UNIVERSIDADE D
COIMBRA

Diana dos Santos Ribeiro da Silva

Mask of sanity or mask of invulnerability? From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention

Tese no âmbito do Doutoramento em Psicologia, especialidade em Psicologia Forense, orientada pelo Professor Doutor Daniel Maria Bugalho Rijo e pelo Professor Doutor Randall Todd Salekin e apresentada à Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra

Julho de 2019

Faculdade de Psicologia e de Ciências da Educação da
Universidade de Coimbra

MASK OF SANITY OR MASK OF INVULNERABILITY?
From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention

Diana dos Santos Ribeiro da Silva

Tese no âmbito do Doutoramento em Psicologia, especialidade em Psicologia Forense, orientada pelo Professor Doutor Daniel Maria Bugalho Rijo e pelo Professor Doutor Randall Todd Salekin e apresentada à Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra.

Julho de 2019

UNIVERSIDADE D
COIMBRA

Title	Mask of sanity or mask of invulnerability? From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention
Author	Diana dos Santos Ribeiro da Silva
Scientific Supervision	Daniel Maria Bugalho Rijo, Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra Randall T. Salekin Unversity of Alabama
Scientific domain	Psicologia, especialidade em Psicologia Forense
Research Center	CINEICC – Centro de Investigação em Neuropsicologia e Intervenção Cognitivo-Comportamental (Unidade I&D) da Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra
Institution	Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra

Este trabalho foi apoiado por uma Bolsa de Doutoramento concedida pela Fundação para a Ciência e Tecnologia [SFRH/BD/99795/2014].

Para os meus filhos
Inês, Luís, Joana

Para vocês

L. D. D. P. D. L. R. F. C. I. S. T. G. L. C.

The kids who need the most love will ask for it in the most unloving ways

Russel Barkley

Acknowledgments

Os trabalhos que foram realizados durante estes anos de estudo foram o resultado de um percurso que aconteceu no campo académico e profissional, mas também no campo pessoal. Este percurso apenas foi possível graças aos contributos de diversas pessoas, às quais aqui expresso a minha imensa gratidão.

Ao Professor Doutor Daniel Rijo, por ter acreditado em mim desde o primeiro momento. Pela sua capacidade de trabalho e gosto pela investigação. Por conseguir ser um orientador de mérito e excelência e um amigo. Por todas as ideias e debates que foram surgindo nas nossas reuniões, supervisões e conversas. Pelo seu rigor científico e pelo seu sentido de humor. Por ser capaz de dar tempo e de me dar tempo para amadurecer ideias. Por escutar com atenção e por aconselhar sem impor. Por aceitar as minhas escolhas e por estar lá quando elas não funcionam. Por saber sempre a forma correta e o *timing* certo. Pela tolerância e por estar nos momentos decisivos. Pela prudência e por ser uma presença segura. Pelas oportunidades que me foi dando. Estou muito grata por um dia termos decidido começar esta caminhada em conjunto. Este trabalho também é seu.

I extend my gratitude to Professor Randall Salekin. I am immensely grateful that you have accepted to be the supervisor of this thesis. I am thankful for your scientific supervision and for the words of encouragement during challenging moments. Your guidance and inspiring questions were of utmost importance for my growth as a researcher.

À Professora Doutora Paula Castilho pela amizade e pela partilha. Por conseguir estar presente nas alturas mais importantes. Pelos seus contributos na construção do manual de intervenção e pela sabedoria na reflexão conjunta dos casos clínicos. Pela sua generosidade e amabilidade. É sempre inspiradora a sua companhia!

To Professor Paul Gilbert, I am deeply thankful for your guidance, support and kind words of encouragement during this work. I am grateful for having witnessed your enthusiasm and knowledge during this scientific journey, mostly during the clinical trial. Your insightful supervision was of utmost importance for my growth as a clinician.

Ao Dr. João Cóias por ter confiado e possibilitado a realização do ensaio clínico.

A todos os diretores, coordenadores e psicólogos dos Centros Educativos pelo interesse e disponibilidade com que receberam este projeto. Um agradecimento especial à Dr.ª Ângela Portugal e à Dr.ª Conceição Dixe, pela confiança e amabilidade com que me

recebem. Pela partilha e pelo exemplo. Estendo o meu agradecimento a toda a equipa técnica e a todos os colaboradores do Centro Educativo dos Olivais, muito grata pela forma como sempre me acolheram.

Um agradecimento sincero a todos os jovens que estiveram envolvidos nestes estudos. Muito grata por todas as partilhas, por todas as experiências, por todas as aprendizagens. É imensa a admiração e o respeito que sinto por vós.

A todos os colaboradores que participaram na recolha de dados. Um agradecimento muito sentido e muito especial à Marlene Paulo e à Rita Miguel, pela dedicação durante o ensaio clínico. Foi uma experiência única que sei que ficará para sempre marcada no nosso percurso e na nossa memória. Não podia estar mais grata por vos ter tido ao meu lado, com a certeza que foram as pessoas certas para esse trabalho tão desafiante, tão delicado e tão essencial. À Marlene agradeço ainda a amizade e a proximidade, o afeto incondicional e a compaixão, a capacidade de aceitar, de me deixar ser eu e de estar sempre, sempre lá, quase que adivinhando quando eu preciso, quando é precisa. À Rita agradeço a amizade e o *soothing*, o carinho que coloca nas recordações, nas palavras, a capacidade de dar um abraço, quando realmente não há nada que se possa dizer ou fazer.

Ao Nélio Brazão, que curiosamente me acompanhou desde o dia em que tive a minha primeira reunião na faculdade. Muito mais que um colega, é um amigo que levo para a vida. Muito grata por todas as gargalhadas genuínas. Pela partilha de conhecimento e pelo cuidado na revisão desta dissertação. Por ser um amigo de verdade, por escutar como ninguém e por ter uma forma tão especial de colocar as coisas em perspectiva. Por se importar e por estar lá para tudo. Por tornar a vida mais leve. Tu sabes!

À Paula Vagos, pelos contributos que deu para os estudos desta tese. Por ser um modelo de trabalho, ética e rigor. Pela amizade e pelo pragmatismo que coloca na análise das circunstâncias da vida.

A Carolina Dall'Antonia da Motta, pela amizade e por estar sempre perto. Pela sensibilidade e pela capacidade de trabalho. Por ser capaz de notar silêncios com abertura e curiosidade, por ser capaz de perguntar, respeitando e dando espaço. Estendo este agradecimento à Cláudia, por ter sido tão doce quando eu mais precisei.

À Marta Capinha pela amizade. Pela capacidade de escutar e reformular sem julgar. Ao Ruben Sousa e à Laura Santos, pela entreajuda e pelas conversas aleatórias.

A todos os colegas do CINEICC, por tornarem este centro de investigação um local acolhedor, de partilha de conhecimento, experiências e afetos. Em especial à Ana Xavier, à Andreia Azevedo, à Cristiana Duarte, à Inês Trindade, ao João Pedro Leitão, ao Marco Pereira, à Ana Fonseca, à Helena Moreira, à Ana Ganho, ao Carlos Carona, à Joana Pereira, à Susana Santos, à Marcela Matos, à Magda Jordão, à Maria João Martins e ao Sérgio Carvalho. Muito grata por vos ter por perto.

Aos professores que marcaram o meu percurso nesta faculdade, desde a licenciatura. Ao Professor Doutor Rui Paixão, que me apresentou este tópico de estudo. À Professora Doutora Luiza Lima, minha orientadora de estágio curricular num local tão especial. À Professora Doutora Maria do Céu Salvador por transmitir como ninguém a importância de nos mantermos focados nos nossos valores e intenções. Ao Professor Doutor António Castro Fonseca, pelo seu inestimável trabalho na área da psicologia forense. Ao Professor Doutor Mário Simões, à Professora Doutora Salomé Pinho e à Professora Isabel Alberto, pelo rigor e pelas oportunidades que me foram oferecendo. À Professora Doutora Cristina Canavarro, por ser uma líder de excelência, por ser capaz de retirar o melhor de cada um e de escutar os contributos de todos nós.

À D. Vera, por ter sempre aquele sorriso que alegra a faculdade.

À Professora Doutora Cristina Soeiro, pela oportunidade e pela confiança que depositou em mim. Pela gentileza com que me recebe no Instituto Universitário Egas Moniz. À Professora Doutora Olga Cunha, pela disponibilidade e pelas conversas que nos unem.

A todos os professores que, desde o ensino básico, me foram guiando. Foi um privilégio ter sido vossa aluna, este trabalho tem um pouco de cada um de vós. Agradeço em especial aos professores: Alice Rodrigues, Maria João Teles, António Conceição, Aníbal Marques, Celeste Aleixo, Luís Santos e Celeste Lebre. Um agradecimento ainda ao Professor Doutor José Pinto da Costa e à Professora Doutora Maria José Pinto da Costa.

Às pessoas que se foram cruzando no meu caminho e que permaneceram pela sua singularidade, autenticidade e amizade. À Joana Reis, à Brígida, à Cristiana Leal, amigas de sempre! Ao Fernando e à Goreti, só vocês! À Virgínia Fernandes, à Márcia Oliveira, à Sandra Rocha, à Sandra Paiva, ao Pipão, ao Ricardo, à Mónica Alves, à Nazaré, à Margarida Flores, à Adélia, ao Miguel Trincadeira, à Sónia Cherpe, ao Juan, à Adriana, tão bom ter-vos por perto! Ao Ribas, à Graça, à Lúcia e ao Fernando, pelas risadas. À Fátima Flores, pela amizade e pela tradução dos primeiros artigos que escrevi. Aos vizinhos dos Olivais e da Rua Júlio Maia, pelas memórias e pelo carinho. À Elizabete Bento, nunca me vou esquecer do que fizeste por mim. À Dr.ª Alice Pinto, pelo exemplo. À Filomena, à Ana, à

Isabel, à Armanda, à Eduarda, à Paula, à Fernanda, à Bernarda, à Teresa, à Magda, à Vânia, à Ermelinda, ao Rui, à Inês, à Ana, à Juliana, por terem sido mais que colegas de trabalho. À Sofia, à Sandra, à Susana, à Mariana e ao Samuel, por me acolherem. À D. Amélia e ao Eduardo, pelos encontros e reencontros. À Mariana, ao João Pedro, à Débora, ao Pedro, ao Nuno, ao Manuel, ao Luís, ao Tiago e à Daniela, muito grata pelos nossos momentos. À Teresa Messias, por tornar o verão tão leve. À Fátima, à Carla, à Olinda, à Amélia, à Alice, à Isabel, à Nely e à Cláudia, estou-vos muito grata. À Teresa Simões e à Paula Virgínia Maia, um beijo e um abraço, por tudo!

Às amigas que são família. À Joana Vale, minha amiga de sempre, pela revisão cuidada desta tese, mas sobretudo pela amizade sincera, sem filtros, genuína e incondicional. À Maria João Conde, por estar disponível sempre que é preciso e para o que for preciso. À Sónia Bessa, por toda a ajuda no tempo de faculdade, por ser uma amiga de verdade, independentemente da distância, por sermos tão parecidas e tão cúmplices. À Sónia Gregório, pelas conversas tão únicas, tão em sintonia, pela perspicácia em traduzir por palavras os sentimentos e os silêncios que observa, por ser autêntica.

À Minha família, pilar de sempre e para sempre, muito grata por sermos nós. Às minhas tias: Dulce e Eugénia. Aos meus primos: Tiago, Gonçalo, Ana, Carolina, João, Pibli, Rita, Afonso e Matilde. À minha irmã. À Susana, à Susaninha e à Margarida. Agradeço em especial às tias Lu e Tina e aos seus Zés, pelo carinho, pelo cuidado, obrigada! Ao tio Dino, à tia Daisy e ao tio Mané, foram sempre vocês a estar lá, a estar mesmo!

Aos meus avós. Abílio. Alda. Manuel. Rosália. Tenho tantas saudades vossas!

Aos meus pais. A vida nem sempre é fácil. Obrigada por me ensinarem que a escolha do percurso está nas nossas mãos. Muito grata por vos ter tido. A vocês. Como pais.

Aos meus pais. Abílio e Mimi. Sem vocês nada disto seria possível! Eu não seria possível. Porque todas as crianças deviam ter alguém assim nas suas vidas.

Aos meus filhos. Inês. Luís. Joana. Por me lembrarem sempre o que é mais importante. Por serem fonte de inspiração. Pela admiração que sinto por vocês. Por ser tão fácil estabelecer prioridades convosco ao meu lado. É um verdadeiro privilégio ser vossa mãe! Obrigada!

Table of contents

List of tables

PART I – THEORETICAL BACKGROUND

Chapter 1 | Psychopathic traits in children and youth: The state-of-the-art

PART II – METHOD

Chapter 2 | General methodology and research aims

PART III – EMPIRICAL STUDIES

Chapter 3 | Contribution to the conceptualization of psychopathic traits in children and youth

Study I | Psychopathic profiles: A Latent Profile Analysis in youth samples with implications for the diagnosis of Conduct Disorder

Chapter 4 | The evolutionary roots of psychopathic traits in children and youth

Study II | The evolutionary roots of psychopathy

Study III | Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls

Study IV | An evolutionary model to conceptualize psychopathic traits across community and forensic male youth

Chapter 5 | The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits

The PSYCHOPATHY.COMP program|

Study V | The efficacy of a compassion-focused therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee

Study VI | Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth

APPENDIXES

Appendix A | Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories

Appendix B | Child and adolescent psychopathy: Assessment issues and treatment needs

Appendix C | The PSYCHOPATHY.COMP program: An overview

List of figures

PART III – EMPIRICAL STUDIES

Chapter 3 | Contribution to the conceptualization of psychopathic traits in children and youth

Chapter 4 | The evolutionary roots of psychopathic traits in children and youth

Chapter 5 | The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits

List of acronyms and abbreviations

APP	Average Psychopathic Profile
BIC	Bayesian Information Criteria
CBT	Cognitive Behavioral Therapy
CD	Conduct Disorder
CFA	Confirmatory Factor Analyses
CFI	Comparative Fit Index
CFT	Compassion Focused Therapy
CINEICC	Centro de Investigação em Neuropsicologia e Intervenção Cognitivo-Comportamental
CONSORT	Consolidated Standards of Reporting Trials
CU	Callous-Unemotional traits
FCT	Fundação para a Ciência e a Tecnologia
FPCE-UC	Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra
GM	Grandiose-Manipulative traits
HPP	High Psychopathic Profile
II	Impulsive-Irresponsible traits
LPA	Latent Profile Analysis
LPP	Low Psychopathic Profile
R&D	Research and Development
RCT	Randomized controlled trial
RMSEA	Root-Mean Square Error of Approximation
RNR	Risk-Need-Responsivity
SEM	Stuctural Equation Modelling
SRMR	Standardized Root-Mean Square Residual
TREND	Transparent Reporting of Evaluations with Nonrandomized Designs

Resumo

Introdução: Os traços psicopáticos (Grandiosidade/Manipulação–GM; Frieza/Insensibilidade emocional–FI; Impulsividade/Irresponsabilidade-II) estão ligados às formas mais precoces, estáveis e severas de comportamento antissocial, sobretudo quando associados à Perturbação do Comportamento (PC). Contudo, ainda não existe consenso relativamente à conceptualização dos traços psicopáticos em crianças/jovens, não sendo claro se o modelo multifacetado da psicopatia é mais benéfico do que considerar apenas os traços de FI. Embora alguns autores sugiram que os traços psicopáticos possam ser uma estratégia adaptativa em ambientes psicossociais hostis, a investigação sobre as raízes evolucionárias da psicopatia é escassa. Aumentar a investigação nesta área é crucial de modo a clarificar estas trajectórias etiológicas. Finalmente, a investigação no tratamento dos traços psicopáticos é limitada, sobretudo em amostras forenses, não existindo intervenções especificamente desenhadas para o seu tratamento. A Terapia Focada na Compaixão (TFC) tem sido proposta como uma abordagem evolucionária promissora no tratamento dos traços psicopáticos. De forma a colmatar estas lacunas, esta tese procurou responder a três questões de investigação: (1) Qual a melhor forma de conceptualizar os traços psicopáticos em crianças/jovens?; (2) Poderão os traços psicopáticos ser uma estratégia adaptativa perante determinadas circunstâncias de vida?; e (3) Será que intervenções específicas poderão alterar os traços psicopáticos?

Método: Esta tese incluiu seis estudos e o PSYCHOPATHY.COMP, um programa individual baseado na TFC que foi especialmente desenhado para reduzir os traços psicopáticos e o comportamento antissocial. Os estudos foram conduzidos em diferentes amostras; i.e., amostras comunitárias de rapazes e raparigas e amostras forenses de rapazes. Diversas medidas de autorrelato foram utilizadas para avaliar os traços psicopáticos e outros construtos em estudo. Os participantes da amostra forense foram ainda avaliados com uma entrevista clínica estruturada e os dados relativos ao risco de reincidência e ao comportamento disruptivo foram recolhidos dos seus processos na justiça.

Resultados: Recorrendo a um desenho transversal, o Estudo I procurou responder à primeira questão de investigação. Uma Análise de Perfis Latentes baseada nos traços GM, FI e II foi realizada numa amostra forense e numa amostra comunitária. Os resultados mostraram a existência de perfis de baixos, médios e altos traços psicopáticos em ambas as amostras. Os perfis psicopáticos da amostra forense diferenciaram-se em variáveis relevantes: psicopatologia, risco de reincidência e agressividade. O Estudo II (uma revisão compreensiva sobre as raízes evolucionárias da psicopatia) e os estudos transversais III/IV tiveram como objetivo responder à segunda questão de investigação. Usando diferentes amostras (comunitárias de rapazes/raparigas e forense de rapazes) e um conjunto de medidas de autorrelato, os Estudos III/IV testaram um modelo evolucionário que incluiu a relação entre o

impacto de experiências precoces traumáticas e os traços psicopáticos e ainda os efeitos indirectos da vergonha e do *coping* disfuncional com a vergonha nessa mesma associação. Foi ainda testada a invariância do modelo entre sexos na amostra comunitária e entre rapazes da comunidade e da amostra forense. Os resultados sugeriram que o impacto de experiências precoces traumáticas se associava direta e indirectamente aos traços psicopáticos. Com algumas diferenças, este modelo explicou parcialmente os traços psicopáticos nas diversas amostras. Os estudos longitudinais V/VI procuraram responder à última questão de investigação, testando a eficácia preliminar do programa PSYCHOPATHY.COMP. O Estudo V mostrou que o programa foi eficaz na redução dos traços psicopáticos e do comportamento disruptivo num jovem detido com elevados traços psicopáticos (avaliação pré/pós/*follow-up*). Através de um ensaio clínico (avaliação pré/pós-tratamento com grupo de controlo), o Estudo VI mostrou a eficácia do programa na promoção da adesão terapêutica e na redução dos traços psicopáticos em jovens detidos, considerando quer a mudança grupal quer a mudança individual.

Conclusão: Respondendo à primeira questão de investigação, os resultados indicaram que o modelo multifacetado da psicopatia, em comparação aos traços de FI isoladamente, poderá ser mais vantajoso, tanto na investigação como na prática clínica. Em relação à segunda questão, os resultados sugeriram que os traços psicopáticos podem ser entendidos como uma resposta evolucionária perante ambientes psicossociais hostis. Relativamente à última questão, os resultados indicaram que o programa PSYCHOPATHY.COMP foi capaz de reduzir os traços psicopáticos e o comportamento disruptivo e de promover a adesão terapêutica em jovens detidos. Embora as primeiras conceptualizações enfatizassem a sanidade aparente e a ausência de experiência emocional como características principais da psicopatia, os resultados desta investigação sugeriram que os traços psicopáticos podem ser vistos como uma estratégia adaptativa que encobre disfunções emocionais, atuando como uma máscara de invulnerabilidade que esconde um profundo sofrimento. Ultrapassar esta máscara através da promoção de uma motivação compassiva parece uma estratégia adequada e um objetivo terapêutico crucial na reabilitação de jovens agressores. Os resultados promissores do programa PSYCHOPATHY.COMP sustentam a sua utilização nas políticas de reabilitação do sistema de justiça juvenil, reduzindo potencialmente os custos que os traços psicopáticos têm para os próprios jovens agressores e para a sociedade em geral.

Palavras-chave: comportamento antissocial/disruptivo; *coping* com a vergonha; experências precoces; jovens detidos; perturbação do comportamento; programa PSYCHOPATHY.COMP; teoria evolucionária; terapia focada na compaixão; traços psicopáticos; tratamento; vergonha.

Abstract

Introduction: Psychopathic traits (Grandiose/Manipulative–GM; Callous/Unemotional–CU; and Impulsive/Irresponsible-II) are linked to the most early, stable, and severe forms of antisocial behavior, especially when associated with Conduct Disorder (CD). Still, there is a lack of consensus about the conceptualization of psychopathic traits in children/youth. It is still not clear whether a multifaceted model of psychopathy is more beneficial and accurate than CU traits alone. Although some authors proposed that psychopathy can be seen as an adaptive strategy to deal with harsh rearing scenarios, there is a lack of research on the evolutionary roots of psychopathic traits. Increasing research on this topic is necessary to clarify these etiological pathways. Finally, research on the treatment of psychopathic traits is scarce and limited, mostly in young offender samples. There are no psychotherapeutic interventions specifically developed and tested for the treatment of psychopathic traits. Compassion Focused Therapy (CFT), an evolutionary-based therapy, seems to be suitable to treat psychopathic traits. In an attempt to fill these gaps, this thesis aimed to answer three research questions: (1) What is the best way to conceptualize psychopathic traits in children and youth?; (2) Can psychopathic traits be seen as an adaptive strategy towards certain life circumstances?; and (3) Can specific and tailored intervention efforts change psychopathic traits?

Method: This thesis comprises six studies and the PSYCHOPATHY.COMP program, an individual CFT-based intervention specifically designed to target psychopathic traits and antisocial behavior among young offenders. The studies were conducted in distinct samples of youth; i.e., community samples of boys and girls and forensic samples of male youth. Several self-report measures were used across studies, assessing psychopathic traits and other key variables. Forensic participants were also assessed through a structured clinical interview and the recidivism risk and disruptive behavior data were collected from their record files.

Results: Study I presents a cross-sectional design aimed to answer the first research question. A Latent Profile Analysis based on GM, CU and II traits was performed with forensic and community samples of male youth. In both samples, results showed the existence of low, average, and high psychopathic traits profiles. The psychopathic profiles within the forensic sample differed on key variables including psychopathology, recidivism risk, and aggression. Study II (a comprehensive review on the evolutionary roots of psychopathic traits) and cross-sectional Studies III/IV aimed to answer the second research question. Using a set of self-report measures and community samples of boys and girls and a forensic sample of male youth, Studies III/IV tested an evolutionary model involving pathways linking the impact of harsh rearing experiences to psychopathic traits as well as the indirect effects of external shame and maladaptive shame coping strategies in that association. The invariance of the

model across boys and girls from community settings and across boys from forensic and community samples was also tested. Results suggested that the impact of harsh rearing experiences was directly and indirectly linked to psychopathic traits. This model partially explained psychopathic traits in community and forensic samples, although differences were found across groups. Longitudinal Studies V/VI aimed to answer the last research question, testing the preliminary efficacy of the PSYCHOPATHY.COMP program. The clinical case study reported in Study V showed that the program was effective in reducing psychopathic traits and disruptive behavior over time (pre/post/follow-up assessment) in a detained youth with a high psychopathic profile. Using a controlled trial design (pre/post-test with a control group), Study VI supported the efficacy of this intervention in promoting therapeutic engagement and in reducing psychopathic traits among detained youth, considering both change at a group level as well as change at an individual level.

Conclusions: Concerning the first research question, findings indicated that the multifaceted model of psychopathy may be more valuable for research and clinical practice than considering CU traits alone. Regarding the second question, findings suggested that psychopathic traits can be conceptualized as evolutionary rooted responses to deal with harsh rearing scenarios. Finally, answering the last question, findings indicated that the PSYCHOPATHY.COMP program was able to reduce psychopathic traits, disruptive behavior, and to promote therapeutic engagement among detained youth. Although early conceptualizations emphasized the appearance of sanity and the lack of emotional experience as core features of psychopathy, findings suggested that psychopathic traits can be seen as an adaptive strategy that disguises central emotional dysfunctions, acting as a mask of invulnerability that hides deep suffering. Overcoming this mask by building a compassionate motivation seems both an adequate therapeutic strategy and a fundamental therapeutic goal in the rehabilitation of young offenders. The promising treatment outcomes of the PSYCHOPATHY.COMP program supported its use as part of the rehabilitation policies of the juvenile justice system, potentially reducing the costs that psychopathic traits have on young offenders and on the society.

KEYWORDS: antisocial/disruptive behavior; compassion-focused therapy; conduct disorder; detained youth; evolutionary theory; harsh rearing experiences; psychopathic traits; PSYCHOPATHY.COMP program; shame; shame coping strategies; treatment.

List of publications

I. Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2019). Psychopathic profiles: A Latent Profile Analysis in youth samples with implications for the diagnosis of Conduct Disorder. *Journal of Criminal Justice, 60,* 74-83. doi: 0.1016/j.jcrimjus.2018.12.003.

II. Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2015). The evolutionary roots of psychopathy. *Aggression and Violent Behavior, 21,* 85-96. doi: 10.1016/j.avb.2015.01.006.

III. Ribeiro da Silva, D., Vagos, P., & Rijo, D. (2019). Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls. *Current Psychology*. Advance online publication. doi: 10.1007/s12144-019-00353-3

IV. Ribeiro da Silva, D., Vagos, P., & Rijo, D. (2019). An evolutionary model to conceptualize psychopathic traits across community and forensic male youth. *International Journal of Offender Therapy and Comparative Criminology, 63,* 574-596. doi: 10.1177/0306624X18823624.

V. Ribeiro da Silva, D., Rijo, D., Castilho, P., & Gilbert, P. (2019). The efficacy of a compassion-focused therapy–based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee. *Clinical Case Studies.* Advance online publication. doi: 10.1177/1534650119849491.

VI. Ribeiro da Silva, D., Rijo, D., Salekin, R. T., Paulo, M., Miguel, R., & Gilbert, P., (2019). Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth. Manuscrip under review in Journal of Experimental Criminology.

Attached:

VII. Ribeiro da Silva, D., Rijo, D.,& Salekin, R. T. (2012). Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories. *Journal of Criminal Justice, 40,* 269-277. doi: 10.1016/j.jcrimjus.2012.05.005.

VIII. Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2013). Child and adolescent psychopathy: Assessment issues and treatment needs. *Aggression and Violent Behavior, 18,* 71-78. doi: 10.1016/j.avb.2012.10.003.

This Dissertation

Psychopathy is a concept that accompanied the history of mankind, although its first clinical descriptions only emerged in the 19th century (Pinel, 1806/1962; Prichard, 1835). The modern clinical conceptualization of psychopathy has been shaped mostly by "The Mask of Sanity", an emblematic book first published in 1941 by the psychiatrist Hervey Cleckley. Central to Cleckley´s conception is the notion that psychopathy is a severe disorder masked by an external appearance of robust mental health (1941/1988).

Despite the efforts of Cleckley (1941/1988) and several other authors, researchers have yet to come to a clear agreement concerning the definition of psychopathy (Polaschek & Skeem, 2018). There is some evidence that psychopathy is a developmental disorder, which comprises a set of interpersonal (i.e., Grandiose-Manipulative: GM), affective (i.e., Callous-Unemotional: CU), and behavioral (i.e., Impulsive-Irresponsible: II) deviant traits (Cooke & Michie, 2001; Hare, 2003; Neumann & Hare, 2008). Psychopathy is considered of upmost importance in clinical and forensic settings, as it is associated with the most early, stable, and severe forms of antisocial behavior, negatively impacting on society and in individuals themselves (Hare & Neumann, 2006). For these reasons, several authors argued that the best time to prevent and intervene is early in life, which reinforced the need to study psychopathic traits in children and youth (Colins & Andershed, 2018; Salekin, 2010).

The construct of child and adolescent psychopathy can be tracked since the works of Cleckley (1941/1988), although the first empirical study on the topic only occurred in 1990 (Forth, Hart, & Hare), in which the authors showed that young offenders also displayed psychopathic traits. After this study, research on psychopathic traits in youthful populations vastly increased, mostly due to the relevance of the construct for risk assessment, risk prediction, and risk management in forensic settings (Salekin, 2010). Nevertheless, the scientific literature on psychopathic traits in children and youth still presents several gaps, namely issues related to its conceptualization, to the study of its etiological pathways and, mostly, to its treatment.

Regarding the conceptualization of psychopathic traits in children and youth, there is still under debate whether considering a dimensional and multifaceted model of psychopathy (i.e., GM, CU, and II traits) is more beneficial and accurate than considering CU traits only (Colins & Andershed 2015; Salekin, 2016, 2017; Viding & McCrory, 2012, 2018). Despite this, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) included CU traits as a Conduct Disorder (CD) specifier. Although including CU traits as a specifier for CD has been important for both clinical and research purposes, it seems that it has contributed to narrow research on psychopathic traits literature in the youthful population. The lack of agreement on psychopathic traits conceptualization in children and youth and/or the focus on CU traits only may hinder the definition of the boundaries of the construct and, consequently, the study, assessment, and treatment of psychopathic traits during these developmental stages (Johnstone & Cooke, 2004; Salekin,

2016, 2017). Clarifying the conceptualization of psychopathic traits in children and youth seems therefore paramount both for clinical and research purposes.

Regarding the etiology of psychopathic traits, it is almost consensual that like other psychiatric conditions, psychopathic traits are probably a multicausal phenomenon (Glenn, 2019; Viding & McCrory, 2018). Nevertheless, contrary to other mental health problems, evolutionary influences were not broadly examined in the study of psychopathic traits, which is mirrored in the scarcity of research on this topic (see Glenn, 2019 for a review). Increasing research on the evolutionary roots of psychopathy seems therefore of the utmost importance not only to clarify etiological pathways, but mostly because evolutionary mechanisms have been gaining a growing relevance and empirical support in new cognitive-behavioral therapeutic (CBT) approaches.

Finally, it is noteworthy that while the premise sustaining that "nothing works" in the rehabilitation of criminal offenders in general has proved to be flawed by several systematic reviews and meta-analytic studies (see Bonta & Andrews, 2016 for a review), the premise sustaining that "nothing works with psychopaths" is still far from being effectively tested (Harris & Rice, 2006; Salekin, 2002). In the early 1940s, Cleckley (1941/1988) wrote that "We do not at present have any kind of psychotherapy that can be relied upon to change the psychopath fundamentally" (p. 478). After almost 80 years, treatment outcome research on this topic is still scarce and marked by several methodological flaws, particularly in young offenders samples (Polaschek & Skeem, 2018). More importantly, no intervention program was designed and tested to reduce psychopathic traits in young offenders. New CBT approaches have been developed in recent years, showing growing empirical support in the treatment of several psychopathological symptoms and disorders, some of them previously considered difficult to treat (e.g., Feliu-Soler et al., 2018). Compassion Focused Therapy (CFT), an evolutionary-based therapy, seems to be particularly promising to treat young offenders with psychopathic traits (Ribeiro da Silva, Rijo, & Salekin, 2013). However, there was no CFT-based intervention program designed to target psychopathic traits and disruptive/antisocial behavior in young offenders. Consequently, treatment outcome research in this area was absent.

Psychopathy has been a particular interest of mine since I was an undergraduate student. This interest increased in 2011, when I started to collaborate with the Center for Research in Neuropsychology and Cognitive and Behavioral Intervention (CINEICC), from the Faculty of Psychology and Educational Sciences, University of Coimbra (FPCE-UC). At that time I carefully examined the state-of-the-art on psychopathic traits in children and youth and published two review papers on the topic with my future PhD supervisors (Ribeiro da Silva, Rijo, & Salekin, 2012, 2013). These papers forecasted the above mentioned gaps in the literature; i.e., issues linked to the conceptualization of psychopathic traits in children and youth, to its etiological pathways and to its treatment. These issues can be tracked in the following citations:

Still left to be researched include issues such as - how do “psychopaths” see us and see themselves? Is psychopathy a developmental disorder marked by an emotional hypo-responsiveness (Lynam et al., 2007), low fear (Lykken, 2006), an absence of shame and remorse, and a mask of sanity that hides this “insanity” (Cleckley, 1941/1988)? Or is psychopathy better conceptualized as an adaptive strategy toward certain life circumstances (e.g., Gilbert, 2005; Glenn et al., 2011)? A primary question for research is whether psychopathy can be prevented, altered or ameliorated (Salekin et al., 2010). (Ribeiro da Silva et al., 2012; pp. 275).

Studies of therapeutic outcomes show that children with behavioral problems can significantly improve with a cognitive–behavioral approach (e.g., Kazdin, 2009; Kazdin & Wassell, 2000; Kolko et al., 2009). Nevertheless, in children and adolescents with psychopathy, results are less encouraging (Harris & Rice, 2006; Hass et al., 2011; Salekin, 2002). Therefore, how shall we intervene effectively in the affective and interpersonal features of psychopathy (CU traits, grandiosity, manipulation, and narcissism)? (Ribeiro da Silva et al., 2013; pp. 76)

These questions were then integrated in a major research question, embodied in the title of this thesis - “Mask of sanity or mask of invulnerability? From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention”, which comprised three specific and sequential research questions:

(1) What is the best way to conceptualize psychopathic traits in children and youth?
(2) Can psychopathic traits be seen as an adaptive strategy towards certain life circumstances?
(3) Can specific and tailored intervention efforts change psychopathic traits?

To answer these research questions, we developed six empirical studies and an individual CFT-based intervention specifically designed to target psychopathic traits and antisocial/disruptive behavior in young offenders. To the date of the conclusion of this thesis (July 2019), five empirical studies were published in international scientific peer review journals and one is under review in a similar journal. The current thesis presents four parts, with a total of six chapters, which are organized as follows:

Part I - **Theoretical background**, comprises **Chapter 1** (Psychopathic traits in children and youth: The state-of-the-art), which presents the state-of-the-art on psychopathic traits in children and youth, including: the reflection on the construct, the most studied etiological theories, the assessment issues, and the treatment efforts.

Part II – **Method**, incudes **Chapter 2** (General methodology and research aims), providing an overview of the aims and methodological options of the studies included in this thesis.

Part III - **Empirical studies**, consists of 3 interconnected chapters aiming to answer the three aforementioned specific research questions of this thesis: **Chapter 3** (Contribution to the conceptualization of psychopathic traits in children and youth); **Chapter 4** (The evolutionary roots of psychopathic traits in children and youth); and **Chapter 5** (The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits).

Chapter 3 (Contribution to the conceptualization of psychopathic traits in children and youth) was developed to answer the first specific research question - What is the best way to conceptualize psychopathic traits in children and youth? This chapter includes **Study I** (Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder), which aimed to contribute to the conceptualization of psychopathic traits in children and youth by exploring the benefits of including GM, CU, and II traits as CD specifiers.

Chapter 4 (The evolutionary roots of psychopathic traits in children and youth) was developed to answer the second specific research question - Can psychopathic traits be seen as an adaptive strategy towards certain life circumstances? This chapter includes three studies. **Study II** (The evolutionary roots of psychopathy) reviewed previous research on the evolutionary roots of psychopathy and discussed how psychopathic traits could be seen as a useful heritage, especially for people who have grown in harsh rearing scenarios. The implications of evolutionary theory for the comprehension and treatment of psychopathic traits were also emphasized, namely through CFT, an evolutionary-based intervention. **Study III** (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) and **Study IV** (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth) explored, in different samples of youth, an evolutionary-based model involving pathways linking the impact of harsh rearing experiences and psychopathic traits, as well as the indirect effects of external shame and maladaptive shame coping strategies in that association. Moreover, these studies tested the invariance of this model across samples; i.e., **Study III** tested the invariance of this model across boys and girls from the community and **Study IV** tested the invariance of this model across community and forensic male youth.

Building on the previous chapters, **Chapter 5** (The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits) was developed to answer the last specific research question - Can specific and tailored intervention efforts change psychopathic traits? This chapter includes an overview of the PSYCHOPATHY.COMP, an individual CFT-based intervention specifically designed to target antisocial/disruptive behavior and psychopathic traits among young offenders. To our best knowledge, this is among the first psychotherapeutic programs specifically designed to treat

antisocial/disruptive behavior and psychopathic traits in young offenders, and the first that uses a CFT-based intervention approach to treat these youth. This chapter then includes studies aiming to test the preliminary efficacy of the PSYCHOPATHY.COMP program. **Study V** (The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee) aimed to test the efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits and disruptive behavior in a juvenile detainee with CD, a high psychopathic profile, and a very high risk for criminal recidivism. **Study VI** (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth) aimed to test the preliminary efficacy of the PSYCHOPATHY.COMP program in promoting therapeutic engagement among male detained youth and in reducing psychopathic traits, both considering change at a group level as well as change at an individual level.

Part IV - General discussion, comprises the final chapter, **Chapter 6** (General discussion of the main findings), which offers an overview of the contributions and conclusions of this thesis for the literature on psychopathic traits in children and youth. This chapter also details the main methodological strengths and limitations of the different studies included in the thesis and suggests avenues for future research. Finally, this chapter comprises a discussion of the clinical and forensic implications of the studies presented here, not only for the assessment and treatment of young offenders, but also for the management of the juvenile justice system and for prevention efforts.

The **Reference** section at the end of the thesis refers to all the references cited in the chapters. In addititon, the reference list of each study as published/submitted for publication is provided in each study at the respectice reference section.

Appendix A (Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories) and **Appendix B** (Child and adolescent psychopathy: Assessment issues and treatment needs) present the review papers on the state-of-the-art on psychopathic traits in children and youth, which were published previously to the beginning of these PhD studies, serving as a basis to develop **PART I** (Theoretical background). **Appendix C** (The PSYCHOPATHY.COMP program: An overview) presents an overview of the PSYCHOPATHY.COMP program and **Appendix D** (The PSYCHOPATHY.COMP program: Sessions' assessment) includes the assessment sheets of the sessions.

It is worth to mention that the quality and the extent of the products of this thesis were possible due to the fact that the author of this dissertation is part of the research team of one project developed at CINEICC during the last years, which had the collaboration of several researchers and experts from Portugal, United Kingdom, and USA - the R&D project "Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention" (PTDC/MHC-PCL/2189/2014). This teamwork allowed the thoroughly test of the psychometric proprieties of the majority of the self-report

questionnaires used in this thesis (Pechorro, Ribeiro da Silva, Andershed, Rijo, & Gonçalves, 2016, 2017; Vagos, Ribeiro da Silva, & Brazão, 2018; Vagos, Ribeiro da Silva, Brazão, & Gilbert, 2016, 2017; Vagos, Ribeiro da Silva, Brazão, & Elison, 2019).

Finally, is seems important to highlight that the expertise of the supervisors (Daniel Rijo and Randall T. Salekin) and the integration of the PhD student as a research member of the aforementioned project (Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention - PTDC/MHC-PCL/2189/2014) also strengthened the quality and the extent of the products of this thesis *per se*. In detail, **Part I** (**Theoretical background**), **Part II** (**Method**), and **Part IV** (**General discussion**) were written by the author of this thesis and reviewed by her supervisors. **Part III** (**Empirical studies**) was developed by the author of this dissertation with the collaboration of the co-authors mentioned in each study:

- **Study I** (Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder) – Diana Ribeiro da Silva and Daniel Rijo designed the study; Diana Ribeiro da Silva and other research members of the CINEICC participated in data collection; Diana Ribeiro da Silva analyzed the data; Diana Ribeiro da Silva, Daniel Rijo and Randall T. Salekin wrote the paper.
- **Study II** (The evolutionary roots of psychopathy) – Diana Ribeiro da Silva and Daniel Rijo designed the study; Diana Ribeiro da Silva carefully reviewed the literature on the topic and wrote the paper; Daniel Rijo and Randll T. Salekin reviewed the final version of the paper.
- **Study III** (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) and **Study IV (**An evolutionary model to conceptualize psychopathic traits across community and forensic male youth) – Diana Ribeiro da Silva and Daniel Rijo designed the study; Diana Ribeiro da Silva and other research members of the CINEICC participated in data collection; Diana Ribeiro da Silva and Paula Vagos analyzed the data; Diana Ribeiro da Silva, Daniel Rijo and Paula Vagos wrote the paper.
- The **PSYCHOPATHY.COMP program** – The final version of the program was designed and written by Diana Ribeiro da Silva in a close collaboration with members of the research team of the R&D project "Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention" (PTDC/MHC-PCL/2189/2014), namely: Paula Castilho, Rita Miguel, Marlene Paulo, Paul Gilbert, and Daniel Rijo (for a detailed description of the development of the program see **Part** II – Method).
- **Study V** (The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee) – Diana Ribeiro da Silva and Daniel Rijo designed the study;

Diana Ribeiro da Silva delivered the PSYCHOPATHY.COMP program to the juvenile detainee; Daniel Rijo, Paula Catilho, and Paul Gilbert supervised the sessions; research members of the CINEICC collected the data; Daniel Rijo analyzed the data; Diana Ribeiro da Silva, Daniel Rijo, Paula Castilho, and Paul Gilbert wrote the paper.

- **Study VI** (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth) - Diana Ribeiro da Silva and Daniel Rijo designed the study; Diana Ribeiro da Silva and two other therapists (Marlene Paulo and Rita Miguel) delivered the PSYCHOPATHY.COMP program to detained youth; Daniel Rijo, Paula Catilho, and Paul Gilbert supervised the sessions; research members of the CINEICC collected the data; Diana Ribeiro da Silva analyzed the data; Diana Ribeiro da Silva, Daniel Rijo, Randall T. Salekin, Marlene Paulo, Rita Miguel, and Paul Gilbert wrote the paper

PART I

THEORETICAL BACKGROUND

CHAPTER 1 |

Psychopathic traits in children and youth: The state-of-the-art

1. Introduction[1]

The concept of psychopathy is not novel and its descriptions can be found in different historical periods and in diverse cultures. The Greek Mythology have recognized some key features of the disorder, such as immoral behavior, manipulation, perversity, pride, sense of invulnerability, seduction, vanity, wickedness, and extreme violence (Cooke, Michie, & Hart, 2006; Hoyersten, 2001). The same pattern can be found in the Psalms and in the Icelandic Sagas (Hoyersten, 2001; Murphy, 1976).

The first clinical descriptions of psychopathy are ascribed to Pinel (1806/1962) and Prichard (1835), who have respectively used words like "manie sans delire" and "moral insanity" to label the condition. These were accepted diagnoses throughout the second half of the 19th century, both in Europe and America. These diagnoses referred to a type of mental disorder consisting of abnormal emotions (e.g., emotional coldness, callous exploitation of others) and behaviors (e.g., antisocial behavior, brutality, and recklessness) in the apparent absence of intellectual impairments, delusions, or hallucinations (Pinel, 1806/1962; Prichard, 1835). Rush (1812), Kraeplin (1904/1915), Partridge (1930), and Schneider (1950) have also contributed to the development of the psychopathy construct. Rush (1812) suggested that a deeply rooted "moral depravity" was central in psychopathy, while Kraeplin (1904, 1915) and Schneider (1950) considered these individuals pathologically deceitful, that is, with a propensity to fraudulent behaviors. Kraeplin (1904, 1915) named them "swindlers" and described them as charming, glib, and fascinating, but presenting basic failures in morality or loyalty to others. Schneider (1950) considered these individuals a "self-seeking type" and characterized them as apparently pleasant and affable, but egocentric and superficial in their emotional reactions and in their interpersonal relationships.

Modern conceptualizations of psychopathy were derived fundamentally from Hervey Cleckley's work, documented in his emblematic book – "The Mask of Sanity" (1941/1988). Central to his conception, and origin of the title of the book, is the idea that psychopathy is a severe personality disorder masked by an outward appearance of robust mental health. The author tried to narrow the psychopathy concept, too inclusive at that time, reserving it to exceptional cases. Studying inpatients at a large psychiatric hospital, Cleckley (1941/1988) set forth 16 core criteria to define the psychopathic personality. Those criteria were mainly focused on affective and interpersonal features: superficial charm and good "intelligence"; untruthfulness and insincerity; pathologic egocentricity and incapacity for love; absence of delusions and other signs of irrational thinking; lack of remorse or shame; general poverty in major affective reactions; unresponsiveness in general interpersonal relations; absence of "nervousness" or psychoneurotic manifestations; sex life impersonal, trivial, and poorly integrated; poor judgment and failure to learn by experience; unreliability; specific loss of

[1] This chapter is an updated version of Ribeiro da Silva, Rijo, and Salekin (2012, 2013) papers, which are available at Appendix A and B, respectively.

insight; fantastic and uninviting behavior with drink and sometimes without; failure to follow any life plan; suicide rarely carried out; and inadequately motivated antisocial behavior.

Cleckley (1941/1988) claimed that aggressive, antagonistic, cruel, predatory, and revengeful behaviors were not essential in the conceptualization of psychopathy. The author considered that the deeply rooted impairment of emotional processing among these individuals (like aphasia or color-blindness) weakened enraged or cruel reactions. To underline this, he presented cases of "successful psychopaths", which have followed careers as doctors, scholars, and businessmen. Although most of those clinical cases described individuals who have engaged in some form of moral transgression, the author argued that the harm they inflicted on others was a result of their superficiality, boldness, and capricious nature. Contemporaries of Cleckley, studying prison inmates, shared his opinion concerning a possible deficit in emotional reactivity, but claimed that behavioral deficits should also be considered core components of psychopathy, describing criminal psychopaths as antagonist, cold, cruel, predatory, truculent, and violent (Lindner, 1944/2003; McCord & McCord, 1964)

Despite Cleckley's efforts to focus the construct of psychopathy upon interpersonal and affective traits, some authors still debate the question if antisocial behavior is an inherent feature of psychopathy or just a product of it (Cooke & Michie, 2001; Cooke, Michie, & Skeem, 2007; Hare, 2003; Lester, Salekin, & Sellbom, 2013; McCuish, Corrado, Hart, & DeLisi, 2015; Ribeiro da Silva, Rijo, & Salekin, 2012, 2013; Robins, 1966, 1978; Salekin, Brannen, Zalot, Leistico, & Neumann, 2006; Skeem & Cooke, 2010). Even so, psychopathic traits seem to be more prevalent in criminal offenders' samples when compared to community samples (Edens, Marcus, Lilienfeld, & Poythress, 2006). However, not all individuals with a pattern of criminal behavior and diagnosed with Antisocial Personality Disorder (ASPD; American Psychiatric Association, 2013) show psychopathic traits (Skeem, Polaschek, Patrick, & Lilienfeld, 2011). Hare (1985) underlined that about 90% of psychopathic offenders meet criteria for ASPD, but only 25% of the individuals diagnosed with ASPD display psychopathic traits. The same proportions arose in youth with Conduct Disorder (CD; Forth & Bruke, 1998). These discrepancies may be due to the fact that ASPD and CD are focused in the presence of antisocial behaviors and not in the manifestation of the interpersonal and affective traits of psychopathy (Forth & Bruke, 1998; Hare, 1985).

In sum, after almost 80 years, researchers have yet to come to a clear agreement concerning the definition of psychopathy (Hecht, Latzman, & Lilienfeld, 2018). Despite this, there is some evidence that psychopathy is a developmental disorder (Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007), which covers a set of interpersonal (i.e., Grandiose-Manipulative: GM), affective (i.e., Callous-Unemotional: CU), and behavioral (i.e., Impulsive-Irresponsible: II) deviant traits (Cooke & Michie, 2001; Hare, 2003). Moreover, psychopathic traits seem to be continuously distributed throughout the population, differing from normality in degree rather than kind (Edens et al., 2006; Murrie et al., 2007; Neumann, Schmitt, Carter, Embley, & Hare, 2012; Neumann & Hare, 2008). Psychopathy is considered of upmost importance in clinical and forensic settings, as it seems to be a progressive condition that

worsens and becomes less responsive to psychotherapeutic interventions over time (Caldwell, McCormick, Wolfe, & Umstead, 2012; Kubak & Salekin, 2009; Lee, Salekin, & Iselin, 2010; Ribeiro da Silva et al., 2013; Salekin, 2002; Salekin, Tippey, & Allen, 2012). Finally, several studies pointed out that psychopathy, especially when associated with a CD/ASPD diagnosis, is linked to the most early, stable, and severe forms of antisocial behavior, and, consequently, to higher recidivism rates (Colins & Andershed, 2018; DeLisi, 2009; DeLisi & Piquero, 2011; Gretton, Hare, & Catchpole, 2004; Hare & Neumann, 2006; Hemphill, 2007; Herpers, Rommelse, Bons, Buitelaar, & Scheepers, 2012; Leistico, Salekin, DeCoster, & Rogers, 2008; McCuish et al., 2015; Skeem, Polaschek, Patrick, & Lilienfeld, 2011; Vaughn & DeLisi, 2008; Vaughn, Howard, & DeLisi, 2008).

Overall, current knowledge strengthens the need to deepen research in this field: clarifying the concept of psychopathy, studying its etiological pathways from different perspectives, and investing in early screening and early intervention efforts (Colins & Andershed, 2018; DeLisi & Piquero, 2011; Hecht et al., 2018; Kotler & McMahon, 2005, 2010; Ribeiro da Silva et al., 2012; Salekin, Andershed, & Clark, 2018; Skeem et al., 2011; Viding & Larson, 2010). Due to the impact of psychopathy on society and in individuals themselves, several authors argued that the best time to prevent and intervene is early in life; therefore, it seems crucial to study psychopathic traits in children and youth (Colins & Andershed, 2018; Lynam, 1996; Lynam et al., 2007; Ribeiro da Silva et al., 2012, 2013; Salekin & Frick, 2005; Salekin et al., 2018). This section aims to present the state-of-the-art on psychopathic traits in children and youth, considering the conceptualization and main etiological theories, assessment procedures, and treatment efforts.

2. Psychopathic traits in children and youth

The construct of child and adolescent psychopathy derived from the study of adult psychopathy (Kotler & McMahon, 2005, 2010) and can be found in the works of Cleckley (1941/1988), Karpman (1949, 1950), Schneider (1950), McCord and McCord (1964), Quay (1964, 1965), and Robins (1966, 1978). In the early 40s, Cleckley (1941/1988) argued that psychopathy probably presented its roots in childhood or adolescence. About 10 years later, Karpman (1949, 1950) organized and chaired two debates around the pros and cons of extending the construct into childhood. At the same time, Schneider (1950) proposed that psychopathic traits probably emerged early in life, being associated with central emotional deficits. In the 60's, McCord and McCord (1964) underscored the importance of identifying and treating psychopathy in youth, noticing that youth who presented psychopathic traits showed their behavior problems in a different way when compared to the ones without psychopathic traits. Meanwhile, Quay (1964, 1965) tried to define subtypes for juvenile delinquency, which were included as specifiers for the CD diagnosis in the third edition of the "Diagnostic and Statistical Manual of Mental Disorders" *(*DSM-III; APA, 1980). In the DSM-III (APA, 1980), CD was characterized by a repetitive and persistent pattern of aggressive

behavior that could present two distinctive subtypes: under-socialized aggressive subtype and socialized aggressive subtype. The under-socialized aggressive subtype referred to a psychopathic category, consisting of youth with CD that also presented deficits in empathy, attachment, and affectivity (APA, 1980). This subtype was also associated with a greater number of psychopathological dysfunctional indicators and with a worst prognosis (Quay, 1999). Nevertheless, these labels, avoiding the use of the considered derogatory term "psychopathy", ended up by raising some problems, including concerns with respect to the etiology (Kotler & McMahon, 2010). Consequently, these subtypes were withdrawn from subsequent editions of the DSM (APA, 1994, 2000, 2013).

Until relatively recently, there were few published works about psychopathic traits in children and youth (Robins, 1966, 1978) and very little attention was given to the possibility of observing these traits in non-adult populations (Salekin & Lynam, 2010). In 1990, Forth, Hart, and Hare published the first study on the topic, showing that young offenders also displayed psychopathic traits. Although there is some consensus to use the term psychopathic traits instead of psychopathy when applied to children and youth, extending the psychopathy construct into childhood and adolescence is not immune of controversy (Viding & McCrory, 2018). Several questions still remain, namely about: the overrepresentation of some characteristics of the disorder in these age ranges; the malleability of personality during these developmental stages; the heterogeneity of youth presenting antisocial behavior; the validity and temporal stability of psychopathic traits; the pejorative character of the word and its implications in the legal context; the potential stigmatization of these youth; and the triggering of iatrogenic effects (e.g., Chanen & McCutchenon, 2008; Edens & Vincent, 2008; Murrie et al., 2007; Salekin et al., 2018; Seagrave & Grisso, 2002; Silk, 2008). Some authors argued that although the presence of psychopathic traits in children and youth is emerging as an important research/clinical field, it is fundamental to keep these controversies in mind (Salekin & Lynam, 2010a, 2010b; Taylor, Elkins, Legrand, Peuschold, & Iacono, 2007; Viding & McCrory, 2018). This will help researchers and clinicians to invest in the study of psychopathic traits in children and youth more thoroughly, aiming not only an early identification, but also the development of tailored preventive and treatment interventions (Colins & Andershed, 2018; Ribeiro da Silva et al., 2012, 2013; Vitacco & Salekin, 2013; Vitacco, Salekin, & Rogers, 2010).

3. Etiological theories

Psychopathy is considered of utmost importance in forensic settings, because of its relevance in violence prediction, risk assessment, and risk management (Barry et al., 2000; DeLisi, 2009; DeLisi & Piquero, 2011; Farrington, 2005; Gretton et al., 2004; Hare & Neumann, 2006; Hemphill, 2007; Leistico et al., 2008; McCuish et al., 2015; Vaughn & DeLisi, 2008; Vaughn et al., 2008). Thus, understanding the etiological bases of psychopathy and, consequently, its potential mechanisms of change, is gaining growing attention by researchers

(Ribeiro da Silva et al., 2012). The relevance of studying these etiological bases in children and adolescents is crucial, as it is less likely that deviant life styles and more severe consequences can contaminate/blur the clinical presentation of younger individuals (Ribeiro da Silva et al., 2012; Viding & Larson, 2010).

There are several etiological theories of psychopathic traits, being the following ones the most referred in the literature: genetic/epigenetic (e.g., Bezdjian, Raine, Baker, & Lyman, 2011; Murray, Dotterer, Waller, & Hyde, 2018; Viding & McCrory, 2018; Viding, Frick, & Plomin, 2007; Waldman, Rhee, LoParo, & Park, 2018); neuroscience (e.g., Blair, Meffert, Hwang, White, 2018; Murray et al., 2018; Viding & Jones, 2008; Yang & Raine, 2018); CU traits (e.g., Frick, Kimonis, Dandreaux, & Farrel, 2003; Kruh, Frick, & Clements, 2005; Munoz & Frick, 2012); personality (e.g., Lynam, 2010; Lynam & Widiger, 2007; Lynam, Miller, & Derefinko, 2018; Widiger & Crego, 2018), and environmental (e.g., Auty, Farrington, & Coid, 2015; Farrington, Ulrish, & Salekin, 2010; Frick, Cornell, Barry, Bodin, & Dane, 2003; Gao, Raine, Chan, Venables, & Mednick, 2010; Henry et al., 2018; McCrory, De Brito, & Viding, 2012; Sevecke, Franke, Kosson, & Krischer, 2016; Waller et al., 2016). Evolutionary theory has also been applied to different psychopathological disorders, although it is still narrowly investigated in the psychopathy field (Ferguson, 2010).

3.1. Genetic/epigenetic

In the second half of the 20th century, Lykken (1957) presented the Low Fear Hypothesis, in which he argued that the etiology of primary psychopathy (psychopathy) was largely biological, while the etiology of secondary psychopathy (sociopathy) was mostly environmental. In the case of psychopathy, the environment (namely parental styles), would have little influence on the disorder's development. According to Lykken (2006), only exceptional parental practices would make possible to reverse the biologically determined psychopathic path of a fearless and “hard-to-socialize” child. Currently, this conception has some empirical support, namely in molecular genetics and genetically-informative (with twins and adopted children) studies (Baker et al., 2009; Beaver, Rowland, Schwartz, & Nedelec, 2011; Beichtman et al., 2012; Dadds et al., 2013; Malik et al., 2012; Moul et al., 2013; Nordstrom et al., 2011; Viding & Larson, 2010; Waldman & Rhee, 2006).

Molecular genetic studies have found that genetic variations related to the dopaminergic and serotonergic pathways in psychopathy probably exist (Murray et al., 2018). However, no study found an association between psychopathy and a gene or a group of genes. Consequently, and considering the role of environmental influences in the phenotypic expression of several psychopathological disorders, studies have begun to examine these pathways in psychopathy as well (Murray et al., 2018; Viding & McCrory, 2018; Waldman et al., 2018).

There is a large body of research showing that harsh rearing scenarios (marked by child abuse and neglect, absence of parental warmth, among others) are important risk factors for

the prediction, development, and/or maintenance of psychopathic traits (e.g., Auty et al., 2015; Gao et al., 2010; Henry et al., 2018; McCrory et al., 2012; Sevecke et al., 2016; Waller et al., 2016). Despite this, many children exposed to these factors do not develop psychopathic traits (Farrington et al., 2010), although genetic factors seem to contribute to an important variance over and above environmental factors (Murray et al., 2018). Therefore, it seems likely that certain genes may make some children more susceptible to harsh rearing environments, which emphasizes the need for examining the influence of environmental factors on gene expression (i.e., epigenetics; Gene × Environment interactions) on psychopathy' research (Murray et al., 2018; Waldman et al., 2018).

There is empirical evidence to support the notion that psychopathic traits may reflect heritable and non-heritable environmental influences during childhood and adolescence (e.g., Bezdjian et al., 2011; Hyde et al., 2016; Taylor, Loney, Bobadilla, Iacono, & McGue, 2003; Viding et al., 2007). Research also suggested that the degree to which a genetic vulnerability to psychopathic traits is expressed depends on the degree to which a child is exposed to environmental disadvantages (Sadeh et al., 2010; Viding & McCrory, 2018). In turn, children with a genetic predisposition for psychopathic traits may also bring a number of challenges to the parent-child relationship, likely evoking harsher parenting reactions than children without that disposition (Hawes, Dadds Frost, & Hasking, 2011).

Until now, the few genetically-informative longitudinal studies that have investigated parenting and the development of psychopathic traits in children only focused on CU traits (Hyde et al., 2016; Waller et al., 2016). Results suggested that the association between harsh parenting and higher levels of CU traits in children may, at least partially, reflect genetic vulnerability within families (Viding et al., 2009); although high levels of adoptive mother positive reinforcement were able to buffer these risky pathways (Hyde et al., 2016; Waller et al., 2016). Longitudinal studies with twins have also shown that the stability of psychopathic traits in childhood and adolescence is considerably influenced by genetic factors, although protective environmental factors can counter this genetic risk (e.g., Bezdjian et al., 2011; Ferguson, 2010; Murray et al., 2018; Viding et al., 2007; Viding & McCrory, 2018; Viding, Jones, Paul, Moffitt, & Plomin; Waldman et al., 2018).

In sum, although genetic predispositions seem to play a role in the etiology of psychopathic traits, as predicted by Lykken (1957, 2006), it is crucial to keep in mind that no genes were proved to be linked to the development of psychopathy (Viding & McCrory, 2018). In detail, although the genome probably limits the phenotypic expression of individuals, it does not pre-determine that same phenotypic expression; i.e., the individual's developmental trajectory is probably determined by a complex trade-off between genetic predispositions and other biological and environmental factors, which influence the way these genetic predispositions are expressed at different levels of functioning (Viding & McCrory, 2018). In turn, that same genetic predisposition also influences the environments that the individual will come across (e.g., family, school); the so called gene-environment interactions (Nordstrom et al., 2011; Viding & McCrory, 2018; Waldman & Rhee, 2006). Thus, it seems

important for further genetic studies to thoroughly document environmental risk factors and, optimally, to incorporate neuroimaging procedures (Sadeh et al., 2010; Trzaskowski, Dale, & Plomin, 2013; Viding & McCrory, 2018; Waldman et al., 2018). Finally, as genetic studies in the field of psychopathy were mostly focused on CU traits, it seems important for further genetic research to consider the assessment of all psychopathic traits. This strategy may allow disentangling the gene x environment interactions that are contributing to the display of GM, CU and II traits (Salekin, 2016, 2017).

3.2. Neuroscience

Neurocognitive abnormalities, such as low emotional reactivity, poor emotion recognition, and deficient reversal learning are documented in the psychopathy research (Viding & McCrory, 2018). These data, along with the advance of neuroscience techniques, have encouraged researchers in the last two decades to study the neuroscience correlates of antisocial behavior in general and of psychopathic traits in particular. These studies used functional and structural magnetic resonance imaging and/or functional and structural connectivity procedures to study the brain structure and function of antisocial individuals, both adults and youth, with and without psychopathic traits (Yang & Raine, 2018). Nevertheless, as in genetic research, the majority of neuroscience studies in youth samples addressed on CU traits only (Viding & McCrory, 2018).

The paralimbic system is responsible for producing affective responses to stimuli (i.e., good/bad, approach/avoid) and incorporating that information into higher-order emotional processing and decision-making mechanisms. Thus, several regions within the paralimbic system (e.g., amygdala, ventral striatum, medial orbitofrontal cortex, anterior insula, anterior and posterior cingulate cortex, anterior temporal lobe, and posterior superior temporal sulcus) are thought to play a central role in the deficits found in individuals with psychopathic traits (Pujol, Harrison, Contreras-Rodriguez, & Cardoner, 2019; Rogers and De Brito, 2016).

Functional magnetic resonance imaging studies (which measure blood flow during a task procedure or at rest) with youth with CD and high CU traits, have shown that these youth, in comparison with the youth with CD and low CU traits, displayed atypical hemodynamic activity across the paralimbic system during a variety of emotional processing and decision-making tasks, including: diminished amygdala reactivity to fearful faces; reduced orbitofrontal cortex reactivity to pictures of moral transgressions; decreased anterior cingulate cortex and insula reactivity to images of others' pain; increased ventral striatum reactivity on reward experimental tasks; and increased recruitment of the lateral prefrontal cortex during Stroop tasks (Blair et al., 2018; Murray et al., 2018; Rogers and De Brito, 2016; Viding & McCrory, 2018). Research has also pointed out that psychopathy is associated with impaired attention flexibility; i.e., it seems that individuals with psychopathic traits are limited in their capability to process emotionally salient information when this is marginal to

goal-directed behavior (Blair et al., 2018; Dodge & Pettit, 2003; Murray et al., 2018; Stickle, Kirkpatrick, & Bursh, 2009). Therefore, functional magnetic resonance imaging studies suggested that psychopathic/CU traits are associated with a decreased functional activity within socioemotioal brain regions and an increased functional activity within reward-related brain regions (Murray et al., 2018; Yang & Raine, 2018).

Regarding structural magnetic resonance imaging studies with individuals with psychopathic traits, findings reflected structural differences (i.e., grey matter volume and grey matter density) in several brain regions emphasized in the functional studies (Murray et al., 2018; Yang & Raine, 2018). In detail, youth with CD and high CU traits, in comparison with the ones with CD and low CU traits, presented reduced grey matter volume in several brain regions, including: the amygdala, the orbitofrontal cortex, the anterior and posterior cingulate cortex, the hippocampus, and the temporal lobe. On the contrary, greater grey matter volume was found in the ventral striatum (Caldwell et al., 2019; Murray et al., 2018; Sebastian et al., 2016; Wallace et al., 2014; Yang et al., 2015). Reduced volume in brain regions associated with socioemotional processes may contribute to the diminished activation of these regions, while greater volume in reward-related regions may contribute to increased activation (Murray et al., 2018; Yang & Raine, 2018). Thus, similar to the findings from functional neuroimaging studies, it seems that psychopathy is also associated with structural abnormalities in brain regions that may trigger impaired affective processing and increased reward driven behavior (Murray et al., 2018; Yang & Raine, 2018).

Research on psychopathy has also used structural connectivity studies, which measure the integrity of white matter tracts responsible for efficient brain regions' communication. These studies have focused on the uncinate fasciculus (a white-matter tract that links the amygdala and the orbitofrontal cortex; two regions that seem to be functionally and structurally impaired in individuals with psychopathic traits), but also on the corpus callosum, the cingulum, and the superior longitudinal fasciculus (Waller, Dotterer, Murray, Maxwell, & Hyde, 2017). For instance, antisocial individuals with psychopathic traits were found to have reduced uncinate fasciculus integrity when compared with antisocial individuals without psychopathic traits (Waller et al., 2017). Finally, functional connectivity analyses (which measure how efficiently brain regions communicate during a task procedure or at rest) found reduced functional connectivity between the amygdala and various areas of the prefrontal cortex in adults and youth with psychopathic/CU traits (Murray et al., 2018). In contrast, an increased functional connectivity was found between the striatum and other brain areas (Murray et al., 2018). Therefore, similar to functional and structural studies, connectivity studies suggested that psychopathy is linked with a decreased functional connectivity within socioemotional brain regions and an increased functional connectivity between reward-related brain regions (Murray et al., 2018; Waller et al., 2017).

In sum, neuroscience studies (either functional, structural, or connectivity studies) have strengthened the idea that psychopathic traits are probably characterized by dysfunctions in a network of regions critical to socioemotional processing, reward sensitivity,

and attention; i.e., the frontal cortex, the temporal cortex, the amygdala, the hippocampus, the corpus callosum, the uncinate fasciculus, and the ventral striatum (Blair et al., 2018; March et al., 2008; Murray et al., 2018; Viding & Jones, 2008; Waller et al., 2017; Yang & Raine, 2018). Although the relationship between the neural structure, its connectivity, and function is not fully understood, identifying the neuroscience correlates of psychopathic traits may assist etiological theories and guide the design of intervention programs for youth with severe conduct problems and psychopathic traits (Blair et al., 2018; March et al., 2008; Viding & Jones, 2008; Yang & Raine, 2018). Moreover, similar to what happened in genetic studies, some authors highlighted the need to thoroughly document early environmental influences in further neuroimaging studies, in order to advance the scientific knowledge on the interactions between the brain and the social influences that may shape the expression of psychopathic traits (Salekin, 2017; Yang & Raine, 2018).

3.3. Callous-Unemotional traits

Some authors argued that CU traits in children and youth are an important causal pathway for psychopathy in adulthood (White & Frick, 2010). Several studies pointed out that CU traits in children are similar to the interpersonal/affective traits of adulthood psychopathy (Hare, 2003), being also core indicators of a bad prognosis (Fontaine, McCrory, Boivin, & Moffitt, 2011). Those traits seem to forecast delinquency, even in children that still have not presented behavioral problems (Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005).

In this line, Frick and Moffitt (2010) presented a proposal to include a specifier in the diagnosis of CD based on the presence of CU traits to the DSM-5 working group. This effort, coupled with increasing research on this topic (Kumsta, Sonuga-Barke, & Rutter, 2012; Munoz & Frick, 2012; Viding & McCrory, 2012; Wilson, Juodis, & Porter, 2011), lead to the inclusion of CU traits as a specifier for CD ("Limited Prosocial Emotions" specifier; LPE). To qualify for this specifier, children/youth must fulfill CD criteria and, simultaneously, meet at least two of the following criteria persistently over the last 12 months and in multiple situational and relational contexts (the importance of using several informers and several diagnostic measures is also highlighted): Lack of remorse or guilt – does not feel remorse or guilt when he/she does something wrong (or only expresses remorse when caught and/or facing punishment) and shows a general lack of concern about the negative consequences of his/her actions; Callous-lack of empathy – he/she is described as cold and uncaring i.e., disregards and is unconcerned about the feelings of others and appears more concerned about the effects of his/her actions on him/herself, rather than their effects on others, even when they result in substantial harm to others; Unconcern about performance – he/she does not set forth the necessary efforts to perform well (at school, work, or in other important activities), even when expectations are clear, does not express concern about poor or problematic performance, and typically blames others for his/her poor performance; Shallow or deficient affect – he/she does not express feelings or show emotions to others, except in ways that

seem insincere, shallow, or superficial (e.g., actions contradict the emotion expressed; emotions can easily and quickly be turned "on" or "off") or when emotional expressions are used for personal gain, for instance, to manipulate or intimidate others (APA, 2013).

Subsequent research strengthened the idea that CU traits were related to the earliest, most severe, and persistent forms of antisocial behavior, which, in turn, would predict long-term impairments at different levels of functioning (Baskin-Sommers, Waller, Fish, & Hyde, 2015; Frick & Wall Myers, 2018; Frick, Ray, Thornton, & Kahn, 2013; Viding & McCrory, 2018). As stated previously, a substantial body of research has also shown that youth with high CU traits display distinct genetic, biological, cognitive, affective, and social features, suggesting that the etiology of conduct problems for this group of youth may be different from those without high CU traits (Frick & Wall Myers, 2018; Viding & McCrory, 2018). However, most of these studies focused only on CU traits, ignoring the contribution that GM and II traits might have in those associations (Colins & Andershed, 2018; Salekin, 2016).

Although the inclusion of the CU specifier seems to reduce the great heterogeneity of individuals with CD, identifying a subgroup with severe antisocial behavior (APA, 2013; Frick, 2001; Frick & Nigg, 2012; Klahr & Burt, 2014), research on the validity of the CU specifier is scarce and critical questions still remain unanswered (Colins & Andershed, 2018; Colins, Andershed, Salekin, & Fanti, 2018; Jambroes et al., 2016; Lahey, 2014; Salekin, 2016, 2017). Available evidence has also shown that it is the combination of all psychopathic traits that is associated with distinctive dysfunctions at genetic, molecular, neural, cognitive, and social levels, which, in turn, probably account for behavioral problems, persistent antisocial deviance, criminal behavior, criminal recidivism, and for a low responsivity to treatment efforts in these youth (Asscher et al., 2011; Blair, Peschardt, Budhani, Mitchell, & Pine, 2006; Colins & Andershed, 2015; Collins et al., 2018; Forth & Book, 2010; Frogner, Andershed, & Andershed, 2018; Leistico et al., 2008; Lorber, 2004; Ribeiro da Silva et al., 2012; Salekin, 2010, 2017; Somma, Andershed, Borroni, Salekin, & Fossati, 2018). Moreover, focusing only on CU traits, researchers and clinicians may be missing important information for understanding youth with CD, for disentangling the contribution of each psychopathic trait to specific impairments, and for designing prevention and intervention programs (Colins & Andershed, 2018; Colins et al., 2018; Salekin, 2016, 2017; Salekin, Andershed, Batky, & Bontemps, 2018a; Salekin et al., 2018b).

In sum, although the inclusion of CU traits as a CD specifier has advanced current diagnostic terminology, several authors argued that considering a dimensional and multifaceted model of psychopathy could be more beneficial and accurate when diagnosing CD (Colins & Andershed, 2018; Salekin, 2016, 2017; Salekin et al., 2018a). Nonetheless, more research is still needed to explore the benefits of including GM, CU, and II traits as CD specifiers Salekin, 2017).

3.4. Personality

There are two different types of studies on the interface between psychopathy and personality: studies approaching psychopathy on a dimensional perspective (McCrae et al., 2000; Lynam & Derefinko, 2006; Lynam & Widiger, 2007; Lynam et al., 2018) and studies illustrating the psychiatric perspective; i.e., associating psychopathy with personality disorders, namely ASPD (APA, 2013; Widiger & Crego, 2018). Additionally, and considering the toll psychopathic traits have in the society at large, studies reporting on the stability of these traits (Andershed, 2010) will also be presented

Following a dimensional perspective, some authors argued that child, adolescent, and adult psychopathy would be better understood as a constellation of predispositions, distinctive endogenous and lasting manners of feeling, thinking, and acting (e.g., Jones, Miller, & Lynam, 2011; Lynam, 2010; Lynam et al., 2005, 2018; Roose, Bijttebier, Claes, Lilienfeld, De Fruit, Decuyper, 2011). Departing from the assumption that psychopathy is a dimensional and not a categorical construct (as supported by psychopathy scales, e.g., Hare, 2003), some authors conceptualized the disorder as an extreme version of a normal personality profile, or a maladaptive variation of the Five Factor Model domains (i.e., Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness) (Edens, Marcus, Lilienfeld, & Poythress, 2006; Lynam et al., 2018; Salekin, Leistico, Trobs, Schrum, & Lochman, 2005; Widiger, De Clercq, & De Fruyt, 2009).

According to some authors, many questions and controversies associated with psychopathy could be softened by using a dimensional assessment. For instance, Lynam and colleagues (2018) pointed out that analyzing each domain in an elementary way would facilitate the discovery of the central, peripheral, and dispensable facets of psychopathy. That is, selecting the domain facets responsible for the most negative outcomes (e.g., criminal recidivism and treatment resistance) and the effects of certain facet combinations would better define pyschopathy. In this line, studies with adults and youth suggested that the psychopathic personality profile could be defined using a specific set of facets of the Five Factor Model (Lynam et al., 2018). According to these findings, psychopathy seems to be characterized by the following profile: low Agreeableness (i.e., low straightforwardness, low altruism, low compliance, low modesty, and low tender-mindedness), low Conscientiousness (i.e., low dutifulness, low self-discipline, and low deliberation), Neuroticism (i.e., impulsiveness), and Extraversion (i.e., low warmth and high excitement seeking). Slightly smaller associations were also significant for some facets of Neuroticism (i.e., low anxiety, high angry hostility, and low depression) and Agreeableness (i.e., low trustiness) (Lynam et al., 2018; Roberts & DelVecchio, 2000). Nevertheless, adult and youth personality profiles seem to differ in some of the facets, but mostly at Neuroticism; i.e., while psychopathy seemed to be negatively associated with several Neuroticism facets in adult samples, youth with psychopathic traits seemed to be not that immune to anxiety, depression, and stress (Heirigs, DeLisi, Fox, Dhingra, & Vaughn, 2018; Kubak & Salekin, 2009; Lansing, Plante, Beck, & Ellenberg, 2018; Lee, Salekin, & Iselin, 2010; Lynam, 2010). These data may suggest that

youth may be more responsive to treatment when compared with adults, as the presence of anxiety, depression, and stress may give greater permeability to therapeutic changes (Ribeiro da Silva et al., 2012).

The DSM-5, although maintaining personality disorder categories, seems to be moving in the direction of considering the dimensional perspective of personality disorders as well, as presented in its Section III (APA, 2013). In this alternative DSM-5 model for personality disorders, the diagnostic approach largely depends on the use of a pathological variant of the Five Factor Model domains and facets, in order to address some shortcomings of the categorical model (APA, 2013). This diagnostic approach may encourage researchers to study psychopathy within the broader framework of a dimensional perspective of personality pathology, surpassing the limitations found in categorical approaches (Lynam et al. 2018).

From a psychiatric perspective, a personality disorder is characterized by "an enduring pattern of inner experience and behavior that deviates markedly from the expectations on the individual´s culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment"; APA, 2013, p. 645). In the DSM-5 there are no references to antecedents of personality disorders, with the exception of ASPD, where there is, inclusively, a disorder (CD) that must precede it and be present before the age of 15 (APA, 2013). Regardless of this exception, there is a great reluctance to accept that personality disorders occur in youth and, mostly, in children, because of its implicit message of inevitability and immutability (Rutter, 2005). However, recent studies have pointed out that personality disorders are not immutable and its associated impairments can be changed with specific intervention programs (Brazão, Rijo, Ribeiro da Silva, Salvador, & Pinto-Gouveia; 2019; Tyer, 2005; Widiger et al., 2009; Widiger & Crego, 2018). Several studies support the idea that the stability of personality traits is, at least, moderate during childhood and adolescence, and high in adulthood (e.g., De Fruit et al., 2006; Roberts & DelVecchio, 2000; Shiner, 2009; Widiger & Crego, 2018). However, we must keep in mind that malleability continues after this period and that personality stability does not absolutely mean its immutability (De Fruit et al., 2006; Jones et al., 2011; Roberts, Walton, & Viechtbauer, 2006; Roose et al., 2011; Shiner, 2009).

The topic of stability *versus* instability of psychopathic traits is a controversial issue, with studies supporting both perspectives (e.g., Hawes et al., 2018; Lynam et al., 2009; McCrae et al., 2000; Vachon, Lynam, Schell, Dryburgh, & Costa, 2018; Widiger & Crego, 2018). The clarification of these controversial findings may have important implications, mainly to the potential predictive value of psychopathic traits in children and youth (Lynam et al., 2009; McCuish et al., 2015; Skeem et al., 2011). However, most authors considered that the stability of psychopathic traits is somewhere between these two limits (Andershed, 2010; Hawes et al., 2018; Vachon et al., 2018). That is, psychopathic traits are probably very stable for some individuals, but not for others, which may depend on other risk and/or protective factors, such as genetic/temperament effects and environmental influences (Dodge & Pettit, 2003; Gao et al., 2010; Henry et al., 2018; Pardini et al., 2007).

Only a few prospective longitudinal studies explored the stability of psychopathic traits over time (Andershed, 2010; Hawes et al., 2018). However, like other personality traits, psychopathic traits showed a stability ranging from moderate to high between childhood and adolescence (Lynam et al., 2009). These data, along with consistent findings associating psychopathy with delinquency and crime in adulthood, stress the need to assess psychopathic traits in youth with CD, in order to intervene taking advantage of psychopathic traits' malleability at this developmental stage (Hawes et al., 2018; McCuish et al., 2015; Vachon et al., 2018).

In sum, psychopathic traits seem to be associated with developmental pathways with origins in childhood, having as precursors temperamental, genetic and environmental factors (APA, 2013; Caspi, Roberts, & Shiner, 2005; Widiger et al., 2009; Widiger & Crego, 2018). The dimensional perspective is gaining increased evidence, offering support to the notion that psychopathic traits are probably continuously distributed throughout the population, differing from normality in degree rather than kind (Edens et al., 2006; Murrie et al., 2007; Neumann et al., 2012; Neumann & Hare, 2008). Research also suggested that psychopathic traits are stable over time in some individuals, but not in all of them, which underscores the need to study its stability within prospective longitudinal designs, namely after the delivery of therapeutic interventions (Andershed, 2010). Moreover, studies should also focus on the factors that increase, maintain, or alter the stability of psychopathic traits and on the factors associated with criminal outcomes in certain individuals, but not in others (Andershed, 2010; Forth & Book, 2010; Hawes et al., 2018; McCuish et al., 2015; Skeem et al., 2011; McCuish et al., 2015).

3.5. Environmental influences

Several authors, such as Bowlby (1969), Spitz (1979/2004), Winnicott (1983), Ainsworth (1985), and Fonagy and Bateman (2007), established the importance of a secure attachment in childhood for the development of healthy mental health outcomes. The available evidence supports the idea that a secure attachment contributes to emotional regulation, as well as to the mutual experience of positive affections, and to the construction of favorable expectations about the self, the others, and the world (Fonagy, 2018; Fonagy & Bateman, 2007; Gross, 2014). In contrast, a total or a partial deprivation of positive affective relationships may compromise the mentalizing capacity (i.e., the ability to understand the mental state of the self and/or others; Fonagy & Bateman, 2007) and the personality development, which may be permanently affected (Fonagy & Bateman, 2008). Winnicott (1983) went forward, stating that the total or partial deprivation of positive affective relationships, although not understood as psychopathology, often constitutes the basis of developmental processes that may lead to several mental health symptoms and disorders.

In the early 60's, McCord and McCord (1964) argued that parental rejection and/or neglect would be the most important factors for the development of psychopathy, not only as

primary factors (in cases of severe abuse and/or neglect), but also as factors that enhance other pathogenic influences (e.g., fearless and uninhibited temperamental style). According to these authors, parental rejection and/or neglect would possibly facilitate the development of a callous, unemotional, and social detached personality (McCord & McCord, 1964). Several studies, conducted in community, clinical, and forensic settings, established the link between harsh rearing scenarios (e.g., abuse, neglect, poor supervision, dysfunctional parental bonding, parental rejection, coldness, inconsistent discipline) and the development and maintenance of psychopathic traits (e.g., Auty et al., 2015; Bayliss et al., 2010; Farrington et al., 2010; Frick et al., 2003; Gao et al., 2010; Henry et al., 2018; McCrory et al., 2012; Pardini et al., 2007; Salekin & Lochman, 2008; Saltaris, 2002; Sevecke et al., 2016; Waller et al., 2016). Consistent across these studies, and corroborated with genetically informative research, it is the notion that harsh parenting interactions (e.g., marked by abuse/neglect and by a lack of warmth/care) seem to be crucial to the onset of the phenotypic expression of psychopathic traits (e.g., Gao et al., 2010; Murray et al., 2018; Viding & McCrory, 2018; Waldman et al., 2018). In turn, the presence of a supportive, caring, and warm parent seems to buffer these environmental risk factors, being considered a protective factor for the development of psychopathic traits and antisocial behavior, even in genetically vulnerable children (Frick & Morris, 2004; Henry et al., 2018; Kemp, Overbeek, Wied, Engels, & Scholte, 2007; Murray et al., 2018; Viding & McCrory, 2018; Waldman et al., 2018).

In sum, and as previously stated, research suggests that the development of psychopathic traits is tangled in a complex net of interactions, where genetic/temperamental, neural, and environmental influences clearly play a central role (Bayliss et al, 2010; Farrington et al., 2010; Murray et al., 2018; Viding & McCrory, 2018; Waldman et al., 2018). From a protective perspective, preventive programs addressing positive parental practices and parental warmth seem to be crucial to buffer these risky pathways (Farrington et al., 2010; Viding & McCrory, 2018).

3.6. Evolutionary

Evolutionary theory has been expanding, offering valuable insights for the comprehension of humans' nature and functioning (Gangestad & Simpson, 2007; Gilbert, 2010; Krebs, 2007). This perspective argues that the human mind and the human emotional and behavioral repertoire are products of evolution; i.e., evolved in response to ancestrally based problems, which enhanced survival and thrive (Del Giudice, 2016). Being far from biologic determinism, evolutionary theory also acknowledges the great influence of culture and social environments, as well as the influence of genetic, neural, and temperamental effects in individuals' developmental trajectories (Gangestad & Simpson, 2007; Gilbert, 2009, 2010; Krebs, 2007). In this sense, psychopathic traits can be seen as a strategy to survive and thrive in harsh rearing environments, which was maintained in our evolutionary repertoire due to its adaptive value (Del Giudice, 2016; Del Giudice & Ellis,

2015; Ferguson, 2010; Gilbert, 2005; Glenn, Kuzban, & Raine, 2011; Mealey, 1995; Ribeiro da Silva et al., 2012, 2013; Salekin & Lynam, 2010). However, more research is needed to build on this argument, namely because insights from evolutionary theory are gaining relevance in recent developments of Cognitive-Behavioral Therapies (CBT; Wilson, Hayes, Biglan, & Embry, 2014).

In sum, although evolutionary theory is gaining increasing interest by researchers and clinicians (Del Giudice & Ellis 2015; Ferguson 2010), there is a lack of comprehensive reviews on this filed when applied to psychopathy literature. Moreover, few studies were designed and discussed within an evolutionary perspective, which may be useful to enhance etiological models and treatment approaches (Ferguson, 2010; Glenn et al., 2011). [2]

4. Assessment

From the works of Lykken (1957), until the early 80s, Cleckley's (1941/1988) diagnostic criteria were frequently used in the sample selection procedures for the study of psychopathy. This research was conducted mainly with samples of adult male offenders (Cooke and Logan, 2018; Corrado, & McCuish, 2018; Sellbom, Lilienfeld, Fowler, & McCrary, 2018; Weiss, Lynam, & Miller, 2018). In the 80's, there was a turning point in the study of psychopathy, when Robert Hare developed a systematic method to assess psychopathy based on Cleckley's criteria - the Psychopathy Checklist (PCL; Hare, 1980) and its revised edition (PCL-R; Hare, 1991, 2003). The PCL-R is a 20-item inventory, which is rated on the basis of a structured interview complemented with collateral file information (e.g., criminal records) (Hare, 2003). The 20 items assess the following traits: glib and superficial charm; grandiose (exaggeratedly high) estimation of self; need for stimulation; pathological lying; cunning and manipulativeness; lack of remorse or guilt; shallow affect (superficial emotional responsiveness); callousness and lack of empathy; parasitic lifestyle; poor behavioral control; sexual promiscuity; early behavior problems; lack of realistic long-term goals; impulsivity; irresponsibility; failure to accept responsibility for own actions; many short-term marital relationships; juvenile delinquency; revocation of conditional release; and criminal versatility (Hare, 2003). Although the PCL-R factor structure is still not clear, with studies suggesting a two (Interpersonal-Affective; Socially Deviant Lifestyle), a three (Interpersonal, Affective, Behavioral), or a four (Interpersonal, Affective, Lifestyle, Antisocial) factor structure; this is one of the most widely used measurement tools to assess psychopathy in adult forensic populations (Hare, 2003; Vitacco, Rogers, Neumann, Harrison, & Vincent 2005)

Several measures were thereafter developed to assess psychopathy in adult forensic populations, like the P-SCAN checklist (Hare & Hervé, 1999) or the interview-based

[2] A comprehensive review regarding the evolutionary roots of psychopathy was developed during this doctoral research project and is available at Chapter 4, Study II: "The evolutionary roots of psychopathy".

Comprehensive Assessment of Psychopathic Personality (CAPP; Cooke, Hart, Logan, & Michie, 2012). Beside these, different self-report measures were also designed to assess psychopathy, both in criminal and noncriminal adult samples, thus increasing research in this area (Sellbom et al., 2018; Weiss et al., 2018). Instruments of this type include: the Screening Version of PCL-R (PCL: SV; Hart, Cox, & Hare, 1995); the Psychopathic Personality Inventory (PPI; Lilienfeld & Widows, 2005); the Levenson Primary and Secondary Psychopathy Scale (LPSP; Levenson, Kiehl, & Fitzpatrick, 1995), the Self-Report Psychopathy Scale (SRP; Hare, 1985), and the Triarchic Psychopathy Measure (TriPM; Patrick, Fowles, & Krueger, 2009).

As previously stated, psychopathy in adulthood seems to be relevant for violence prediction, risk assessment, and risk management (DeLisi & Piquero, 2011; Hemphill, 2007; Leistico et al., 2008; McCuish et al., 2015; Sellbom et al., 2018; Vitacco & Neumann, 2008; Weiss et al., 2018). Thus, understanding the development of psychopathic traits and assessing these traits in children and youth has received a growing interest by the scientific community (e.g., Kotler & McMahon, 2005; Marczyk, Heilbrun, Lander, & DaMatteo, 2003; McCuish et al., 2015; Salekin et al., 2018; Salekin & Frick, 2005; Schwalb, 2007).

Until 1990, only a few studies about psychopathic traits in children and adolescents were published (Salekin, 2006; Salekin & Lynam, 2010). Forth and colleagues (1990) became pioneers in this area. By adapting the PCL (Hare, 1991), these authors showed that some young offenders also scored high in the assessed psychopathic dimensions (Forth et al., 1990). After this study, other authors developed measurement tools to assess psychopathic traits in children and adolescents, either by adapting measures used in the adult population or by creating new measures adjusted for these developmental stages (Forth et al., 1990; Kotler & McMahon, 2010; Lynam, 1997; Salekin et al., 2018b; Salekin, 2006; Skeem et al., 2011). As a result, the last decades have witnessed an exponential increase in the number of publications about psychopathic traits in children and youth (Salekin & Lynam, 2010; Salekin et al., 2018). However, we must state that, both for adult and children/youth, the measurement tools do not always follow the same theoretical model for psychopathy, which may explain, at least partially, why they frequently seem to assess slightly different traits (Hecht et al., 2018; Ribeiro da Silva et al., 2012, 2013).

4.1. Assessment of psychopathic traits in children and youth

The measurement tools used in the assessment of psychopathic traits in children and adolescents capture a construct that, apparently, is similar to the conceptualization of psychopathy in adulthood (Salekin et al., 2018b). One of the most used measurement tools is the Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003). Other screening measurement tools were also designed from the PCL-R, such as: The Antisocial Process Screening Device (APSD; Frick & Hare, 2001); the Child Psychopathy Scale (CPS; Lynam, 1998); and the Proposed Specifier for Conduct Disorder (PSCD; Salekin & Hare, 2016). Other self/other-report measures to assess psychopathic traits in children and youth include:

The Youth Psychopathic Traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002), its shorter version (The Youth Psychopathic Traits Inventory-Short - YPI-S; Van Baardewijk et al., 2010), and their correspondent children versions (Van Baardewijk et al., 2008); the Child Problematic Traits Inventory (CPTI; Colins, Andershed, et al., 2014); the Psychopathy Content Scale (PCS; Murrie & Cornell, 2000); and the P16 (Salekin, Ziegler, Larrea, Anthony, & Bennett, 2003). Finally, two other assessment tools were developed to assess CU traits only: the Inventory of Callous-Unemotional Traits (ICU; Frick, 2003) and the Clinical Assessment of Prosocial Emotions: Version 1.1 (CAPE 1.1; Frick, 2016). (See Table 1).

The PCL:YV (Forth et al., 2003) is a direct adaptation of the PCL-R for the youth forensic population (Hare, 2003); i.e. the authors modified PCL-R items to better reflect the social context and the developmental stage of adolescence. This measure has 20 items, each one rated on a 3-point scale (0 = no; 1 = maybe; 2 = yes), and is intended for use with adolescents aged between 12 and 18 years old. Symptom criteria are the following: impression management; grandiose sense of self-worth; stimulation seeking; pathological lying; manipulation for personal gain; lack of remorse/guilt; shallow affect; callous/lack of empathy; parasitic orientation; poor anger control; impersonal sexual behavior; early problem behavior; lacks goals; impulsivity; irresponsibility; failure to accept responsibility; unstable interpersonal relationships; serious criminal behavior; serious violation of conditional release; and criminal versatility. As with the PCL-R, the PCL:YV is considered a full-scale assessment tool, which is rated by skilled ratters on the basis of a structured interview together with collateral file information. Similar to the PCL-R, factor analytical studies using the PCL:YV also reported different factor structures: two factors (interpersonal-affective and socially deviant lifestyle — Forth et al., 2003), three factors (interpersonal, affective, and behavioral — Cooke & Michie, 2001; Salekin et al., 2006), or four factors (interpersonal, affective, lifestyle, and antisocial — Hare & Neumann, 2006; Salekin et al., 2006). Despite these controversial findings, the PCL:YV is one of the most widely used measurement tools to assess psychopathic traits in forensic youth and it seems to be the best measure to predict recidivism in this population (Asscher et al., 2011).

The APSD (Frick & Hare, 2001) was designed to work as a screening for psychopathic traits in children and youth. The APSD is a 20-item questionnaire, available in three versions: parents/educators, teachers, and self-report. Scoring for each item ranges from 0 (not at all true) to 2 (definitely true). This measure can be used with children/adolescents aged between 4 and 18 years old. Although the APSD showed a parallelism with adult psychopathy (Frick & Hare, 2001) and some agreement in predicting recidivism rates (Asscher et al., 2011), results are not consistent across studies (e.g., Colins & Andershed, 2015; Salekin et al., 2018). Moreover, research on APSD dimensionality indicated a two factor (impulsivity-conduct problems and CU — Frick et al., 2003) or a three factor (impulsivity, narcissism, and CU — Frick, Bodin, & Barry, 2000) structure. Finally, it is worth to mention that this measure usually shows low agreement across teachers and parents and weak reliability on the CU factor (Colins & Andershed, 2015; Salekin et al., 2018).

The CPS (Lynam, 1997) is a 55-item measurement tool aiming to assess psychopathic traits in youth. Items were adapted from the Child Behavioral Checklist (CBCL; Achenbach, 1991) and from the California Child Q-Set (CCQ; Block & Block, 1980) and were designed to capture the following 13 PCL-R symptom criteria: poor behavioral control; need for stimulation; callousness and lack of empathy; failure to accept responsibility for own actions; glib and superficial charm; impulsivity; lack of remorse or guilt; lack of realistic long-term goals; cunning and manipulativeness; parasitic lifestyle; shallow affect; irresponsibility; and pathological lying. This instrument is to be answered by parents of youth aged 12 or more or by youth themselves. Each item is rated dichotomously (0 = no; 1 = yes). Few studies used the CPS and, although some reported a two-factor structure, these factors were highly correlated, so a one-measurement model is usually used (Lynam, 2017; Salekin et al., 2018; Verschuere, Candel, Van Reenen, & Korebrits, 2012).

The PSCD (Salekin & Hare, 2016) was designed based on the PCL-R and it is a new assessment tool for the assessment of psychopathic traits in youth. The PSCD is a 24-item questionnaire, available in two formats: parents and self-report. The PSCD was designed to assess psychopathic traits in youth via ratings within four different factors: GM; CU; II; and antisocial. Each factor is estimated by a set of six items; each item is rated on a three-point scale (0 = not true to 2 = true). This measure has not been validated and research on its psychometric properties is still in course

The YPI (Andershed et al., 2002) is a 50-item self-report questionnaire to assess psychopathic traits in youth aged 12 years or more. This measure includes 10 different scales (each one with 5 items to be answered according to a four-point scale; 1 = “Does not apply at all” to 4 = “Applies very well”), which assess 10 core personality traits associated with psychopathy: grandiosity, lying, manipulation, callousness, unemotionally, impulsivity, irresponsibility, dishonest charm, remorselessness, and thrill seeking. These traits are grouped in three factors: GM, CU, II (classification similar to the proposal of Cooke & Michie, 2001); the CU factor comprises 3 reversed items. One of the YPI advantages is that the items were formulated in a way that minimizes the possibility of deceitful answers by individuals with psychopathic traits; i.e., items were designed in a subtle way in order to lead youth with psychopathic traits to see them as positive or admirable (e.g., “I can make people believe almost anything”). A shorter version of the YPI, the YPI-S (Van Baardewijk et al., 2010), is also available. The YPI-S has 18 items and assesses psychopathic traits within three factors (GM, CU, and II – does not include the 10 different scales nor the reversed items); each factor is estimated by a set of six items. Both the YPI and the YPI-S were validated in several countries across the globe, both in forensic and community samples of youth, showing good psychometric proprieties, a three-factor structure, and a strong predictive relationship with conduct problems; reliability problems appeared in some studies, mostly for the CU factor (Pechorro, Ribeiro da Silva, Andershed, Rijo, & Gonçalves, 2016, 2017; Salekin et al., 2018). The YPI-S has also revealed a strong convergence with the original YPI (Pechorro et al., 2017; Van Baardewijk et al., 2010). Simplified versions of the YPI and the YPI-S are also available

for children (age range between 9-12 years old), showing good psychometric properties (e.g., van Baardewijk et al., 2008, 2010).

The CPTI (Colins et al., 2014) was designed to assess psychopathic traits in children (age ranging from 3–12 years old), including: grandiosity, lying, lack of empathy, lack of guilt or remorse, impulsivity, and need for stimulation. The CPTI has 28 items that are rated by the teacher of the child on a 4-point scale (1 = does not apply at all; to 4 = applies very well). A parent-rated version is also available (Somma, Andershed, Borroni, & Fossati, 2016). The CPTI items are grouped in three factors (GM, CU, and II). This factor structured was confirmed in the original study, as well as in three other independent studies, which also reported a strong predictive relationship of the CPTI with conduct problems (Colins et al., 2014; Colins, Andershed, Fanti, & Larsson, 2017; Colins, Veen, Veenstra, Frogner, & Andershed, 2016; Somma et al., 2016).

Other available measures include the PCS (Murrie & Cornell, 2000) and the P-16 (Salekin et al., 2003). These measures assess psychopathic traits in youth (12-18 years old) and can be used when administering the Millon Adolescent Clinical Inventory (MACI; Millon, 1993). They are composed of 20 and 16 items, respectively. Items are answered dichotomously (true/false). Only preliminary psychometric data is available for these measures.

The ICU (Frick, 2003) is a 24-item questionnaire that assesses the CU traits only. The ICU is available in parent/caregiver, teacher, and youth self-report forms. Scoring is based on a 4-point scale (0 = nor all true to 3 = definitely true). Items are grouped into three different factors: callousness, uncaring and unemotional. The ICU can be used to assess children and adolescents, aged between 4 and 18 years old. A recent meta-analytic study found support for using the ICU total score as a measure of CU traits, even though support for a bifactor model has also been found in multiple samples (i.e., using 1 general factor and 3 bifactors) (Ray & Frick, 2018).

Finally, the CAPE 1.1 (Frick, 2016) is a clinical assessment system that is currently under development. This measure is aimed to be a clinical guide to assess CU traits in individuals from ages 3 to 21. The CAPE 1.1 was designed based on the ICU (Frick, 2003), but allows clinicians to obtain richer information in comparison with the use of rating scales. The CAPE 1.1 intends to help clinicians making diagnostic decisions based on the DSM-5 criteria for the specifier “with Limited Prosocial Emotions” of the CD diagnosis (APA, 2013); that is: Lack of remorse or guilt; Callous-lack of empathy; Unconcerned about performance; Shallow or deficient affect. The CAPE 1.1 includes both an Informant Interview and a Self-Report Interview. At least two interviews must be conducted to allow for the clinical ratings.

Table 1. *An overview of the available measures to assess psychopathic traits in children and youth*

Measure	Authors	Informant(s)	Age range	No of items	Scale	Factors
PCL:YV Psychopathy Checklist: Youth Version	Forth and colleagues (2003)	Skilled rater	12 + years	20	0-2	Two: Interpersonal-Affective; Socially Deviant Lifestyle Three: Interpersonal, Affective, Behavioral Four: Interpersonal, Affective, Lifestyle, Antisocial
APSD Antisocial Process Screening Device	Frick and Hare (2001)	Youth, Parent, and Teacher	4-18 years	20	0-2	Two: Impulsivity/Conduct Problems, Callous-Unemotional Three: Impulsivity, Narcissism, Callous-unemotional
CPS Child Psychopathy Scale	Lyman (1997)	Parent	12+ years	55	Yes/No	Total score only
PSCD Proposed Specifiers for Conduct Disorder	Salekin and Hare (2016)	Youth, Parent and Teacher	12+ years	24	0-2	Predicted: Grandiose-Manipulative, Callous-Unemotional, Impulsive-Irresponsible, Antisocial
YPI Youth Psychopathic Traits Inventory	Andershed and colleagues (2002)	Youth	9/12+ years	50	1-4	Grandiose-Manipulative, Callous-Unemotional, Impulsive-Irresponsible (in addition to ten subscales)
YPI-S Youth Psychopathic Traits Inventory-Short	Van Baardewijk and colleagues (2010)	Youth	9/12+ years	18	1-4	Grandiose-Manipulative, Callous-Unemotional, Impulsive-Irresponsible
CPTI Child Problematic Traits Inventory	Colins and colleagues (2014)	Youth, Parent and Teacher	3-12	28	1-3	Interpersonal, Affective, Impulsive–Behavioral
PCS/P-16 Psychopathy Content Scale/P-16	Murrie and Cornell (2000) Salekin and colleagues (2003)	Youth	12-18 years	20/16	True/ False	Informal for 16 item version: Interpersonal, Affective, Lifestyle
ICU Inventory of Callous-Unemotional Traits	Frick (2003)	Youth, Parent and Teacher	4-18	24	0-3	Total score or three factors: Callousness, Uncaring, Unemotional
CAPE 1.1 Clinical Assessment of Prosocial Emotions	Frick (2016)	Trained clinicians: Informant and Self-Report Interview	3-21	10 +	Yes/No	Callous-Unemotional traits: Lack of remorse or guilt; Callous-lack of empathy; Unconcerned about performance; Shallow or deficient affect

Note. Adapted from " Child and adolescent psychopathy: Assessment issues and treatment needs", by, D. Ribeiro da Silva, D. Rijo and R. T. Salekin, 2013, *Aggression and Violent Behavior, 18,* 73

In summary, in the last decades several measurement tools were developed to assess psychopathic traits in children and youth, being some of these widely studied. However, a crucial issue still remains; i.e., the lack of agreement on the conceptualization of psychopathic traits, which also accounts for different conceptual models and factor structures of the different measures (Hecht et al., 2018). Moreover, difficulties in assessing CU traits are reported across studies, suggesting that these traits might be particularly difficult to capture with the existing measures (Fink, Tant, Tremba, & Kiehl, 2012; Kotler & McMahon, 2010; Pechorro et al., 2016, 2017; Ribeiro da Silva et al., 2013; Salekin et al., 2018). Among the available measures, the PCL:YV, the APSD, the YPI, and the YPI-S were validated in several countries (see Salekin et al., 2018). However, factor analytic studies reported different factor solutions, both for the PCL:YV and for the APSD, which accounts for validity issues of these measures (Kotler & McMahon, 2010). The YPI and the YPI-S seem to be cost-effective and accurate alternatives to assess psychopathic traits in youth, which also minimize the possibility of deceitful answers (Andershed et al., 2002; Pechorro et al., 2016, 2017; Van Baardewijk et al., 2010). Comparing the YPI and the YPI-S, the YPI-S showed better psychometric proprieties, namely in diverse Portuguese samples of youth (Pechorro et al., 2016, 2017). The fact that the YPI-S did not include the original 10 subscales and the reversed items from the YPI may have contributed to solve certain internal consistency problems and problems in factor analyses regarding the ten YPI subscales (Andershed et al. 2002; Pechorro et al., 2016, 2017; Ribeiro da Silva, da Motta, Rijo, Pechorro, & Gonçalves, 2017; Van Baardewijk et al., 2010). The PSCD (Salekin & Hare, 2016) is also a promising measure to assess psychopathic traits, but it has not been validated yet.

4.2. Comorbidity

The assessment of comorbid symptoms and disorders is of utmost importance when diagnosing mental health problems, as comorbidity burden is commonly associated with poor outcomes (APA, 2018). Some studies examined the relationship between psychopathic traits and other psychiatric disorders, showing that youth with psychopathic traits had high comorbidity rates, mostly with externalizing, but also with internalizing disorders (e.g., Lansing, Plante, Beck, & Ellenberg, 2018; Latzman et al., 2018; Salekin, Leistico, Neumann, DiCicco, & Duros, 2004; Sevecke & Kosson, 2010; Sevecke, Lehmkuhl, & Krisher, 2009). However, these studies used variable-centered methods, which hinder the identification of comorbidity rates within a person-centered perspective; i.e., how other symptoms/disorders function and vary within individuals with different levels of psychopathic traits.

Some studies found that psychopathic traits were related with several externalizing disorders, such as CD, Oppositional Defiant Disorder (ODD), and Attention Deficit Hyperactivity Disorder (ADHD), which seem to share the behavioral deviant component of psychopathic traits; i.e., II traits (Lansing et al., 2018; Latzman et al., 2018; Salekin et al., 2004; Sevecke et al., 2009). CD can be diagnosed in children and youth, with boys presenting

a greater prevalence of this diagnosis than girls (1.8% to 16% in boys *vs*. 0.8% to 9.2% in girls; APA, 2013). In turn, studies with young offenders presented prevalence rates of CD ranging between 31% and 100% (e.g., Rijo et al., 2016; Vermeiren, 2003). Regarding ODD, research indicated prevalence rates ranging from 1 to 11%, being this diagnosis more prevalent in boys than in girls and more prevalent in young offender samples than in normative youth samples (APA, 2013; Vermeiren, 2003). Finally, studies suggested that ADHD presents a prevalence rate of 5% in the general population, but young offenders have a fivefold increase in the prevalence of ADHD (30.1 %) than their peers from community samples (APA, 2013; Johansson, Kerr, & Andershed, 2005; Young, Moss, Sedgwick, Fridman, & Hodgkins, 2015). In line with this, some authors contended that the connection between children with disruptive behavior and psychopathy in adulthood is especially high in children/youth diagnosed with both ADHD and CD — the so called "comorbid subtype hypothesis" (e.g., Barry et al., 2000; DeLisi et al., 2011; Johansson et al., 2005; Lynam, 1996, 1997). Other studies did not confirm this connection, defending that the CD component is primary in relation to ADHD (Lahey, Loeber, Burke, Rathouz, & McBurnette, 2002; Mishonsky & Sharp, 2010).

Substance-related disorders have also been reported as common among young offenders, with prevalence rates ranging between 30 and 56 % (Abram et al., 2015; Rijo et al., 2016), being also associated with psychopathic traits, especially II traits (Kimonis, Tatar, Joseph, & Cauffman, 2012; Waller & Hicks, 2019).

With regard to comorbidity with internalizing problems, some studies found a direct relationship between psychopathic traits and anxiety, depression, and suicidal thoughts in children and youth (Heirigs et al., 2018; Kubak & Salekin, 2009; Lee, Salekin, & Iselin, 2010; Lansing et al., 2018; Latzman et al., 2018; Salekin et al., 2004; Sevecke et al., 2009), but not in adults (Hofmann, Korte, & Suvak, 2009). Thus, internalizing problems seem to represent an important area of discontinuity in youth psychopathy (more internalizing problems), *versus* adult psychopathy (fewer internalizing problems), which requires further research to clarify these developmental pathways. Moreover, these differences among youth and adults with psychopathic traits also suggest that positive treatment outcomes are probably more promising in early developmental stages, as these children and youth may be less resistant to engage in treatment (Ribeiro da Silva et al., 2013).

Recent studies have pointed out the need to make a differential diagnosis between psychopathic traits and autism spectrum disorders (Blair, Mitchell, & Blair, 2005; Bons, Scheepers, Rommelse, & Buitelaar, 2010; Dargis, Wolf, & Koenigs, 2018; Jones, Happé, Gilbert, Burnett, & Viding, 2010). In fact, both youth with autism spectrum disorders and youth with psychopathic traits seem to present fewer fixations to the eyes of others (Dargis et al., 2018). However, there is evidence suggesting that deficient eye fixations among autistic children/youth may be more closely related to social impairments and theory of mind problems, rather than empathic processing, which seems to be the case of children and youth with psychopathic traits (Dargis et al., 2018). Dadd and colleagues (2014) went forward, showing that children with conduct problems and high levels of CU traits, but not children

with conduct problems and low levels of CU traits nor typically developing children, displayed impaired eye contact with their mothers in a brief interaction task where the mother was asked to show love to her child. These impairments were found to be largely independent of maternal behavior, but were associated with the presence of psychopathic traits in the fathers (Dadds et al., 2014).

In sum, the concomitant presence of CD and psychopathic traits seems to identify a group of antisocial youth that display the earliest, most severe, and persistent forms of antisocial behavior, as well as distinct genetic, neural, cognitive, affective, and social impairments (Colins et al., 2018; Jambroes et al., 2016; Kumsta et al., 2012; Lahey, 2014; Salekin, 2016, 2017; Salekin, 2017; Viding & McCrory, 2012, 2018). These data probably help to explain the fact that the majority of studies on psychopathic traits' comorbidity focused mainly on CD. However, variable-centered studies also showed high comorbidity rates between psychopathic traits and other mental health disorders, especially in young offender samples. These findings stress the need for a full mental health assessment of youth entering in contact with juvenile justice systems and emphasize the urgency to deliver appropriate intervention programs to these youth (Ribeiro da Silva et al., 2013). Finally, to clarify conceptual models and etiological theories, it seems relevant to study comorbidity rates on a person-centered perspective, as it is closest to what happens in real clinical practice.

4.3. Psychopathic traits and gender

Until recently, most studies in the psychopathic traits' literature were conducted in forensic samples, mostly composed by men/boys (Odgers & Moretti, 2002; Salekin et al., 2018; Verona & Vitale, 2018; Verona, Sadeh, & Javdani, 2010). Since Verona and Vitale (2006) published a chapter on female psychopathy, the work on this area grown rapidly.

Research suggested that GM and CU traits are, mostly, well captured in female samples across the available measurement tools of psychopathy (Neumann, Schmitt, Carter, Embley, & Hare, 2012; Verona & Vitale, 2018). However, these set of traits seem to be associated with emotional dysregulation and suicidality in females, but not in males (Edens et al., 2007; Thomson et al., 2019; Verona & Vitale, 2018). Regarding II traits, these seem to be not so well captured in female samples with the available assessment tools (Verona & Vitale, 2010, 2018). When compared to male, female tend to present: less evidence of early behavior problems; lower risk of criminal recidivism; greater emotional reactivity and self-directed violence; lower levels of overt aggression; higher levels of relational aggression; and higher tendency towards sexual misbehaviors or sexual risk taking (Crick, Ostrov, &Werner, 2006; Edens et al., 2007; Loeber et al., 2009; Neumann et al. 2012; Sevecke et al., 2009; Thomson et al., 2019; Vaughn, Newhill, DeLisi, Beaver, & Howard, 2008; Verona & Vitale, 2018).

In summary, the study of gender differences on psychopathic traits has vastly increased in the last decade. However, research on female psychopathy mostly focuses on trying to generalize findings from the male psychopathy literature. There is therefore a need to

develop and test conceptual models able to compare male and female individuals with psychopathic traits, which may enable researchers to develop more precise assessment tools and, consequently, better understand gender differences in psychopathic traits across different levels of functioning (Skeem et al., 2011; Verona & Vitale, 2010; Verona et al., 2010).

5. Treatment

In 1941, Cleckley (1941/1986) claimed that psychopathy was essentially a non-treatable condition; "We do not at present have any kind of psychotherapy that can be relied upon to change the psychopath fundamentally" (p. 478). Other authors also agreed with this position, including Suedfeld and Landon (1978) on one of the first chapters on psychopathy and treatment: "no demonstrably effective treatment has been found" (p. 347). Harris and Rice (2006) went forward, stating that "no clinical interventions will ever be helpful" (p. 563). After almost 80 years of Cleckley's words (1941/1988), treatment pessimism around psychopathy is still present. This may explain, at least partially, the scarcity of intervention programs specifically tailored for antisocial individuals with high levels of psychopathic traits and the shortage of research focused on their treatment, especially when compared to the substantial amount of literature on the conceptualization, etiology, and assessment of psychopathic traits (Hecht, Latzman, & Lilienfeld, 2018; Polaschek & Skeem, 2018). In turn, the competing conceptual, etiological, and measurement models of psychopathy may also difficult the design of treatment protocols that target theoretically/empirically sound mechanisms of change, as well as the assessment of treatment efficacy (Hecht et al., 2018; Polaschek & Skeem, 2018; Ribeiro da Silva et al., 2013; Salekin et al., 2018b).

5.1. From treatment pessimism to treatment efforts

The assumption that "nothing works with psychopaths" mirrored the pessimism around the treatment of criminal offenders in general that prevailed until the late 80s (Martinson, 1974). However, while the premise sustaining that "nothing works" in the rehabilitation of criminal offenders in general has proved to be flawed by several systematic reviews and meta-analytic studies (e.g., Andrews et al., 1990; Garret, 1985; Koehler, Lösel, Akoensi, & Humphreys, 2013; Lipsey, 1995; Lipsey & Wilson, 1998; Lipsey, 2009; Lösel, 1995; MacKenzie & Farrington, 2015; Petrosino, Boruch, Farrington, Sherman, & Weisburd, 2003; Redondo, Garrido, & Sanchéz-Meca, 1997; Redondo, Sanchéz-Meca, & Garrido, 1999; Yoon, Slade, & Fazel, 2017), the premise sustaining that "nothing works with psychopaths" is still far from being effectively tested (Hecht et al., 2018; Harris & Rice, 2006; Salekin, 2002).

5.1.1. Treatment of criminal offenders in general

The systematic reviews and meta-analytical studies in the treatment of criminal offenders showed that psychological interventions are effective in reducing criminal recidivism both in adult and youth samples (Garret, 1985; Koehler et al., 2013; Lipsey, 2009; MacKenzie & Farrington, 2015; Petrosino et al., 2003; Yoon et al., 2017). These studies also suggested that interventions can be improved in order to achieve even better outcomes in recidivism reduction if they follow the Risk–Need–Responsivity (RNR) model (Andrews & Bonta, 2010; Bonta & Andrews, 2016).

The RNR model is based on the "human service principles", which state that recidivism reduction should not be managed through punitive strategies (Andrews et al., 1990). In fact, punitive strategies have proved to increase criminal recidivism (Andrews & Bonta 2010; Bonta & Andrews, 2016; Lipsey, 2009; Lipsey, Howell, Kelly & Carver, 2010; McGuire, 2013). The RNR model also argues that treatment programs for criminal offenders yield largest reductions in criminal behavior if they: (1) target relatively intensive interventions toward criminal offenders assessed as being at higher risk of recidivism (the "Risk" principle); i.e., therapists should work with the higher-risk criminal offenders, rather than taking them as not suitable for treatment, leaving lower-risk criminal offenders with less intensive therapeutic interventions; (2) focus treatment interventions on changing offenders' "criminogenic needs" (the "Need" principle); i.e., interventions should be focused on changing empirically documented dynamic risk factors for crime, which, as the term implies, are changeable (e.g., criminal attitudes, substance abuse, impulsivity); and (3) deliver interventions in a way that optimizes offenders' engagement in the treatment process (the "Responsivity" principle); i.e., interventions should match the offender's learning style and abilities. The RNR model recognizes the relevance of the therapeutic relationship and highlights that structured interventions (such as Cognitive-Behavioral Therapies; CBT) are among the most effective in the treatment of antisocial behavior problems, namely when cognitive variables are included as targets of change (Andrews & Bonta, 2010; Bonta & Andrews, 2016; Kazdin, 2009; Kazdin & Wassell, 2000; Kolko et al., 2009).

5.1.2. The treatment of psychopathic traits

As showed, available evidence demonstrated that CBT based interventions are particularly effective in reducing recidivism among adult and youth criminal offenders, especially when they take into account the RNR's model principles (Andrews & Bonta, 2010; Bonta & Andrews, 2016). According to the "Risk" principle, criminal offenders with high levels of psychopathic traits should be among the first to be recruited for treatment (Polaschek & Skeem, 2018). In detail, when compared to their counterparts with lower levels of psychopathic traits, criminal offenders with high levels of psychopathic traits display the earliest, most severe, and persistent forms of antisocial behavior, which make them a population at a higher risk of recidivism (Edens, Campbell, & Weir, 2007; Gretton et al.,

2004; Hare & Neumann, 2006; Herpers et al., 2012; Kubak & Salekin, 2009; Lee et al., 2010; Leistico et al., 2008; Polaschek & Skeem, 2018; Skeem et al., 2011).

However, some authors claimed that: psychopathic traits are not treatable; individuals with high levels of psychopathic traits are inadequate subjects for psychotherapy; the presence of some psychopathic traits (e.g., low motivation to change, deception and manipulation, and lack of deep or lasting emotion) even justifies the exclusion of individuals from treatment; the therapeutic strategies in individuals with psychopathic traits increase antisocial behavior, criminal recidivism, and the levels of psychopathic traits themselves; and the training of certain social and emotional skills in individuals with psychopathic traits may improve their criminal strategies, making them avoid legal detention in more successful ways (Harris & Rice, 2006; Reidy, Kearns, & DeGue, 2013). In contrast, and in line with the RNR model, other authors considered that individuals with high levels of psychopathic traits should be among the first ones to be selected for treatment (Hecht et al., 2018; Olver, Lewis, & Wong, 2013; O'Neill, Lidz, & Heilbrun, 2003; Polaschek & Skeem, 2018; Salekin, 2002, 2010; Skeem, Monahan, & Mulvey, 2002; Thorton & Blud, 2007; Wong & Olver, 2015). Moreover, considering that therapeutic engagement and treatment compliance are a challenge in the treatment of criminal offenders with psychopathic traits, several authors considered that these set of traits and their associated deficits should be taken into account when designing therapeutic programs (e.g., Hecht et al., 2018; Salekin, 2002, 2010; Skeem, Polaschek, & Manchak, 2009).

There is a long debate whether psychopathic traits are treatable or not and little research was focused on the treatment of criminal offenders with high levels of psychopathic traits when compared to the treatment of criminal offenders in general (Frick, Ray, Thornton, & Kahn, 2013; Harris & Rice, 2006; Hecht et al., 2018; Polaschek & Skeem, 2018; Ribeiro da Silva et al., 2013; Salekin, 2002; Salekin et al., 2018; Wilkinson, Waller, & Viding, 2015). While more than on hundred systematic reviews and meta-analytic studies demonstrated that criminal recidivism rates and other behavioral, emotional and cognitive correlates of antisocial behavior were reduced after the delivery of CBT based interventions (e.g., Koehler et al., 2013; Lipsey, 2009; MacKenzie & Farrington, 2015; Petrosino et al., 2003; Yoon et al., 2017), few reviews were conducted on the treatment efficacy of psychopathic traits (e.g., Harris & Rice, 2006; Salekin, 2002).

The first methodological rigorous reviews on this topic were conducted by Salekin (2002; a meta-analytic study), D'Silva, Duggan, and McCarthy (2004; a systematic review), Harris and Rice (2006; a comprehensive review), Salekin, Worley, and Grimes (2010; a comprehensive review), and Reidy and colleagues (2013; a comprehensive review), in which the authors included studies with both adults and youth. More recently, methodological rigorous reviews focusing the treatment of CU traits in children and youth were also conducted by Frick and colleagues (2013; a comprehensive review), Hawes, Price, and Dadds (2014; a comprehensive review), and Wilkinson and colleagues (2015; a systematic review), in

which the authors included studies using forensic samples of youth as well as clinical and community samples of children and youth (see table 2).

Salekin (2002) conducted a meta-analytic study reviewing 42 treatment studies on psychopathy (in a total of 760 individuals in treatment conditions). The author included different types of studies (case studies, open trials and controlled trials), wherein criminal and non-criminal samples were assessed through diverse psychopathy measurement tools and different therapeutic outcomes were used to assess treatment efficacy (e.g., recidivism, capability of feeling remorse and empathy, and maintaining a job). The studies included in this meta-analysis were published between 1928 and 1996 (less than 10% were published in the 90s), most studies had a small sample size (30 studies had an $n < 30$, including 8 case studies), a small portion had a control group (8 studies had a control group, in a total of 287 individuals), and a variety of treatment methods were used across studies (e.g., electroconvulsive therapy, psychodrama, traditional psychoanalysis, CBT, eclectic therapy). Salekin found that the overall proportion of successful intervention for all treatment studies was .62 ($p < .01$), decreasing to .60 when case studies were dropped from the analysis. Intensive individual psychotherapy (on average four sessions per week during 1 year or longer) had the highest successful treatment rates (91%), followed by the combination of group psychotherapy and individual psychotherapy (81%). Eclectic therapy (the combination of both cognitive–behavioral techniques and insight-oriented approaches) was found to be the most effective in the treatment of individuals with psychopathy (82%), followed by CBT (62%), and psychoanalytic therapies (58%). Salekin (2002) concluded therefore that "there is little scientific basis for the belief that psychopathy is an untreatable disorder" (p. 79), highlighting the scarcity of empirical investigations on the psychopathy–treatment relationship. Despite some methodological flaws (e.g., few controlled studies, inclusion of studies with a wide variability of participants), this is the most inclusive review on the treatment of psychopathy and the only meta-analytic study on this topic.

The systematic review by D'Silva and colleagues (2004) aimed to answer a specific research question: What is the evidence that individuals with high PCL-R/PCL:YV scores show a negative response to treatment? The search strategy identified 24 studies (all published between 1990 and 2003) with wide variability in: the characteristics of the participants (e.g., youth and adults from clinic and forensic settings), treatment approaches (e.g., Behavioral therapy, CBT, therapeutic community), outcome measures (e.g. recidivism, institutional behavior), the length of follow-up periods (0 to 125 months) and research designs (open trials, controlled trials, and randomized controlled trials - RCTs). Among these 24 studies, only three had an appropriate research design able to answer the research question, but none met the authors' standards for an acceptable study (assessed through an "Adequate study rating sheet" developed by them). In detail, these three studies had a matching control group (untreated individuals with high levels of psychopathic traits) but the treatment was unethical, the treatment was not specifically designed to address psychopathic traits, the outcome variables were not related to recidivism, and/or follow-up assessments had not been

carried out. The authors concluded therefore "that the commonly held belief of an inverse relationship between high-scores on the PCL-R and treatment response has not been established" (p.163).

The comprehensive review of Harris and Rice (2006) was focused on the treatment of criminal individuals with psychopathy, only including studies that used the PCL:YV/PCL-R to sample selection and, concomitantly, that included recidivism as a treatment outcome. These authors concluded that "there is no evidence that any treatments yet applied to psychopaths have been shown to be effective in reduce violence or crime (p. 568)" and went forward, stating that "some treatments that are effective for other offenders are actually harmful for psychopaths in that they appear to promote recidivism" (p. 568). Harris and Rice (2006) criticized the methodology used by Salekin (2002) and pointed out that many of the studies showing positive therapeutic effects were case studies and that several studies did not include criminal samples and/or criminal recidivism as a treatment outcome. In turn, Salekin (2002) argued that recidivism risk should not be the only therapeutic outcome to be considered, as other treatment gains also offer support for the individual's rehabilitation. This position is shared by other authors, arguing that, besides criminal recidivism reduction, other relevant variables should be regarded as relevant treatment outcome measures (e.g., Antonio & Crossett, 2017; McGuire, 2013; Skeem et al., 2009).

Taking into account contradictory findings from the works of Salekin (2002), D´Silva and colleagues (2004), and Harris and Rice (2006), Salekin and colleagues (2010) conducted another comprehensive review on the treatment of psychopathy. A total of 16 treatment outcome studies that used the PCL and/or its derivatives (PCL-R; PVL:YV; APSD) were included in this review (clinical case studies had been excluded). Among the 16 treatment outcome studies, eight were conducted with adults (published between 1990 and 2009) and the remaining eight were conducted with children/youth (published between 1990 and 2006). The majority of the studies included in this review were conducted in forensic settings, but some had been conducted in clinical settings; for instance, this review included one study young children. Differences in the methodological design (open trials and controlled trials), in the treatment approaches (e.g., behavioral therapy, CBT, parent training), in the outcome measures (psychopathic traits measures as well as different behavioral measures), and in the length of follow-up (0 to 120 months) were also found across the studies included in this review. Despite this, findings indicated low to moderate success in the treatment of adults (3 of 8 studies demonstrated treatment gains); in turn, treatment of children/youth appeared to be more promising (6 of 8 studies showed treatment gains). Salekin and colleagues (2010) concluded that their comprehensive review offered "a first step in showing that treatment is difficult with psychopathic individuals, but there is the hint, with a few of the articles, that something may work with psychopathic individuals" (p. 261) and highlighted that it would be important to tailor treatments to meet the specific features of individuals with psychopathic traits.

The comprehensive review of Reidy and colleagues (2013) was focused on studies assessing the relation between psychopathy and violence outcomes following intervention. A total of 17 treatment outcome studies relating psychopathy with violence (published between 1992 and 2010) were included in this review. Some studies were conducted in adult samples (12 studies) and others in adolescent samples (5 studies). Participants also differed across studies (e.g., criminal and non-criminal samples, male and female) as well as treatment approaches (behavioral interventions, CBT, therapeutic communities), outcome measures (e.g., sexual and nonsexual violent recidivism, self and collateral reported violent behavior, and institutional violence) and length of follow-up (0 to 132 months). In this review, the authors concluded that "specific and tailored interventions which take into consideration psychopathic persons' unique patterns of behavioral conditioning and predispositions may have the potential to reduce violence" (Reidy et al., 2013; p. 527). However, the authors emphasized that certain interventions (i.e., CBT-based interventions and behavioral interventions) may potentially exacerbate these persons' violent behavior. Finally, the authors encouraged future research "to increase methodological rigor by striving to include treatment control groups and increasing the transparency of the implemented interventions (Reidy et al., 2013; p. 527).

The comprehensive review of Frick and colleagues (2013) included a total of 24 studies (published between 1997 and 2012) that were focused on the response to treatment in children and youth with CU traits (male and female participants in community, clinic and forensic settings); nine of these studies reported on psychopathic traits and not on CU traits specifically. Several treatment interventions were included in this review (e.g., behavioral therapy, cognitive-behavioral interventions, emotion recognition training, family-based interventions, and multimodal interventions) as well a wide variety of research designs (open trials, controlled trials, and RCTs), outcome measures (e.g., self, parent, and/or teachers report on CU/psychopathic traits, delinquent behavior, institutional violence) and length of follow-up (0 to 48 months). The authors found that children and youth with both severe conduct problems and elevated CU traits tended to respond less positively to typical interventions provided in mental health and juvenile justice settings. However, they presented positive responses to certain interventions (CBT-based interventions, behavioral interventions, and family-based interventions), reducing the level and severity of their behavior problems and CU traits themselves (Frick et al, 2013). These treatment gains were particularly encouraging when interventions were intensive and tailored for children and youth with elevated CU traits. Frick and colleagues (2013) concluded therefore that their research "suggested that children and adolescents with elevated CU traits are not "untreatable" and that they can improve with intensive treatments" (p. 45).

The comprehensive review of Hawes and colleagues (2014) included a total of 16 family-based treatment studies (parent and child therapy or parent training, published between 2005 and 2014) reporting on CU traits. Of these, 11 studies reported on clinical change in conduct problems among children/youth with CU traits following a family-based

intervention. Differences in the methodological design (e.g., pilot trials, controlled trials, and RCTs), in the participants (e.g., court-ordered, clinical-referred and high risk male and female children/youth), in the outcome measures (different CU/psychopathic traits measures and other measures not related with CU/psychopathic traits), and in the length of follow-up (0 to 36 months) were found across studies. Nevertheless, the 16 treatment outcome studies included in this review provided support of unique associations between CU traits and risk for poor treatment outcomes, also indicating that parent training is capable of producing long-term improvement in children' CU traits, particularly when delivered early in childhood (Hawes et al., 2014). The authors concluded that "the clinical needs of children with conduct problems and CU traits warrant intervention strategies beyond those included in current evidence-based interventions" (Hawes et al., 2014; p. 263).

The systematic review of Wilkinson and colleagues (2015) included 19 treatment studies (published between 2003 and 2014) examining whether treatment was related with reductions in CU traits or whether CU traits predicted or moderated treatment effectiveness. Differences in the methodological design (open trial, controlled trial, RCT), in the participants (male and female children and youth recruited from clinical and forensic settings), in the type of intervention (e.g., behavioral therapy, cognitive-behavioral interventions, emotion recognition training, family-based interventions, and multimodal interventions), in the outcome measures (different CU/psychopathic traits measures as well as different antisocial behavior measures), and in the length of follow-up (0 to 48 months) were found across the studies. The authors (Wilkinson et al., 2015) concluded that "the evidence supports the idea that children with CU traits do show reductions in both their CU traits and their antisocial behavior, but typically begin treatment with poorer premorbid functioning and can still end with higher levels of antisocial behavior" (p. 552). Moreover, the authors highlighted that although there is some support to consider that parenting interventions may be effective in high-CU children, individual-focused treatments tailored for the specific vulnerabilities and associated characteristics of these children and youth would also need to be considered in future trial research.

Despite the importance of these meta-analytic, systematic or comprehensive reviews the fact that they included studies using diverse sample types might be confounding regarding treatment efficacy, as different types of samples present different treatment challenges (Hecht et al., 208). In the treatment of children and youth with CU traits, the focus on CU traits narrows the potential influence that GM and II traits might have in the treatment of children and youth with psychopathic traits.

Table 2. *Principal reviews on the treatment of psychopathic traits*

Study	Type of review	Included studies	Participants across studies	Interventions across studies	Outcomes across studies	Major conclusions	Major strengths	Major limitations
Salekin (2002)	MA	42 studies; CS, OT, CT; Follow-up – NR	Adults, youth and children; Male and female; Clinical and forensic settings	Several	Several	62% participants benefitted from psychotherapy	The only MA study on the threatment of psychopathic traits, which included an extensive review of the literature.	Inclusion of different types of participants; Just 8 studies had a control group; 11 studies were clinical case studies.
D'Silva and colleagues (2004)	SR	24 studies RCT, CT, OT; Follow-up – 0 to 125 months	Adults and youth; Clinical and forensic settings	Several	Several, but specially focused on recidivism and violence	There is no evidence to establish whether individuals with psychopathy show a negative response to treatment or not.	Methodologically rigorous systematic review.	Inclusion of different types of participants; Just 3 studies had a control group.
Harris & Rice (2006)	CR	NA	Adults and youth	Several	Recidivism	No treatments shown to reduce recidivism	An important mark to establish recidivism as an important outcome	It is not a SR; Inclusion of different types of participants.
Salekin and colleagues (2010)	CR	16 studies; CS, CT, OT; Follow-up – 0-120 months	Adults, youth and children; Male and female; Clinical and forensic settings	Several	Several	Treatment of youth appears to be more promising than the treatment of adults.	The authors divided treatment outcome studies with adults and children/youth.	It is not a SR; Inclusion of different types of participants; Just 2 studies had a control group.

Reidy and colleagues (2013)	CR	17 studies; CS, CT, OT; Follow-up - 0-132 months	Adults and youth; Male and female; Clinical and forensic settings	Several	Violence and recidivism	There is no sufficient evidence to affirm that treatment reduces violence	Focus on a clear outcome.	It is not a SR; Inclusion of different types of participants; Just 3 studies had a control group
Frick and colleagues (2013)	CR	´24 studies; CS, CT, OT; Follow-up - 0-48 months	Children and youth; Male and female; Community, clinical and forensic settings	Several	Several, but mostly related to CU traits and violence	Children and youth with elevated CU traits can improve with intensive treatments	The first methodological rigorous CR on the treatment of children and youth with CU trais.	It is not a SR; Inclusion of different types of participants; Focus only on CU traits; Just 6 studies had a control group.
Hawes and colleagues (2014)	CR	16 studies; CS, CT, OT; Follow-up - 0-36 months	Children and youth; Male and female; Court-ordered, clinical-referred and high risk children/youth	Family-based interventions	Several	Parent training is capable of producing long-term improvement in children' CU traits.	The first methodological rigorous CR on the treatment of children and youth with CU trais after the delivery of family-based interventions.	It is not a SR; Inclusion of different types of participants; Focus only on CU traits; Just 6 studies had a control group.
Wilkinson and colleagues (2015)	SR	19 studies; CS, CT, OT; Follow-up - 0-48 months	Children and youth; Male and female; Community, clinical and forensic settings	Several	Several, but mostly related to CU traits and violence	Children and youth with CU traits do show reductions in both their CU traits and their antisocial behavior	The first SR on the treatment of children and youth with CU traits.	Inclusion of different types of participants; Focus only on CU traits; Just 9 studies had a control group.

Note: MA = Meta-Analysis; SR = Systematic Review; CR = Comprehensive Review; RCT = Randomized Controlled Trials; CT = Controlled Trials; OT; Open Trials; CS = Case studies; N/A = Not Applicable; NR = Not reported.

Taking into account the eight mentioned studies (D´Silva et al., 2004; Frick et al., 2014; Harris & Rice, 2006; Hawes et al., 2014; Reidy et al., 2013; Salekin, 2002; Salekin et al., 2010; Wilkinson et al., 2015), there is some evidence supporting the idea that psychopathic traits seem to be changeable and that long-term impairments (e.g., recidivism rates, maladjustment, maintaining a job, ability of feel remorse and empathy) could be ameliorated, particularly, but not exclusively, if individuals were identified early in life (during childhood or adolescence) and appropriately treated (Bayliss, Miller, & Henderson, 2010; Hawes et al., 2014; Hecht et al., 2018; Kimonis & Armstrong, 2012; Olver et al., 2013; O'Neill et al., 2003; Ribeiro da Silva et al., 2013; Salekin, 2002, Salekin et al., 2010; Skeem et al., 2009; Thorton & Blud, 2007; Wilkinson et al., 2015). Moreover, there is some evidence to consider that children and youth with psychopathic traits tend to improve in those same traits and in their disruptive/antisocial behavior in response to intensive intervention programs associating CBT and motivational strategies (e.g., Caldwell, 2011; Caldwell, Skeem, Salekin, & Van Rybroek, 2006; Caldwell, McCormick, Umstead, & Van Rybroek, 2007; Caldwell, McCormick, Wolfe, & Umstead, 2012). Behavioral therapy (Hass et al., 2011); family-based interventions (Hawes et al., 2014; McDonald, Dodson, Rosenfield, & Jouriles, 2011; Salekin, 2002; Thorton & Blud, 2007; Waller, Gardner, & Hyde, 2013; White, Frick, Lawing, & Bauer, 2013); and multimodal interventions, involving individual intervention (e.g., self-control, problem solving, role playing, social skills, anger management), parental training, family therapy, and medication (Kolko & Pardini, 2010; Masi et al., 2013; Salekin, 2002) seem also to present promising results for the treatment of psychopathic traits. Another promising path to treat psychopathic traits are interventions based on positive and/or prosocial/affiliative emotions, such as the empathic-emotion recognition training (Dadds, Cauchi, Wimalaweera, Hawes, & Brennan, 2012) and the Mental Models interventions for positive emotions (a group program combining: motivational techniques, cognitive behavior training, and instruction on positive emotions; Salekin, Tippey, & Allen, 2012).

Nevertheless, the scientific literature on the treatment of psychopathic traits is still scarce and marked by several methodological flaws (Hecht et al., 2018; Polaschek & Skeem, 2018). The methodological flaws can be an important roadblock when testing the efficacy of treatment programs and in the psychopathic traits literature they are abundant. That is, besides being scarce, the majority of studies on this field were conducted prior to the 21st century and only a few used methodological rigorous designs; for instance, few studies used a control group (Harris & Rice, 2006; Hawes et al., 2014; Hecht et al., 2018; Salekin, 2002; Salekin et al., 2010; Skeem & Polaschek, 2018; Wilkinson et al., 2015). Moreover, although of major interest, the few studies that focused on the treatment of psychopathic traits are somehow disperse (e.g., in terms of sample type, treatment type, and treatment outcome measures), which makes difficult to conduct accurate systematic reviews and, consequently, rendering meaningful conclusions (Hecht et al., 2018; Polaschek & Skeem, 2018).

Finally, it is noteworthy that the majority of studies on the treatment of individuals with psychopathic traits were conducted through group, group/individual, or family based

interventions (D'Silva et al., 2004; Frick et al., 2013; Harris & Rice, 2006; Hawes et al., 2014; Reidy et al., 2013; Salekin, 2002; Salekin et al., 2010; Wilkinson et al., 2015). Thus, not enough is yet known about the relative benefits of individual *versus* group/family-based interventions in individuals with psychopathic traits. Still, the few studies following an individual intervention modality presented promising results (Salekin 2002; Wilkinson et al., 2015). Although studies using individual interventions are more challenging to perform following strong research designs (due to time and human resource constrictions), they offer an in deep treatment approach that can be easily tailored for the specific mental health needs of each individual (Rogers, 1961). Moreover, individual psychotherapy facilitates the establishment of a strong therapeutic alliance, a key component of a successful psychotherapeutic intervention, particularly in criminal samples (Bonta & Andrews, 2016; Rogers, 1961).

5.1.3. The treatment of psychopathic traits in young offenders

As shown above, only a few studies tested the efficacy of treatment approaches in reducing psychopathic traits both in adult, children, and youth, and even fewer were conducted in forensic settings (Frick et al., 2014; Harris & Rice, 2006; Hawes et al., 2014; Hecht et al., 2018; Polaschek & Skeem, 2018; Ribeiro da Silva et al., 2013; Salekin, 2002; Salekin et al., 2010, 2018; Wilkinson et al., 2015). Considering the large risk of young offenders with psychopathic traits to relapse in crime and to face prison sentences in the future, along with the toll of psychopathic traits in the society and in the individual him/herself (Edens et al., 2007; Gretton et al., 2004; Herpers et al., 2012), there is a clear need to build on previous reviews, focusing on treatment outcome studies of psychopathic traits in young offenders.

Searching in several databases and previous reviews, only 13 studies focused on the treatment of psychopathic traits and disruptive/criminal behavior among young offenders (Butler, Baruch, Hickey, & Fonagy, 2011; Caldwell, 2011; Caldwell et al., 2006, 2007, 2012; Falkenbach, Poythress, & Heide, 2003; Gretton, McBride, Hare, O'Shaughnessy, & Kumka, 2001; Manders, Deković, Asscher, van der Laan, & Prins, 2013; O'Neill, Lidz, & Heilbrun, 2003; Rogers, Jackson, Sewell, & Johansen, 2004; Salekin et al., 2012; Spain, Douglas, Poythress, & Epstein, 2004; White, Frick, Lawing, & Bauer, 2013). These studies fulfill the following inclusion criteria: (a) studies – RCT, controlled trials with different conditions but no randomization process, open trials with only one treatment condition, or clinical case studies; (b) participants – male young offenders up to age 18 participating in an intervention (studies using only female samples were excluded, because female young offenders represent a small percentage of the total young offenders worldwide and any possible idiosyncrasies from this cohort would be underrepresented; Young, Greer, & Church, 2017); (c) interventions - any psychotherapeutic intervention or psychological treatment; and (d) measures – studies using measures of psychopathic traits. Other inclusion criteria were:

English language (to avoid translation misunderstandings); peer-reviewed publication (to guarantee scientific quality), and published between 1990 (coincident with the first study on psychopathic traits in youth: Forth et al., 1990) and 2019 (see Table 3).

From the 13 examined treatment outcome studies, just four studies had a control group; of these: two had a RCT design (Butler et al., 2011; Manders et al., 2013) and two had a controlled trial design (Caldwell, 2011; Caldwell et al., 2006)[3]. The remaining nine studies had an open trial design with no control group (Caldwell et al., 2007, 2012; Falkenbach et al., 2003; Gretton et al., 2001; O'Neill et al., 2003; Rogers et al., 2004; Salekin et al., 2012; Spain et al., 2004; White et al., 2013), which makes it difficult to assure that treatment effects are a product of the intervention and not of any other factors (CONSORT; Moher et al., 2010). No clinical case study that met the inclusion criteria was found. In detail, there are some case studies reporting successful treatment in individuals with psychopathic traits, but these were: published before 1990 (between the 40s and the 70s; see Salekin, 2002 for a review) or recently published, but described the treatment process of adult offenders (Chakhssi, Kersten, de Ruiter, & Bernstein, 2014) or small children (e.g., Datyner, Kimonis, Hunt, & Armstrong, 2016; Fleming, Kimonis, Datyner, & Comer, 2017; Kimonis, & Armstrong, 2012; Mills, Babinski, & Waschbusch, 2018). Given that clinical case studies usually thoroughly report on the treatment process, there is a clear need to invest in this area (Nissen & Wynn, 2014). In specific, it would be of major interest to test the efficacy of intervention programs in young offenders with psychopathic traits, both through RCT/controlled trials and clinical case studies. The RCT/controlled trials would offer support to treatment efficacy, while the clinical case studies would offer an in deep comprehension of the treatment process.

Regarding participants, nine of the 13 reviewed studies focused on male young offender samples (Caldwell, 2011; Caldwell et al., 2006, 2007, 2012; Gretton et al., 2001; O'Neill et al., 2003; Salekin et al., 2012; Spain et al., 2004; White et al., 2013). However, four studies had mixed samples of youth (including the ones with a RCT design), with female and male participants in clinic and forensic settings (Butler et al., 2011; Falkenbach et al., 2003; Manders et al., 2013; Rogers et al., 2004). Moreover, Falkenbach and colleagues (2003) also included children in their study. These methodological options make it difficult to reliably ascertain for treatment effects on male young offender samples. That is, different types of participants usually present different treatment needs; for instance, female young offenders present a different pattern of emotional, cognitive, and behavioral correlates in comparison with male young offenders (Thomson et al., 2019; Verona & Vitale, 2018), and children/youth from clinical settings usually present a less severe pattern of antisocial behavior than youth from forensic settings (Salekin et al., 2018). Consequently, these participants might have different treatment responses, which may be biasing research findings. Finally, it is worth to mention that just seven studies had more than 100 participants (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006, 2012; Gretton et al., 2001; Manders et al., 2013; White et al.,

[3] Two other studies used a control group and were conducted in forensic settings, but with adult criminal offenders, so they were excluded from this review (Polaschek, 2011; Wong, Gordon, Gu, Lewis, & Olver, 2012).

2013), but, of these, just 4 had a control group (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006; Manders et al., 2013), which leads us again to the fragilities of the open trial studies.

Concerning interventions, several treatment approaches were used across studies, including behavioral-based interventions (Spain et al., 2004), CBT-based interventions (Gretton et al., 2001; Caldwell, 2011; Caldwell et al., 2006, 2007, 2012; O'Neil et al., 2003; Salekin et al., 2012), family-based interventions (Butler et al., 2011; Manders et al., 2013; White et al., 2013), and psychoeducative interventions (Falkenbach et al., 2003; Rogers et al., 2004). Regarding treatment description, this was insufficient in six studies (Caldwell, 2011; Caldwell et al., 2006, 2007, 2012; Falkenbach et al., 2003; Gretton et al., 2001; O'Neill et al., 2003; Rogers et al., 2004; Spain et al., 2004) and sufficiently described (or described elsewhere) in seven studies (Butler et al., 2011; Gretton et al., 2001; Manders et al., 2013; O'Neill et al., 2003; Salekin et al., 2012; White et al., 2013). Treatment description is of utmost importance in clinical trials, in order to allow clinicians and researches to access a detailed treatment approach and, therefore, to thoroughly comprehend and eventually replicate the same treatment protocol (Perepletchikova, 2011). Regarding delivery format, this was also variable across studies, except for family-based interventions (Butler et al., 2011; Manders et al., 2013; White et al., 2013): two studies delivered the intervention in a group format (Gretton et al., 2001; Salekin et al., 2012), five delivered the intervention both using individual and group formats (Caldwell, 2011; Caldwell et al., 2006, 2007, 2012; O'Neil et al., 2003), and no study tested the efficacy of an individual intervention. Due to poor treatment description, in three studies it was difficult to ascertain if the intervention was delivered using both individual and group formats or just a group format (Falkenbach et al., 2003; Rogers et al., 2004; Spain et al., 2004). On the topic of treatment integrity, this was only controlled, at least partially, in three studies, namely the ones using family based-interventions (Butler et al., 2011; Manders et al., 2013; White et al., 2013). The control for treatment integrity is essential for empirical testing of interventions' efficacy as it allows for unambiguous interpretations of the obtained results as well as for the dissemination of evidence-based practices (Perepletchikova, 2011). Finally, it is important to mention that just one study tested the efficacy of an intervention that was specifically designed to target psychopathic traits and antisocial behavior in male young offenders (Salekin et al., 2012)[4]. The intervention was based on mental models, delivered at a group format, and was sufficiently described the study of Salekin and colleagues (2012). The intervention presented promising results, showing that youth increased in positive emotion and treatment amenability scores and reduced psychopathy scores across the intervention. However, this study presented several limitations; for instance, it was an open trial with few participants (*n* = 24), without a control group, without a follow-up assessment, without control of treatment

[4] There is another treatment program based on Schema Therapy (combining an individual and a group format), which was specifically designed to reduce the risk of violence in offenders with high levels of psychopathic traits (Tew, Bennett, & Dixon, 2016). However, this program was designed for adult offenders and it is not thoroughly validated yet.

integrity, and relied on self-report measures only (Salekin et al., 2012). Until the present, no other studies were published using this intervention.

Finally, regarding outcomes measurement, eight of the 13 studies included in this review used psychopathic traits' measures just at baseline (Caldwell, 2011; Caldwell et al., 2006; 2007; Falkenbach et al., 2003; Gretton et al., 2001; O'Neill et al., 2003; Spain et al., 2004; White et al., 2013). Of these, six studies tested the efficacy of interventions considering the severity of psychopathic traits in young offenders (Caldwell, 2011; Caldwell et al., 2007; Falkenbach et al., 2003; Gretton et al., 2001; O'Neill et al., 2003; Spain et al., 2004), one study tested the efficacy of a family-based intervention considering the severity of CU traits in young offenders (White et al., 2013), and one study tested the efficacy of a CBT-based intervention in young offenders with high levels of psychopathic traits (Caldwell et al., 2006). The remaining five studies examined directly whether treatment reduced psychopathic traits and/or criminal behavior in young offenders; i.e., psychopathic traits were assessed at baseline and post-treatment (Butler et al., 2011; Caldwell et al., 2012; Manders et al., 2013; Rogers et al., 2004; Salekin et al., 2012). However, follow-up assessment of psychopathic traits was not carried out in any study, which is fundamental to ascertain if treatment gains are maintained over time (Bonta & Andrews, 2016). Moreover, of these five studies, one tested whether psychopathic traits acted as a predictor and/or a moderator of the effectiveness of Multisystemic Therapy (MST; Manders et al., 2013). This methodological option is considered flawed by several authors, as a moderator cannot act as a predictor and vice-versa (Muthen & Muthen, 2001).

Regardless of the specificities, strengths, and limitations across studies, of the 13 studies included in this review, nine showed promising results for the treatment of young offenders with psychopathic traits (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006, 2007, 2012; Manders et al., 2013; Rogers et al., 2004; Salekin et al., 2012; White et al., 2013). Of these nine studies, five showed that individuals with high psychopathic traits at baseline benefited from treatment (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006, 2007; White et al., 2013) and four studies showed that psychopathic traits and their associated deficits were changeable after the delivery of a psychotherapeutic intervention (Caldwell et al., 2012; Manders et al., 2013; Rogers et al., 2004; Salekin et al., 2012). That is, all the studies that assessed psychopathic traits at baseline and post-treatment showed that these set of traits and other negative correlates reduced after the delivery of a psychoeducative intervention (Rogers et al., 2004), a CBT-based intervention (Caldwell et al., 2012), family-based interventions (Manders et al., 2013), or a Mental-Models-based intervention (Salekin et al., 2012). While nine studies included in this review showed promising results for the treatment of young offenders with psychopathic traits, the remaining four studies found that individuals with higher levels of psychopathic traits presented higher rates of disruptive/criminal behavior than their counterparts with lower levels of psychopathic traits after the delivery of a psychotherapeutic intervention (Falkenbach et al., 2003; Gretton et al., 2001; O'Neill et al., 2003; Spain et al., 2004). These

studies only assessed psychopathic traits at baseline and so, the changeability of psychopathic traits after the delivery of intervention programs was not tested. Besides, all of these studies had open trial designs (not including a control group) and were the ones that were conducted a long time ago. More importantly, none of the 13 studies tested the possible mechanisms underlying change in the treatment of young offenders with psychopathic traits, which is crucial to the study of treatment efficacy (Bonta & Andrews, 2016; Hecht et al., 2018; Polaschek & Skeem, 2018). This may be due to the competing conceptual, etiological, and measurement models in the psychopathy literature, which difficults the design of treatment protocols targeting theoretically/empirically sound mechanisms of change in individuals with high levels of psychopathic traits, and, consequently the thoroughly study of these same mechanisms of change (Hecht et al., 2018; Polaschek & Skeem, 2018; Ribeiro da Silva et al., 2013; Salekin et al., 2018b).

Detailing the studies with a more robust design (i.e., a relatively large sample size to guarantee adequate and stable results and an experimental or quasi-experimental design with a control group to assure that treatment effects can be ascribed to the intervention), only four studies fulfilled these methodological requirements (Butler et al., 2011; Caldwell, 2011; Caldwell et al. 2006; Manders et al., 2013).

Caldwell and colleagues (2006) assigned 141 male young offenders with high scores on the PCL:YV (PCL:YV > 27) to either the Mendota Juvenile Treatment Center (MJTC - an intensive treatment program using CBT techniques; *n* = 56) or to "treatment as usual" (TAU; *n* = 85) in conventional juvenile correctional institution settings. Young offenders of the MJTC group were less likely to violently recidivate in the community during the 2-year follow-up than those from the TAU group. However, in this study (Caldwell et al., 2006), the treatment was not specifically designed to target psychopathic traits, treatment description was lacking, treatment integrity was not assessed, mechanisms of change were not examined, and clinical change on psychopathic traits was not measured. Moreover, this study had a controlled trial design and, so, randomization of participants to conditions was not performed, which may be bias results (CONSORT, Moher et al., 2010).

Later, Caldwell (2011) performed another controlled trial examining the association between the facets of psychopathy (assessed through the PCL:YV) and changes in disruptive behavior/criminal recidivism in a sample of male young offenders treated in the MJTC. The author assigned 248 male young offenders to either the MJTC (*n* = 101) or to TAU (*n* = 147) in conventional juvenile correctional institution settings. The Interpersonal facet of the PCL:YV was significantly related to behavior problems at baseline. However, youth with elevated Interpersonal facet scores showed the greatest improvement in disruptive behavior during treatment. Treatment was also associated with a significant decrease in criminal recidivism at a 5-years follow-up period. The Interpersonal facet of the PCL:YV was found to play a key role in disruptive/criminal behavior (Caldwell, 2011). Nevertheless, this study presented the same major limitations of Caldwell and colleagues (2006) research: participants were not randomly assigned to conditions, the treatment was not specifically designed to target

psychopathic traits, treatment description was lacking, treatment integrity was not controlled, mechanisms of change were not examined, and clinical change on psychopathic traits was not measured.

Butler and colleagues (2011) randomly assigned 108 families of young offenders to either Multisystemic Therapy (MST - an intensive multimodal family intervention; *n* = 56) or to the comprehensive and targeted usual services delivered by youth offending teams (YOT; *n* = 52). Both MST and YOT interventions decreased offending, but the MST reduced significantly further the likelihood of non-violent offending during the 18-month follow-up period. Besides, MST was more effective in reducing post-treatment parent ratings of psychopathic traits (measured by the APSD total score) than YOT. Neither YOT nor MST reduced post-treatment youth ratings on psychopathic traits. This study presented some limitations, for instance: the sample had few chronic and violent offenders; baseline psychopathic traits mean scores were relatively small; psychopathic traits follow-up assessment was not carried out; the treatment was not specifically designed to target psychopathic traits; and the possible treatment mechanisms underpinning change were not examined.

Finally, Manders and colleagues (2013) randomly assigned 256 adolescents referred for conduct problems to either MST (*n* = 147) or TAU (*n* = 109). CU traits did not decrease significantly in either treatment conditions, whereas II traits decreased in both conditions. GM traits decreased significantly only in the MST condition. However, these differences between conditions were nonsignificant, indicating that MST was not more effective than TAU in decreasing psychopathic traits (as measured by the ICU and the APSD). This study also aimed to determine whether psychopathic traits acted as predictors and/or moderators of the effectiveness of MST. MST was more effective than TAU in decreasing externalizing problems for the "low CU" and "low GM" group, but not for the "high CU" and "high GM" group (moderators). II traits were found to predict more post-treatment externalizing problems rated by adolescents (predictor), but not by parents. This study also presents some limitations: the sample included male and female youth collected both from clinical and forensic settings; the treatment was not specifically designed to target psychopathic traits; treatment integrity was not assessed; the psychopathic traits measures were not previously validated in the country where the study was carried out; psychopathic traits were used as dependent variables, predictors, and moderators; and the possible treatment mechanisms underpinning change were not examined (Manders et al., 2013). Although MST was designed to decrease youth criminal behavior and out-of-home placements in juvenile offenders, inconsistent results on its efficacy can be found in the literature (Littell, 2005). Besides, MST was not intended to target psychopathic traits and few studies included psychopathic traits measures to assess MST treatment efficacy, either in forensic, clinical or community settings (Skeem & Polaschek, 2018).

Table 3. *Treatment outcome studies of psychopathic traits in young offenders*

Study	Design	Sample	Intervention	Comparison	Follow-up	Outcomes	Major strengths	Major limitations
Gretton and colleagues (2001)	OT	220 male young sex offenders; age = 12-18 (M_{age} = 14.7 years)	SOTP – CBT based program; group format (duration not reported)	None	5 years	Psychopathic traits (PCL:YV) predicted more breaches of probation, more violent offenses, more sexual offenses, and shorter time to reoffending. Offenders with a high PCL-YV score who had remained in treatment reoffended at a rate that was not significantly different from that of offenders with a low PCL:YV score.	Large sample size; Structured intervention program; Large follow-up period.	No control group; Outpatient treatment; Treatment not specifically designed to address psychopathic traits; Treatment integrity not measured; Criminal records as the only post-treatment outcome; Changeability of psychopathic traits not measured; Mechanisms of change were not examined.
O'Neil and colleagues (2003)	OT	64 male young offenders with substance abuse problems; age = 15-18 (M_{age} = 16 years)	Treatment program based on CBT; individual and group formats (3 months)	None	1 year	Psychopathic traits (PCL:YV) were associated with fewer days of attendance, lower rated quality of participation, more substance use, less clinical improvement, and higher rates of rearrests.	Structured treatment; Fair treatment description; Inclusion of a follow-up period; Use of several outcome measures.	No control group; Outpatient treatment; Treatment not specifically designed to address psychopathic traits; Treatment integrity not measured; Changeability of psychopathic traits not measured; Mechanisms of change were not examined.
Falkenbach and colleagues (2003)	OT	69 male and female young offenders; age = 9-17 (M_{age} = 14.4 years)	Court diversion treatment Program - Psychoeducation (5 weeks minimum)	None	1 year	Psychopathic traits (APSD and CPS) was related with program non-compliance and rearrests	Inclusion of a follow-up period.	No control group; Relatively small and mixed sample, including children, female and male youth; Poor treatment description; Treatment not specifically designed to address psychopathic traits; Treatment integrity not measured; Changeability of psychopathic traits not measured; Mechanisms of change were not examined.

Rogers ad colleagues (2004)	OT	82 male and female young offenders M_{age} = 15.37.	Inpatient treatment program; psychoeducation and group format (duration not reported)	None	None	Psychopathic traits were associated with poor course of treatment (i.e., peer conflicts, noncompliance, and fights with staff) as well as poorer level of improvement, controlling for CD/aggression and poly-substance abuse. Approximately 26% of the sample showed a significant decrease in psychopathic traits.	Assessment of the changeability of psychopathic traits.	No control group; Relatively small and mixed sample, including female and male youth; No follow-up period; Poor treatment description; Treatment not specifically designed to address psychopathic traits; Treatment integrity not measured; Mechanisms of change were not examined.
Spain and colleagues (2004)	OT	85 male young offenders; age = 11–18 (M_{age} = 15.77)	BT – REBT (9 to 12 months)	None	None	The self-report measures of psychopathic traits (CPS more than APSD) were more consistently and strongly related to antisocial behavior and to the days required to progress in treatment than the PCL:YV.	Structured BT program Fair treatment description.	No control group; No follow-up period; Treatment not specifically designed to address psychopathic traits; Treatment integrity not measured; Changeability of psychopathic traits not measured; Mechanisms of change were not examined.
Caldwell and colleagues (2006)	CT	141 male young offenders; 56 at the treatment group and 85 at the TAU. All offenders had PCL:YV > 27 (age not reported)	MJTC - involving individual and group CBT (duration not reported)	TAU	2 years	Treatment was associated with relatively slower and lower rates of serious recidivism, even after controlling for the effects of non-random assignment.	Relatively large sample size; Control group; Focused on young offenders with high psychopathic traits (PCL:YV > 27) Relatively large follow-up period	Not randomized; Poor treatment description; Treatment not specifically designed to address psychopathic traits; Treatment integrity not measured; Changeability of psychopathic traits not measured; Mechanisms of change were not examined.

Caldwell and colleagues (2007)	OT	86 male young offenders	MJTC - involving individual and group CBT (45 weeks on average)	None	4 years	PCL:YV scores not predictive of treatment response or recidivism	Large follow-up period	No control group; Poor participants' description; Poor treatment description; Treatment not specifically designed to address psychopathic traits; Treatment integrity not measured; Changeability of psychopathic traits not measured; Mechanisms of change were not examined.
Caldwell (2011)	CT	248 male young offenders; (M_{age} = 17 years); 101 at the treatment group and 147 at the TAU	MJTC – involving individual and group CBT (duration not reported)	TAU	5 years	Treatment was associated with a significant decrease in general and violent offending for each facet of the PCL:YV. Youth with elevated Interpersonal facet scores showed the greatest improvement in institutional behavior during treatment. The Interpersonal facet of the PCL:YV was found to play a key role in institutional and community violence.	Large sample size; Control group; Large follow-up period.	Not randomized; Poor treatment description; Treatment not specifically designed to address psychopathic traits; Treatment integrity not measured; Changeability of psychopathic traits not measured; Mechanisms of change were not examined.
Caldwell and colleagues (2012)	OT	127 male young offenders; (M_{age} = 17 years).	MJTC - involving individual and group CBT (duration not reported)	None	None	Significant changes in APSD total score and facets after treatment; changes in each scale predicted improved institutional behavior and treatment compliance.	Relatively large sample size; Assessment of the changeability of psychopathic traits.	No control group; No follow-up period; Poor treatment description; Treatment not specifically designed to address psychopathic traits; Treatment integrity not measured; Mechanisms of change were not examined.

Butler and colleagues (2011)	RCT	108 male and female young offenders; age = 11-17; 56 at the treatment group and 52 at the control group	MST (11 to 30 weeks)	TAU (YOT)	18 months	MST reduced significantly further the likelihood of non-violent offending. The results of youth-reported delinquency and parental reports of aggressive and delinquent behaviors show significantly greater reductions from pre-treatment to post-treatment levels in the MST group. MST was more effective in reducing post-treatment parent ratings of psychopathic traits (ASPD) than YOT. Neither YOT nor MST reduced post-treatment youth ratings on psychopathic traits (ASPD).	RCT design; Relatively large sample size; Structured intervention program; Fair treatment description; Control of treatment integrity; Follow-up period; Assessment of the changeability of psychopathic traits at pre- and post-treatment	Mixed sample with male and female participants; Baseline psychopathic traits' mean scores were relatively small; Treatment not specifically designed to address psychopathic traits; Psychopathic traits not measured at the follow-up period; Mechanisms of change were not examined.
Salekin and colleages (2012)	OT	24 male young offenders; (M_{age} = 14.7 years).	Mental Models (group program combining: motivational techniques, Cognitive behavior training, and instruction on positive emotion (12 weeks – 12 sessions)	None	None	Positive emotion and treatment amenability scores increased and psychopathic traits scores (APSD) decreased.	Fair treatment description; Treatment designed to target psychopathic traits. Assessment of psychopathic traits at pre- and post-treatment	Small sample size; No control group; No follow-up period; Reliance on self-report only; Treatment integrity not measured; Mechanisms of change were not examined.

Manders and colleagues (2013)	RCT	256 male and female young offenders; age = 12-18 (M_{age} = 16 years); 147 at the treatment group and 109 at the control group	MST (6 months)	TAU	None	MST was more effective than TAU in decreasing externalizing problems for the "lower CU" and "lower GM" group, but not for the "high CU" and "high GM" group. II traits were found to predict more post-treatment externalizing problems rated by adolescents, but not by parents. CU traits (ICU) did not decrease significantly in either conditions; II traits (ASPD) decreased in both conditions; GM traits (ASPD) decreased significantly only in the MST condition - These differences between conditions were small and nonsignificant, indicating that MST was not more effective than TAU in decreasing psychopathic traits. For externalizing problems (both rated by parents and youth), MST was found to be more effective than TAU.	RCT design; Large sample size; Structured intervention program; Fair treatment description; Control of treatment integrity; Assessment of the changeability of psychopathic traits at pre- and post-treatment	No follow-up period; Mixed sample with male and female participants recruited from both clinical and forensic settings; Psychopathic traits measures were not previously validated in the country where the study was carried out; Psychopathic traits were used as dependent variables, predictors, and moderators; Treatment not specifically designed to address psychopathic traits; Treatment integrity was not measured; Mechanisms of change were not examined.
White and colleagues (2013)	OP	134 male young offenders; Age = 11-17 (M_{age} = 15.34 years).	FFT (3 to 5 months)	None	1 year	CU traits were related to more severe emotional, social, and behavioral adjustment prior to treatment. Youth with CU traits show improvements across treatment, but they still tended to show the highest levels of problems after treatment.	Relatively large sample size; Structured therapy; Fair treatment description; Control of treatment integrity; Follow-up period;	No control group; Treatment not specifically designed to address psychopathic traits; Focus on CU traits only; CU traits only measured at pre-treatment; Mechanisms of change were not examined.

Note: RCT = Randomized Controlled Trial; CT = Controlled Trial; OT; Open Trial; BT = Behavioral Therapy; CBT= Cognitive-Behavioral Therapy; FFT = Functional Family Therapy; MJTC = Mendota Juvenile Treatment Center; MST = Multisystemic Therapy; REBT = Rational Emotive Behavioral Treatment; SOTP = Sex Offender Treatment Program; TAU = Treatment As Usual; YOT = services delivered by Youth Offending Teams

In sum, while the premise sustaining that "nothing works" in the rehabilitation of criminal offenders in general has proved to be flawed by several systematic reviews and meta-analytic studies (e.g., Andrews et al., 1990; Koehler et al., 2013; Yoon et al., 2017), the premise supporting that "nothing works with psychopaths" is still far from being effectively tested (Hecht et al., 2018; Polaschek & Skeem, 2018). That is, taking into account the state-or-the-art on the treatment of psychopathic traits, we can conclude that: research in this topic is scarce, the rigor of treatment outcome studies is limited, and the assessment of treatment efficacy presents several methodological problems (D'Silva et al. 2004; Frick et al., 2013; Harris & Rice, 2002; Hawes et al., 2014; Hecht et al., 2018; Polaschek & Skeem, 2018; Salekin, 2002; Salekin et al., 2010; Wilkinson et al., 2015). These issues are even more problematic if we focus only on treatment outcome studies with young offenders with psychopathic traits, which represent a high risk population for recidivism and, therefore, a population that should be among the first regarded for treatment (Edens et al., 2007; Gretton et al., 2004; Hecht et al., 2018; Herpers et al., 2012; Polaschek & Skeem, 2018; Ribeiro da Silva et al., 2012, 2013). Of the 13 studies that focused on the treatment of young offenders with psychopathic traits, just four met basic methodological standards; i.e., an experimental or quasi-experimental design with a control group and a relatively large sample size (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006; Manders et al., 2013). However, none of these four studies: tested the efficacy of an intervention program specifically designed to target psychopathic traits, assessed psychopathic traits at follow-up or examined the mechanisms underlying change. On the 13 studies reviewed: treatment integrity was controlled only in three studies (Butler et al., 2011; Manders et al., 2013; White et al., 2014); eight studies measured psychopathic traits uniquely at baseline (Caldwell, 2011; Caldwell et al., 2006, 2007; Falkenbach et al., 2003; Gretton et al., 2001; O'Neill et al., 2003; Spain et al., 2004; White et al., 2013), and no study assessed psychopathic traits at follow-up or examined mechanisms underlying change.

No clinical case studies reporting on the treatment of young offenders with psychopathic traits were found. Clinical case studies are irreplaceable on treatment research as they offer a comprehensive and in deep perspective of the treatment process (Nissen & Wynn, 2014). It is also worth to mention that no study tested the efficacy of an individual intervention program in reducing psychopathic traits and disruptive/antisocial behavior in young offenders. Individual interventions can offer an in deep treatment alternative that can be easily tailored for the specific mental health needs of these youth and facilitate the establishment of a strong therapeutic alliance; which is a critical issue in the treatment of individuals with psychopathic traits (Herpers et al., 2012; Salekin, 2002; Wilkinson et al., 2015). Most notably, there was only one treatment program designed to target psychopathic traits in young offenders (Mental Model intervention; Salekin et al., 2012), but the efficacy of this intervention was tested in a single open trial study.

Despite all these limitations across studies, the available findings are encouraging, indicating that positive treatment responses are possible in young offenders' population (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006, 2007, 2012; Manders et al., 2013; Rogers et al., 2004; Salekin et al., 2012; White et al., 2013). Thus, it seems of utmost importance to thoroughly invest in the treatment of young offenders with psychopathic traits, targeting and assessing psychopathic traits as well as theoretically/empirically sound mechanisms of change through robust clinical trial designs (i.e., controlled trials or RCTs) and clinical case studies (Hecht et al., 2018). Taking into account the beneficts of individual interventions over group interventions as well as the absence of individual interventions to treat young offenders with psychopathic traits, there is a need for further trial studies of individual-focused treatment proposals.

5.2. Treatment of psychopathic traits in young offenders: The road ahead

In an effort to increase the scientific grounding of the psychotherapeutic field, David and Montgomery (2011) suggested a new evaluative framework for evidence-based psychotherapeutic interventions. The authors proposed that psychotherapies should be classified into nine categories, defined by two factors: (1) theory (mechanisms of psychological change) and (2) therapeutic package derived from that theory; in turn, each factor should be organized by three levels: (a) empirically well supported; (b) equivocal data (e.g., no preliminary data, preliminary data less than minimum standards, or mixed data); and (c) strong contradictory evidence (i.e., absence of benefit and/or evidence of harm) (David & Montgomery, 2011). A clear relationship between a guiding theoretical framework, the mechanisms of change targeted through the therapeutic package, and the empirical data collected is also considered an important prerequisite (David & Montgomery, 2011). The proposed categories can separate scientifically oriented psychotherapies (categories: I - Evidence-Based Psychotherapies; II - Intervention-Driven Psychotherapies; III - Theory-Driven Psychotherapies; and IV - Investigational Psychotherapies) from pseudoscientifically oriented psychotherapies (categories: V - Good Intervention and Bad Theory-Driven Psychotherapies; VI - Good Theory and Bad Intervention-Driven Psychotherapies; VII - Bad Theory-Driven Psychotherapies; VIII - Bad Intervention-Driven Psychotherapies; and IX - Bad Theory and Bad Intervention-Driven Psychotherapies). To be classified as a scientifically oriented psychotherapy (i.e., category I, II, II, or IV), both theory and treatment package cannot have strong contradictory evidence in the literature (David & Montgomery, 2011). Category I corresponds to psychotherapies in which both the theory about psychological mechanisms of change and the therapeutic package are well validated. Category IX corresponds to psychotherapies in which both the theory and the therapeutic package have showed strong contrary evidence. The proposed categories are dynamic; i.e., depending on the

progress of research, psychotherapies could move from one category to another (David & Montgomery, 2011; see Table 4).

Table 4. *Psychotherapies classification framework*

	Theory:		
	Well supported	Equivocal	SCE
Therapeutic package:			
Well supported	Category I**	Category II**	Category V*
Equivocal	Category III**	Category IV**	Category VII*
SCE	Category VI*	Category VIII*	Category IX*

Note. Adapted from "The scientific status of psychotherapies: A new evaluative framework for evidence-based psychosocial interventions", by, D. David and G. H. Montgomery, 2013, *Clinical Psychology: Science and Practice, 18*, 90.
SCE = strong contradictory evidence.
Equivocal = No preliminary data, preliminary data less than minimum standards, or mixed data.
Categories with two asterisks (**) are considered scientifically oriented psychotherapies; The core of these are represented by Category I.
Categories with one asterisks (*) are considered pseudoscientifically oriented psychotherapies; The core of these are represented by Category IX.

Due to the aforementioned issues in the psychopathic traits literature (i.e. the competing conceptual, etiological, and assessment models), coupled with the shortage of studies on the treatment of psychopathic traits (frequently methodologically flawed) and the scarcity of therapeutic programs for individuals with psychopathic traits, none therapy can still be regarded as an evidence-based psychotherapy or, at least, a scientifically oriented psychotherapy for the treatment of psychopathic traits (Hecht et al., 2018). Together, these issues preclude firm conclusions regarding the effectiveness of psychotherapeutic interventions in the treatment of psychopathic traits in general and in the treatment of young offenders with psychopathic traits in particular (Hecht et al., 2018; Polaschek & Skeem, 2018).

Despite these shortcomings, several encouraging pathways to the scientific treatment of young offenders with high levels of psychopathic traits have been recognized in the literature (Hecht et al., 2018). First, although treatment compliance (e.g., days of attendance, quality of participation) and treatment responsiveness (e.g., changeability of psychopathic traits and behavioral regulation) are particularly challenging in criminal offenders with high psychopathic traits, treatment compliance and responsiveness seem to be especially encouraging in young offender samples with psychopathic traits (Caldwell et al., 2012; Frick et al., 2013; Hecht et al., 2018; Salekin, 2002; Salekin et al., 2010; Wilkinson et al., 2015). Second, although several competing models to conceptualize psychopathic traits still exist, the past few decades have seen significant gains regarding the scientific understanding about the etiology and assessment of psychopathic traits (Hecht et al., 2018; Ribeiro da Silva et al., 2015; Salekin, 2002). Thus, following an empirically supported theoretical model is fundamental to the development and delivery

of intervention programs targeting theoretically sound mechanisms of change in these youth (David & Montgomery, 2011). Third, new forms of CBT have been developed in the last years, such as Acceptance and Commitment Therapy (ACT), Compassion Focused Therapy (CFT), and Mindfulness-Based Cognitive Therapy (MBCT) (Feliu-Soler et al., 2018; Gilbert, 2010; Hayes, 2004; Kahl, Winter, & Schweiger, 2012; Wilson, Hayes, Biglan, & Embry, 2014). These new forms of CBT have been showing a growing empirical support, even for patients with conditions previously considered difficult to treat (Gilbert, 2010; Hayes, 2004; Kahl, et al., 2012). These new CBT approaches comprise a heterogeneous group of psychotherapies that present several similarities with traditional CBT, reformulating and synthesizing its previous insights, strategies and techniques (Gilbert, 2010; Hayes, 2004; Kahl et al., 2012; Wilson et al., 2014). However, unlike traditional CBT, these new approaches mainly focus on changing the function of psychological events (e.g., motives, cognitions, and emotions) rather than on changing their particular content or frequency. That is, the focus is on changing the relationship of people with their own emotions, motives, cognitions, and schemas, rather than changing the maladaptive emotions/motives/cognitions/schemas themselves (Gilbert, 2010; Hayes, 2004; Kahl et al., 2012; Wilson et al., 2014).

5.2.1. Compassion Focused Therapy

Within the new CBT approaches, CFT may be of particular interest for treating young offenders with psychopathic traits, mostly for three reasons. First, although initially developed for adults, CFT seems also an adequate treatment approach for children and youth (Carona, Rijo, Salvador, Castilho, & Gilbert, 2017). Second, increasing evidence has been suggesting that CFT is a promising treatment approach for several psychopathological symptoms and disorders, some of them previously considered difficult to treat, such as personality disorders and psychosis (e.g., Ashworth, Gracey, & Gilbert, 2011; Braehler et al., 2013; Gale, Gilbert, Read, & Goss, 2014; Kirby, Tellegen, & Steindl, 2017; Leaviss & Uttley, 2015; Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, 2018). Third, coupling the idea that youth with psychopathic traits seem to be more malleable to CBT interventions and to interventions based on positive and/or prosocial/affiliative emotions (Dadds et al., 2012; Salekin et al., 2012), CFT seems the approach that best integrates these therapeutic qualities (Ribeiro da Silva et al., 2013).

CFT stands out by its evolutionary underpinning and by its focus on the promotion of a compassionate motivation in individuals (Gilbert, 2014). Compassion can be conceptualized as a motivation to be sensitive to the suffering of the self and others, allied with the wisdom, strength and commitment to prevent and/or alleviate that same suffering (Dalai Lama, 1995; Gilbert, 2010). Using neuroimaging techniques, some studies (Klimecki, Leiberg, Ricard, & Singer, 2014; Singer & Klimecki, 2014) also showed that compassion training (more than empathy training), can induce positive emotions both at

an experiential and at a neuronal level. Specifically, whereas empathy training was related with an increase of negative affect and with the activation of allied brain circuits, compassion training was capable to reverse these effects, by strengthening positive affect and by promoting the activation of brain networks associated with affiliation and reward (Klimecki et al., 2014; Singer & Klimecki, 2014). These data suggested that compassion may be seen as an important motivational attitude, capable to promote positive affect and resilience in overcoming empathic distress, which are essential prerequisites to find the courage and strength to relieve the suffering from others and from the self (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Gilbert, 2019; Klimecki et al., 2014; Singer & Klimecki, 2014).

In a CFT-based intervention, therapists compassionately guide individuals to discover the universal and evolutionary role of the human functioning (in a mind/body duality) and the adaptive role of the individual's own functioning, taking into account his/her personal history and current life context (Carter, Bartel, & Porges, 2017; Cowan, Callaghan, Kan, & Richardson, 2016; Gilbert, 2014; Shirtcliff et al., 2009). As animals, humans have automatic, universal, and instinctive reactions to threats (related to the reptilian brain, part of the “old” brain area), which cannot be classified as good or bad, as they are essential to survive and thrive (MacLean, 1985). Most problems arise when the reptilian brain conflicts with affiliative motivations (related to the mammalian brain, also part of the “old” brain) and with the exclusive cognitive skills of the human cerebral cortex (related to the “new” brain) (MacLean, 1985).

In order to regulate emotional states, which always combine a multiplicity of emotional patterns (i.e., emotions blend with each other, giving rise to the so called multiples-self’s: angry self, sad self, anxious self, etc.), humans may resort to three emotion regulation systems: the threat system (shared by all species; its function is to protect individuals from threats); the drive system (its function is to allow individuals to experience positive feelings that guide, motivate, and encourage them to seek out resources to survive and prosper); and the soothing system (its function is to allow individuals to experience peacefulness and safeness) (Gilbert, 2015). According to a CFT conceptualization, mental health problems arise when there is a lasting unbalance of these emotion regulation systems, particularly when the threat activation commands the individual’s functioning. In this regard, shame (encompassing unbearable and persistent feelings of being inferior, inadequate, and worthless), and shame regulation difficulties, seem to play a major role in emotion regulation systems’ unbalance, and, consequently, in mental health problems (Gilbert, 2010, 2015, 2016, 2017, 2019). According to the Evolutionary and Biopsychosocial Model of Shame (Gilbert, 2010), as all individuals share the need to create positive feelings about themselves in the mind of others, when individuals felt abused, devalued, and/or neglected since early ages, they may be likely to became vulnerable to shame. In turn, shame over-stimulates the threat system and its archaic and narrowed responses; i.e., freeze, flight, and fight (Cannon, 1915; Gilbert,

2015, 2017; Perry, Pollard, Blakley, Baker, & Vigilante, 1995). Several studies have found evidence for the key role of shame and shame regulation problems in several internalizing and externalizing psychopathological disorders (e.g., Gross, 2014; Gross & Hansen 2000; Harper & Arias 2004; Hejdenberg & Andrews 2011; Lewis, 1992, 2001; Tangney & Dearing, 2003; Tangney & Tracy, 2012). Individuals with internalizing psychopathology usually tend to internalize the shame experience (e.g., "I am inferior and valueless"), while individuals with externalizing psychopathology have the propensity to externalize the shame experience (e.g., "The others want to demean and humiliate me") (Elison, Pulos, & Lennon, 2006; Nathanson, 1992; Vagos, Ribeiro da Silva, Brazão, Rijo, & Elison, 2018b).

Thus, in a CFT-based intervention, therapists compassionately guide patients to discover that our functioning is actually not our fault, as we are just one version of ourselves, which was shaped by evolutionary, genetic, epigenetic, neural and environmental influences that we did not choose (Cowan et al., 2016; Gilbert, 2019). However, we are also responsible for our actions, as we can know ourselves better, learn and practice new regulation strategies, guiding our automatic responses, instead of being guided by them (Gilbert, 2010, 2017). To do so, beyond psychoeducation, CFT provides training to individuals on specific practices that were designed to deal with the triggering of the threat system, to balance the emotion regulation systems, to overcome the fears, blocks, and resistances to compassion, and to cultivate the different flows of compassion - compassion towards the self (i.e., self-compassion), giving compassion to others, and receiving compassion from others (Gilbert, 2017, 2018, 2019).

It is possible that a CFT-based intervention may raise even more concerns when applied to young offenders with psychopathic traits than other therapeutic approaches. For instance, some authors may argue that CFT may help to mask and/or exacerbate psychopathic traits more efficiently, making young offenders more successfully achieve their antisocial goals and/or worsen their callousness and sense of self-worth. Undeniably, in applying a CFT based intervention to young offenders with psychopathic traits, therapists must be attentative to these issues and be skillful in order to overcome these potential barriers. Nonetheless, the evolutionary framework and the focus on the promotion of a compassionate motivation, both for the self and towards others, might be crucial to the activation of potentially dormant affiliative strategies in these youth (Gilbert, 2010). That is, although early conceptualizations emphasized the lack of emotional experience as a core feature of individuals with high psychopathic traits (Cleckley, 1941/1988), recent research has suggested that emotional dysfunctions are a central component of psychopathy (e.g., Garofalo & Neumann, 2018; Garofalo, Neumann, & Velotti, 2018; Hare & Neumann, 2008; Kosson, Vitacco, Swogger, & Steuerwald, 2016; Schriber, Chung, Sorensen, & Robins, 2017). Moreover, harsh rearing environments have been being considered crucial to the onset and maintenance of the deficits found in individuals with psychopathic traits, particularly, but not exclusively, when other risk factors are present (Murray et al., Viding & McCrory, 2018; Waldman et al., 2018). These

data reinforce the notion that psychopathic traits probably function as an adaptive strategy to deal with harsh rearing scenarios and with the unbearable emotions this kind of environments are constantly inputting (Ferguson, 2010; Glenn et al., 2011). Finally, it is well established that youth with psychopathic traits are not responsive to punishment, but clinical improvements were found after the delivery of CBT interventions, interventions based on positive and/or prosocial/affiliative emotions, and/or interventions promoting parental warmth (Dadds et al., 2012; Frick et al., 2014; Salekin et al., 2012; Wilkinson et al., 2015). Thus, as a CBT-based intervention approach focused on the promotion of a compassionate motivation, both towards the self and towards others, CFT may be particularly relevant to treat these youth.

In sum, there is a scarcity of studies focused on the treatment of psychopathic traits, especially in young offender samples, and the existing ones present several methodological flaws (Hecht et al., 2018, Polaschek & Skeem, 2018). More importantly, in contradiction to the RNR model, there is a scarcity of treatment programs specifically designed and tested in young offenders with high levels of psychopathic traits; i.e., taillored to address their specific mental health needs (Hecht et al., 2018; Ribeiro da Silva et al., 2013; Polaschek & Skeem, 2018; Salekin, 2002; Salekin et al., 2010; Wilkinson et al., 2015). Besides, none research was published testing the efficacy of any of the promising new CBT approaches in the treatment of this high-risk population (Hecht et al., 2018; Ribeiro da Silva et al., 2013; Polaschek & Skeem, 2018). Among these new approaches, CFT seems especially suitable to treat young offenders with high levels of psychopathic traits (Ribeiro da Silva et al., 2012, 2013). However, the CFT theoretical background and the therapeutic package are still not validated for this specific population.

6. Summary

In the last three decades, the study of psychopathic traits in children and youth has gained a growing interest by researchers, mostly due to its relevance for risk assessment, risk prediction, and risk management in forensic settings (Colins & Andershed, 2018; Colins et al., 2018; Jambroes et al., 2016; McCuish et al., 2015; Salekin et al., 2018). The present chapter showed the state-of-the-art on psychopathic traits in children and youth, including the reflection on the construct, the most studied etiological theories, the assessment issues, and the treatment efforts. Moreover, this chapter highlighted important gaps in the literature that should be addressed in future research

Psychopathic traits conceptualization

Researchers have yet to come to a clear agreement concerning psychopathic traits conceptualization, which may hinder the definition of the boundaries of the construct and, consequently, the study, assessment, and treatment of these individuals (Hecht et

al., 2018; Johnstone & Cooke, 2004; Ribeiro da Silva et al., 2012, 2013). Concerning youth, there is still under debate whether considering a dimensional and multifaceted model of psychopathy (i.e., GM, CU, and II traits) is more beneficial and accurate when diagnosing and specifying CD than considering CU traits only (Baskin-Sommers et al., 2015; Colins & Andershed 2015; Frick et al., 2013; Kumsta et al., 2012; Salekin, 2016, 2017; Salekin et al., 2018; Viding & McCrory, 2012). Besides, to further build on this issue, there is a need to study the interplay of psychopathic traits/CU traits with other mental health disorders, recidivism risk, and aggression using person-centered methods (Kotler & McMahon, 2010; Lansing et al., 2018; Latzman et al., 2018).

Etiological theories of psychopathic traits

The developmental trajectory of any individual is determined by a complex interplay between several factors (e.g., genetic/epigenetic, neural, temperamental, environmental, evolutionary) and the development of psychopathic traits is not an exception (Murray et al., 2018; Viding & McCrory, 2018; Waldman et al., 2018). That is, several studies suggested that genetic/epigenetic mechanisms (e.g., Murray et al., 2018; Viding & McCrory, 2018; Waldman et al., 2018); neural deficits (e.g., Blair et al., 2018; Murray et al., 2018; Yang & Raine, 2018); CU traits (e.g., Frick, Kimonis, Dandreaux, & Farrel, 2003; Kruh, Frick, & Clements, 2005; Munoz & Frick, 2012); personality traits (e.g., Lynam et al., 2018; Widiger & Crego, 2018), and environmental influences (e.g., Auty et al., 2015; Henry et al., 2018; Sevecke et al., 2016; Waller et al., 2016) play a central role in the origin, developmental and maintenance of psychopathic traits. However, contrary to other mental health problems, evolutionary influences are not widely investigated in the psychopathic traits' literature, which is mirrored in the scarcity of research on this topic (Ferguson, 2010; Gilbert, 2005; Glenn, 2019; Glenn et al., 2011). Increasing research on the evolutionary roots of psychopathy seems therefore of the utmost importance not only to clarify etiological pathways, but mostly because evolutionary have been gaining a growing relevance and empirical support in the new promising CBT therapeutic approaches, namely in CFT (Gilbert, 2010; Hayes, 2004; Kahl et al., 2012).

The assessment of psychopathic traits in the youthful population

In the last decades, several assessment tools were developed to assess psychopathic traits in the youthful population, being some of these widely studied. Nevertheless, these measures were developed considering different conceptual models of psychopathic traits, which accounts for different factor structures across these measures (Hecht et al., 2018). Additionally, difficulties in assessing CU traits were reported across studies, suggesting that these traits might be particularly difficult to capture with the existing measures (Fink et al., 2012; Kotler & McMahon, 2010; Pechorro et al., 2016, 2017; Ribeiro da Silva et al., 2013; Salekin et al., 2018). Among the available measures, the YPI and the YPI-S were validated in several countries, being considered cost-effective and accurate measures to assess

psychopathic traits in youth (Andershed et al., 2002; Pechorro et al., 2016, 2017; Van Baardewijk et al., 2010). When compared with the YPI, the YPI-S showed better psychometric proprieties, namely in diverse Portuguese samples of youth (Pechorro et al., 2016, 2017), which strengthen the use of this measure to assess psychopathic traits in the Portuguese youthful population.

Treating young offenders with psychopathic traits

From our perspective, there is no point in studying and identifying psychopathic traits in young offenders if the aim is not to treat these youth. Since the 40s, when Hervey Cleckley (1941/1988) stated that psychopathy was a non-treatable condition, there have been promising advances in the psychotherapy field. Nevertheless, few studies tested the efficacy of treatment programs when applied to young offenders and several methodological flaws are transversal to published works (D´Silva, et al., 2004; Frick et al., 2013; Harris & Rice, 2006; Hawes et al., 2014; Reidy et al., 2013; Salekin, 2002; Salekin et al., 2010; Wilkinson et al., 2015). In specific, few studies had a control group, few studies controlled for treatment integrity, no study assessed psychopathic traits at follow-up, and the mechanisms of psychological change were not investigated in any study. Moreover, only one treatment program was specifically designed to target psychopathic traits in young offenders, but its efficacy was poorly investigated in a single open trial study (Salekin et al., 2012). Besides, there are no clinical case studies reporting on the treatment of young offenders with psychopathic traits and no study tested the efficacy of an individual intervention program in reducing psychopathic traits and disruptive/antisocial behavior among young offenders. Despite these limitations, results on the treatment of psychopathic traits among young offenders are encouraging across the majority of studies (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006, 2007, 2012; Manders et al., 2013; Rogers et al., 2004; Salekin et al., 2012; White et al., 2013). Finally, it is worth to mention that there are no treatment outcome studies on the efficacy of any new CBT in reducing psychopathic traits and antisocial/disruptive behavior in young offenders. Among these approaches, CFT seems to be particularly promising to treat these youth (Ribeiro da Silva et al., 2013). However, more robust theoretical and empirical foundations as well as a matched therapeutic package are needed to test the effectiveness of this psychotherapeutic intervention in reducing antisocial/disruptive behavior and psychopathic traits among young offenders.

PART II

METHOD

CHAPTER 2 |

General methodology and research aims

1. PhD research project

The current thesis was developed within the PhD research project "Mask of sanity or mask of invulnerability? From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention". This project was carried out at the Center for Research in Neuropsychology and Cognitive and Behavioral Intervention (CINEICC), from the Faculty of Psychology and Educational Sciences, University of Coimbra (FPCE-UC), and was funded by the Portuguese Foundation for Science and Technology (FCT), through an individual PhD Grant (SFRH/BD/99795/2014).

This research project followed the work made by the PhD Student as a member of the research team of the PAIPA project (Assessment and therapeutic intervention program for the Portuguese juvenile justice system; JLS /2010/JPEN/AG/EJ). The PAIPA project was funded by the European Commission in a partnership between the General Directorate of Reintegration and Prison Services (DGRSP) of the Portuguese Ministry of Justice and the CINEICC. Among others, the PAIPA project aimed to: (1) assess the mental health intervention needs of young offenders in custody and in the community (these results were published in an international scientific peer reviewed journal; Rijo et al., 2016) and (2) implement an individual intervention protocol to address those mental health intervention needs, offering another treatment alternative beyond group programs that were delivered at Portuguese juvenile detention facilities (e.g., the Growing Prosocial Program - GPS; Rijo et al., 2007).

This PhD project was then nested on an R&D Project of the CINEICC "Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention" (PTDC/MHC-PCL/2189/2014), which had as a principal investigator Professor Daniel Rijo from the FPCE-UC (the supervisor of this PhD) and, as consultants, Professor Randall T. Salekin from the University of Alabama (the co-supervisor of this PhD) and Professor Paul Gilbert from the University of Derby and the founder of Compassion Focused Therapy (CFT). The extent of the products of this thesis was only possible due to a close collaboration between the PhD Student and the research team of this R&D project.

The empirical component of this thesis (see **Part III** – Empirical Studies) integrates six studies, which were designed to address specific gaps in the psychopathic traits' literature in children and youth. From these six studies, five are published in international scientific peer reviewed journals (**Study I** – Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder; **Study II** – The evolutionary roots of psychopathy; **Study III** – Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls; and **Study IV** - An evolutionary model to conceptualize psychopathic traits across community and forensic male youth; and **Study V** - The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee) and one is submitted for publication (**Study VI** - Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings

of a controlled trial with male detained youth).

An individual CFT-based program specifically designed to target antisocial/disruptive behavior and psychopathic traits among young offenders (the PSYCHOPATHY.COMP program) was also developed within this doctoral research project, with the support of researchers of the R&D project "Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention" (PTDC/MHC-PCL/2189/2014).

Two other literature review papers are available at **Appendix A** and **Appendix B**; these were published before the PhD Grant, but served as guides to the development of **Chapter 1** – (Psychopathic traits in children and youth: The state-of-the-art) of this thesis.

The six studies included in this dissertation are available at **Part III** (Empirical Studies) of this thesis, in which a description of the aims and methodology are detailed in each study. An overview of the PSYCHOPATHY.COMP program is also available at **Part III** (Empirical Studies; cf. **Chapter 5** and **Appendix C** – The PSYCHOPATHY.COMP program: An overview).

In this chapter, an overview of the global aims and methodological options of the PhD research project is provided.

2. Aims

The current thesis intended to fill some of the gaps in the existing research on psychopathic traits in children and youth and tried to overcome some of the methodological limitations of previous studies (cf. **Chapter 1** - Psychopathic traits in children and youth: The state-of-the-art). This thesis aimed therefore to answer a major reseach question, which is embodied in its title "Mask of sanity or mask of invulnerability? From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention", which was divided in three specific and sequential research questions that gave rise to the three chapters of **Part III** (Empirical studies) (see Table 1):

(1) What is the best way to conceptualize psychopathic traits in children and youth?
Chapter 3 - Contribution to the conceptualization of psychopathic traits in children and youth;

(2) Can psychopathic traits be seen as an adaptive strategy towards certain life circumstances?
Chapter 4 - The evolutionary roots of psychopathic traits in children and youth; and

(3) Can specific and tailored intervention efforts change psychopathic traits?
Chapter 5 - The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits.

2.1. Chapter 3 - Contribution to the conceptualization of psychopathic traits in children and youth

Researchers have yet to come to a clear agreement regarding psychopathic traits conceptualization, especially in children and youth (Hecht et al., 2018; Johnstone & Cooke, 2004; Ribeiro da Silva et al., 2012, 2013). In detail, there is still not clear whether considering a dimensional and multifaceted model of psychopathy (i.e., GM, CU, and II traits) is more beneficial and accurate when diagnosing CD than considering CU traits alone (Baskin-Sommers et al., 2015; Colins & Andershed 2015; Frick et al., 2013; Kumsta et al., 2012; Salekin, 2016, 2017; Salekin et al., 2018; Viding & McCrory, 2012). Despite this, the DSM-5 (APA, 2013) included CU traits as a CD specifier. Although including CU traits as a specifier for CD seems important for both clinical and research purposes, it seems that it has contributed to narrow research on psychopathic traits literature in children and youth. This issue is observable in several studies (e.g., genetic, neuroscience, environmental) that only assess CU traits in their research designs, paying little attention to the contribution that GM and II traits might have in the correlates that they found (Salekin, 2016, 2017; Salekin et al. 2018a, 2018b). In sum, the lack of agreement on psychopathic traits conceptualization in children and youth and/or the focus on CU traits only may hamper the definition of the boundaries of the construct and, consequently, hinder and/or narrow the study, assessment, and treatment of psychopathic traits at these developmental stages. Building on prior research using variable-centered methods, there was a need to explore the benefits of including psychopathic traits/CU traits as CD specifiers and to study the interplay of psychopathic traits/CU traits with other mental health disorders, recidivism risk, and aggression using a person-centered perspective (Kotler & McMahon, 2010; Lansing et al., 2018; Latzman et al., 2018), which it is thought to be closest to what happens in real clinical practice (Bauer & Curran, 2004; Lubke & Muthén, 2007; McLachlan & Peel, 2004; Muthén, 2001; Vermunt & Magidson, 2002).

Study I (Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder) aimed to contribute to the conceptualization of psychopathic traits in children and youth, by exploring the benefits of including GM, CU, and II traits as CD specifiers. To attain this goal, this study used a person-centered method to identify groups of forensic male youth based on their levels of psychopathic traits (i.e., psychopathic profiles) and to test if these findings would replicate in a male youth community sample. The psychopathic profiles of the forensic sample were then compared on key outcome variables; i.e., CD diagnosis, comorbidity, recidivism risk, and aggression.

2.2. Chapter 4 - The evolutionary roots of psychopathic traits in children and youth

Although psychopathy is historically associated with a lack of emotional experience (Cleckley, 1941/1988; Hare, 2003), some authors argued that individuals with psychopathic traits present central emotional dysfunctions allied with a tendency to externalize the experience of unpleasant emotions, including shame (Campbell & Elison, 2005; Elison et al., 2006; Garofalo et al., 2018; Hare & Neumann, 2008; Kosson et al., 2016; Nystrom & Mikkelsen, 2012). Taking into account these recent developments, psychopathic traits could be seen as an adaptive strategy from an evolutionary framework (Del Giudice, 2016; Del Giudice & Ellis, 2015; Ferguson, 2010; Glenn et al., 2011; Jonason et al., 2016; Mealey, 1995). Evolutionary theory has been gaining an increasing relevance for the comprehension and study of several mental health problems, as well as a growing application in the new developments of CBT (Gilbert, 2010; Hayes, 2004; Kahl et al., 2012; Wilson et al., 2014). Although there is a growing interest in the study of psychopathic traits from an evolutionary framework as well, there is a lack of comprehensive reviews regarding this issue and the empirical research on psychopathic traits' literature rarely used evolutionary arguments to discuss their research findings (Ferguson, 2010; Glenn et al., 2011; Ribeiro da Silva, Rijo, & Salekin, 2015).

In order to overcome these shortcomings, studies on **Chapter 4** aimed to contribute to the conceptualization and study of psychopathic traits in children and youth within an evolutionary perspective. Therefore, **Study II** (The evolutionary roots of psychopathy) aimed to review previous research on the evolutionary roots of psychopathy and discuss how psychopathic traits could be seen as a useful heritage, especially for people who have grown in harsh rearing scenarios. The implications of evolutionary theory for the comprehension and treatment of psychopathic traits were also emphasized, namely through evolutionary based interventions, such as CFT. In turn, **Study III** (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) and **Study IV** (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth), aimed to test, in different youth samples, an evolutionary-based model involving pathways linking the impact of harsh rearing experiences and psychopathic traits, as well as the indirect effects of external shame and shame coping strategies in that association. Moreover, these studies tested the invariance of this model across samples; i.e., **Study III** (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) tested the invariance of this model across boys and girls from the community and **Study IV** (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth) tested the invariance of this model across community and forensic male youth.

2.3. Chapter 5 - The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits.

Research on the treatment of criminal offenders with psychopathic traits is scarce and marked by several methodological flaws, particularly in young offenders (Harris & Rice, 2006; Hecht et al., 2018; Polaschek & Skeem, 2018; Salekin, 2002). Following the RNR's model (Andrews & Bonta, 2010; Bonta & Andrews, 2016), these gaps contradict the "Risk" principle, as criminal offenders with high levels of psychopathic traits present a higher risk of recidivism than their counterparts with lower levels of psychopathic traits (Gretton et al., 2004; Hare & Neumann, 2006; Hecht et al., 2018; Herpers et al., 2012; Kubak & Salekin, 2009; Lee et al., 2010; Leistico et al., 2008; Polaschek & Skeem, 2018; Skeem et al., 2011). More importantly, there is just one treatment program targeting psychopathic traits in young offenders, but its efficacy was only tested through an open trial (Salekin et al., 2010). Coupling these findings along with the scarce and contradictory evidence on the treatment of individuals with psychopathic traits in general, and of young offenders in particular, it is still not possible to corroborate or reject the premise supporting that "nothing works with psychopaths" (Harris & Rice, 2006; Hecht et al., 2018; Polaschek & Skeem, 2018; Salekin, 2002). Despite these issues, several promising pathways to the treatment of psychopathic traits have been recognized in the literature, especially in young offenders' samples (Hecht et al., 2018). Research on this field has been suggesting that CBT-based interventions and interventions based on positive and/or prosocial/affiliative emotions are especially encouraging in the treatment of psychopathic traits in youth (Dadds et al., 2012; Salekin et al., 2012). CFT, a new CBT approach that stands out by its evolutionary underpinning and by its focus on the promotion of a compassionate motivation in individuals, seems the approach that best integrates these therapeutic qualities (Leaviss & Uttley, 2015; Ribeiro da Silva et al., 2013). Relying on previous research in the efficacy of CFT for several psychopathological disorders (e.g., Leaviss & Uttley, 2015), coupled with the findings of studies presented on **Chapter 4**, CFT seems suitable to treat young offenders with high levels of psychopathic traits (Leaviss & Uttley, 2015; Ribeiro da Silva et al., 2013). However, no research was published testing the efficacy of a CFT-based intervention in the treatment of young offenders with psychopathic traits.

As required in the evaluative framework for evidence-based psychotherapeutic interventions proposed by David and Montgomery (2011), studies on **Chapter 4** contributed to the study of the theoretical and empirical processes underlying change in young offenders with psychopathic traits using an evolutionary framework (the basis of a CFT intervention). However, the CFT therapeutic package to treat young offenders with psychopathic traits has not been developed or validated yet, which is also a crucial prerequisite to scientifically support any psychotherapy (Bonta & Andrews, 2016; David & Montgomery, 2011; Polaschek & Skeem, 2018). Thus, the initial part of **Chapter 5** presents the PSYCHOPATHY.COMP program, an individual CFT-based specifically designed to target psychopathic traits and antisocial/disruptive behavior among young offenders (see also Appendix C – The

PSYCHOPATHY.COMP program: An overview). To our best knowledge, this is among the first psychotherapeutic programs that was specifically designed to treat antisocial/disruptive behavior and psychopathic traits in young offenders, and the first that uses a CFT-based intervention approach to treat these youth. As an individual intervention program, the PSYCHOPATHY.COMP program was also intended to offer an in deep treatment alternative to treat young offenders, including the ones with high levels of psychopathic traits. Studies on **Chapter 5** were then aimed to test the preliminary efficacy of the PSYCHOPATHY.COMP program in treating young offenders with psychopathic traits. **Study V** (The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee) aimed to test the efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits and disruptive behavior in a juvenile detainee with CD, a high psychopathic profile, and a very high risk for criminal recidivism. This study allowed a comprehensive overview of the treatment process of this young offender using the PSYCHOPATHY.COMP program. **Study VI** (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth) aimed to test the preliminary efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits and in promoting therapeutic engagement among detained youth.

Table 1. *Specific aims of the studies*

Chapter	Studies	Specific aims
3	Study I	Explore the benefits of including GM, CU, and II traits as CD specifiers. Identify groups of forensic male youth based on their levels of psychopathic traits Test if these findings would replicate in a community sample of male youth. Compare the psychopathic profiles of the forensic sample on key outcome variables (CD diagnosis, comorbidity, recidivism risk, and aggression).
	Study II	Review previous research on the evolutionary roots of psychopathy. Discuss how psychopathic traits could be seen as a useful heritage, especially for people who have grown in harsh rearing scenarios. Emphasize the implications of evolutionary theory for the comprehension and treatment of psychopathic traits through a CFT based intervention.
4	Study III	Test, in a community sample, an evolutionary-based model involving pathways linking the impact of harsh rearing experiences and psychopathic traits, as well as the indirect effects of external shame and shame coping strategies in that association. Test the invariance of this model across community boys and girls.
	Study IV	Test, in community and forensic male youth samples, an evolutionary-based model involving pathways linking the impact of harsh rearing experiences and psychopathic traits, as well as the indirect effects of external shame and shame coping strategies in that association. Test the invariance of this model across community and forensic male youth.
	The PSYCHOPATHY.COMP program	Develop an individual CFT-based psychotherapeutic program specifically designed to target psychopathic traits and antisocial/disruptive behavior among young offenders.
5	Study V	Test the feasibility and efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits and disruptive behavior in a young offender with CD, high psychopathic traits profile, and a very high risk for criminal recidivism
	Study VI	Test the preliminary efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits and in promoting therapeutic engagement in a sample of detained youth

3. Methodological options

3.1. Study design and participants

The empirical studies presented in this thesis had cross-sectional and longitudinal designs. Moreover, a comprehensive review was also developed during this doctoral research project. Table 2 reports on the studies' design and participants (see Table 2).

Study I (Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder) had a cross-sectional design and used a sample of 393 forensic male youth, aged between 13 and 19 years, who were recruited from Portuguese juvenile facilities, either foster care and juvenile detention centers (i.e., the forensic sample). All of these youth had a history of severe behavior problems. This study also included a community sample of 481 male youth, aged between 13 and 19 years, who were recruited from school settings (i.e., the community sample).

Study II (The evolutionary roots of psychopathy) was a comprehensive review on previous research about the evolutionary roots of psychopathy.

Study III (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) had a cross-sectional design and included 703 students from school settings (58.9 % girls and 41.4% boys), aged between 15 and 18 years.

Study IV (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth) also had a cross-sectional design. Participants in this study were 595 male youth: 52.6% (*n* = 300) were recruited from forensic settings and 47.4% (*n* =295) were recruited from secondary schools.

Study V (The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee) was a clinical case study with a longitudinal design. The youth (Peter – pseudonym) was a 16-year-old male, which was detained in a Portuguese maximum-security unit (from a Portuguese juvenile detention facility) for 26 months, after having committed several offenses against people. Peter had a high psychopathic profile, a CD diagnosis, comorbidity with ODD and substance use disorders, and a very high risk for criminal recidivism.

Study VI (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth) was a Controlled Trial with a matched control group and blind assessments carried out in the six Portuguese juvenile detention facilities. Participants in this study were 46 male young offenders, aged between 14 and 18 years old, who were detained in Portuguese juvenile detention facilities: 24 participants were assigned to the treatment group and 22 participants were assigned to the control group.

Table 2. *Studies' design and participants*

Chapter	Studies	Design	Participants (n)	
			Forensic	Community
3	Study I	Cross-sectional	393	481
	Study II	Comprehensive review	N/A	N/A
4	Study III	Cross-sectional	-	703*
	Study IV	Cross-sectional	295	300
5	Study V	Longitudinal – clinical case study	1	-
	Study VI	Longitudinal – controlled clinical trial	46**	-

Note: NA = Not applicable
* 58.9% girls and 41.1% boys
** 24 in the treatment group; 22 in the control group

3.2. Measures

Several measures and assessment methods were used across studies in order to collect data from participants. Those measures will be outlined below and table 3 synthetizes that information.

3.2.1. Sociodemographic data form

A sociodemographic data form was built in order to collect the following data from participants (both from the community and forensic samples): age, school grade, number of previous school retentions, and socioeconomic status (SES). SES was measured by parents' profession, considering the Portuguese professions classification (Instituto Nacional de Estatística, 2011). Examples of professions in the high SES group are judges, higher education professors, or MDs; in the medium SES group are nurses, psychologists, or school teachers; and in the low SES group are cleaning staff, waiters, or undifferentiated workers.

3.2.2. Legal data form

A legal data form was built in order to collect the following data from the file record of forensic participants: previous contacts with the Portuguese Child and Juvenile Protection Service, detention period length, number of previous offenses, type of offenses, and frequency of individual counseling sessions or group-intervention programs.

3.2.3. Clinical interview

With the aim to assess mental health disorders in forensic participants, the Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID; Sheehan et al., 2010; Portuguese Authorized Version by Rijo et al., 2016) was used. The MINI-KID is a structured clinical diagnostic interview, which assesses DSM Axis I disorders in children and

adolescents in a way that is both comprehensive and concise, namely: mood disorders; anxiety disorders; substance-related disorders; tic disorders; disruptive disorders and attention-deficit hyperactivity disorder; psychotic disorders; eating disorders; and adjustment disorders. The interview also has a section that allows the screening of pervasive developmental disorders. The MINI-KID is organized into diagnostic sections, each one starting with 2 to 4 screening questions for each specific disorder. Additional symptom questions within each disorder section are asked only if the screen questions are positively answered. All questions are in a binary "yes/no" format. The MINI-KID takes into account not only DSM criteria A, but also the impairment and duration of the symptoms, being considered a short and accurate instrument to diagnose Axis I disorders. Additionally, items are included to address ruling out medical, organic, and/or drug causes for disorders. Diagnostic criteria are summarized and documented within each disorder section and on a summary sheet, where the interviewer can also identify the main diagnosis; i.e., which diagnosis troubles the youth the most or dominates the others or came first in the natural history. The MINI-KID can be used to diagnose mental health disorders categorically (present or absent) and dimensionally (according to the number of criteria met for each diagnosis). The MINI-KID takes between 30 and 90 min to administer, depending on the number of screening questions that are positively answered by the child/adolescent. In a previous study (Sheehan et al., 2010), inter-rater reliability was found to be excellent for all mental health disorders assessed with the MINI-KID. In the present study, due to time, resources, and financial constraints it was not possible to assess the inter-rater reliability of the MINI-KID. To overcome this limitation, the interviewers received intensive training, including a 3-day workshop, on the administration and rating of the MINI-KID and were frequently supervised by a senior researcher during the assessment phase.

3.2.4. Recidivism Risk

The Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge, Andrews, & Leschied, 2002; Portuguese version by Pimentel, Quintas, Fonseca, & Serra, 2015) is a 42-item checklist, which assesses eight different risk factors/needs: Prior and Current Offenses/Disposition, Family Circumstances/Parenting, Education/Employment, Peer Relations, Substance Abuse, Leisure/Recreation, Personality/Behavior, and Attitudes/Orientation. Each item is scored dichotomously (present/absent). Each response in the affirmative receives a point towards the respective factor score and also to the total score (i.e., the sum of all eight risk/need scores). Based on the total score, youth can be categorized into four levels of recidivism risk: low, moderate, high, or very high. The reliability and validity of this measure was confirmed in several studies, including in a Portuguese study, which also showed that the YLS/CMI total risk score is significantly correlated with indices of reoffending (Hoge et al., 2002; Pimentel et al., 2010). In the present study, the total risk score of the YLS/CMI was used as a measure of recidivism risk.

3.2.5. Self-report questionnaires

The self-report questionnaires used across studies are detailed below (see Table 3)[5].

3.2.5.1. YPI-S - Youth Psychopathic Traits Inventory-Short

The Youth Psychopathic Traits Inventory-Short (YPI-S; Van Baardewijk et al., 2010; Portuguese version by Pechorro, Andershed, Ray, Maroco, & Gonçalves, 2015) is an 18-item self-report version of the original Youth Psychopathic Traits Inventory (YPI; Andershed et al., 2002). The YPI-S assesses psychopathic traits in youth via ratings within three different factors: Grandiose-Manipulative (GM; e.g., "It's easy for me to manipulate people"), Callous-Unemotional (CU; e.g., "I think that crying is a sign of weakness, even if no one sees you"), and Impulsive-Irresponsible (II; e.g., "I like to do exciting and dangerous things, even if it is forbidden or illegal"). Each factor is estimated by a set of six items. Each item in the YPI-S is rated on a four-point scale (1= "Does not apply at all" to 4 = "Applies very well"). The YPI-S can be scored by simply adding the item ratings, and higher scores are indicators of increased levels of psychopathic traits. The YPI and the YPIS were validated in several countries across the globe; both in forensic and community samples of youth (see Salekin et al., 2018 for a review). The three-factor structure of the YPI-S was, among others, confirmed in a sample of Portuguese male young offenders (Pechorro et al., 2015) and in a Portuguese youth community sample of boys and girls (Pechorro, Ribeiro da Silva, Andershed, Rijo, & Gonçalves, 2017). This measurement model has proven to be invariant across boys and girls from the community and across boys from community and forensic samples (Pechorro et al., 2017). The YPI-S has revealed a strong convergence with the original YPI and it has been demonstrated to have good psychometric properties (Pechorro et al., 2015; Pechorro et al., 2017; Van Baardewijk et al., 2010).

3.2.5.2. BPAQ – Buss-Perry Aggression Questionnaire

The Buss–Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992; Portuguese version by Vieira & Soeiro, 2002) is a 29-item self-report measure. Items are rated on a 5-point scale (ranging from "extremely uncharacteristic of me" = 1 to "extremely characteristic of me" = 5). The BPAQ offers a global measure of aggression and scores on four subscales: physical aggression (9 items; e.g., "I may hit someone if he or she provokes me"), verbal aggression (5 items; e.g., "My friends say that I argue a lot"), anger (7 items; e.g., "I have trouble controlling my temper"), and hostility (8 items; e.g., "Other people always seem to get the breaks"). The BPAQ has revealed good psychometric properties, including in its Portuguese version (Buss & Perry, 1992; Vieira & Soeiro, 2002).

[5] A detailed description about the psychometric proprieties of the self-report measures included in the studies of this thesis is provided in each study of Part III (Emprirical Studies).

3.2.5.3. EMWSSA:SV - Early Memories of Warmth and Safeness Scale for Adolescents: Short Version

The Early Memories of Warmth and Safeness Scale for Adolescents: Short Version (EMWSSA:SV; Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2017) is a nine-item shorter version for adolescents of the original Early Memories of Warmth and Safeness Scale (Richter et al., 2009). The EMWSSA:SV is a self-report scale designed to measure one's recall of feeling warm, safe, and cared for in childhood. Items (e.g., "I had feelings of connectedness") are rated on a 5-point frequency scale (0= *No, never*, 4= *Yes, most of the time*). Vagos and colleagues (2017) found that this measure was highly correlated with the original longer version of the scale and presented a one-factor measurement model with very good internal consistency values within male forensic participants and male and female community participants. Moreover, the one-factor measurement model of the EMWSSA:SV has proven to be invariant across boys and girls from the community and across boys from community and forensic samples (Vagos et al., 2017).

3.2.5.4. CESA:SV - Centrality of Event Scale for Adolescents: Short Version

The Centrality of Event Scale for Adolescents: Short Version (CESA:SV; Gauer, Souza, Silveira, & Sediyama, 2013; Portuguese version for adolescents by Vagos, Ribeiro da Silva, Brazão, & Rijo, 2016) is a seven-item shorter version of the Centrality of Event Scale (Berntsen & Rubin, 2006). The CESA:SV is a self-report scale that measures the extent to which a traumatic memory of a shameful event impacted on the individual; that is, became a reference point for individual's everyday references, a turning point in one's life story, and a central component of personal identity. The CESA:SV gives the following prompt to participants: "Please think back on the most traumatic shameful event in your life and answer the following questions"; items (e.g., "I feel that this event has become a central part of my life story") are then rated on a 5-point frequency scale (1 = totally disagree, 5 = totally agree). Vagos and colleagues (2016) found that the CESA:SV was highly correlated with the original longer version of the scale and presented a one-factor measurement model with good internal consistency values within male forensic participants and male and female community participants. The one-factor measurement model of the CESA:SV has proven to be invariant across boys and girls from the community and across boys from community and forensic samples (Vagos et al., 2016).

3.2.5.5. OASB-A - Other as Shamer Scale Brief-Adolescent version

The Other as Shamer Scale Brief–Adolescent version (OASB-A; Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016) is the adolescent version of the OAS2 (Matos, Pinto-Gouveia, Gilbert, Duarte, & Figueiredo, 2015), both shorter versions of the Other as Shamer Scale (Goss et al., 1994). The OASB-A is an eight-item self-report scale that measures external shame, that is, a subject's perception of being negatively judged by others. Items (e.g., "Other people see me as not good enough") are rated on a 5-point frequency scale (0 = Never; 4 =

Almost Always), reporting on how frequently one experiences the feelings described in each statement. Vagos and colleagues (2016) found that this measure was highly correlated with the original longer version of the scale and presented a one-factor measurement model with very good internal consistency values within male forensic participants and male and female community participants. Furthermore, the one-factor measurement model of the OASB-A has proven to be invariant across boys and girls from the community and across boys from community and forensic samples (Vagos et al., 2016).

3.2.5.6. CoSS – Compass of Shame Scale

The Compass of Shame Scale (CoSS; Elison et al., 2006; Portuguese version for Adolescents by Vagos et al., 2018) is a 48-item self-report scale that assesses the individual's use of shame coping strategies described in Nathanson's (1992) Compass of Shame Model. The 48 items are distributed across 12 scenarios. Participants are asked to imagine that the situation described in each scenario (e.g., "When I feel humiliated") has just happened to them, and then are presented with four items (presented in rotating order) referring to different possible reactions to the situation. Those reactions correspond to the four maladaptive shame coping strategies, namely: (a) Avoidance (e.g., "I cover up the humiliation by keeping busy"); (b) Attack Self (e.g., "I get angry with myself"); (c) Withdrawal (e.g., "I isolate myself from other people"); and (d) Attack Other (e.g., "I get mad at people for making me feel this way"). All items are rated on a 5-point frequency scale (0 = Never to 4 = Almost always). Vagos and colleagues (2018) found evidence in favor of a four-factor measurement model for the CoSS with acceptable to very good internal consistency values within male forensic participants and male and female community participants for each one of the four maladaptive coping strategies. Additionally, the measurement model of the CoSS has proven to be invariant across boys and girls from the community and across boys from community and forensic samples (Vagos et al., 2018).

3.2.6. Disciplinary infractions grid

A grid was developed by researchers in order to collect the following behavioral data from juvenile justice record files: the total number of disciplinary infractions (e.g., school absence, defiant/oppositional behavior, aggressive/violent behavior, destruction of detention property) committed by each youth; as well as the total number of days in punishment (as a consequence of those disciplinary infractions). This assessment was only made in the clinical case study (**Study V -** The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee). Behavioral data of this youth were collected for four time intervals (during the 3 months before the beginning of the PSYCHOPATHY.COMP program; during the first 3 months of the program, during the last 3 months of the program, and during the 3 months after the completion of PSYCHOPATHY.COMP) and taken as disruptive behavior indicators.

Table 3. *Variables and measures used across studies*

Variables	Measures	Studies					
		I	II	III	II	V	VI
Sociodemographic data	Sociodemographic data form	✓	N/A	✓	✓	✓	✓
Legal data	Legal data form	✓	N/A	-	✓	✓	✓
Clinical interview	Mini-International Neuropsychiatric Interview for Children and Adolescents	✓	N/A	-	✓	✓	✓
Recidivism risk	Youth Level of Service/Case Management Inventory	✓	N/A	-	-	✓	✓
Psychopathic traits	Youth Psychopathic traits Inventory-Short	✓	N/A	✓	✓	✓[a]	✓[a]
Aggression	Buss–Perry Aggression Questionnaire	✓	N/A	-	-	-	-
Early memories of warmth and safeness	Early Memories of Warmth and Safeness Scale for Adolescents: Short Version	-	N/A	✓	✓	-	-
Centrality of event	Centrality of Event Scale for Adolescents: Short Version	-	N/A	✓	✓	-	-
External shame	Other as Shamer Scale Brief–Adolescent version	-	N/A	✓	✓	-	-
Shame coping strategies	Compass of Shame Scale	-	N/A	✓	✓	-	-
Disciplinary infractions	Disciplinary infractions grid	-	N/A	-	-	✓[b]	-

Note: N/A = Not applicable

[a] Participants completed these self-report measures at two-time points: baseline (before the beginning of PSYCHOPATHY.COMP) and post-treatment (after the PSYCHOPATHY.COMP). Participant at study V additionally completed the follow-up self-report assessment 3 months after treatment completion.

[b] These data were collected for four time-intervals: during the 3 months before the beginning of the PSYCHOPATHY.COMP program, during the first 3 months of the program, during the last 3 months of the program, and during the 3 months after PSYCHOPATHY.COMP completion.

3.3. Interventions

During this PhD research project, with the support of the research team of the project "Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention" (PTDC/MHC-PCL/2189/2014), it was possible to develop an individual CFT-based intervention program to treat young offenders - The PSYCHOPATHY.COMP program (cf. **Chapter 5**). The development of this program went through a series of interconnected stages:

(1) The research team had intensive training on CFT with Paul Gilbert (a CFT expert and a consultant of the aforementioned R&D project);

(2) The program´s structure and methodologies were designed in a close collaboration between the members of the research team (most of them experts in CFT and/or CBT and in the assessment and treatment of antisocial individuals, including young offenders) and Paul Gilbert;

(3) From this effort, a draft of an individual intervention program based on CFT (20-sessions) was developed to be tested in a small group of young offenders;

(4) A pilot-study with six young offenders tested the feasibility of the 20-sessions of the draft of the PSYCHOPATHY.COMP program;

(5) Based on qualitative feedback data from this feasibility study as well as on supervision sessions with CFT experts, content related changes were identified and conducted in order to develop the final version of the PSYCOPATHY.COMP program.

3.3.1. The PSYCHOPATHY.COMP program

The PSYCHOPATHY.COMP program is an individual CFT-based intervention for detained youth. To our best knowledge, this is the first CFT-based intervention specifically designed to target psychopathic traits and antisocial behavior among young offenders (see **Chapter 5** and **Appendix C** for an overview of the program).

This program has many similarities with other CFT programs (e.g., strategy of change, Compassionate Mind Training - CMT; Gilbert, 2010) but stands out by being highly experiential and tailored for the specific issues and life experiences of detained youth; i.e., the contents and methodology were adapted to the features of the target population. Moreover, as detained youth with psychopathic traits tend to present poor treatment engagement (Hecht et al., 2018; Leistico et al., 2008), the PSYCHOPATHY.COMP program was designed taking into account motivational interviewing strategies aligned with a CFT framework (Steindl et al., 2018).

The PSYCHOPATHY.COMP is a manualized program of 20 60-min sessions, which runs on a weekly basis. Sessions must be delivered by therapists skilled in CFT. The program's structure follows a progressive strategy of change, which occurs in four successive modules: (1) The basics of our mind; (2) Our mind according to CFT; (3) Compassionate Mind Training; and (4) Recovery, relapse prevention, and finalization. As a common feature of all

therapeutic sessions, therapists are focused on developing a secure therapeutic relationship, evaluating the motivational stage of the youth, and stimulating the CMT (see **Chapter 5** for a detailed description of the modules and of the structure of the sessions).

3.3.2. The Treatment as Usual

The treatment as usual (TAU) delivered in Portuguese juvenile detention facilities is primarily aimed to increase educational and professional qualifications, as well as to promote behavioral regulation and encompasses: school frequency, a token economy system for behavior control, the frequency of a cognitive-behavioral group program (the GPS—Growing Pro-Social; Rijo et al., 2007) and individual counseling sessions delivered by psychologists from the juvenile justice system in a regular basis.

3.4. Research procedures

The PhD research project was submitted to the approval of the Ethics Committee of the FPCE-UC and to the national data protection committee. Institutional authorizations were also sought from the DGRSP of the Portuguese Ministry of Justice (in order to assess male youth placed in Portuguese juvenile detention facilities due to criminal behavior), from executive boards of Portuguese Child and Juvenile Protection Services (to assess youth that had a history of severe behavior problems and were placed in Portuguese foster care facilities), and from executive boards of schools (to assess youth from community settings). Youth placed in juvenile detention or foster care facilities correspond to forensic participants (i.e., forensic samples), while youth recruited at schools correspond to community participants (i.e., community samples).

After these authorizations were obtained, participants were informed about the nature of the study they were going to participate and were invited to voluntarily participate. It was explained that their decision would not impact their sentencing/school grades in any way and that no payment or extra credit would be offered. Confidentiality and anonymity of their responses were also guaranteed. Participants older than 18 years gave written consent for their own participation and participants younger than 18 years verbally assented to their own participation in addition to their parents/legal guardians' written consent. Youth who declined to participate and those who presented exclusion criteria were excluded from the studies (these specific data are available in each empirical study; cf. **PART III** - Empirical Studies).

Researchers participating in data collection (including the PhD Student) were all psychologists, having received intensive training on the assessment measures, including: a 3-day workshop on the administration and rating of the structured clinical interview and training on the administration and rating of the self-report questionnaires. These researchers were regularly supervised by a senior researcher during the assessment phase of the studies.

Taking into account that this doctoral research project had different types of studies, beyond the aforementioned general research procedures (transversal to all empirical studies), specific research procedures for the cross-sectional and longitudinal studies are going to be detailed bellow.

3.4.1. Specific research procedures for cross-sectional studies

For the cross-sectional studies (**Study I** - Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder; **Study III** - Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls; and **Study IV** - An evolutionary model to conceptualize psychopathic traits across community and forensic male youth), youth were assessed at one time-point by trained assessors with the measures previously identified (see Table 3). The clinical interviews were administered by the PhD Student or by a trained researcher; interviewers took between 25 and 90 min for each participant. Self-report assessment took about 25 min and it was conducted in the presence of a trained researcher, either the PhD Student or other member of the research team. The filling in of the self-report measures happened in small groups (six to eight youth) in the case of forensic participants and during classes in the case of community participants.

Regarding specific inclusion and/or exclusion criteria for these cross-sectional studies:

Study I used a male forensic sample and a male community sample. Youth with suspected cognitive impairment, psychotic symptoms, and/or developmental disorders were excluded from this study. Additionally, exclusion criterion for the community sample also included the presence of any behavioral problems.

Study III used a community sample of boys and girls. Youth with suspected cognitive impairment, psychotic symptoms, and developmental disorders and/or with the presence of any behavioral problems were excluded from this study.

Study IV used a male forensic sample and a male community sample. Exclusion criteria for both samples were the presence of psychotic symptoms and/or suspicion of cognitive impairment, while exclusion criterion for the community sample was also the presence of any behavioral problems. Inclusion criteria for the forensic sample were the presence of severe behavioral problems and a CD diagnosis.

3.4.2. Specific research procedures for longitudinal studies

For longitudinal studies (**Study V** - The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee and **Study VI** - Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a

controlled trial with male detained youth), youth were assessed at different time-points by trained assessors with the measures previously identified (see Table 3). The specific research procedures for the each of these studies are detailed below.

3.4.2.1. Study V - The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee

Being a clinical case study, this study had one participant, which was selected mainly for two reasons. First, he was among the firsts to complete the PSYCHOPATHY.COMP program, and second, he had a high psychopathic profile in addition to a CD diagnosis (childhood-onset type, severe), and a very high risk for criminal recidivism. It is also worth to mention that this youth did not meet any of the following exclusion criteria: (1) presence of cognitive disabilities (because PSYCHOPATHY.COMP is not suitable for cognitively-impaired youth); presence of psychotic symptoms (the experiential exercises used in the program are contraindicated for psychotic patients); (3) presence of autism spectrum disorders (because PSYCHOPATHY.COMP was not designed considering the social impairments of these youth); remaining in the juvenile detention facility less than 12 months (taking into account PSYCHOPATHY.COMP length and assessment periods) since the beginning of the program.

A first meeting between the youth and the research team was carried out, in which researchers explained the goals of the study and presented a brief overview of the PSYCHOPATHY.COMP program. The youth was invited to participate voluntarily in the program/study. It was explained that his participation in the study would not impact on his sentencing/school grades in any way and that no payment or extra credit would be offered. Confidentiality and anonymity of his responses and of the information collected during the sessions was also guaranteed. The youth verbally assented to his own participation in addition to his parents' written consent. The youth attended PSYCHOPATHY.COMP's 20 individual sessions for 6 months in addition to TAU delivered at Portuguese juvenile detention facilities; except for the individual counseling sessions delivered by the psychologists of the juvenile detention facility and for the GPS program (this was delivered to this youth after the follow-up period).

The youth was assessed at baseline with the clinical interview; psychopathic traits were assessed at three time-points (baseline, post-treatment, and 3 months' follow-up); and disciplinary infractions were assessed at four time-intervals (during the 3 months before the beginning of the program, during the first 3 months of the program, during the last 3 months of the program, and during the 3 months after PSYCHOPATHY.COMP completion). The therapist (the PhD Student) did not serve as assessor and the assessor was a trained researcher blind to condition assignment.

Regarding treatment integrity assessment, as video-tapping and/or audio-tapping was not authorized by the DGRSP of the Portuguese Ministry of Justice due to ethical and

confidential constraints, researchers tried to overcome this shortcoming in various ways, namely:

(1) The therapist was a psychologist, with more than 14 years of clinical experience;

(2) The therapist had intensive training in CFT and in the program itself;

(3) The therapist already had experience in delivering the PSYCHOPATHY.COMP program to young offenders (see 3.3. Interventions);

(4) The therapist received weekly supervision sessions by CFT experts during the time the PSYCHOPATHY.COMP program was being delivered to this youth;

(5) The therapist and the youth rated every session on their subjective perception regarding the usefulness of the session (1 = nothing useful to 10 = extremely useful) and the therapeutic relationship (1 = very bad to 10 = very good); the therapist additionally rated every session on her subjective perception regarding how she followed the protocol of the session (1 = completely different to 10 = very similar) and how globally she rated the session (1 = very bad to 10 = very good) (see **Appendix D** - The PSYCHOPATHY.COMP program: Sessions' assessment);

(6) The PSYCHOPATHY.COMP's structured and manualized design ensured, at least partially, that program integrity was also guaranteed.

3.4.2.2. Study VI - Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth

This study had a controlled trial design with a matched control group and blind assessments (pre/post-treatment) and was carried out in the six Portuguese juvenile detention facilities. This study was designed in accordance with the TREND Statement (Des Jarlais, Lyles, Crepaz, & the Trend Group, 2004) and it was registered as a controlled trial at the ClinicalTrials.gov (ID: NCT03971682). The decision for a controlled trial design was made by the research team of the R&D project "Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention" (PTDC/MHC-PCL/2189/2014). As Portuguese juvenile detention facilities usually have no more than 150 detained youth (about 30 youth *per* juvenile detention facility), facing between 6 and 36 months of detention, around 10 youth enter and leave Portuguese juvenile detention facilities *per* month, which makes it difficult to randomly assign participants to conditions. The research team of the R&D project tried to soften that roadblock, deciding that the first 30 youth entering in the Portuguese juvenile detention facilities during the research period would be recruited into the treatment group (PSYCHOPATHY.COMP and TAU) and the following 30 youth would be recruited into the control group (TAU). This selection obeyed to the following exclusion criteria (for both groups): (1) presence of cognitive disabilities (because PSYCHOPATHY.COMP is not suitable for cognitively-impaired youth); (2) presence of psychotic symptoms (the experiential exercises used in the program are contraindicated for psychotic patients); (3) presence of autism spectrum disorders (because PSYCHOPATHY.COMP

was not designed considering the social impairments of these youth); remaining in the juvenile detention facility less than 12 months (taking into account PSYCHOPATHY.COMP length and assessment period) since the beginning of the program. Female young offenders were also excluded from this study, as they represent less than 5% of the total young offenders detained in Portuguese juvenile detention facilities, and any possible idiosyncrasies from this cohort would be underrepresented.

For the eligible participants, a first meeting with the research team was carried out after the first month of detention, as this is considered an adaptation period. At this meeting, the researchers explained the goals of the study and presented a brief overview of the PSYCHOPATHY.COMP program. Youth were then invited to participate voluntarily in the study. Youth were informed if they would be allocated to the treatment group or to the control group; youth assigned to the control group were informed that they would receive TAU, which also encompasses individual counseling sessions with a psychologist from the juvenile detention facility. It was also explained that their participation in the study would not impact on their sentencing/school grades in any way and that no payment or extra credit would be offered. Confidentiality and anonymity of their responses and of the information collected during the sessions (for the treatment group) were also guaranteed. Young offenders older than 18 years gave written consent for their own participation and participants younger than 18 years verbally assented to their own participation in addition to their parents/legal guardians' written consent. Young offenders in the treatment group attended PSYCHOPATHY.COMP's 20 individual sessions for 6 months in addition to the TAU delivered at juvenile detention facilities (except for the individual counseling sessions delivered by the psychologists from the juvenile detention facilities), while the young offenders in the control group received TAU only (including the abovementioned counseling sessions). All participants were assessed at baseline with the structured clinical interview (see 3.2. Measures). Participants in the treatment group were assessed before the first session of the program (baseline assessment) and right after its terminus (i.e., about 6 months after the baseline assessment) with the measures identified at Table 3; controls were assessed with the same time interval using the same measures. Therapists did not serve as assessors, and assessors were trained researchers blind to condition assignment. Respondent-specific codes were used to link the data from one time-point to the next one.

Considering treatment integrity assessment, as video-tapping and/or audio-tapping was not authorized by the DGRSP of the Portuguese Ministry of Justice due to ethical and confidential constrictions, researchers tried to overcome this barrier in numerous ways. These strategies included the procedures specified for **Study V** (see the previous section of this chapter - 3.4.2.1.) in addition to the following two:

(1) PSYCHOPATHY.COMP's therapists were 3 psychologists (including the PhD Student), who had at least 6 years of clinical experience;

(2) 5% of the sessions were observed by independent ratters (experts on CFT) in order to assess treatment integrity.

3.5. Data analysis

3.5.1. Sample size

To determine the sample sizes required for the cross-sectional studies, Muthén and Muthén (2002) recommendations were followed. **Study I** (Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder) required a minimum of 100 participants for each continuous variable used to determine the number of profiles; i.e., at least 300 participants were needed for each sample included in the study. **Study III** (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) and **Study IV** (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth) required a minimum of 10 participants for each variable/pathway; i.e., at least 370 participants were needed to perform the analysis in each of these studies. Data were collected for a greater number of participants in order to deal with potential attrition rates (see Table 2 describing the sample sizes of the studies).

With regard to **Study VI** (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth), a power analysis was conducted with the GPower v3.1 software (Faul, Erdfelder, Buchner, & Lang, 2009). Results showed that a sample of 46 young offenders was necessary to detect medium effects with a significance level of .05 and a power of .90. This power analysis was conducted *a priori*, i.e., before the clinical trial onset, and repeated measures ANOVA was planned as the data analytic strategy.

3.5.2. Missing data

Considering both the randomness and scarceness of missing values found across studies, we opted for a listwise approach bearing consistency and stability of the results (e.g., using the same sample size as considered for all analyses). Thus, participants with missing values were excluded from the samples of the current thesis (i.e., not included either in the description of participants or in the data to be analyzed).

3.5.3. Preliminary statistical analysis

The SPSS v24 (IBM SPSS, 2016) software was used in the initial phase of the studies for descriptive and inferential statistics. The internal consistency of the scales and factors was calculated based on mean inter-item correlations (MIC; recommended value range of 0.15 to 0.50; Clark & Watson, 1995) and/or Cronbach's alpha (α; ranging from ≥ .90 = excellent to ≤ .50 = unacceptable).

3.5.4. Confirmatory Factor Analysis

The Mplus v7 (Muthén & Muthén, 2010) statistical software was used to perform Confirmatory Factor Analyses (CFA) for the measurement models proposed to be underlying each one of the self-report measures used across studies. Given that these measures had been validated for the forensic and community Portuguese youth population, we accepted only reasonable fit of the models as indicative of the latent variables being adequately measured by the observed variables. In judging for the CFA overall adjustment, we considered the guidelines provided by Hu and Bentler (1999), and so considered a standardized root mean square residual (SRMR) value ≤ 0.09 combined either with a comparative fit index (CFI) value ≥ .95 or with a root mean square error of approximation (RMSEA) value ≤ 0.06.

3.5.5. Latent Profile Analysis

For the **Study I** (Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder), the Mplus v7 (Muthén & Muthén, 2010) statistical software was used to perform a Latent Profile Analysis (LPA) to identify distinct subgroups of youth (latent profiles) based on their scores on the GM, CU, and II YPI-S factors in the forensic sample. The same procedure was then replicated in the community sample.

The first stage in LPA was to determine the number of classes with well-defined differentiated profiles across samples (forensic sample and community sample). Thus, LPA models were fit in a series of modeling steps starting with the specification of a one class model. Thereafter, the number of classes was then sequentially increased until there was no further improvement in the model; i.e., adding another class would result in meaningless classes (Lubke & Muthén, 2007). To avoid Local Likelihood Maxima, the sets of random start values were increased to 3000 (with the best 100 of these starts being retained for final stage optimization) and the number of iterations were increased to 100 in the first steps of the optimization procedure (Morin, 2016). Moreover, it was checked the replicability of best log likelihood value (Morin, 2016).

The adjustment of the models and the decision about model selection were then judged by the guidelines proposed by Ram and Grim (2009). In detail, we first examined the output of each estimated model and searched for potential problems or inconsistencies. We then compared models with different numbers of classes using Information Criteria (IC) based on fit statistics; i.e., Bayesian Information Criteria (BIC; Schwartz, 1978), Akaike Information Criteria (AIC; Akaike, 1987), and Sample-Size-Adjusted BIC (SSA-BIC; Sclove, 1987). Lower values on IC fit statistic indices indicate better model fit; i.e., an optimum trade-off between model parsimony and residuals, with BIC being considered a better fit statistic index than the other IC fit statistic indices (Nylund, Asparouhov, & Muthén, 2007). Next, we examined Entropy values, which assess the accuracy with which models classify individuals into their most likely class. Entropy ranges from 0 to 1, with higher scores representing greater classification accuracy. Entropy values superior to .70 are preferable, indicating clear

classification and greater power to predict class membership (Muthén, 2001). Then we tested the statistical significance to determine whether a more complex model (k classes) would fit the data significantly better than a more parsimonious model (k – 1 classes) by using the Lo-Mendell-Rubin test (LMR; Lo, Mendell, & Rubin, 2001) and the Bootstrap Likelihood Ratio Test (BLRT; McLachlan & Peel, 2004). The LMR and the BLRT tests provide p-values that can be used to determine if there is a statistically significant improvement in fit for the inclusion of one more class. For statistical model comparisons, the BLRT is generally preferred over the LMR test (Nylund et al., 2007). The sample size of the smallest class was then evaluated, specifically deciding that models with a class of <1% and/or numerically n < 25 members should be rejected or rigorously grounded by theory and research (Bauer & Curran, 2004). Finally, and because LPA is a probabilistic approach, we also considered the average probabilities of class membership (Rost, 2006). The more distinct the average latent class probabilities for the most likely class membership are, the more useful and accurate the latent class solution will be. Thus, average probabilities equal to or larger than 0.80 (Rost, 2006) indicate a good class solution.

After determining the optimal number of classes, we tested for significant mean differences on outcome variables across profiles in the forensic sample. We did not include them on the LPA model in order to retain some "independence" between the classes and the variables of interest and to avoid meaningless results (Asparouhov & Muthén, 2014). Traditional analyzes (e.g., logistic regression, analysis of variance) have been questioned when applied to mixture modeling, because they may introduce error and decrease precision by fixing an individual's probability of their highest class to 1 and all others to 0. Different approaches have been proposed to remedy these problems (Asparouhov & Muthén, 2014), such as using the auxiliary variable function in Mplus. This function allows for comparisons between classes while taking into account participants' partial membership in classes, while also facilitating the exploration of relationships between profiles and other auxiliary variables without directly including them in the model.

Among these approaches, we selected the modified BCH method (Bakk & Vermunt, 2016; Bolck, Croon, & Hagenaars, 2004), which is the most robust approach and the recommended method for examining relationships between profiles and continuous distal outcomes (in this study, aggression-related variables and number of comorbid diagnoses) across latent profiles (Asparouhov & Muthén, 2014). We also selected the DCAT method (Lanza, Tan, & Bray, 2013), which is the preferred method to accommodate categorical distal outcomes across latent profiles (Asparouhov & Muthén, 2014). In this work, the presence of a CD diagnosis and other mental health disorders, as well as recidivism risk were investigated through the DCAT method.

3.5.6. Structural Equation Modeling

The Mplus v7 (Muthén & Muthén, 2010) statistical software was also used to perform Structural Equation Modeling (SEM) at **Study III** (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) and **Study IV** (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth). Data analyzes relied on SEM, positing psychopathic traits as dependent variables and the impact of harsh rearing experiences measures as independent variables. Indirect effects between the independent and dependent variables were also considered, through external shame and shame coping strategies. We took on a model generation approach, in which *a priori* model was tested upon the data and it was sequentially improved (i.e., only one modification was made at a time) based on theoretical considerations and statistical indications. The same guidelines as those used for assessing the models' fit for CFA were used when considering the structural models (Hu & Bentler, 1999).

The moderating effect of sample type (i.e., forensic/community; boys/girls) was then investigated upon the modified specific model, following a four-stage approach: (a) testing for the adequacy of the model for the different participants separately (i.e., configural structural invariance), (b) testing for the equality of patterns between participants, (c) testing for the equality of pathways between participants, and (d) testing for the equality of intercepts between participants. When the fit of the model was not significantly worsened by adding a new equality constraint within each new model, equality could be assumed.

3.5.7. Reliable Change Index

For longitudinal studies (**Study V** - The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee and **Study VI** - Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth) the SPSS v24 (IBM SPSS, 2016) software was used to calculate the Reliable Change Index (RCI; Jacobson & Truax, 1991), which evaluates intra-subject clinical individual change. The RCI is considered an index with high reliability (Atkins, Bedics, McGlinchey, & Bauchaine, 2005) and it was designed to test the efficacy of a particular therapy or program. Instead of focusing on the differences of mean scores, it provides information about treatment effects for each individual, allowing to test whether an individual improves or deteriorates in comparison to baseline (Conboy, 2003). In order to ascertain whether the observed change is in fact genuine and not just due to measurement errors, and whether the change places the individual inside the norms of functional groups (Conboy, 2003), the RCI allows the testing of the null hypothesis of no clinically meaningful change, depending on the normal distribution (Maaseen, 2001), and taking into account the measurement error of the instruments (Jacobson & Truax, 1991). This index is computed using the formula:

$$RCI = \frac{(x2 - x1)}{\sqrt{2(SD0\sqrt{1-\alpha})^2}}$$

The *x*2 represents the result of the individual in the post-treatment/follow-up, x1 represents the result of the individual in the pretreatment, *SD*0 represents the standard deviation of the variable in a normative sample, and α represents the internal consistency of the scale in the present sample.

According to Wise (2004), if the RCI scores are > 0.84 we can assert, with a confidence interval of 80%, that real, reliable and significant change has been verified; however, if the result exceeds 1.28 or 1.96, that confidence interval increases to 90% and 95%, respectively. On the contrary, if the result is less than -0.84, we can say that deterioration occurred. All values between 0.84 and -0.84 indicate that no change was observed. For the interpretation of the RCI in **Study VI** (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth), three broad categories were defined: ''Global Improvement'' (GI), ''Global Deterioration'' (GD) and ''No Change'' (NC). In this study, to compare both groups in the distributions by clinical change categories, Chi square statistics with Fisher's exact tests with a .05 level of significance were performed. Effect sizes of the differences found in the distributions by clinical change category between groups were calculated with *Cramer's V* (.00 and under .10 = negligible association; .10 and under .20 = weak association; .20 and under .40 = moderate association; .40 and under .60 = relatively strong association; .60 and under .80 = strong association; and .80 to 1.00 = very strong association).

3.5.8. Repeated measures analysis of variance

For the **Study VI** (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth), Mixed ANOVA with time as the within-group factor and condition as the between-group factor were carried out. Effect sizes were computed using partial eta squares (η^2p), with η^2p = .01 referring to a small effect size, .06 to a medium effect size and .14 to a large effect size (Tabachnick & Fidell, 2013).

4. Ethical Requirements

All ethical requirements were followed to conduct the studies presented in the current PhD thesis. In detail, all procedures performed in the studies involving human participants were in accordance with the ethical standards of the national research committee (Código Deontológico da Ordem dos Psicólogos Portugueses, 2011) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

When designing the studies, in order to accomplish the four fundamental principles of ethics (i.e., autonomy, non-maleficence, beneficence, and justice), the PhD Student and the research team reflected about: the relevance of the aims of the studies; the consistency of the methodological options; and the potential risks and benefits for participants, as well as for the juvenile detention facilities' environment, and society at large. Assembling these considerations, the project was submitted to the Ethics Committee of the FPCE-UC and to the national data protection committee. After being approved, the doctoral research project was submitted to the DGRSP of the Portuguese Ministry of Justice (in order to assess male youth placed in Portuguese juvenile detention facilities due to criminal behavior), to the executive boards of Portuguese Child and Juvenile Protection Services (to assess youth that had a history of severe behavior problems and were placed in Portuguese foster care facilities), and to the executive boards of public schools (to assess youth from community settings). When all authorizations were gathered, the PhD Student and the research team started to contact participants, informing them about the nature of the study they were invited to participate (i.e., aims of the study, participants' involvement, procedures for data collection, among others). Parents/legal guardians of participants younger than 18 years were also contacted and informed in the same terms. The voluntary nature of the participation in the studies, as well as the confidentiality and anonymity of the data were also guaranteed to participants and to their parents/legal guardians. An informed consent with this information was given to participants and to their parents/legal guardians. The contact of the members of the research team was also made available, in order to assist any potential doubts.

During the implementation of the research project, some procedures were adopted in order to guarantee the confidentiality and anonymity of participants: (1) keep the informed consents in a separate file (not allowing the identification of the participant, either by persons external to the research team, or by the research team itself); (2) identify the assessment protocols with a code; (3) only collect the personal data strictly necessary for the study; (4) insert data on a data base, analyzing them exclusively collectively; and (5) use respondent-specific codes to link the data from one time-point to the next one (in the case of the longitudinal studies).

Concerning the clinical trial, it is noteworthy that all youth received psychotherapeutic intervention, either the PSYCHOPATHY.COMP program or individual counseling sessions by the psychologists from the juvenile detention facilities.

Finally, the results of the studies were disseminated among the scientific community (through the publication of papers in international scientific peer reviewed journals and the presentation of oral and poster communications at national and international scientific meetings) according to the international parameters of scientific dissemination. A meeting between the research team and the members of the DRGSP (i.e., directorate members of the DGRSP, heads and psychologists of the Portuguese juvenile detention facilities) is also scheduled, in order to share the results of the studies and discuss the main implications for the assessment and intervention with young offenders as well as for the management of the Juvenile Justice System.

PART III

EMPIRICAL STUDIES

CHAPTER 3 |

Contribution to the conceptualization of psychopathic traits in children and youth

Study I |

Psychopathic profiles: A Latent Profile Analysis in youth samples with implications for the diagnosis of Conduct Disorder

Journal of Criminal Justice, *60,* 74-83
2019, doi: 10.1016/j.jcrimjus.2018.12.003

Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder

Diana Ribeiro da Silva[a], Randall T. Salekin[b], and Daniel Rijo[a],

[a] Research Center for Neuropsychology and Cognitive-Behavioral Intervention
Faculty of Psychology and Educational Sciences, University of Coimbra
[b] University of Alabama

Abstract

Purpose: The current study aimed to explore the benefits of including a broader set of psychopathic traits (i.e. Grandiose-Manipulative; Callous-Unemotional, Impulsive-Irresponsible traits) to specify Conduct Disorder (CD).

Methods: A Latent Profile Analysis (LPA) based on the three-factor model of the Youth Psychopathic Traits Inventory-Short was performed with a forensic sample of 393 male adolescents and was replicated in a community sample of 481 male adolescents. Significant mean differences on outcome variables across profiles in the forensic sample were also tested using the modified BCH and the DCAT methods.

Results: Results revealed the existence of three psychopathic severity profiles: a low psychopathic traits profile, an average psychopathic traits profile, and a high psychopathic traits profile. Though with lower scores, replication of the LPA in a community sample yielded approximately the same psychopathic severity profiles. The psychopathic profiles within the forensic sample differed on key variables including CD diagnosis, severity of comorbid diagnoses, recidivism risk, and aggression.

Conclusions: Overall, the results highlight the importance of considering the full range of psychopathic traits in the assessment and treatment of youth with conduct problems, especially those in contact with the juvenile justice system.

Keywords: Conduct Disorder; CU traits; *DSM-5*; Latent Profile Analysis; Psychopathy

Introduction

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) recently included Callous-Unemotional (CU) traits as a specifier for Conduct Disorder (CD) termed - "Limited Prosocial Emotions" (LPE). This specifier describes those youth who meet diagnostic criteria for a CD, but also present with at least 2 of 4 CU traits. The International Classification of Diseases 11th Revision (ICD-11) is also considering a similar CU specifier for the CD diagnosis (World Health Organization; WHO, 2016). While the inclusion of some psychopathic traits has advanced current diagnostic terminology, significant evidence also suggests that considering the a multifaceted model of psychopathy (Cooke & Michie, 2001; Hare, 2003; Salekin & Hare, 2016), combining not only CU, but also Grandiose-Manipulative (GM) and Impulsive-Irresponsible (II) traits could be beneficial when diagnosing and specifying CD (see Salekin, 2016 for a review; Salekin, Andershed, Batky, & Bontemps, 2018; Salekin, Andershed, & Clark, 2018).

The inclusion of CU traits as a specifier for CD was based on a considerable amount of research pointing out that those traits were related to the earliest, most severe, and persistent forms of antisocial behavior, which, in turn, would predict long-term impairments at different levels of functioning (Baskin-Sommers, Waller, Fish, & Hyde, 2015; Frick, Ray, Thornton, & Kahn, 2013; Kumsta, Sonuga-Barke, & Rutter, 2012; Viding & McCrory, 2012). A substantial body of research has also shown that youth with elevated CU traits display distinct genetic, biological, cognitive, affective, and social features, suggesting that the etiology of conduct problems for this group of youth may be different from those without elevated CU traits (see Frick & Wall Myers, 2018 for a review).[6]

To meet diagnostic criteria for CD, an individual must present at least 3 of 15 possible symptoms, which account for the great heterogeneity of individuals with this disorder and, consequently, for the relevance of subtyping CD into clinically distinctive groups (APA, 2013; Frick, 2001; Frick & Nigg, 2012; Klahr & Burt, 2014). Thus, it seems crucial to include a specifier that not only helps to identify a severe antisocial subgroup of CD, but also that increases diagnostic information for case conceptualization and treatment planning (see Salekin, 2016, 2017 for review; see also Colins & Andershed, 2015). Though the CU specifier seems to partially respond to those needs (Baskin-Sommers et al., 2015; Frick et al., 2013; Frick & Wall Myers, 2018; Kumsta et al., 2012; Viding & McCrory, 2012), the available evidence on the validity of this specifier is sparse and critical questions still remain (Colins, Andershed, Salekin, & Fanti, 2018; Jambroes et al., 2016; Lahey, 2014; Salekin, 2016, 2017). Specifically, some authors argued that the combination of CD with high levels of all psychopathic traits better predicts behavioral problems and criminal recidivism than any single psychopathic trait by itself (Asscher et al., 2011; Colins & Andershed, 2015; Collins et al., 2018; Forth & Book, 2010; Leistico, Salekin, DeCoster, & Rogers, 2008; Lorber, 2004; Somma, Andershed, Borroni, Salekin, & Fossati, 2018). Moreover, research has also shown

[6] It is important to acknowledge that some of this research was based on psychopathy total scores as well as scales that contained primarily GM traits and/or II traits.

that psychopathic traits are associated with distinctive dysfunctions at the genetic, molecular, neural, cognitive, and social levels, which account for persistent antisocial deviance and criminal behavior (see Blair, Peschardt, Budhani, Mitchell, & Pine, 2006 and Ribeiro da Silva, Rijo, & Salekin, 2012 for a review). Finally, it seems that it is the combination of high levels of GM, CU, and II traits that decrease the responsiveness to treatment in youth with CD (Leistico et al., 2008; Salekin, 2010, 2017).

Taken together, these findings indicate that while including CU traits as a specifier for CD is important for both clinical and research purposes, there are several reasons to also consider other dimensions of psychopathy as well. First, it seems that including the multifaceted model of psychopathy as a specifier for CD may, more accurately, help to reduce the heterogeneity of this diagnosis, allowing to identify a more severe antisocial subgroup of CD individuals (Colins et al., 2018; Salekin, 2016, 2017; Salekin, Andershed, & Clark, 2018). Second, this multifaceted model of psychopathy may help to improve our understanding of conduct disordered youth, helping to clarify etiological models, as well as to disentangle the contribution of each psychopathic trait to specific impairments (Salekin, 2016, 2017). Third, it seems paramount to assess these set of traits in clinical practice, in order to improve case conceptualization, as well as prevention and intervention efforts (Colins et al., 2018; Salekin, 2016, 2017; Salekin, Andershed, & Clark, 2018).

An important issue for classification systems is the use of clinically relevant disorders and specifiers (APA, 2013; WHO, 2016). In trying to address this issue, research has been interested in studying the manifestations of symptoms/traits on a person-by-person basis (i.e., how symptoms function and vary within individuals). Latent profile Analysis (LPA), a variant of Latent Variable Mixture Modeling, is considered a robust and accurate person-centered method used to classify individuals from a heterogeneous population into smaller, more homogeneous subgroups based on individuals' scores on continuous variables (Bauer & Curran, 2003; McLachlan & Peel, 2004; Muthén, 2001; Muthén & Muthén, 2001; Vermunt & Magidson, 2002). As a stricter probabilistic/model, LPA is more flexible than cluster analysis techniques, because is based on an explicit model of the data and also takes into account that each person has a certain (nonzero) membership probability for other classes (Vermunt & Magidson, 2009). Recent studies have applied LPA to explore different profiles of psychopathic traits in adult forensic (e.g., Krstic et al., 2018; Mokros et al., 2015; Neumann, Vitacco, & Mokros, 2016) and adult community (e.g., Colins, Fanti, Salekin, & Andershed, 2017) samples. In youth, studies applying LPA have used measures of CU traits alone (e.g., Fanti, Demetriou, & Kimonis, 2013; Kimonis, Goulter, Hawes, Wilbur, & Groer, 2017).

Though there are no studies applying LPA to tap the broader psychopathic syndrome in youth samples, previous research has employed Latent Class Analysis (LCA; like LPA, LCA is person-centered method, but is based on individuals' scores on categorical variables) and cluster analysis techniques to sort youth according to their levels of psychopathic traits. For instances, Nijhof et al. (2011) used LCA and found evidence for three-latent classes (normal; impulsive, non-psychopathic like; and psychopathy-like) in a residential youth sample

(n=214), using the Youth Psychopathic Traits Inventory. Andershed, Köhler, Louden, and Hinrichs (2008) found evidence for a three-cluster solution (Unemotional/Impulsive-Irresponsible, Low Traits, and Psychopathic Personality) in a male offender sample (n=148), using the Psychopathy Checklist: Screen Version. In turn, Lee, Salekin, and Iselin (2010) identified three clusters that varied in the severity of psychopathic traits (low, moderate, and high) in a sample of male offenders (n=94), using both the Psychopathy Checklist: Youth Version and the Antisocial Process Screening Device. Despite incongruences across these studies findings, youth scoring higher on all the psychopathic traits were likely to correspond to the smallest group, but to have higher prevalence rates of CD, higher levels of aggression, and higher recidivism risk, than youth belonging to other groups (e.g., Andershed et al., 2008; Lee et al., 2010; Nijhof et al., 2011). Regarding comorbidity rates, though this is still an area without consensus (Sevecke & Kosson, 2010), some variable- centered (not person-centered) studies found that youth with psychopathic traits had higher comorbidity rates, mostly with externalizing, but also with internalizing psychopathology (e.g., Lansing, Plante, Beck, & Ellenberg, 2018; Latzman et al., 2018; Salekin, Leistico, Neumann, DiCicco, & Duros, 2004).

Although cluster analysis studies have provided important findings, there is a need for LPA investigation in youthful populations to further build on cluster analytic results (McLachlan & Peel, 2004; Vermunt & Magidson, 2002), to provide comparisons with adult LPA studies, and to add to the current knowledge about associations between psychopathic profiles and comorbidity within a person centered perspective. Moreover, LPA, as a person-centered analytic tool that is thought to be closest to what happens in real clinical practice (Bauer & Curran, 2004; Lubke & Muthén, 2007; McLachlan & Peel, 2004; Muthén, 2001; Vermunt & Magidson, 2002), may further aid in our understanding of children with CD and psychopathic traits. In detail, due to the multitude of possible combinations of criteria that a youth may meet to receive a CD diagnosis (APA, 2013; Frick, 2001; Klahr & Burt, 2014), LPA studies can help to support and guide translational science, ascertaining for the clinical usefulness of subtyping CD according to the presence/absence of psychopathic traits (Salekin, 2016).

The current study

The main goal of the current study was to explore the benefits of including GM, CU, and II traits as CD specifiers. To attain this goal, we used LPA to identify groups of forensic male youth based on their levels of psychopathic traits (GM, CU, and II) and to test if these findings would replicate in a male youth community sample. Finally, we compared the psychopathic profiles of the forensic sample on key outcome variables (CD diagnosis, comorbidity, recidivism risk, and aggression). We expected to find similar psychopathic profiles in the forensic and community samples, with at least one group with low scores on all three psychopathic traits and another group with high scores on all three psychopathic traits (Andershed et al., 2008; Lee et al., 2010; Nijhof et al., 2011). We also expected to find at

least another intermediary group, though it is difficult to formulate hypothesis regarding the trait composition of this group, because of the mixed findings of previous research (Andershed et al., 2008; Lee et al., 2010; Neumann, Schmitt, Carter, Embley, & Hare, 2012; Nijhof et al., 2011). As research has shown that psychopathic traits are continuously distributed throughout the population, it was expected that the levels of psychopathic traits would be lower in the community sample (e.g., Andershed, Kerr, Stattin, & Levander, 2002; Edens, Marcus, Lilienfeld, & Poythress Jr, 2006; Frick, Bodin, & Barry, 2000; Hare, 2003; Kosson et al., 2013; Murrie et al., 2007; Neumann et al., 2012; Neumann & Hare, 2008). Finally, it is expected that profiles with higher scores on all three psychopathic traits in the forensic sample would have the highest prevalence rates of CD, the uppermost comorbidity rates, and the highest levels of aggression and recidivism risk, than profiles with lower scores on all three psychopathic traits (e.g., Andershed et al., 2008; Asscher et al., 2011; Leistico et al., 2008; Salekin et al., 2004).

Method

Participants

This study included a forensic sample of 393 male youth aged between 13 and 19 years, who were recruited from Portuguese juvenile facilities, either foster care and juvenile detention centers. All of those recruited in these settings had a history of severe behavior problems and, consequently, had a high probability for having a CD diagnosis (Rijo et al., 2016). This study also included a community sample[7] of 481 male youth aged between 13 and 19 years who were recruited from school settings (i.e., the community sample). Table 1 presents the demographic characteristics of the samples, including the prevalence rate of CD in the forensic sample (see Table 1).

[7] The community sample was only used to replicate the LPA procedure.

Table 1. *Demographic Characteristics and Descriptive of Measures for the Forensic and Community Samples*

	Forensic sample (n = 393)	Community sample (n = 481)	*t*/*x2*
Sample size	393 (45.0)	481 (55.0)	
Age	16.29 (1.35)	16.40 (1.10)	(754.42) = -1.32
Years of education	6.34 (1.66)	9.77 (1.16)	(680.73) = 34.51*
SES			
Low	302 (76.8)	118 (24.5)	
Medium	85 (21.7)	241 (50.1)	(4) = 254.10*
High	6 (1.5)	122 (25.4)	
YPI-S-GM	13.10 (3.24)	12.48 (3.20)	(2.871) =2.84*
YPI-S-CU	12.86 (3.18)	11.78 (2.85)	(2.871) = 5.28*
YPI-S-II	16.45 (3.39)	13.92 (2.62)	(876.42) = 12.57*
CD-MINI-KID	316 (80.4)	-	-
Comorbidity-MINI-KID	2.20 (1.26)	-	-
YLS/CMI-T (n = 189)			
Low	21 (5.3)	-	-
Moderate	85 (21.6)	-	-
High	76 (19.3)	-	-
Very High	7 (1.8)	-	-
BPAQ-T	75.57 (18.72)	-	-
BPAQ-PA	24.81 (7.03)	-	-
BPAQ-VA	13.69 (3.98)	-	-
BPAQ-A	18.08 (5.24)	-	-
BPAQ-H	20.10(5.96)	-	-

Note. Information for sample size, SES, CD-MINI-KID, and recidivism risk are presented as n (%); information for age, years of education, descriptive of measures and comorbidity are presented as M (SD). YPI-S = Youth Psychopathic Traits Inventory: Short Form: GM = Grandiose-Manipulative Factor CU = Callous-Unemotional Factor; II = Impulsive-Irresponsible Factor; CD-MINIKID = Number of individuals receiving a Conduct Disorder diagnosed with the Mini-International Neuropsychiatric Interview for Children and Adolescents; Comorbidity-MINI-KID = Number of diagnosis established with the MINI-KID; YLS/CMI-T = Youth Level of Service/Case Management Inventory, Total Score; BPAQ = Buss-Perry Aggression Questionnaire: T = total score; PA = Physical Aggression Factor; VA = Verbal Aggression Factor; A = Anger Factor; H = Hostility Factor.

* Main effects significant at $p < .001$ for Independent-Samples *t*-tests and *x2* tests between the forensic and the community samples

Measures

The Youth Psychopathic Traits Inventory-Short (YPI-S; Van Baardewijk et al., 2010; Portuguese version by Pechorro, Andershed, Ray, Maroco, & Gonçalves, 2015) is an 18-item self-report version of the original Youth Psychopathic Traits Inventory (YPI; Andershed et al., 2002). The YPI-S assesses psychopathic traits in youth via ratings within three different factors: Grandiose-Manipulative (GM; e.g., "It's easy for me to manipulate people"), Callous-Unemotional (CU; e.g., "I think that crying is a sign of weakness, even if no one sees you"), and Impulsive-Irresponsible (II; e.g., "I like to do exciting and dangerous things, even if it is forbidden or illegal"). Each factor is estimated by a set of six items. Each item in the YPI-S is rated on a four-point scale (1 = "Does not apply at all" to 4 = "Applies very well"). The YPI-S

can be scored by simply adding the item ratings, and higher scores are indicators of increased levels of psychopathic traits. The YPI and the YPIS were validated in several countries across the globe, both in forensic and community samples of youth (see Salekin, Andershed, & Clark, 2018 for a review). The three-factor structure of the YPI-S was, among others, confirmed in a sample of Portuguese male young offenders (Pechorro et al., 2015) and in a Portuguese youth community sample (Pechorro, Ribeiro da Silva, Andershed, Rijo, & Gonçalves, 2017). This measurement model has proven to be invariant across boys taken from those different samples (Pechorro, Ribeiro Da Silva, Andershed, Rijo, & Gonçalves, 2017). The YPI-S has revealed a strong convergence with the original YPI and it has been demonstrated to have good psychometric properties (Pechorro et al., 2015; Pechorro et al., 2017; Van Baardewijk et al., 2010). The three-factor measurement model achieved good fit, both for the forensic (RMSEA=0.04, ranging from 0.04 to 0.05; CFI=0.91; SRMR=0.06) and the community (RMSEA=0.05, ranging from 0.04 to 0.05; CFI=0.91; SRMR=0.05) samples. The YPI-S showed acceptable to good internal consistency based on alpha and mean inter-item correlations (MIC; within the recommended value range of 0.15–0.50; Clark & Watson, 1995). Specifically: for the forensic sample the alphas for the GM, CU, and II factors were 0.79 0.69, and.73, respectively, while the MIC ranged between 0.27 and 0.36 and for the community sample the alphas for the GM, CU, and II factors were 0.78 0.64, and.55, respectively, and MIC ranged between 0.17 and 0.36. The YPI-S factors presented moderate correlations between each other, ranging from 0.30 to 0.34. Table 1 also presents the descriptive statistics of the YPI-S factors across samples.

The Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID; Sheehan et al., 2010; Portuguese Authorized Version by Rijo et al., 2016) is a structured clinical diagnostic interview, which assesses DSM-IV/ICD-10 Axis I disorders in children and adolescents in a way that is both comprehensive and concise. MINI-KID is organized into diagnostic sections, each one starting with 2 to 4 screening questions for each specific disorder. Additional symptom questions within each disorder section are asked only if the screen questions are positively answered. All questions are in a binary “yes/no” format. The MINI-KID takes into account not only DSM criteria A, but also the impairment and duration of the symptoms, being considered a short and accurate instrument to diagnose Axis I disorders. Additionally, items are included to address ruling out medical, organic, and/or drug causes for disorders. Diagnostic criteria are summarized and documented within each disorder section and on a summary sheet. The MIMI-KID takes between 30 and 90 min to administer, depending on the number of screening questions that are positively answered by the child/adolescent. In a previous study (Sheehan et al., 2010), inter-rater reliability was found to be excellent for all mental health disorders assessed with the MINI-KID.

The Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge, Andrews, & Leschied, 2002; Portuguese version by Pimentel, Quintas, Fonseca, & Serra, 2015) is a 42-item checklist, which assesses eight different risk factors/needs: Prior and Current Offenses/Disposition, Family Circumstances/Parenting, Education/Employment, Peer

Relations, Substance Abuse, Leisure/Recreation, Personality/Behavior, and Attitudes/Orientation. Each item is scored dichotomously (present/absent), and each response in the affirmative receives a point towards the respective factor score and also to the total score (i.e., the sum of all eight risk/need scores). Based on the total score, youth can be categorized into four levels of recidivism risk: low, moderate, high, or very high. The reliability and validity of this measure has been confirmed by research, including in a Portuguese study showing that the YLS/CMI total risk score is significantly correlated with indices of reoffending (Hoge et al., 2002; Pimentel et al., 2010). In the present study, the total risk score of the YLS/CMI was used as a measure of recidivism risk.

The Buss–Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992; Portuguese version by Vieira & Soeiro, 2002) is a 29-item self-report measure. Items are rated on a 5-point scale (ranging from "extremely uncharacteristic of me"=1 to "extremely characteristic of me" = 5). The BPAQ offers a global measure of aggression and scores on four subscales: physical aggression (9 items; e.g., "I may hit someone if he or she provokes me"), verbal aggression (5 items; e.g., "My friends say that I argue a lot"), anger (7 items; e.g., "I have trouble controlling my temper"), and hostility (8 items; e.g., "Other people always seem to get the breaks"). The BPAQ has revealed good psychometric properties, including its Portuguese version (Buss & Perry, 1992; Vieira & Soeiro, 2002). In the present study, the alpha for the total scale in forensic sample was 0.92, and for the physical aggression, verbal aggression, anger, and hostility factors were 0.80, 0.78, 0.77, 0.81, respectively. In turn, alpha for the total scale in community sample was 0.92, and for the physical aggression, verbal aggression, anger, and hostility factors were 0.84, 0.71, 0.80, 0.82, respectively. The BPAQ factors also achieved optimal MIC in the present study, ranging between 0.32 and 0.37. for the forensic sample and between 0.34 and 0.38 for the community sample.

Procedure

This study was approved by the ethics committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra and by a national data protection committee. Institutional authorizations were sought from the Ministry of Justice (in order to assess male youth placed in Portuguese juvenile detention facilities due to criminal behavior), from executive boards of Portuguese Child and Juvenile Protection Services (to assess youth that had a history of severe behavior problems and were placed in Portuguese foster care facilities), and from executive boards of public schools (to assess community youth). After authorization was obtained, all participants were informed about the nature of the study and were invited to voluntarily participate. It was explained that their decision would not impact their sentencing/school grades in any way and that no payment or extra credit would be offered. Confidentiality and anonymity of their responses were also guaranteed. Participants older than 18 years gave verbal and written consent for their own participation and participants younger than 18 years verbally assented to their own participation in addition to their parents/legal guardians' written consent. 17 and 33 youth, respectively from the

forensic and community samples, declined to participate. Youth with suspected cognitive impairment, psychotic symptoms, and/or developmental disorders were excluded from this study.

Data collection in the forensic sample consisted of three assessment phases: (a) the clinical interviewing procedure (see the Measures section), to assess mental health disorders in participants (including the identification of exclusion criteria not previously identified); (b) the self-report assessment, and (c) the recidivism risk assessment. Evaluators received extensive training; including a 3-day workshop, on the administration and rating of the structured clinical interview (see the Measures section). Once the training was completed, interviewers were frequently supervised by a senior researcher during the assessment phase. In the forensic sample, six youth fulfilled one or more exclusion criteria. The remaining participants further completed a self-report measure to assess psychopathic traits (see the Measure section). Twelve participants failed to complete this questionnaire. A listwise case deletion approach was applied for missing data. From the forensic sample, 262 youth also completed a self-report questionnaire to assess aggression (see the Measures section). Data related to recidivism risk (i.e., the total risk score of the YLS/CMI) was collected from the report files of youth placed in juvenile detention facilities. This data was previously compiled by a separate mental health professional or probation officer based on interviews with the youth, a review of his clinical/criminal record, and information gathered from various collateral sources (e.g., parents/legal guardians, teachers, and social workers).

In the community sample, only youth with no history of behavioral problems and/or mental health disorders were eligible for the study. This initial selection was made by parents/teachers after researchers have explained these exclusion criteria for the community sample. So, data collection in the community sample consisted only of the assessment of psychopathic traits by a self-report measure (see the Measure section). For the 19 participants who failed to complete this questionnaire, a listwise case deletion approach was applied.

Data analysis

The data were analyzed using SPSS v24 (IBM SPSS, 2016) and Mplus v7 (Muthén & Muthén, 2010) statistical software. The SPSS software was used in the initial phase for descriptive and inferential statistics and for internal consistency calculations (Clark & Watson, 1995). Mplus 7 was used to perform a Confirmatory Factor Analysis (CFA – using the Robust Maximum Likelihood estimator) to examine the evidence for a three-factor model of the YPI-S (the data were modeled based on items). The adjustment of the model, investigated via CFA, was judged based on the two-index approach proposed by Hu and Bentler (1999), with the requirements of a Comparative Fit Index (CFI) higher than 0.95 or a Root Mean Square Error of Approximation (RMSEA) lower than 0.06 combined with a Standardized Root Mean Square Residual (SRMR) lower than 0.09. Mplus was also used to conduct LPA to identify distinct subgroups of youth (latent profiles) based on their scores on

the GM, CU, and II YPI-S factors in the forensic sample. The same procedure was then replicated in the community sample.

The first stage in LPA was to determine the number of classes with well-defined differentiated profiles across samples (forensic and community). Thus, LPA models were fit in a series of modeling steps starting with the specification of a one class model. Then, the number of classes was then subsequently increased until there was no further improvement in the model; i.e., adding another class would result in meaningless classes (Lubke & Muthén, 2007). To avoid Local Likelihood Maxima, we increased the sets of random start values to 3000 (with the best 100 of these starts being retained for final stage optimization), increased the number of iterations to 100 in the first steps of the optimization procedure, and checked the replicability of best log likelihood value (Morin, 2016).

The adjustment of the models and the decision about model selection were then judged by the following guidelines proposed by Ram and Grim (2009). We first examined the output of each estimated model and searched for potential problems or inconsistencies. We then compared models with different numbers of classes using Information Criteria (IC) based on fit statistics; i.e., Bayesian Information Criteria (BIC; Schwartz, 1978), Akaike Information Criteria (AIC; Akaike, 1987), and Sample-Size-Adjusted BIC (SSA-BIC; Sclove, 1987). Lower values on these fit statistic indices indicate better model fit; i.e., an optimum trade-off between model parsimony and residuals, with BIC being considered a better fit statistic index than the other IC indices (Nylund, Asparouhov, & Muthén, 2007). Next, we examined Entropy values, which assess the accuracy with which models classify individuals into their most likely class. Entropy ranges from 0 to 1, with higher scores representing greater classification accuracy. Entropy values superior to 0.70 are preferable, indicating clear classification and greater power to predict class membership (Muthén, 2001). Then we tested the statistical significance to determine whether a more complex model (k classes) would fit the data significantly better than a more parsimonious model (k – 1 classes) by using the Lo-Mendell-Rubin test (LMR; Lo, Mendell, & Rubin, 2001) and the Bootstrap Likelihood Ratio Test (BLRT; McLachlan & Peel, 2004). The LMR and the BLRT tests provide p-values that can be used to determine if there is a statistically significant improvement in fit for the inclusion of one more class. For statistical model comparisons, the BLRT is generally preferred over the LMR test (Nylund et al., 2007). The sample size of the smallest class was then evaluated, specifically deciding that models with a class of<1% and/ or numerically n < 25 members should be rejected or rigorously grounded by theory and research (Bauer & Curran, 2004). Finally, and because LPA is a probabilistic approach, we also considered the average probabilities of class membership (Rost, 2006). The more distinct the average latent class probabilities for the most likely class membership are, the more useful and accurate the latent class solution will be. Thus, average probabilities equal to or larger than 0.80 (Rost, 2006) indicate a good class solution.

After determining the optimal number of classes, we tested for significant mean differences on outcome variables across profiles in the forensic sample. We did not include

them on the LPA model in order to retain some "independence" between the classes and the variables of interest and to avoid meaningless results (Asparouhov & Muthén, 2014). Traditional analyses (e.g., logistic regression, analysis of variance) have been questioned when applied to mixture modeling, because they may introduce error and decrease precision by fixing an individual's probability of their highest class to 1 and all others to 0. Different approaches have been proposed to remedy these problems (Asparouhov & Muthén, 2014), such as using the auxiliary variable function in Mplus. This function allows for comparisons between classes while taking into account participants' partial membership in classes, while also facilitating the exploration of relationships between profiles and other auxiliary variables without directly including them in the model.

Among these approaches, we selected the modified BCH method (Bakk & Vermunt, 2016; Bolck, Croon, & Hagenaars, 2004), which is the most robust approach and the recommended method for examining relationships between profiles and continuous distal outcomes (in this study, aggression-related variables and number of comorbid diagnoses) across latent profiles (Asparouhov & Muthén, 2014). We also selected the DCAT method (Lanza, Tan, & Bray, 2013), which is the preferred method to accommodate categorical distal outcomes across latent profiles (Asparouhov & Muthén, 2014). In the present work, the presence of a CD diagnosis and other mental health disorders[8], as well as recidivism risk were investigated through the DCAT method.

Results

Table 2 shows the LPA model fit outcomes for the forensic and community sample. According to LPA results, and considering both samples, solutions with latent classes fit the data better than it did a unitary solution without latent classes. The Information Criteria (IC) based fit statistics (particularly BIC, but also AIC and SAS-BIC), along with entropy values and LMR/BLRT tests (Ram & Grimm, 2009), indicated that a three-class solution was the best model for allocating cases to profiles in the forensic sample. The same was true in the replication sample (i.e., the community sample), except for the entropy value of the three-profile solution (lower than 0.70). However, remaining indicators were all in favor of a three-profile solution. Moreover, the average probabilities of class membership for the four-class solution had one or two average probabilities lower than 0.80 (ranging from 0.70 to 0.93) in the tested samples (Rost, 2006). Therefore, across the different samples the three-profile solution provided a better model fit than a two or a four-profile solution (Ram & Grim, 2009) (see Table 2).

[8] To avoid null or residual indicators, we only considered disorders that had a prevalence rate of at least 10% in the forensic sample. Considering this criterion, only Alcohol Dependence (n = 49; 12.5%), Substance Abuse (n=44; 11.2%), Substance Dependence (n = 103; 26.2%), and Oppositional Defiant Disorder (n = 141; 35.9%) were taking into account for further analysis. For additional information on this topic, please contact the corresponding author.

Table 2. *Model Fit of the Latent Profile Analyzes for the Forensic and Community Samples*

	Log-likelihood (number of replications)	Nº of free parameters	AIC	BIC	SSA-BIC	Entropy	LMR *p*	BLRT *p*
Forensic sample (n = 393)								
1 Class	-3066.902 (100/100)	6	6145.80	6169.65	6150.61	-	-	-
2 Classes	-3006.458 (100/100)	10	6032.92	6072.65	6040.92	.82	<.001	<.001
3 Classes	**-2969.701 (100/100)**	**14**	**5927.40**	**6023.04**	**5978.61**	**.88**	<.001	**<.001**
4 Classes	-2965.095 (85/100)	18	5966.19	6037.72	5980.61	.62	.324	.428
Community sample (n = 471)								
1 Class	-3572.209 (100/100)	6	7156.42	7181.47	7162.43	-	-	-
2 Classes	-3542.950 (100/100)	10	7105.82	7147.66	7115.92	.88	.029	<.001
3 Classes	**-3524.192 (100/100)**	**14**	**7076.39**	**7134.85**	**7090.41**	**.66**	**.017**	**<.001**
4 Classes	-3515.886 (86/100)	18	7067.77	7142.94	7085.81	.69	.049	<.001

Note: AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; SSA-BIC = Sample-Size Adjusted BIC; LMR *p* = *p* value of the Lo-Mendell-Rubin test; BLRT *p* = *p* value of the Bootstrap Likelihood Ratio Test.
Optima models are highlighted in boldface

Table 3 reports profile allocation based on maximum posterior probability for the three latent profiles across samples. Taking into account the YPI-S factors mean scores, the three profiles were labeled as: Low Psychopathic Profile (LPP); Average Psychopathic Profile (APP), and High Psychopathic Profile (HPP). The HPP was the profile with the lowest percentage of youth (though always superior to 1% as recommended by Bauer & Curran, 2004) and the APP was the one with the highest percentage of youth. The average probabilities of class membership were always superior to 0.80 (Rost, 2006), except for the LPP in the community sample (0.78). Table 3 also presents the YPI-S factor mean scores across the three latent profiles and samples (which were statistically different within each sample as expected in LPA approaches) and Fig. 1 provides a visual illustration of this (see Table 3 and Fig. 1). Although the profiles were similar across the samples, it should be noted that the community sample profiles had lower scores in all YPI-S factors when compared to the similar profiles of the forensic sample.

Table 3. *Profile Allocation Based on Maximum Posterior Probability for Three Latent Profiles. Mean Probabilities of Latent Profiles in the Forensic and Community Samples. Mean scores on the YPI-S Factors*

	N	%	Latent Profile*			YPI-S-GM	YPI-S-CU	YPI-S-II
			LPP	APP	HPP			
Forensic sample (N = 393)								
LPP	47	12.1	.88			9.21 (.42)	9.19 (.51)	11.06 (.66)
APP	328	83.5		.96		13.36 (.20)	13.08 (.19)	16.98 (.19)
HPP	17	4.4			.87	18.84 (1.39)	18.76 (1.08)	21.33 (1.01)
Community sample (N = 481)								
LPP	119	24.8	.78			9.72 (.74)	9.68 (.42)	12.76 (.70)
APP	341	70.9		.85		13.27 (.38)	12.12 (.33)	14.12 (.15)
HPP	21	4.3			.83	15.23 (.98)	18.31 (.80)	17.30 (1.07)

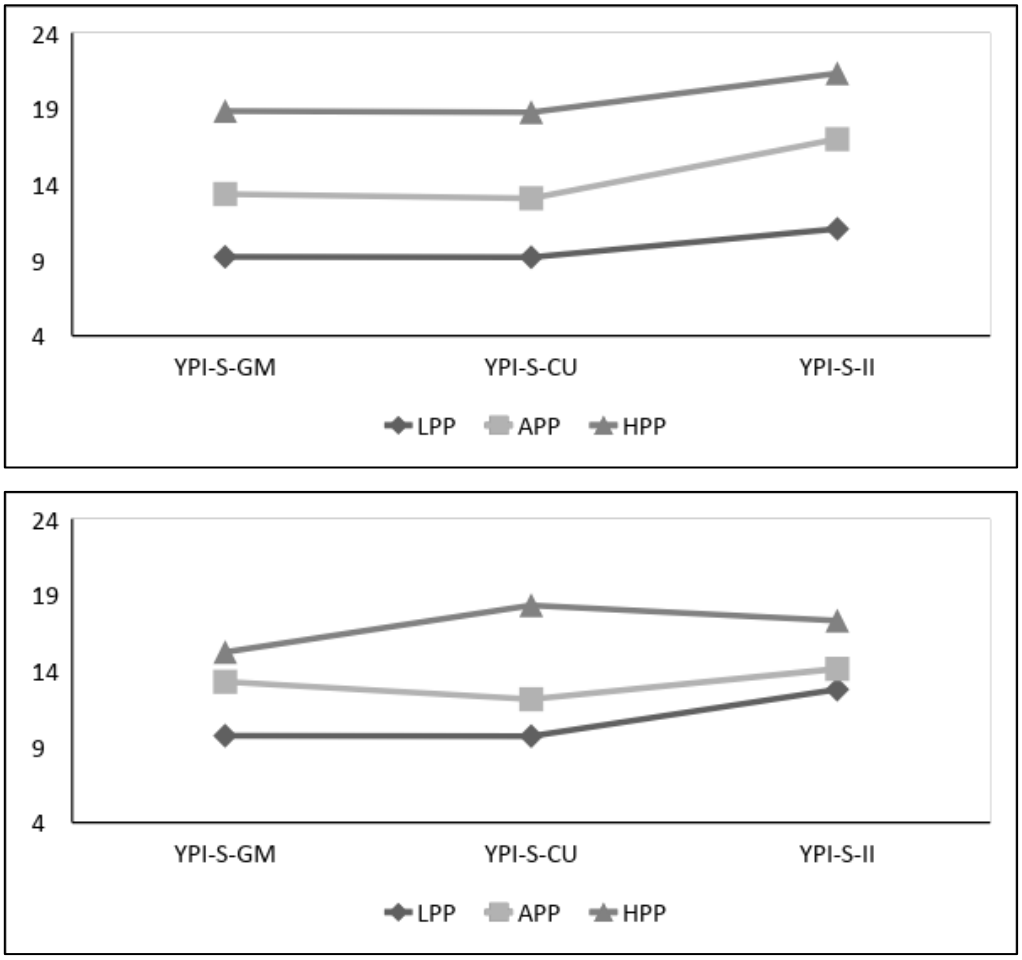
Note: LPP = Low Psychopathic Profile; APP = Average Psychopathic Profile; HPP = High Psychopathic Profile.

YPI-S = Youth Psychopathic Traits Inventory: Short Form: GM = Grandiose-Manipulative Factor CU = Callous-Unemotional Factor; II = Impulsive-Irresponsible Factor.

Information for YPI-S descriptive is presented as M (SE).

* Average probabilities of profile membership.

Figure 1. *Latent Profile Analyzes Results: Means Scores on the YPI-S Factors for the Forensic and Community Samples*



LPP = Low Psychopathic Profile; APP = Average Psychopathic Profile; HPP = High Psychopathic Profile; YPI-S = Youth Psychopathic Traits Inventory: Short Form: GM = Grandiose-Manipulative Factor CU = Callous-Unemotional Factor; II = Impulsive-Irresponsible Factor

Table 4 reports the relationships between the three psychopathic severity profiles in the forensic sample and the outcome variables (CD, comorbidity, recidivism risk, and aggression), in addition to overall chi-square tests and chi-square statistics for pairwise differences between profiles. The results indicated that those with a HPP were at a higher risk for CD, ODD, Substance Dependence, number of comorbid diagnosis, had a higher recidivism risk, and had higher aggression scores (considering the total score of the BPAQ or any of its four subscales physical aggression, verbal aggression, anger, and hostility). These results were significant for the majority of the comparisons, except when comparing the APP and the HPP on the total score of the BPAQ and its factors or when comparing the LPP and the APP on CD and comorbidity (see Table 4)[9].

[9] We also conducted different LPA in the forensic sample to identify distinct latent profiles based on: YPI-S-GM; YPI-S-CU; and YPI-S-II, separately. The model fit indicators to obtain the optimal number of classes was always worse than using the combination of GM, CU, and II YPI-S factors. Furthermore, the LPA results considering YPI-S factors separately did not replicate in the community sample. In addition, comparisons between the GM, CU, or II severity profiles in the forensic sample on the outcome variables was never as pronounced as when using the three YPI-S factors to establish severity

Table 4. *Relations of the Three Latent Profiles to the Outcome Variables in the Forensic Sample*

	LPP (n = 47)	APP (n= 328)	HPP (n = 17)	*x2*	LPP vs APP	LPP vs HPP	APP vs HPP
CD – MINI-KID	.72 (.07)	.81 (.02)	1 (.00)	88.54 *p* <.001	1.20 *p* =.27	14.34 *p* <.001	66.87 *p* <.001
Substance Dependence*	.09 (.05)	.28 (.03)	.57 (.17)	13.88 *p* =.001	10.02 *p* =.002	7.36 *p* =.006	3.02 *p* =.08
ODD*	.28 (.08)	.35 (.03)	.71 (.13)	8.36 *p* =.014	0.67 *p* =.41	8-03 *p* =.005	7.10 *p* =.008
Comorbidity-MINI-KID	1.89 (.25)	2.19 (.07)	3.19 (.37)	8.89 *p* = .01	1.22 *p* = .24	8.67 *p* = .003	6.97 *p* = .001
YLS/CMI-T				70.00 *p* =.00	8.69 *p* = .03	6.16 *p* >.001	31.45 *p* <.001
Low	.17 (.02)	.11 (.00)	.00 (.02)				
Moderate	.53 (.04)	.43 (.21)	.31 (.04)				
High	.31 (.03)	.41 (.24)	.54 (.03)				
Very High	.00 (.01)	.04 (.18)	.15 (.01)				
BPAQ-T	56.90 (2.8)	79.61 (1.28)	101.07 (10.92)	56.95 *p* <.001	50.08 *p* <.001	15.38 *p* <.001	3.74 *p* =.05
BPAQ-PA	18.03 (1.09)	25.84 (.48)	32.45 (3.53)	35.56 *p* <.001	39.41 *p* <.001	15.24 *p* <.001	3.37 *p* =.07
BPAQ-VA	9.85 (.55)	14.29 (.27)	17.75 (2.18)	53.93 *p* <.001	48.58 *p* <.001	12.37 *p* <.001	2.43 *p* =.12
BPAQ-A	13.15 (.74)	18.79 (.36)	24.60 (3.13)	48.58 *p* <.001	42.96 *p* <.001	11.38 *p* <.001	2.97 *p* =.09
BPAQ-H	15.87 (1.13)	20.69 (.41)	26.27 (2.98)	19.70 *p* <.001	11.87 *p* <.001	10.67 *p* <.001	3.36 *p* =.07

Note: Analyzes were performed with BCH and DCAT procedures in MPlus 7. LPP = Low Psychopathic Profile; APP = Average Psychopathic Profile; HPP = High Psychopathic Profile. CD-MINI-KID = Probability of having Conduct Disorder diagnosed with the Mini-International Neuropsychiatric Interview for Children and Adolescents; Comorbidity-MINI-KID – Number of diagnosis assessed with the MINI-KID; YLS/CMI-T = Youth Level of Service/Case Management Inventory, Total score; BPAQ = Buss-Perry Aggression Questionnaire: T = total score; PA – Physical Aggression Factor; VA = Verbal Aggression Factor; A = Anger Factor; H = Hostility Factor.

Information for relations of the three latent classes to categorical outcomes variables is presented as probability, Standard Error (*SE*). Information for relations of the three latent classes to continuous outcomes variables is presented as *M* (*SE*).

Only mental health disorders that had a prevalence rate of at least 10% in the forensic sample (assessed with the MIN-KID) were considered; i.e., Alcohol Dependence, Substance Abuse, Substance Dependence, and Oppositional Defiant Disorder (ODD). However, of those, Alcohol Dependence and Substance Abuse had no significant differences between profiles, so were not presented in the table.

profiles. In this respect, the GM severity profiles differed on CD, ODD, recidivism risk, and physical aggression; while the CU severity profiles only differed on recidivism risk; and the II severity profiles differed on comorbidity, recidivism risk, and aggression (BPAQ and its factors). For additional information on this topic, please contact the corresponding author.

Discussion

The goal of this study was to explore the benefits of including GM, CU, and II traits as CD specifiers. To address this, we used LPA to identify groups of forensic male youth based on their levels of psychopathic traits (GM, CU, and II) as measured by the YPI-S. Moreover, we also used LPA to determine if the findings from the LPA in the forensic sample would replicate in a community sample of male youth. Finally, the current study sought to examine and compare the psychopathic profiles of the forensic sample on key outcome variables including CD diagnosis, comorbidity, recidivism risk, and aggression.

Using LPA, as a more robust and accurate person-centered method than conventional cluster analysis (Bauer & Curran, 2004; Lubke & Muthén, 2007; McLachlan & Peel, 2004; Muthén, 2001; Vermunt & Magidson, 2002), a solution with three latent profiles also showed better model fit both for the forensic and the community samples (Andershed et al., 2008; Lee et al., 2010). As was found in Lee et al. (2010) study, the three latent profile solution was related to different levels of severity of psychopathic traits. Specifically, two extreme groups were found in the tested samples: one group with low scores on all the three YPI-S factors (i.e., the Low Psychopathic Profile: LPP) and another group with high scores on all the three YPI-S factors (i.e., the High Psychopathic Profile: HPP). This latter group was the one with the smallest percentage of youth, which is consistent with existing research (e.g., Andershed et al., 2008; Lee et al., 2010; Nijhof et al., 2011). A third group with average scores on all the three YPI-S factors also emerged (i.e., the Average Psychopathic Profile; APP). However, we must state that though we have found evidence for the existence of the same psychopathic profiles, both in the forensic and in the community samples, the community sample profiles had lower scores in all YPI-S dimensions when compared to the similar profiles of the forensic sample. These findings suggest that the three latent profiles represent distinct variations of psychopathy severity within each sample, offering support to the notion that psychopathic traits seem to be continuously distributed throughout the population, differing from normality in degree rather than kind (Andershed et al., 2002; Edens et al., 2006; Frick et al., 2000; Kosson et al., 2013; Murrie et al., 2007; Neumann et al., 2012; Neumann & Hare, 2008).

The current study also compared the three profiles of the forensic sample on critical outcome variables. While the HPP had the highest risk of a CD diagnosis, recidivism, and aggression, the LPP was the one with the lowest risks concerning the same variables. These findings are in accordance with defined hypothesis and past research, which has suggested that those with elevated psychopathic traits are at greater risk for a CD diagnosis, recidivism, and aggression (Forth & Book, 2010; Salekin, 2017; Sevecke & Kosson, 2010). However, it should be noticed that though the HPP was the profile that had the highest risk for a CD diagnosis, the LPP and the APP also showed a considerable risk for this diagnosis, which may be due to the nature of the current forensic sample, where most of these youth are expected to meet criteria for CD (see Rijo et al., 2016).

Regarding comparisons between psychopathic profiles of the forensic sample on specific comorbid diagnosis and comorbidity rates, results were consistent with expectations and past research using variable-centered methods. Specifically, though we were only able to compare few other mental health problems beyond CD (due to the low prevalence rates of other psychopathologies in the forensic sample), not surprisingly (e.g., Lansing et al., 2018; Salekin et al., 2004; Sevecke & Kosson, 2010), the HPP was the one at a higher risk for ODD and Substance Dependence, followed by the APP, and by the LPP. Finally, the high comorbidity rates found in the HPP, but also in the APP, are in line with previous works (e.g., Lansing et al., 2018; Salekin et al., 2004; Sevecke & Kosson, 2010), suggesting that youth with high psychopathic traits, especially in forensic settings, also exhibit higher rates of other mental health problems. These high comorbidity rates underscore the critical need to deliver prevention and intervention programs for youth at risk for conduct problems and psychopathy (Ribeiro da Silva, Rijo, & Salekin, 2013; Salekin, 2010).

Most notably, it should be highlighted that a high CU only traits profile was not identified in any of the tested samples, as in former research with adult and youth samples using clustering, LCA or LPA procedures (Andershed et al., 2008; Krstic et al., 2018; Lee et al., 2010; Mokros et al., 2015; Nijhof et al., 2011). Moreover, when conducting additional LPA procedures using the YPI-S-GM, YPI-S-CU, and YPI-S-II factors, separately: the model fit indicators to obtain the optimal number of classes was always worse than using the combination of GM, CU, and II YPI-S factors; the LPA results considering YPI-S factors separately were never replicated in the community sample; and, most importantly, the relationship between the GM, CU, or II severity profiles in the forensic sample and the outcome variables was never as pronounced as using the three YPI-S factors. Remarkably, the CU severity profiles only differed on recidivism risk, while the GM and the II severity profiles showed differences in a larger number of outcome variables.

In turn, the psychopathic severity profiles (resulting from the combination of GM, CU, and II traits) showed differences on even more outcome variables (comorbidity, CD, ODD, Substance Dependence, recidivism risk, and aggression). Taken together, these findings suggest that both for research purposes and clinical practice, a multifaceted model of psychopathy may be more informative and advantageous to specify CD than a model considering CU traits alone (Colins & Andershed, 2015; Collins et al., 2018; Kosson et al., 2013; Lahey, 2014; Salekin, 2016, 2017; Somma et al., 2018).

Clinical implications

As mentioned in the opening pages, the inclusion of CU traits as a specifier for CD was, among others, an attempt to reduce the heterogeneity of this diagnosis in order to help to identify a severe subgroup of CD youth and to enhance diagnostic information for case conceptualization and treatment planning (e.g., Baskin-Sommers et al., 2015; Frick et al., 2013; Kumsta et al., 2012; Viding & McCrory, 2012). However, findings from the current work and from former research (see Salekin, 2016, 2017 for a review), suggest that GM, CU, and II

traits might better serve as specifiers to CD than CU traits alone. First, several works indicated that there is a lack of support for a CU traits alone specifier, which was also found in the current study, as there was no evidence for a CU trait only profile (e.g., Colins et al., 2018; Jambroes et al., 2016; Kosson et al., 2013; Lahey, 2014; Salekin, Andershed, Batky, & Bontemps, 2018; Salekin, 2016; Somma et al., 2018). Second, the current study offered support to the notion that psychopathic traits tend to hang together, differing in degree rather than kind (Edens et al., 2006; Murrie et al., 2007). Third, and in agreement with previous findings (Asscher et al., 2011; Colins et al., 2018; Colins & Andershed, 2015; Forth & Book, 2010; Lansing et al., 2018; Leistico et al., 2008; Lorber, 2004; Salekin, 2016, 2017; Sevecke & Kosson, 2010; Somma et al., 2018), the current study pointed out that profiles resulting from the combination of all psychopathic traits better predicted comorbidity rates, behavioral problems, and criminal recidivism than profiles resulting from any psychopathic alone.

Thus, it seems that including the multifaceted model of psychopathy to delimitate a specifier for CD may, more accurately, help to reduce the heterogeneity of this diagnosis, identifying a more severe antisocial subgroup of CD individuals (Colins et al., 2018; Salekin, 2016, 2017; Salekin, Andershed, & Clark, 2018). Besides, learning more about the interface between CD diagnoses and GM, CU, and II traits, may help to enhance our understanding of conduct disordered youth, including the mechanisms that underlie each trait (Patrick, 2018; Salekin, 2016, 2017; Salekin et al., 2018) and/or hinder the therapeutic process (Ribeiro da Silva et al., 2013). Finally, this multifaceted model of psychopathy may allow clinicians to be more attentive in the assessment of psychopathic traits in individuals with conduct problems (Jambroes et al., 2016; Lahey, 2014; Salekin, 2016), which may be crucial to improve case conceptualization and to deliver tailored psychotherapeutic interventions (Colins et al., 2018; Ribeiro da Silva et al., 2013; Salekin, 2016, 2017; Salekin, Andershed, & Clark, 2018).

Altogether, results of the current study, coupled with previous research findings, suggest that GM, CU, and II traits might better serve as specifiers to CD as opposed to CU traits alone (Colins et al., 2018; Colins & Andershed, 2015; Salekin, 2016, 2017). However, the assessment and diagnosis of psychopathic traits in children and adolescents, even as a specifier, is still a controversial issue (see Salekin et al., 2018 for a review). On one side, some authors claimed that the construct of juvenile psychopathy has not been adequately established and that it would be inappropriate for clinicians to use a diagnosis that has negative and likely stigmatizing connotations. On the other side, an increasing number of authors has pointed out that an early identification of psychopathy traits might allow clinicians to intervene sooner and more effectively with conduct disordered youth, which, *per se*, would overcome eventual detrimental effects of that same early identification (Ribeiro da Silva et al., 2012, 2013; Salekin, Andershed, & Clark, 2018).

Limitations

This study had several limitations. First, the YPI-S is a self-report questionnaire that, in addition to the limitations of any self-report measure, does not include the antisocial factor of the psychopathic syndrome (Andershed et al., 2002; Salekin & Hare, 2016), which may add relevant information to future LPA studies. Second, the YPI-S does not account for the duration of the symptoms that, according to the DSM-5, must be consistently displayed over at least a 12 month period (APA, 2013). Third, the forensic sample only included youth with conduct problems, while the community sample did not include youth with conduct problems, which makes results potentially generalizable uniquely to similar samples. Future studies should replicate these findings in larger samples, using other psychopathic measures and including male and female participants, as well as school-attending youth with conduct problems. Larger and diverse youth samples may help to better understand which profiles exist within a population at large, also advancing knowledge by characterizing and comparing those same profiles more broadly. Finally, future studies with longitudinal designs are needed to examine the stability of psychopathic profiles both throughout the lifespan and after the deliver of tailored intervention programs.

Conclusion

To our knowledge, this is among the first studies to use LPA to examine the broader set of psychopathic traits (GM, CU, and II) in youth samples. Findings indicated the existence of three psychopathic severity profiles including a low (LPP), average (APP), and high (HPP) psychopathic traits profile in both community and forensic samples of male youth, though the community sample profiles had lower scores in GM, CU, and II factors when compared to the similar profiles of the forensic sample. Moreover, the HPP had the highest risk of a CD diagnosis, comorbidity, recidivism, and aggression, followed by the APP, and by the LPP. These results, along with findings from previous research in adult (e.g., Colins et al., 2017; Krstic et al., 2018; Mokros et al., 2015) and youth samples (Andershed et al., 2008; Lee et al., 2010; Nijhof et al., 2011), underline the importance of examining the total psychopathy scores as well as dimension scores (GM, CU, II). While additional research is needed on this topic, it seems that including GM, CU, and II traits as CD specifiers may be more valuable for research and clinical practice, thereby potentially reducing the toll that CD has on youth, on the juvenile justice system, and in the society at large.

Acknowledgements

This research has been supported by the first author PhD Grant (SFRH/BD/99795/2014), sponsored by the Portuguese Foundation for Science and Technology (FCT). This work was also financed by FEDER – European Social Fund - through the COMPETE 2020–Operational Programme for Competitiveness and Internationalization (POCI), and by Portuguese funds through FCT in the framework of the project POCI-01-0145-FEDER-016724.

References

Akaike, H. (1987). Factor analysis and AIC. *Psychometrika, 52,* 317–332. https://doi.org/10.1007/BF02294359.

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-referred youth: Initial test of a new assessment tool. In E. Blaauw, & I. Sheridan (Eds.). *Psychopaths: Current international perspectives* (pp. 131–158). Hague, The Netherlands: Elsevier.

Andershed, H., Köhler, D., Louden, J. E., & Hinrichs, G. (2008). Does the three-factor model of psychopathy identify a problematic subgroup of young offenders? *International Journal of Law and Psychiatry, 31,* 189–198. https://doi.org/10.1016/j.ijlp.2008.04.003.

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling: A Multidisciplinary Journal, 21,* 329–341. https://doi.org/10.1080/10705511.2014.915181.

Asscher, J. J., van Vugt, E. S., Stams, G. J. J. M., Dekovi'c, M., Eichelsheim, V. I., & Yousfi, S. (2011). The relationship between juvenile psychopathic traits, delinquency and (violent) recidivism: A meta-analysis. *Journal of Child Psychology and Psychiatry, 52,* 1134–1143. https://doi.org/10.1111/j.1469-7610.2011.02412.x.

Bakk, Z., & Vermunt, J. K. (2016). Robustness of stepwise latent class modeling with continuous distal outcomes. Structural *Equation Modeling: A Multidisciplinary Journal, 2,* 20–31. https://doi.org/10.1080/10705511.2014.955104.

Baskin-Sommers, A. R., Waller, R., Fish, A. M., & Hyde, L. W. (2015). Callous-unemotional traits trajectories interact with earlier conduct problems and executive control to predict violence and substance use among high risk male adolescents. *Journal of Abnormal Child Psychology, 43,* 1529–1541. https://doi.org/10.1007/s10802-015-0041-8.

Bauer, D. J., & Curran, P. J. (2003). Over extraction of latent trajectory classes: Much ado about nothing? Reply to Rindskopf (2003), Muthén (2003), and Cudeck and Henly (2003). *Psychological Methods, 8,* 384–393. https://doi.org/10.1037/1082-989X.8.3.

Blair, R. J. R., Peschardt, K. S., Budhani, S., Mitchell, D. G. V., & Pine, D. S. (2006). The development of psychopathy. *Journal of Child Psychology and Psychiatry, 47,* 262–276. https://doi.org/10.1111/j.1469-7610.2006.01596.x.

Bolck, A., Croon, M., & Hagenaars, J. (2004). Estimating latent structure models with categorical variables: One-step versus three-step estimators. *Political Analysis, 12,* 3–27. https://doi.org/10.1093/pan/mph001.

Buss, A., & Perry, M. (1992). The Aggression Questionnaire. *Journal of Personality and Social Psychology, 63,* 452–459.

Clark, L., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7,* 309–319. https://doi.org/10.1037/1040-3590.7.3.309.

Colins, O. F., & Andershed, H. (2015). The DSM-5 with limited prosocial emotions specifier for conduct disorder among detained girls. *Law and Human Behavior, 39,* 198–207. https://doi.org/10.1037/lhb0000108.

Colins, O. F., Andershed, H., Salekin, R. T., & Fanti, K. A. (2018). Comparing different approaches for subtyping children with conduct problems: Callous-unemotional traits only versus the multidimensional psychopathy construct. *Journal of Psychopathology and Behavioral Assessment, 40,* 6–15. https://doi.org/10.1007/s10862-018-9653-y.

Colins, O. F., Fanti, K. A., Salekin, R. T., & Andershed, H. (2017). Psychopathic personality in the general population: Differences and similarities across gender. *Journal of Personality Disorders, 31,* 49–74. https://doi.org/10.1521/pedi_2016_30_237.

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Toward a hierarchical model. *Psychological Assessment, 13,* 171–188. https://doi.org/10.1037/1040-3590.13.2.171.

Edens, J. F., Marcus, D. K., Lilienfeld, S. O., & Poythress, N. G., Jr. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology, 115,* 131–144. https://doi.org/10.1037/0021-843X.115.1.131.

Fanti, K. A., Demetriou, C. A., & Kimonis, E. R. (2013). Variants of callous-unemotional conduct problems in a community sample of adolescents. *Journal of Youth and Adolescence, 42,* 964–979. https://doi.org/10.1007/s10964-013-9958-9.

Forth, A. E., & Book, A. S. (2010). Psychopathic traits in children and adolescents: The relationship with antisocial behavior and aggression. In R. T. Salekin, & D. R. Lynam (Eds.). *Handbook of child and adolescent psychopathy* (pp. 251–283). New York: Guilford Press.

Frick, P. J. (2001). Effective interventions for children and adolescents with conduct disorder. *The Canadian Journal of Psychiatry, 46,* 597–608. https://doi.org/10.1177/070674370104600703.

Frick, P. J., Bodin, S. D., & Barry, C. T. (2000). Psychopathic traits and conduct problems in community and clinic-referred samples of children: Further development of the psychopathy screening device. *Psychological Assessment, 12,* 382–393.

Frick, P. J., & Nigg, J. T. (2012). Current issues in the diagnosis of attention deficit hyperactivity disorder, oppositional defiant disorder, and conduct disorder. *Annual Review of Clinical Psychology, 8,* 77–107. https://doi.org/10.1146/annurev-clinpsy-032511-143150.

Frick, P. J., Ray, J. V., Thornton, L. C., & Kahn, R. E. (2013). Can callous unemotional traits enhance the understanding, diagnosis, and treatment of serious conduct problems in children and adolescents? A comprehensive review. *Psychological Bulletin, 140,* 1–57. https://doi.org/10.1037/a0033076.

Frick, P. J., & Wall Myers, T. D. (2018). Conduct Disorder and Callous-Unemotional Traits. In J. E. Lochman, & W. Matthys (Eds.). *The Wiley handbook of disruptive and impulse-control disorders* (pp. 37–54). Oxford, UK: Wiley Blackwell.

Hare, R. D. (2003). *The hare psychopathy checklist-revised* (2nd ed.). Toronto: Multi-Health Systems.

Hoge, R. D., Andrews, D. A., & Leschied, A. (2002). *The Youth level of service/case management inventory*. Toronto: Multi Health Systems.

Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 61,* 1–55. https://doi.org/10.1080/10705519909540118.

Jambroes, T., Jansen, L. M., Vermeiren, R. R., Doreleijers, T. A., Colins, O. F., & Popma, A. (2016). The clinical usefulness of the new LPE specifier for subtyping adolescents with conduct disorder in the DSM 5. *European Child & Adolescent Psychiatry, 25*, 891–902. https://doi.org/10.1007/s00787-015-0812-3.

Kimonis, E. R., Goulter, N., Hawes, D. J., Wilbur, R. R., & Groer, M. W. (2017). Neuroendocrine factors distinguish juvenile psychopathy variants. *Developmental Psychobiology, 59,* 161–173. https://doi.org/10.1002/dev.21473.

Klahr, A. M., & Burt, S. A. (2014). Practitioner review: Evaluation of the known behavioral heterogeneity in conduct disorder to improve its assessment and treatment. *Journal of Child Psychology and Psychiatry, 55,* 1300–1310. https://doi.org/10.1111/jcpp.12268.

Kosson, D. S., Neumann, C. S., Forth, A. E., Salekin, R. T., Hare, R. D., Krischer, M. K., & Sevecke, K. (2013). Factor structure of the Hare Psychopathy Checklist: Youth Version (PCL:YV) in adolescent females. *Psychological Assessment, 25,* 71–83. https://doi.org/10.1037/a0028986.

Krstic, S., Neumann, C. S., Roy, S., Robertson, C. A., Knight, R. A., & Hare, R. D. (2018). Using latent variable-and person-centered approaches to examine the role of psychopathic traits in sex offenders. *Personality Disorders: Theory, Research, and Treatment, 9,* 207–216. https://doi.org/10.1037/per0000249.

Kumsta, R., Sonuga-Barke, E., & Rutter, M. (2012). Adolescent callous–unemotional traits and conduct disorder in adoptees exposed to severe early deprivation. *The British Journal of Psychiatry, 200,* 197–201. https://doi.org/10.1192/bjp.bp.110.089441.

Lahey, B. B. (2014). What we need to know about callous-unemotional traits: Comment on Frick, Ray, Thornton, and Kahn (2014). *Psychological Bulletin, 140,* 58–63. https://doi.org/10.1037/a0033387.

Lansing, A. E., Plante, W. Y., Beck, A. N., & Ellenberg, M. (2018). Loss and grief among persistently delinquent youth: The contribution of adversity indicators and psychopathy- spectrum traits to broadband internalizing and externalizing psychopathology. *Journal of Child & Adolescent Trauma, 11,* 375–389. https://doi.org/10.1007/s40653-018-0209-9.

Lanza, S. T., Tan, X., & Bray, B. C. (2013). Latent class analysis with distal outcomes: A flexible model-based approach. *Structural Equation Modeling: A Multidisciplinary Journal, 20,* 1–26. https://doi.org/10.1080/10705511.2013.742377.

Latzman, R. D., Palumbo, I. M., Sauvigné, K. C., Hecht, L. K., Lilienfeld, S. O., & Patrick, C. J. (2018). Psychopathy and internalizing psychopathology: A triarchic model perspective. *Journal of Personality Disorders, 32*, 1–26. https://doi.org/10.1521/pedi_2018_32_347.

Lee, Z., Salekin, R. T., & Iselin, A. M. R. (2010). Psychopathic traits in youth: Is there evidence for primary and secondary subtypes? *Journal of Abnormal Child Psychology, 38,* 381–393. https://doi.org/10.1007/s10802-009-9372-7.

Leistico, A. M., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis relating the hare measures of psychopathy to antisocial conduct. *Law and Human Behavior, 32,* 28–45. https://doi.org/10.1007/s10979-007-9096-6.

Lo, Y., Mendell, N., & Rubin, D. (2001). Testing the number of components in a normal mixture. *Biometrika, 88,* 767–778. https://doi.org/10.1093/biomet/88.3.767.

Lorber, M. F. (2004). Psychophysiology of aggression, psychopathy, and conduct problems: A meta-analysis. *Psychological Bulletin, 130,* 531–552. https://doi.org/10.1037/0033-2909.130.4.531.

Lubke, G., & Muthén, B. O. (2007). Performance of factor mixture models as a function of model size, covariate effects, and class-specific parameters. *Structural Equation Modeling, 14,* 26–47.

McLachlan, G., & Peel, D. (2004). *Finite mixture models*. New York, NY: Wiley.

Mokros, A., Hare, R. D., Neumann, C. S., Santtila, P., Habermeyer, E., & Nitschke, J. (2015). Variants of psychopathy in adult male offenders: A latent profile analysis. *Journal of Abnormal Psychology, 124,* 372–386. https://doi.org/10.1037/abn0000042.

Morin, A. J. S. (2016). Person-centered research strategies in commitment research. In J. P. Meyer (Ed.). *The Handbook of employee commitment* (pp. 490–508). Cheltenham, UK: Edward Elgar.

Murrie, D. C., Marcus, D. K., Douglas, K. S., Lee, Z., Salekin, R. T., & Vincent, G. (2007). Youth with psychopathy features are not a discrete class: A taxometric analysis. *Journal of Child Psychology and Psychiatry, 48,* 714–723. https://doi.org/10.1111/j.1469-7610.2007.01734.x.

Muthén, B. (2001). Latent variable mixture modeling. In G. A. Marcoulides, & R. E. Schumacker (Eds.). *New developments and techniques in structural equation modeling* (pp. 1–33). Mahwah, NJ: Lawrence Erlbaum Associates.

Neumann, C. S., & Hare, R. D. (2008). Psychopathic traits in a large community sample: Links to violence, alcohol use, and intelligence. *Journal of Consulting and Clinical Psychology, 76,* 893–899. https://doi.org/10.1037/0022-006X.76.5.893.

Neumann, C. S., Schmitt, D. S., Carter, R., Embley, I., & Hare, R. D. (2012). Psychopathic traits in females and males across the globe. *Behavioral Sciences & the Law, 30,* 557–574. https://doi.org/10.1002/bsl.2038.

Neumann, C. S., Vitacco, M. J., & Mokros, A. S. (2016). Using both variable-centered and person-centered approaches to understanding psychopathic personality. In C. B. Gacono (Ed.). *Personality and clinical psychology series. The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 14–31). New York, NY, US: Routledge/Taylor & Francis Group.

Nijhof, K. S., Vermulst, A., Scholte, R. H., Van Dam, C., Veerman, J. W., & Engels, R. C. (2011). Psychopathic traits of Dutch adolescents in residential care: Identifying subgroups. *Journal of Abnormal Child Psychology, 39,* 59–70. https://doi.org/10.1007/s10802-010-9445-7.

Nylund, K. L., Asparouhov, T., & Muthén, B. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling. A Monte Carlo simulation study. *Structural Equation Modeling, 14,* 535–569. https://doi.org/10.1080/10705510701575396.

Patrick, C. J. (2018). Psychopathy as masked pathology. In C. J. Patrick (Ed.). *Handbook of psychopathy* (pp. 3–21). (2 nd Ed). New York: Guilford Press.

Pechorro, P., Andershed, H., Ray, J. V., Maroco, J., & Gonçalves, R. A. (2015). Validation of the youth psychopathic traits inventory and youth psychopathic traits inventory – Short version among incarcerated juvenile delinquents. *Journal of Psychopathology and Behavioral Assessment, 37,* 576–586. https://doi.org/10.1007/s10862-015-9490-1.

Pechorro, P., Ribeiro Da Silva, D., Andershed, H., Rijo, D., & Gonçalves, R. A. (2017). Psychometric properties and measurement invariance of the youth psychopathic traits inventory - Short version among Portuguese youth. *Journal of Psychopathology and Behavioral Assessment, 39,* 486–497. https://doi.org/10.1007/s10862-017-9597-7.

Pimentel, A., Quintas, J., Fonseca, E., & Serra, A. (2015). Estudo normativo da versão Portuguesa do YLS/CMI: Inventário de avaliação do risco de reincidência e de gestão de caso para jovens. [Psychometric proprieties of the Portuguese version of the YLS/ CMI]. *Análise Psicológica, 33,* 55–71. https://doi.org/10.14417/ap.883.

Ram, N., & Grimm, K. J. (2009). Growth mixture modeling: A method for identifying difference in longitudinal change among unobserved groups. *International Journal of Behavioral Development, 33,* 565–576. https://doi.org/10.1177/0165025409343765.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2012). Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories. *Journal of Criminal Justice, 40,* 269–277. https://doi.org/10.1016/j.jcrimjus.2012.05.005.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2013). Child and adolescent psychopathy: Assessment issues and treatment needs. *Aggression and Violent Behavior, 18,* 71–78. https://doi.org/10.1016/j.avb.2012.10.003.

Rijo, D., Brazão, N., Barroso, R., Ribeiro da Silva, D., Vagos, P., Vieira, A., ... Macedo, A. M. (2016). Mental health problems in male young offenders in custodial versus community based-programs: Implications for juvenile justice interventions. *Child and Adolescence Psychiatry and Mental Health, 10,* 52. https://doi.org/10.1186/s13034-016-0131-6.

Rost, J. (2006). Latent-Class-Analyse [Latent class analysis]. In F. Petermann, & M. Eid (Eds.). *Handbuch der psychologischen Diagnostik* [Handbook of psychological assessment] (pp. 275–287). Göttingen, Germany: Hogrefe.

Salekin, R. T. (2010). Treatment of child and adolescent psychopathy: Focusing on change. In R. T. Salekin, & D. R. Lynam (Eds.). *Handbook of child and adolescent psychopathy* (pp. 343–373). New York: Guilford Press.

Salekin, R. T. (2016). Psychopathy in childhood: Toward better informing the DSM–5 and ICD-11 conduct disorder specifiers. *Personality disorders: Theory, research, and treatment, 7,* 180–191). https://doi.org/10.1037/per0000150.

Salekin, R. T. (2017). Research review: What do we know about psychopathic traits in children. *Journal of Child Psychology and Psychiatry, 58,* 1180–1200. https://doi.org/10.1111/jcpp.12738.

Salekin, R. T., Andershed, H., Batky, B. D., & Bontemps, A. P. (2018). Are callous unemotional (CU) traits enough? J*ournal of Psychopathology and Behavioral Assessment, 40*, 1–5. https://doi.org/10.1007/s10862-018-9663-9.

Salekin, R. T., Andershed, H., & Clark, A. P. (2018). Psychopathy in children and adolescents: Assessment and critical questions regarding conceptualization. In C. J. Patrick (Ed.). *Handbook of psychopathy* (pp. 479–508). (2 nd Ed). New York: Guilford Press.

Salekin, R. T., & Hare, R. (2016). *Proposed specifiers for Conduct Disorder* (PSCD). (Unpublished test).

Salekin, R. T., Leistico, A. M. R., Neumann, C. S., DiCicco, T. M., & Duros, R. L. (2004). Psychopathy and comorbidity in a young offender sample: Taking a closer look at psychopathy's potential importance over disruptive behavior disorders. *Journal of Abnormal Psychology, 113,* 416–427. https://doi.org/10.1037/0021-843X.113.3.416.

Schwartz, G. (1978). Estimating the dimension of a model. *The Annals of Statistics, 6,* 461–464. https://doi.org/10.1214/aos/1176344136.

Sclove, L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika, 52,* 333–343. https://doi.org/10.1007/BF02294360.

Sevecke, K., & Kosson, D. S. (2010). Relationships of child and adolescent psychopathy to other forms of psychopathology. In R. T. Salekin, & D. R. Lynam (Eds.). *Handbook of child and adolescent psychopathy* (pp. 284–314). New York: Guilford Press.

Sheehan, D. V., Sheehan, K. H., Shytle, R. D., Janavsm, J., Bannon, Y., Rogersm, J. E., ... Wilkinsonm, B. (2010). Reliability and validity of the Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID). *Journal of Clinical Psychiatry, 71,* 313–326. https://doi.org/10.4088/JCP.09m05305whi.

Somma, A., Andershed, H., Borroni, S., Salekin, R. T., & Fossati, A. (2018). Psychopathic personality traits in relation to self-report delinquency in adolescence: Should we mind about interaction effects? *Journal of Psychopathology and Behavioral Assessment, 40,* 69–78. https://doi.org/10.1007/s10862-018-9658-6.

Van Baardewijk, Y., Andershed, H., Stegge, H., Nilsson, K., Scholte, E., & Vermeiren, R. (2010). Development and tests of short versions of the youth psychopathic traits inventory and the youth psychopathic traits inventory-child version. *European Journal of Psychological Assessment, 26,* 122–128. https://doi.org/10.1027/1015-5759/a000017.

Vermunt, J. K., & Magidson, J. (2002). Latent class cluster analysis. In J. A. Hagenaars, & A. McCutcheon (Eds.). *Applied latent class analysis* (pp. 89–106). Cambridge, UK: Cambridge University Press.

Viding, E., & McCrory, E. J. (2012). Why should we care about measuring callous–unemotional traits in children? *The British Journal of Psychiatry, 200,* 177–178. https://doi.org/10.1192/bjp.bp.111.099770.

Vieira, A., & Soeiro, C. (2002). Agressividade e psicopatia [Aggression and psychopathy]. *Temas Penitenciários, Série II, 8 e, 9,* 25–35.

World Health Organization. (2016). *Classifications: Revision of the International Classification of Disease* (ICD). Retrieved from http://www.who.int/classifications/icd/ICDRevisied.

CHAPTER 4 |

The evolutionary roots of psychopathic traits in children and youth

Study II |

The evolutionary roots of psychopathy

Aggression and Violent Behavior*, *21, 85–96
2015, doi: 10.1016/j.avb.2015.01.006

The evolutionary roots of psychopathy

Diana Ribeiro da Silva[a], Daniel Rijo[a], and Randall T. Salekin[b]

[a] Research Center for Neuropsychology and Cognitive-Behavioral Intervention
Faculty of Psychology and Educational Sciences, University of Coimbra
[b] University of Alabama

Abstract

There is a growing interest in the study of psychopathic traits from an evolutionary framework; however, there is a lack of comprehensive reviews regarding this issue. To address this gap in the literature, the current paper examines the evolutionary roots of psychopathy by reviewing previous research on this topic. Specifically, the potentially adaptive role of psychopathic traits during human evolution through the lifespan is highlighted. Key areas covered include the evolution of the brain ("old brain, new brain" and the emotion–logic lag), emotion regulation, aggression and its potential adaptive function, and emotions specific to psychopathy including anger and shame/dishonor. This paper (mainly in the light of the Adaptive Calibration Model) discusses how psychopathic features can be seen as a useful heritage, especially for people who have grown in harsh psychosocial backgrounds. The implications of an evolutionary approach for the comprehension and treatment of children, youth, and adults with psychopathic traits are suggested, along with directions for future research.

Keywords: Psychopathy; Evolutionary approach: Anger; Shame/dishonor; Adaptive Calibration Model

1. Introduction

Psychopathy is a controversial (e.g., Silk, 2008) yet important psychopathological construct that can be characterized by a set of affective, interpersonal, and behavioral deviant characteristics (Cooke & Michie, 2001; Hare, 2003). Moreover, psychopathy could be seen as a developmental disorder (Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007; Lynam & Gudonis, 2005) that gets worse with age (e.g., Kubak & Salekin, 2009; Lee, Salekin, & Iselin, 2010; Lynam, 2010), and becomes less responsive to treatment, which suggests the need for early screening and intervention efforts (Caldwell, McCormick, Wolfe, & Umstead, 2012; Ribeiro da Silva, Rijo, & Salekin, 2013; Salekin, 2002, 2010; Salekin, Tippey, & Allen, 2012).

Some authors highlight that no particular risk factor (genetic, dispositional, neurobiological, neurochemical, neurocognitive, and environmental) has been shown to be exclusive in the etiology and maintenance of psychopathic traits. This means, that like other psychiatric conditions, psychopathy is probably a multicausal phenomenon (e.g., DeLisi & Piquero, 2011; Ribeiro da Silva, Rijo, & Salekin, 2012; Viding & Larson, 2010). Other researchers also highlight the importance of an evolutionary approach to explain the development and maintenance of psychopathic traits (Ferguson, 2010; Gilbert, 2005; Glenn, Kuzban, & Raine, 2011; Ribeiro da Silva et al., 2012, 2013; Salekin & Lynam, 2010).

Evolutionary sciences expanded very quickly over the past two decades and, despite some criticism (e.g., Gould, 1991), these models offer a great potential in the comprehension of human nature (Gangestad & Simpson, 2007; Gilbert, 2010; Krebs, 2007). Evolutionary psychology argues that human mind and behavior evolved in response to ancestrally based problems to the extent that fitness was enhanced. In contemporary environments, some of these traits may or may not be adaptive (Gangestad & Simpson, 2007; Gilbert, 2009, 2010; Nairne & Pandeirada, 2010; Tooby & Cosmides, 1990). Evolutionary psychology is an adaptationist approach (i.e., a method for discriminating which features are adaptations and which are likely by-products of selection), being far from biological determinism, since it does not ignore the tremendous influence of culture and social environment (Gangestad & Simpson, 2007; Gilbert, 2009, 2010; Krebs, 2007). In this sense, psychopathy can be understood not exclusively as a psychopathological disorder, but also as an adaptive strategy to deal with hostile psychosocial environments or as a strategy that is based on traits and tradeoffs (Del Giudice, 2014; Del Giudice & Ellis, in press; Del Giudice, Ellis, & Shirtcliff, 2011; Del Giudice, Ellis, & Shirtcliff, 2013; Ellis, Del Giudice, & Shirtcliff, 2013; Ferguson, 2010; Gilbert, 2005; Glenn et al., 2011; Mealey, 1995; Ribeiro da Silva et al., 2012, 2013; Salekin & Lynam, 2010). However, we must stress that an adaptive response, in an evolutionary point of view, does not necessarily mean psychological well-being or socially valued outcomes. Moreover, the fact that children can adapt to harsh rearing environments or adopt a strategy that is not communal, obviously, does not imply that such conditions should be passively accepted as inevitable facts of life (Del Giudice et al., 2011).

This paper addresses the insights of Evolutionary Theory in explaining the origin and development of psychopathic traits during evolution, reviewing data since the origin and evolution of species to the most recent and accurate research studies. Although there are different developmental pathways that probably lead to psychopathy, this paper focuses mainly on psychopathic subjects who have grown in harsh psychosocial backgrounds. Implications of this theoretical understanding for the comprehension and treatment of psychopathy will be outlined.

2. The human brain

2.1. Evolution, brain and attachment

At birth, humans are neurobiologically immature, being neurons designed to be reactive and change in response to external and internal environments (Perry, Pollard, Blakley, Baker, & Vigilante, 1995). The immaturity of the newborn requires extended maternal care which, at the same time, places the developing brain in a unique mother–infant social context (Bowlby, 1969; Gilbert, 2010; Keverne & Curley, 2008; Linden, 2007, Wang, 2005). For the developing infant, the mother (or a significant attachment figure) provides the most significant environmental influence, shaping brain development by producing long-term epigenetic modifications (non-heritable) to neural and behavioral phenotypes (Bird, 2007; Gilbert, 2005, 2010; Jablonka & Lamb, 2005; Keverne & Curley, 2008; Tollefsbol, 2010; Zhang & Meaney, 2010).

Genetic and epigenetic inheritance (ways of providing variance) is complex and inter-dependent, and their interactions are central to human evolution and behavior (Jablonka & Lamb, 2005; Tollefsbol, 2010; Zhang & Meaney, 2010). In this sense, some authors argue that psychopathy is actually an extreme version of some personality traits, which are affected by genes triggered in early hostile or resource limited environments (Glenn et al., 2011; Salekin, Leistico, Trobst, Schrum, & Lochman, 2005). In a different (evolutionary) perspective, other authors argue that psychopathy exists and is adaptive at a low frequency (thrive by exploiting others) and represents a shift to a “fast” life-history strategy (focused on mating rather than parental efforts, on gaining immediate rather than long term advantages) that can be beneficial to the individual especially in some particular harshly contexts (Del Giudice et al., 2011, 2013; Ellis et al., 2013; Glenn et al., 2011, Mealey, 1995). In fact, the systematic association between toxic experiences in infancy and an increased psychopathic response in adulthood is shown in several studies (e.g., Gao, Raine, Chan, Venables, & Mednick, 2010; Salekin & Lochman, 2008; Saltaris, 2002). In summary, psychopathy seems to be more prevalent in specific rearing scenarios, probably because genes associated with it may be more advantageous in those particular environments (Del Giudice et al., 2011, 2013; Ellis et al., 2013; Glenn et al., 2011; Salekin et al., 2005).

2.2. Old brain, new brain: the emotion-logic lag

Darwin (1859/2009), on his emblematic work "On The Origin Of Species", points out that evolution cannot go back, what explains why all species share the same body systems (e.g., digestive, cardiovascular), and all brains have the same basic functions.

Neurobiologically, beyond the neocortex (exclusive to mammals) and corpus callosum (exclusive to placental mammals), the human brain contains all of the parts of simpler brains (Striedter, 2005), i.e., ancient systems that may no longer serve the purposes for which they evolved (Gilbert, 2010; Linden, 2007).

According to MacLean (1990), human brains can be divided into three parts, which constitutes the "Triune Brain": a) the "reptilian brain" (related to the brainstem and cerebellum); b) the "paleomammalian brain" (related to the limbic system); and c) the "neomammalian brain" (related to the neocortex). The first two components represent "old brain" parts, while the last one represents "new brain" areas (Gilbert, 2005, 2009, 2010; MacLean, 1990).

Humans share the so called "old brain" (more primitive, linked to reptilian strategies) with many other animals. The "reptilian" component controls our motives and instinctive behavior (e.g., sex, aggression, power), even in deep sleep (Gilbert, 2009, 2010; MacLean, 1990). These interests in defending, reproducing, and acquiring resources cannot be classified as bad or good, because, to some extent, they are fundamental to self-preservation/survival and to gene-preservation/reproduction across generations (Gilbert, 2009, 2010, MacLean, 1990). So, we can assert that humans have a "reptilian" brain, filled with ancestral memories that evolved over millions of years. However, this "reptilian" brain is not deleted; actually it is in charge of our more basic processes and emotions, i.e., our most primitive instincts of survival and reproduction (Gilbert, 2009, 2010; MacLean, 1990).

Our "old brain" also contains a "paleomammalian" component that appeared and evolved with the first mammals about 120 million years ago. This area facilitates care-eliciting and care-giving, and is extremely important for the survival of the immature newborn, especially in the case of human beings (Cracraft & Donoghue, 2004; de Duve, 2002; Gilbert, 2010; Keverne & Curley, 2008; Linden, 2007; MacLean, 1990; Wang, 2005). The "paleomammalian brain" is also responsible for enhancing emotion, motivation, learning, and memory; and gives more flexibility to behavior (MacLean, 1990). Shortly, from an evolutionary point of view, our "old brain" emotions, motives and desires (related to both "reptilian" and "paleomammalian" brain) were and continue to be crucial to human evolution (Gilbert, 2005, 2009, 2010, MacLean, 1990). These "old brain" regions are linked to "new brain" areas ("neomammalian brain"), which give us unique abilities, like observe, reflect, plan, think, communicate, fantasize, play, become self-aware, and form a self-identity (Gilbert, 2009, 2010; MacLean, 1990).

As Damasio (1999, 2006) highlights, the conscious mind results from the fluid articulation between several brain areas, and many psychological problems arise in the way our "old" and "new" brain interact. In fact, logic (linked to "new brain" areas) and emotion

(related to “old brain” areas) can be, and frequently are, in conflict (Haidt, 2001), especially when we feel, in a way or another, that we (or those we care about) are threatened (Gilbert, 2009, 2010; MacLean, 1990). On these occasions, our “old brain” commands our emotional experience, cognitions, and behaviors (Gilbert, 2009, 2010; MacLean, 1990). Damasio (1999, 2006) goes further and argues that most of our actions or choices are not deliberated; instead, they operate below the threshold of awareness, guided by unconscious processes.

Although the “triune brain” conceptualization represents an interesting hierarchical organization of the brain from an evolutionary perspective, advances in neuroscience research have shown some flaws of this approach. Namely, we must keep in mind that the emergence of the neocortex certainly involved several highly specific changes in brain anatomy, making mammal brains not just reptile brains scaled up or down (Striedter, 2005). Nevertheless, this conceptualization remains interesting for the study of psychopathy from an evolutionary point of view, since it brings insights from the evolution of instincts, emotions and reasoning — central to human evolution and to the conceptualizations of psychopathy itself.

3. Emotion-regulation systems

As Gilbert (2010) proposes, “We are made up of many different talents, abilities, social motives, emotions, and so on, and coping with their various pushes and pulls is no easy matter” (p. 31). Our different motivations are regulated by emotions, and recent research shows that our brains contain negative (the threat and self-protection system) and positive (the incentive and resource-seeking, drive-excitement system; and the soothing, contentment and safeness system) emotion-regulation systems, which operate interdependently, controlling our different motivations and behaviors (Depue & Morrone-Strupinsky, 2005; Gilbert, 2005, 2009, 2010; LeDoux, 1998, 2003).

As the author points out, “the term system is not meant to imply a separate system existing some place in the brain, but rather a mode or modes of functioning” (Gilbert, 1995, p. 139). Genes, childhood experiences, life events, and brain training affect the maturation and balance of our emotion-regulation systems (Gilbert, 1995, 2005, 2009, 2010; Perry et al., 1995).

3.1. The threat system

Accordingly to Gilbert (1995, 2005, 2009, 2010), the threat and self-protection system (shortly, “threat system”) is a protection system, shared by all living beings, which alerts and protects us from a potential threat, danger, or harm (real or even imagined, e.g., predators, competitors, frustrations, unfamiliar situations, but also unfavorable thoughts about the self).

The threat system (Gilbert, 2005, 2010) is designed to detect and pick up on different kinds of threats quickly, process those threats, select an emotional reaction (e.g., anxiety, fear, anger, disgust), and an appropriate behavioral response (e.g., freeze, fight, flight, submission), similar to Cannon's (1915) proposal. Alternatively, some authors (Schauer &

Elbert, 2010; Spitzer, Barnow, Freyberger, & Grabe, 2006) suggest a coherent sequence of six fear responses ("Freeze–Flight–Fight–Fright–Flag–Faint") to a threatening event. The initial freezing response facilitates a "stop–look–listen" perception of the threat. Then, humans (and mammals in general) generally flee, or if they are unable to successfully flee, they will fight (Schauer & Elbert, 2010; Spitzer et al., 2006).

From a neuroscience perspective, it seems that specific brain areas, like the amygdala, the medial pre-frontal cortex, and the hypothalamic–pituitary–adrenal axis (Bishop, 2008; Josephs et al., 2011; LeDoux, 1998, 2003; Murrough et al., 2011), and serotonin regulation (Caspi & Moffitt, 2006; Josephs et al., 2011; Murrough et al., 2011) help to shape individual differences to threat environmental sensitivity and reactivity. Different areas of the brain control and coordinate mental and physical functioning through threat continuum ("Freeze–Flight–Fight–Fright–Flag–Faint"), and the more threatened the person feels, the more "primitive" becomes the style of thinking and behaving (Bishop, 2008; Gilbert, 2005, 2009, 2010; Josephs et al., 2011; LeDoux, 1998, 2003; Mikulincer, Shaver, Gillath, & Nitzberg, 2005; Murrough et al., 2011; Perry et al., 1995; Schauer & Elbert, 2010).

When a person activates the threat mode (e.g., in the presence of a phobic trigger, or in a shameful situation), all aspects of mind can become threat focused, just concerned about protection and safety (Gilbert, 1995, 2005, 2009, 2010). All of these mechanisms operate rapidly, almost in an automatic way, and (at least at the beginning) beyond our awareness (Gilbert, 2005, 2010). Therefore, as stated, this is considered a negative affect regulation system (related to anger, fear, anxiety, and disgust), with ancient roots, easily triggered, and not designed for complex thinking, but rather for rapid actions (Gilbert, 2005, 2010).

Some studies (e.g., Horstmann & Bauland, 2006; Pinkham, Griffin, Baron, Sasson, & Gur, 2010) find that threatening or angry faces are detected more efficiently among a crowd than happy or nonthreatening faces. These findings are rooted in evolutionary arguments, proposing a fitness advantage for processing threatening in comparison to nonthreatening environmental stimuli (Bishop, 2008; Horstmann & Bauland, 2006; Pinkham et al., 2010).

All of these data corroborate the idea that the threat system is a protection system oriented to a "better safe than sorry" strategy, being over-sensitive and over-estimates threats and danger (Gilbert, 2005, 2009, 2010; Perry et al., 1995). Despite their frailties (e.g., over-reaction in a nonthreatening situation), we should not forget that this system is extremely important to survival (Gilbert, 2005, 2010; Perry et al., 1995; Schauer & Elbert, 2010; Spitzer et al., 2006). Furthermore, functioning in a "better safe than sorry" strategy could as well be adaptive, especially in hostile backgrounds (Gilbert, 1995, 2005, Perry et al., 1995; Ribeiro da Silva et al., 2012, 2013; Schauer & Elbert, 2010; Spitzer et al., 2006).

On the other side, when a person (child or adult) functions in a threat mode most of the time, he/she becomes hypervigilant, with little space for other activities. This could be the source of numerous psychological disorders, many related to attachment difficulties (Bowlby, 1969; Burnette, Taylor, Worthington, & Forsyth, 2007; Irons, Gilbert, Baldwin,

Baccus, & Palmer, 2006; Mills, Arbeau, Lall, & De Jaeger, 2010; Perry et al., 1995; Pinto-Gouveia & Matos, 2011; Porges, 2007; Wang, 2005).

We must also point out that the threat system conceptualization resembles, at least partially, the scope and functioning of the Stress Response System (SRS), a fundamental system to the comprehension of the Evolutionary Theory. The SRS (which encompasses the integrate functioning of the autonomic nervous system and the hypothalamic–pituitary–adrenal axis) has three main biological functions: "to coordinate the organism's allostatic response to physical and psychosocial challenges; to encode and filter information from the environment, thus mediating the organism's openness to environmental inputs; and to regulate a range of life history-relevant traits and behaviors" (Ellis et al., 2013, p. 259). We must also highlight that life histories can vary along a slow–fast spectrum. In the slower extreme, we have subjects who display slow development, low reproductive rates, and a long lifespan. In the faster extreme, we have individuals who show rapid development, high reproductive rates, and shorter lives (Del Giudice, 2014; Del Giudice & Ellis, in press; Del Giudice et al., 2011, 2013; Ellis et al., 2013). Moreover, the calibration of stress responsivity and life histories can shift toward a different trajectory especially in some developmental periods (prenatal and early postnatal development, juvenile transition, and puberty), and/or in some particular rearing scenarios (Ellis et al., 2013).

Accordingly to the Adaptive Calibration Model (an evolutionary model, built on Life History Theory and on Developmental Biology), humans evolved to survive and ultimately reproduce in a variety of contexts (stressful/supportive). Consequently, different patterns of stress responsivity (regarding competitive risk-taking, learning, self-regulation, attachment, affiliation, and reproductive functioning) and life history strategies (e.g., sexual maturation, fertility, risk-taking, and parenting styles) are mainly seen as adaptations rather than pathologies (Del Giudice, 2014 Del Giudice & Ellis, in press; Del Giudice et al., 2011, 2013; Ellis et al., 2013).

The Adaptive Calibration Model proposes four prototypical patterns of stress responsivity: I (sensitive), II (buffered), III (vigilant), and IV (unemotional). These patterns of responsivity are conceptualized in a dimensional way, developed under the interdependent effects of genetic and environmental factors. Moreover, these patterns are considered fairly stable, although not fixed (Del Giudice et al., 2011; Ellis et al., 2013). We will focus mainly on the unemotional pattern, marked by low stress responsivity, since it has a great overlap with the construct of psychopathy (Del Giudice et al., 2011; Ellis et al., 2013; Frick & Morris, 2004).

The unemotional pattern lies at the fast extreme of the life history spectrum (associated with the principle — "live fast, die young", i.e., rapid development, early sexual maturation, high reproductive rates, shorter life expectancy) and can be adaptive in harshly stressful contexts, as a way to maximize the fitness benefit/cost ratio (Del Giudice et al., 2011; Ellis et al., 2013). This phenotype is characterized by a persistent pattern of markedly reduced SRS basal responsivity and by low serotonergic and dopaminergic activity. The

unemotional pattern, and psychopathy itself, are also associated with inhibition of social learning, low sensitivity to social feedback, low empathy, high impulsivity, could be linked to risk-taking (by blocking information about threats), and aggressive behavior (mostly, but not exclusively, instrumental/proactive type) (Del Giudice et al., 2011; Ellis et al., 2013).

There are two mainly developmental pathways that probably lead to psychopathy or to an unemotional responsivity pattern: the first is highly related to extremely harsh environmental factors and the second one is largely associated with a genetic predisposition (Del Giudice et al., 2013; Ellis et al., 2013; Glenn et al., 2011; Lykken, 1957, 2006). Several authors argue that some toxic experiences in early childhood (with recurrent and intense SRS activation — signaling extrinsic morbidity–mortality and environmental unpredictability) may trigger a shifting toward a faster life history strategy, facilitating the emergence of psychopathic traits (Del Giudice et al., 2013; Ellis et al., 2013; Glenn et al., 2011). In fact, in severely harsh social contexts, engaging in high levels of risk taking (e.g., antagonistic competition, impulsivity) can be the more adaptive response (i.e., fitness-maximizing) from an evolutionary perspective. Low stress responsivity may also help individuals to reinforce their resilience to internalizing disorders in stressful environments and to maintain calm and vigilance during hostile interactions. These strategies require an unresponsive SRS, or a higher threshold to threats, dangers, and social feedback, which is an advantage for the extreme risk-taker and for an exploitative person (Del Giudice et al., 2011; Ellis et al., 2013).

To some extent, these data point toward a potential evolutionary root for psychopathy, i.e., the development and maintenance of psychopathic traits, and the low stress responsivity behind those traits could be seen as a possible adaptive strategy to deal with highly threatening environments. Nevertheless, as stated, an adaptive response and reproductive success are not equivalent to psychological well-being or socially valued outcomes. Furthermore, although psychopathy could have some benefits to the individual itself, it is indeed a condition with many societal and individual costs that, therefore, signals a need for intervention.

3.2. The drive system

The drive, seeking acquisitions focused system (shortly drive system) is designed to give us a sense of well-being (Berridge & Kringelbach, 2008; Depue & Morrone-Strupinsky, 2005; Gilbert, 2005, 2009, 2010). This system is considered to be a positive affect regulation system, that motivates and allows us to seek out, consume and achieve nice things (e.g., food, sex, friendship, status, and recognition), making us feel happiness and pleasure (Gilbert, 2005, 2009, 2010).

From an affective neuroscience perspective, it seems that the brain's mesolimbic system (“reward system” — linked to dopamine pathways) is crucial to the functioning of the drive system, regulating the pleasure response, i.e., the hedonic impact of the stimuli (Berridge & Kringelbach, 2008; Blum et al., 2008; Depue & Morrone-Strupinsky, 2005; Esch & Stefano, 2004). Further, it has been suggested that some genetic variations are also

important in the function of the reward system, especially when linked to certain environmental experiences (Blum et al., 2008).

All of these data indicate that natural pleasing activities are essential for survival and prosperity, acting on reward pathways, promoting behavioral flexibility, satisfaction of biological needs (e.g., food, sex and reproduction), and rewarding relationships (e.g., friendship, status, recognition) (Blumet al., 2008; Esch & Stefano, 2004). However, an impairment of the mechanisms involved in these natural processes (e.g., a genetic hypodopaminergic activity of the brain) predisposes individuals to seek artificial stimulants and/or pleasure-seeking behaviors that will overcome this hedonic state by triggering dopaminergic centers, creating an artificial state of pleasure (Blum et al., 2008; Esch & Stefano, 2004). The chronic abuse of substances or the systematic display of thrill seeking behaviors can be seriously detrimental, and according to some researchers may lead to the inactivation of the brain reward system — Reward Deficiency Syndrome (Blum et al., 2008; Blum et al., 2012; Esch & Stefano, 2004).

When balanced with the other systems, the drive system is a clearly advantage, guiding us toward important life goals (Depue & Morrone-Strupinsky, 2005; Gilbert, 2005, 2010). However, pathological losses of pleasure may be a central component of many affective and substance use disorders (Berridge & Kringelbach, 2008; Depue & Morrone-Strupinsky, 2005; Gilbert, 2005, 2010). Furthermore, when our drive and threat systems are activated at the same time, this leads to anxiety, frustration, and even anger, making people engage in aggressive behavior more easily (Gilbert, 2005, 2010).

Although we do not know of any research that directly relates psychopathy with the drive system, there are different studies pointing out that psychopathy could be, somehow, related to an unbalanced drive system. In detail, psychopathic traits are frequently linked with thrill seeking behaviors (Frick & Dickens, 2006; Frick & White, 2008; Patrick, Fowles, & Krueger, 2009) and with “fast” life history strategies, characterized by short-term mating effort, early sexual maturation, large number of offspring, little investment in parental care, less focus on planning for the future, increased risk-taking, reduced self-control, and a selfish disposition (Del Giudice et al., 2011, 2013; Ellis et al., 2013; Glenn et al., 2011; Mealey, 1995). In other words, it seems that some individuals scoring high on psychopathic measures tend to have a high motivation to seek out risky but somehow rewarding activities. These findings lead us again to the unemotional pattern (similar, although not totally equivalent to the construct of psychopathy) conceptualized in the Adaptive Calibration Model. Specifically, some psychopathic traits (e.g., callousness, unemotional, impulsivity, thrill-seeking), could be understood as design features of psychopathic strategy, adaptive initially in stressful or resource limited contexts as a way to maximize the fitness benefit/cost ratio (Del Giudice et al., 2011; Ellis et al., 2013; Glenn et al., 2011).

3.3. The soothing system

The contentment, soothing and affiliative focused system (shortly soothing system) is also a positive affect regulation system, linked to attachment, designed to bring peacefulness and soothing when a person is no longer threat-focused or focused on seeking resources. Conditioning, negative emotional memories, dysfunctional beliefs, a higher drive and/or threat focusing, parental neglect, criticism, relational trauma, and abuse may fail to help the soothing system mature, causing problems in brain maturation (Perry et al., 1995; Schore, 2001, 2009).

The soothing system helps to restore our balance, mainly because it regulates threat and drive (Gilbert, 2005, 2010; Gilbert et al., 2008; Porges, 2007). It is when children (and adults) are soothed that they can finally shut down the threat system and relax (passive safeness) or explore (active safeness) (Bowlby, 1969; Porges, 2007).

Attachment is one of the most important aspects in mammalian evolution in general and in human evolution in particular (Bowlby, 1969; Gilbert, 2010; Keverne & Curley, 2008; Linden, 2007; Wang, 2005). As an altricial species (i.e., a species born needing parental care), for humans, the immediate initiation and maintenance of social bonds is a survival requirement and a fundamental human quality and need. From birth, children are highly sensitive to interpersonal signs, and the sense of safeness is not created merely in the absence of threat; instead, it is rooted in caretaking and stimulated via-warmth and affection (Bowlby, 1969; Gilbert, 2005, 2010; Mikulincer et al., 2005; Perry et al., 1995; Wang, 2005).

Several authors (e.g., Bowlby, 1969; Burnette et al., 2007; Gilbert, 2005, 2010; Mikulincer et al., 2005) established the significance of a secure attachment, especially in the first years of life with the maternal figure, to the emotional and social development of children. Caring signals and behaviors (e.g., holding, stroking, touching, facial expressions, and voice tone), related to the "Caregiving Behavioral System" (Bowlby, 1969), evolved as natural stimuli that activate, from birth, the soothing system, promoting clear calming effects, also affecting brain maturation (Gilbert et al., 2008; Mikulincer et al., 2005; Perry et al., 1995; Porges, 2007; Wang, 2005). In turn, human infants also born with an evolutionary repertoire of behaviors ("Attachment Behavioral System") that interacts and complements the "Caregiving Behavioral System" (Bowlby, 1969). Proximity seeking and a sense of attachment security are seen as primary inborn strategies for affect regulation (e.g., in a distress situation or in the presence of a threatening event), evolutionarily important for survival, and for future reproduction (Bowlby, 1969; Mikulincer et al., 2005; Perry et al., 1995).

A young person who has a secure attachment style, was soothed, and loved can easily recall these feelings and memories, which help to regulate the threat system by a self-soothing mechanism (Gilbert, 2010; Wang, 2005). Attachment security is related to lower indices of psychopathology (Gilbert et al., 2008; Schore, 2001, 2009), provides a natural basis for care-oriented feelings and caregiving behaviors (Mikulincer et al., 2005), reduces angry rumination, and promotes forgiveness (Burnette et al., 2007). A secure attachment style

(with occasional and low-intensity activation of the SRS) generally promotes the development of "slow" life history strategies, oriented to high somatic efforts and parental investment (Del Giudice, 2014; Del Giudice & Ellis, in press; Del Giudice et al., 2011, 2013; Ellis et al., 2013).

On the other hand, a child who has an insecure attachment style is more likely to develop a hyper-reactive threat system and a toned down or suppressed soothing system (Gilbert, 2010; Wang, 2005). A lack of secure attachment experiences early in life is also one of the most common causes of psychopathology (e.g., Burnette et al., 2007; Gilbert, 2005, 2010; Irons et al., 2006; Mills et al., 2010; Perry et al., 1995; Schore, 2001, 2009), affects or suppresses compassionate caregiving behavior (Mikulincer et al., 2005), enhances angry rumination, and reduces forgiveness (Burnette et al., 2007). Highly threatening environments (with frequent and intense activation of the SRS) can also shift life history strategies toward the fast end of the life history spectrum (Del Giudice, 2014; Del Giudice & Ellis, in press; Del Giudice et al., 2011, 2013; Ellis et al., 2013; Glenn et al., 2011).

Some studies in the neuroscience arena (e.g., Baumgartner, Heinrichs, Vonlanthen, Fischbacher, & Fehr, 2008; Delgado, 2008; Heinrichs & Domes, 2008; Panksepp, 1998; Porges, 2007; Schore, 2001, 2009) point out that caring and warmth are related to profound changes in central and peripheral nervous systems, enabling threat processing regulation (moderating defensive emotions like anger, anxiety, and sadness; and inhibiting fight/flight), promoting a sense of safety, social interest, interpersonal closeness, and affiliation, and also decreasing psychopathology.

Oxytocin seems to play a major role in the balancing of the soothing system, since much of its biological functions turns around relational events. Oxytocin may bias humans toward prosocial ends, promoting social connectedness and safeness (Depue & Morrone-Strupinsky, 2005; Heinrichs & Domes, 2008; Kirsch et al., 2005; MacDonald & MacDonald, 2010; Wang, 2005), trust (Baumgartner et al., 2008; Delgado, 2008), and feelings of well-being. Oxytocin can also be released in something as simple as a social touch (Delgado, 2008). This neuropeptide could also alter physiological pain thresholds, impact on the immune system, and on threat processing, reducing amygdala activation (of fear, anxiety, and stress), and promoting an anxiolytic effect (Baumgartner et al., 2008; Delgado, 2008; Depue & Morrone-Strupinsky, 2005; Heinrichs & Domes, 2008; Kirsch et al., 2005; MacDonald & MacDonald, 2010).

Although we are unaware of any study relating psychopathic traits with the soothing system, several authors (e.g., Cleckley, 1941/1988; Cooke & Michie, 2001; Frick & Dickens, 2006; Frick & White, 2008; Hare, 1993) indicate that psychopathic individuals are characterized by a set of affective and interpersonal features (e.g., lack of empathy, callous-unemotional traits, social detachment), which echoes an underbuilt soothing system. Moreover, some authors suggest that certain environmental risk factors, above all psychosocial ones, play a significant role in the etiology and maintenance of psychopathy (Farrington, Ullrich, & Salekin, 2010; Gao et al., 2010; Pardini, Lochman, & Powel, 2007; Salekin & Lochman, 2008; Saltaris, 2002). In an evolutionary perspective, insecure

attachment styles and extremely severe rearing environments commonly lead to the development of "fast" life strategies, focused on mating, with a little investment in interpersonal relationships and in parenting (Del Giudice, 2014; Del Giudice & Ellis, in press; Del Giudice et al., 2011, 2013; Ellis et al., 2013; Glenn et al., 2011). On addiction, the unemotional pattern present in individuals with psychopathic traits mirror those characteristics of a "fast" life-history strategy, being also associated with inhibition of social learning, sensitivity to social feedback, and low empathy (Del Giudice, 2014; Glenn et al., 2011; Mealey,1995). All of these studies and perspectives point out, to some extent, that individuals with psychopathy most likely present an inoperative or inappropriately reinforced soothing system marked by (among others) detachment, coldness, callousness, and an unemotional relational pattern.

4. The adaptive role of aggression

There is a long debate whether humans are innately competitive or cooperative (Fuentes, 2004). On one side, Neo-Darwinian theory defends that natural selection acts by competition, understood as the primary driving force in evolutionary change (Alexander, 1989; Dawkins, 1976/2006). Some authors defend that despite the decline in aggressive behaviors, which have accompanied modern civilizations, the human mind is still designed for ancestral environments, where strength, anger, aggression, and fighting abilities were crucial for competition (e.g., status, territory, and resources), survival, and reproduction (Anderson & Bushman, 2002; Gangestad & Simpson, 2007; MacLean, 1990; Nairne & Pandeirada, 2010; Sell, Hone, & Pound, 2012; Tooby & Cosmides, 1990). As Anderson and Bushman (2002) point out, "perhaps the anger-aggression linkage is one that humans are evolutionarily prepared to learn" (p. 44), being competition and potential for aggressive behavior present in humans (Alexander, 1989; Anderson & Bushman, 2002; Beck, 1999; Cashdan & Downes, 2012; Darwin, 1874; Dawkins, 1976/2006; Flinn, Ponzi, & Muehlenbein, 2012; Krebs, 2007; Sell et al., 2012; Wrangham & Glowacki, 2012).

Other authors (MacDonald & MacDonald, 2010; Panksepp, 1998) contend that natural selection most likely privileged the development of a variety of socially-oriented neural circuits that bias mammals to reflexively and actively orient themselves toward prosocial behaviors. Several authors (Beck, 1999; Fuentes, 2004; Gilbert, 2005; Smith, 2006; Sussman, Garber, & Cheverud, 2005; Trivers, 1971) argue that prosocial behavior, empathy and morality are fundamental human features, and that human cooperative social interactions form the fabric of society. We can see the impact that groups have on their environment and how cooperation within and between groups may also be one important human adaptive pattern (Fuentes, 2004; Reysen, Talbert, Dominko, Jones, & Kelley, 2011). Cooperation combined with rapid behavioral plasticity and innovation is probably what allowed humans to successfully construct their niche and evolve with it (Fuentes, 2004). Moreover, data suggest that all primates (including humans) engage in relatively little aggressive behavior and that

most social interactions are actually affiliative and altruistic (Beck, 1999; Fuentes, 2004; Sussman et al., 2005).

Despite these positions, we should move beyond dichotomous thinking, accepting that competition and cooperation had a role, and are not mutually exclusive, in our evolutionary past (Fuentes, 2004; Trivers, 1971). Actually, humans cooperate in a wide range of situations, including altruistic and prosocial (Beck, 1999; Fuentes, 2004; Gilbert, 2005; Smith, 2006; Sussman et al., 2005; Trivers, 1971), as well as aggressive ones (Cashdan & Downes, 2012; Flinn et al., 2012; Wrangham & Glowacki, 2012). Moreover, we must not forget that there are many potential routes to reproductive success in our species, some more cooperative and some more aggressive (Del Giudice, 2014 Del Giudice & Ellis, in press; Del Giudice et al., 2011, 2013; Ellis et al., 2013).

On this basis, some authors (Anderson & Bushman, 2002; Cashdan & Downes, 2012; Sell et al., 2012; Wrangham & Glowacki, 2012) believe that despite the fact that aggression has evolutionary roots, shaped in our ancestral environment, that does not mean that humans are predestined to behave violently. On the contrary, humans actually need and usually balance their instinctive desires to defend (inherited agonic tendencies related to aggression, individuality, territoriality and hierarchy) with their instinctive desires to bond (inherited hedonic tendencies related to mutual support and egalitarianism) (Gilbert, 2009, 2010)

Although some authors still debate the question of the inclusion of aggressive behavior as an inherent feature of psychopathy or its product (Cleckley, 1941/1988; Cooke & Michie, 2001; Salekin, Brannen, Zalot, Leistico, & Neumann, 2006; Skeem & Cooke, 2010), research shows that at least in some individuals, psychopathy is related with the most early, severe, and chronic forms of antisocial behavior (DeLisi, 2009; DeLisi & Piquero, 2011; Leistico, Salekin, DeCoster, & Rogers, 2008; Vaughn, Howard, & DeLisi, 2008), thus sustaining that psychopathic individuals probably present more agonic than hedonic tendencies. Psychopathy is also associated with faster life history strategies, marked by a set of agonic traits and behaviors, like increased risk-taking, reduced self-control, a selfish disposition, short-term mating effort, early sexual maturation and reproduction, large number of offspring, and little investment in social and parental care (Mealey, 1995). This “fast” life strategy, present in individuals with psychopathic traits, generally is adaptive (i.e., a route to reproductive success — more aggressive in this case) in highly stressful environments (Del Giudice et al., 2011; Ellis et al., 2013). Besides, some studies found an association between psychopathic traits and a pattern of precocious sexuality, promiscuity, and sexual coercion (Del Giudice, 2014; Glenn et al., 2011; Mealey, 1995). However, we must stress out that not all individuals who present psychopathic traits display aggressive behavior, and not all individuals who present antisocial behavior or even Antisocial Personality Disorder (APA, 2013) show psychopathic features (e.g., Cleckley, 1941/1988; Viding & Larson, 2010). Moreover, as stated, although psychopathy could be seen as an adaptive strategy, with some benefits to the individual, including reproductive success, it is a condition with various society and individual costs (Del Giudice et al., 2011; Ellis et al., 2013; Glenn et al., 2011).

5. Emotions and psychopathy

Emotions evolved due to their adaptive value and our emotional states in different scenarios are influenced by our ancestral past, but also by our own life history (Damasio, 1999, 2006; Darwin, 1872/1965; Ekman, 1999; Izard, 2007; Panksepp, 1998; Plutchik, 1980; Tomkins, 1962/1991; Tooby & Cosmides, 1990). Accordingly to Damasio (1999, 2006), emotions have two basic functions: they give rise to a quick and specific reaction according to the situation (e.g., fight, flight); and regulate the body internal state, so that it can be prepared for a specific reaction (e.g., increase the heart rate, breathing rate). Emotions are also crucial to the development, maintenance, and regulation of interpersonal relationships, being capable of influencing our thoughts, decision making, and actions (Damasio, 1999, 2006; Ekman, 1999; Izard, 2007).

Following the nomenclature of Damasio, emotions can be divided into universal (also called primary, pure or basic) and social (also called secondary or self-conscious; Damasio, 1999, 2006; Ekman, 1999; LeDoux, 1998, 2003; Lewis, 1992, 2001; Plutchik, 1980). Universal emotions (joy, fear, anger, sadness, disgust, surprise) are unlearned, automatic, and predictable, are also characterized by their early appearance (until 6 or 8 months), and by having universal facial expressions across cultures and other animal species (Damasio, 1999, 2006; Darwin, 1872/1965; Ekman, 1999; Lewis, 1992, 2001). The universality of these emotions does not imply a genetic or an evolutionary determinism, i.e., the brain mechanism of emotions is similar across individuals, but the emotional responses are idiosyncratic, influenced by the sociocultural environment of the subject (Damasio, 2006). The limbic system (especially the amygdala and the anterior cingulate) has a key influence in the operation of universal emotions (Damasio, 1999, 2006; LeDoux, 1998, 2003).

Social emotions (e.g., pride, shame, guilt, and compassion) appear later in life (at about 3 years of age), after the child acquires meta-representation, self-awareness, and additional cognitive abilities (Lewis, 1992, 2001). These emotions are triggered in social situations, induced by self-reflection and self-evaluation (implicit or explicit, conscious or unconscious), and play a key role in socialization, moral and ethical conduct of the individual, functioning as an emotional barometer (Damasio, 2006; Tangney & Dearing, 2003; Tangney, Stuewig, & Mashek, 2007; Tangney & Tracy, 2012). Thus, these emotions can impact on social and moral choices and behaviors by providing critical feedback concerning both anticipated behavior and actual behavior (Haidt, 2001; Tangney & Dearing, 2003; Tangney & Tracy, 2012; Tangney et al., 2007). Social emotions are a more recent product of evolution than universal ones, and some social emotions (like certain varieties of compassion) are exclusive to humans (Damasio, 2006). The social emotions processing is supported by the limbic system and also by the prefrontal and somatosensory cortices (Damasio, 1999, 2006).

Positive emotions, both universal (like joy) and social (like compassion) ones are related to prosocial, affiliative and altruistic behavior (Damasio, 2006; Gilbert, 2005, 2010; Schultz, Izard, & Bear, 2004). On the other side, negative universal and social emotions (like

hostility or shame) are frequently involved in aggressive behavior and in psychopathy itself (Baumeister, Smart, & Boden, 1996; Frick & Morris, 2004; Gold, Sullivan, & Lewis, 2011; Heinzen, Koehler, Smeets, Hoffer, & Huchzermeier, 2011; Lotze, Ravindran, & Myers, 2010; Morrison & Gilbert, 2001). While the ability of psychopathic individuals to detect emotions has been investigated, few studies have looked at positive and negative emotions in psychopathic individuals. Thus, next, we present a brief review regarding some emotions that may play a role in psychopathy, i.e., anger and shame, giving a special emphasis to shame/dishonor.

5.1. The role of anger on psychopathy

Anger-prone individuals usually have an anger-perception bias (perceiving neutral cues as challenging or hostile), problems in emotional regulation (both under or over-regulation), difficulties in the access to higher-level cognitive processes (especially those used in decision making, moral reasoning and judgment), being more likely to engage in aggressive behaviors, including, antisocial ones (Frick & Morris, 2004; Heinzen et al., 2011; Schultz et al., 2004).

There are some studies and theories regarding the association between anger, aggressive behavior (reactive and/or proactive), and psychopathy (e.g., Burt, 2012; Cale & Lilienfeld, 2006; Frick & Morris, 2004; Heinzen et al., 2011; Marsee & Frick, 2007; Schultz et al., 2004). Psychopathy seems to be present as unpathological and over-controlled with respect to anger. Psychopathic individuals deny the anger experience (anger is avoided, not consciously experienced), and publicly are sociable, compliant, and free of anxiety (Blackburn, 1971, 1993). Antisocial offenders who score high in psychopathic measures tend to exhibit more proactive aggressive behaviors, and are often motivated by sadistic interests and thrill seeking (Frick & Dickens, 2006; Frick & White, 2008; Marsee & Frick, 2007; Patrick et al., 2009). These subjects, on the other hand, can also display anger and aggressive behavior in response to ego threats (Baumeister et al., 1996; Cale & Lilienfeld, 2006).

However, we must highlight that some authors have questioned this traditional assumption — anger causes aggression (e.g., Geen, 2001). In this regard, it seems that self-conscious emotions, particularly shame/dishonor, play a role in the regulation of anger and aggression (e.g., Gilbert, 2005, 2009, 2010; Gold et al., 2011; Morrison & Gilbert, 2001; Tangney & Tracy, 2012; Tangney et al., 2007). This idea raises questions about the role of shame or dishonor in psychopathy.

5.2. The role of shame/dishonor in psychopathy

Shame and dishonor are negative self-conscious emotions that can comprise a negative evaluation of the global self. Shame and dishonor can be focused on several aspects of the self (body, feelings, fantasies, desires, thoughts, behaviors, and personal attributes), creating feelings of being inferior, undesirable, devaluated, unwanted, inadequate, defective, and worthless or feeling that others feel this way about oneself (Gilbert, 2009, 2010; Lewis, 1971; Tangney & Tracy, 2012; Tangney et al., 2007). According to the Evolutionary and

Biopsychosocial Model of Shame (Gilbert, 2009, 2010), since birth, all humans share the need to create positive feelings (e.g., be wanted, cared, and valued) about the self in the mind of others. The way we experience our interpersonal relationships early in life (especially with our family, but also with peers, and teachers) has a key influence on our shame/dishonor experience and shame/dishonor proneness, or on factors like ego threat tolerance and tolerance for being dishonored (Gilbert, 2005, 2009, 2010; Gold et al., 2011; Harper, 2011; Pinto-Gouveia &Matos, 2011). Whether shame or dishonor are felt or bypassed (Lewis, 1971; Lewis, 1992), people can cope with these emotions in two different ways (safety strategies/defenses): internalizing or externalizing the shame/dishonor experience (Gilbert, 2005, 2009, 2010). When the individual internalizes the shame/dishonor experience, usually makes internal attributions, adopts a submissive strategy, feels inferior, devalued, depressed, and anxious (Gilbert, 2005, 2009, 2010). When the individual externalizes the shame/dishonor experience, usually makes external attributions, adopts a dominant/aggressive strategy, enhancing the need to humiliate and devalue others. This last strategy is often linked to anger, revenge, and psychopathy (Gilbert, 2005, 2009, 2010).

If we take a close look, the mechanisms for dealing with these negative emotions mirrors the poles of the compass in Nathanson's theory (1992). Nathanson (1992) proposed a model that describes shame management coping styles, triggered in reaction to a dishonoring experience, and by which shame and/or dishonoring is enhanced, reduced, or ignored. Nathanson (1992) bases his model on the Tomkins's script theory (1962/1991), naming it as the Compass of Shame Model.

The author considers four poles of the compass, mainly maladaptive, related to different affects, cognitions, motivations, and behaviors: Attack Self, Withdrawal, Attack Other, and Avoidance. There is also one adaptive way to cope with shame/dishonor, related to self-reassurance and/or to the reestablishment of relationships (Elison, Lennon & Pulos, 2006; Harper, 2011; Nathanson, 1992). The poles of the Compass of Shame Model can be seen from both a state (situational) and a trait (dispositional) perspective. However, the poles are not necessarily independent, and the individual can use (in everyday life and even in the same situation) different coping styles to deal with shame and/or dishonoring experiences (Elison, Lennon, & Pulos, 2006; Harper, 2011; Nathanson, 1992).

The four poles of the compass can be divided into two main groups, according to the recognition of the shame/dishonor experience: Attack Self and Withdrawal; Attack Other and Avoidance (Elison et al., 2006; Harper, 2011; Nathanson, 1992). Attack Self and Withdrawal poles are frequently found in internalizing disorders (Elison et al., 2006; Gilbert, 2005, 2009, 2010; Nathanson, 1992). In both of these poles, the individual identifies the shame/dishonor experience as negative and valid, but not necessarily as shame/dishonor. The major differences can be observed in motivations and behaviors: at the Attack Self pole, the person supports shame/dishonor in order to maintain relationships with others (but turns anger inward); while at the Withdrawal pole the individual cannot bear or be willing to tolerate the shame/dishonor experience and moves away from others and/or may also not be aware of, or

take on the emotion of shame, at a conscious level (Elison et al., 2006; Harper, 2011; Nathanson, 1992).

Avoidance and Attack Other scripts share the narrow awareness and minimization of shame and/or dishonor (not accepting the shame's message as valid), and a tendency to externalize the negative experience, being frequently found in externalizing disorders (Elison et al., 2006; Harper, 2011; McWilliams, 1994/2011; Nathanson, 1992). The major differences are in the phenomenological experience (neutral/positive *versus* negative), and in behavior (distract *versus* attack). The Avoidance pole is the most likely to work outside consciousness, and can be seen as more adaptive than the other three maladaptive copying styles. However, Avoidance can have other costs, like addictions or narcissism (Elison et al., 2006; Harper, 2011; Nathanson, 1992), and has been linked to psychopathy — along with the Attack Other pole (Nyström & Mikkelsen, 2012; Paulo, da Motta, Ribeiro da Silva, & Rijo, submitted for publication) (See Table 1).

However, we must highlight that shame/dishonor, as a temporary emotional experience, is universal, mostly adaptive, and could serve different important purposes like the development of personal identity, socialization, interpersonal success, and even survival (Harper, 2011).

Table 1. *Poles of the compass in Nathanson Compass of Shame Model*

	Affect	Cognitions	Motivation	Behavior
Withdrawal	Negative (Shame, sadness, fear, anxiety)	Consciousness of shameful actions, flaws, or features, and discomfort with others	Limit shameful exposure	Withdraw, Hide, Avoid others
Attack Self	Negative (self-directed anger, Self-hatred, self-disdain, disgust)	Consciousness of shameful actions, flaws, or features.	Take control of shame, directing anger inward Being wanted, accepted, and valued by others	Self-criticism, Obey, Adopt a submissive behavior
Avoidance *	Neutral or positive (happiness, enthusiasm)	Little consciousness of shame, shameful actions, flaws, or features (denial)	Distract others and the self from the painful feeling Reduce the aware experience of shame. Display being above shame	Denial, Emotional distancing, Minimization, Jokes, Sex, Addictions, Narcissism
Attack Other *	Negative (anger)	May or may not have Consciousness of shame. Generally is too focused in other's behaviors and/or misbehaviors	Sustain the self-image, direct anger outward, and externalize the shame experience	Attack other person or thing. Make someone else feel worse, inferior and guilty

Note. Asterisked shame management styles are the more prevalent in subjects with psychopathic traits

On the other hand, shame-proneness is mostly maladaptive, rooted in dominant-submissive strategies, and linked with numerous psychopathological problems (Gilbert, 2010; Harper, 2011; Mills et al., 2010; Pinto-Gouveia & Matos, 2011; Tangney & Tracy, 2012). Besides, as Elison et al. (2006) point out, it seems that it is not the experience of shame/dishonor *per se* that is maladaptive, but rather the way shame/dishonor is handled by the individual.

There is a considerable amount of research focused on the role of shame/dishonor or ego threats in internalized disorders (e.g., Gilbert, 2010; Harper, 2011; Mills et al., 2010; Pinto-Gouveia & Matos, 2011; Tangney & Tracy, 2012). In comparison, there is little research focused on the role of shame in violence (e.g., Gold et al., 2011; Tangney et al., 2007), and even less focused on the link between shame/dishonor and psychopathy-related personality traits (Campbell & Ellison, 2005; Holmqvist, 2008; Morrison & Gilbert, 2001; Nyström & Mikkelsen, 2012; Paulo et al., submitted for publication).

In this regard, some authors contend that psychopathy is associated with a lack of shame (Cleckley, 1941/1988; Hare, 2003), while others (Campbell & Ellison, 2005; Holmqvist, 2008; Morrison & Gilbert, 2001; Nyström & Mikkelsen, 2012; Paulo et al., submitted for publication) claim a positive association between psychopathic traits and shame or some dishonoring event(s). It is quite possible that there are multiple pathways to psychopathy one of which involves dishonoring and potentially feelings of shame. Although it is likely that psychopathic individuals encounter shaming events, either they are oblivious to the shaming/dishonoring event, or they may defend against it by attacking the person or group/society that is attempting to shame and/or dishonor the individual. This defensive responding occurs because the ego threat is distasteful to the psychopathic individual who views him or herself as superior to the rest of the community/society.

According to this last perspective, shame/dishonor is often linked to attempts to deny, avoid, or side step the shame or dishonor-inducing situation, promoting defensiveness, interpersonal separation, distance, and a lack of empathy (Gilbert, 2010; Tangney & Dearing, 2003; Tangney & Tracy, 2012; Tangney et al., 2007), which reflects some of the affective and interpersonal features of psychopathy (Cleckley, 1988; Cooke & Michie, 2001). Moreover, according to Nathanson (1992), the interpersonal and affective features of psychopathy (e.g., callous-unemotional, grandiosity, manipulation) are only superficial, and serve to side step (from others and from the self) initially shameful, or dishonoring, feelings. In fact, shame and/or dishonor management in psychopathy seems to be conducted mostly at an unconscious level (Avoidance and Attack Other strategies), leading to minimal internalization of the shame/dishonor message (Campbell & Ellison, 2005; Harper, 2011; Holmqvist, 2008; McWilliams, 1994/2011; Nathanson, 1992; Paulo et al., submitted for publication). And, after some time of denying these emotional experiences, the psychopathic individual may evidence brain changes that reduce the likelihood that they will process these negative emotions.

Other authors (Baumeister et al., 1996; Meloy, 1988) also argue that subjects with psychopathy avoid a broad range of unwanted emotions. Baumeister et al. (1996) go further,

pointing out that, it is when the individuals with psychopathic traits fail to avoid unpleasant emotions that they tend to attack. “By focusing on his or her hostility toward the evaluators, the person avoids the dismal cycle of accepting the feedback, revising his or her self-concept, and experiencing the dejected feelings about the self” (p. 11).

According to the Adaptive Calibration Model (Del Giudice et al., 2011, 2013; Ellis et al., 2013), the low stress responsivity, the exploitative interpersonal style, and the unemotional pattern (to threats, to social feedback, and to social context) present in psychopathy, despite its weaknesses (for the self and for the society), seems to protect the individual from social rejection, criticism, and from unpleasant emotions. In other words, in line with these authors, psychopathic strategy shields the individual from hostile emotions, seeming to be adaptive, especially in hostile and abusive psychosocial environments (Del Giudice et al., 2011, 2013; Ellis et al., 2013) or in environments where they might be socially excluded. And, like any behavior and style, these defensive styles, after practicing it for some time, it eventually becomes part of one's personality (e.g., feeling of superiority, superficial charm, grandiosity).

Briefly, on one side, classical authors advocate a negative association between psychopathy and shame/dishonor (Cleckley, 1941/1988; Hare, 2003), while on the other side different authors claim a positive association between psychopathic traits and these emotions (Campbell & Ellison, 2005; Holmqvist, 2008; Morrison & Gilbert, 2001; Nyström & Mikkelsen, 2012; Paulo et al., submitted for publication). These contradictory points of view, resulting from different conceptual approaches, represent a difficult problem requiring clarification, since it can contribute to alter the comprehension and, consequently, the treatment approach of psychopathic subjects. We hypothesize that these contradictory results can derive from different theoretical backgrounds regarding the conceptualization of shame/dishonor and from different methodologies employed in the studies, as well as possibly different ways in which psychopathy can come about for individuals, with the shame and dishonor connection being one potential mechanism that in combination with other factors may lead to psychopathy. In other words, we think that future research should, accurately, shed light on the association between psychopathy and negative emotions (like shame and dishonor) that can prompt the psychopathic condition in some individuals.

6. Discussion

Evolutionary psychology proposes remarkable insights into human behavior based on our long evolutionary past, not ignoring culture and psychosocial influences (Gangestad & Simpson, 2007; Gilbert, 2009, 2010; Krebs, 2007). In the specific case of psychopathy, we could track the adaptive role of some features of the disorder, both along the human evolution as throughout the lifespan of a particular individual. Indeed, some authors (Del Giudice et al., 2011, 2013; Ellis et al., 2013; Gao et al., 2010; Glenn et al., 2011; Salekin et al., 2005) contend that psychopathy is more predominant in specific developmental

backgrounds, probably due to a fitness-advantage of those traits (and associated genes) in such environments.

Homo sapiens are a recent product of evolution, a combination and a reorganization of new and ancient systems (Cracraft & Donoghue, 2004; Damasio, 1999, 2006; Darwin, 1859/2009; de Duve, 2002; Gilbert, 2010; MacLean, 1990; Striedter, 2005). As animals, humans share the same brain functions (related to the "reptilian brain") and the so called drive and threat system with other animals (Damasio, 1999, 2006; Gilbert, 2005, 2009, 2010; MacLean, 1990). Although there is a lack of research focused on these precise issues, it seems that psychopathy is associated with an unbalanced drive and threat systems (Del Giudice et al., 2011; Ellis et al., 2013; Frick & Dickens, 2006; Frick & White, 2008; Patrick et al., 2009). However, low fear (Lykken, 1957, 2006), thrill-seeking behaviors (Del Giudice et al., 2011; Patrick et al., 2009), and a hypoarousal response (Del Giudice et al., 2011, 2013; Glenn et al., 2011) – what seems to be the case of subjects with psychopathic traits – could represent a strong advantage, especially when the psychosocial environment is highly hostile. Supporting this data, there is a considerable amount of research indicating a low association between psychopathic traits and reactive aggression (Burt, 2012; Cale & Lilienfeld, 2006; Frick & Morris, 2004; Heinzen et al., 2011; Marsee & Frick, 2007; Schultz et al., 2004) and a high association between psychopathy and risk-taking behaviors (Del Giudice et al., 2011; Patrick et al., 2009). Moreover, the Adaptive Calibration Model argues that, in severely harsh psychosocial backgrounds, environmental cues (e.g., unpredictability, high rates of mortality and morbidity) can shape the Stress Response System (SRS) in ways that support a shifting toward the development of a "fast" life-history strategy, and toward an unemotional pattern (frequently present in individuals with psychopathic traits) — more adaptive in those contexts (Del Giudice et al., 2011, 2013; Ellis et al., 2013; Glenn et al., 2011; Mealey, 1995).

As eutherians, humans share some basic functions (related to the "paleomammalian brain") with other placental mammals (MacLean, 1990). Besides, the human being presents a particular sensitivity to the psychosocial environment, mainly in the first years of life (Bird, 2007; Bowlby, 1969; Gilbert, 2005, 2010; Jablonka & Lamb, 2005; Keverne & Curley, 2008; Tollefsbol, 2010; Zhang & Meaney, 2010). Therefore, the soothing system is evolutionarily crucial not just for reproduction, but also for survival of the species and of the individual itself (Gilbert, 2005, 2009, 2010). Although there is a lack of research focused on this topic, it seems that subjects with psychopathic traits present an immature soothing system, reflected into the affective and interpersonal features of the disorder. Moreover, an hostile psychosocial background, that hampers the development of the soothing system (Gilbert, 2005, 2010), is probably crucial in the etiology and maintenance of psychopathy (Farrington et al., 2010; Gao et al., 2010; Pardini et al., 2007; Salekin & Lochman, 2008; Saltaris, 2002). From an evolutionary perspective, highly hostile developmental environments (that, from early ages, frequently and intensely activate the SRS, sending information about extrinsic morbidity–mortality and environmental volatility) usually tend to shift life history strategies toward the fast end of the life history continuum — "live fast, die young". This seems to be

the case of (at least some) individuals with psychopathy, which develop an unemotional pattern (e.g., inhibition of social learning, insensitivity to social feedback, low empathy), low stress responsivity, and "fast" life strategies, focused on mating, risk-taking, high rates of reproduction, with little investment in interpersonal relationships and parenting (Del Giudice, 2014; Del Giudice & Ellis, in press; Del Giudice et al., 2011, 2013; Ellis et al., 2013; Glenn et al., 2011). In summary, psychopathy, comprises a detached, cold, and callous-unemotional personality (Cleckley, 1941/1988; Cooke & Michie, 2001; Hare, 2003), that echoes an underdeveloped soothing system, that is adaptive at a low frequency (thriving by exploiting others) and represents an alternative strategy (a "fast" life-history strategy) that can be beneficial/adaptive to the individual in some contexts (Del Giudice et al., 2011; Ellis et al., 2013; Glenn et al., 2011, Mealey, 1995).

If Lombroso's theory of atavism (1895/2004) advocates that criminal subjects were defects of evolution, recent research sustains the contrary, i.e., it seems that cooperation, but also competition and a potential for aggressive behavior play key roles in the human evolution, being present until current times (Beck, 1999; Cashdan & Downes, 2012; Flinn et al., 2012; Fuentes, 2004; Gilbert, 2005, 2009, 2010; Smith, 2006; Sussman et al., 2005; Trivers, 1971; Wrangham & Glowacki, 2012). Moreover, some pathways to reproductive success actually include competition and aggressive behavior (Del Giudice et al., 2011, 2013; Ellis et al., 2013). Thus, the aggressive behavior present in a great percentage of subjects with psychopathy could be explained, at least partially, by these assumptions. But what about the affective and interpersonal features, considered by several authors the cornerstone of psychopathy?

As previously explained, primary emotions are shared by several species, indicating that emotions were crucial in the history of evolution, and evolved with it (Damasio, 1999, 2006; Darwin, 1872/1965). Emotions are affected by our ancestral past, but also by our own rearing experiences (Damasio, 1999, 2006; Darwin, 1872/1965; Ekman, 1999; Izard, 2007; Panksepp, 1998; Plutchik, 1980; Tomkins, 1962/1991; Tooby & Cosmides, 1990). Prosocial and altruistic behavior, as well as a secure attachment style is linked to positive emotions (Damasio, 2006; Gilbert, 2005, 2010; Schultz et al., 2004); while violent behavior, psychopathic traits, and attachment difficulties are related to negative emotions (Baumeister et al., 1996; Frick & Morris, 2004; Gold et al., 2011; Heinzen et al., 2011; Lotze et al., 2010; Morrison & Gilbert, 2001).

Psychopathy is historically associated with a lack of emotional and affective experience (Cleckley, 1944/1981; Hare, 2003); nevertheless, some authors argue that individuals with psychopathy may not have a lack of emotional experience; but a tendency to over control it, deny/avoid it, and/or to minimize it self-awareness (Blackburn, 1971, 1993; Nathanson, 1992). This line of research points out that some self-conscious or possibly even unconscious emotions, particularly shame/dishonor, can play a major role in the regulation of anger and aggression (e.g., Geen, 2001; Gilbert, 2005, 2009, 2010; Gold et al., 2011; Morrison & Gilbert, 2001; Tangney & Tracy, 2012; Tangney et al., 2007), and that shame/dishonor, more than

anger, has a key influence in the development and maintenance of psychopathic traits (Campbell & Ellison, 2005; Holmqvist, 2008; Morrison & Gilbert, 2001; Nathanson, 1992; Nyström & Mikkelsen, 2012; Paulo et al., submitted for publication).

According to the theory that shame or dishonor might prompt or exacerbate psychopathy in some individuals, some studies indicate that shame/dishonor, and other unpleasant emotions, are handled by subjects with psychopathic traits mostly at an unconscious level, with recourse to Avoidance and Attack Other strategies as preferred coping strategies (Campbell & Ellison, 2005; Harper, 2011; Holmqvist, 2008; McWilliams, 1994/2011; Nathanson, 1992; Paulo et al., submitted for publication). Consequently, it seems that individuals with psychopathy may actually go through the experience of shame and/or dishonor at times, but they tend to cope with these emotions (and other unwanted emotions) differentially, minimalizing the internalization of the shame, dishonor, or ego-threatening message: bypassing/avoiding it or, in the worst scenario (e.g., when avoidance is impossible), attacking (Baumeister et al., 1996; Blackburn, 1971, 1993; Cale & Lilienfeld, 2006; Campbell & Ellison, 2005; Holmqvist, 2008; Morrison & Gilbert, 2001; Nathanson, 1992; Nyström & Mikkelsen, 2012; Paulo et al., submitted for publication). These coping strategies can protect the individual with psychopathy from having to experience negative emotions. However, on the dark side, these psychological management strategies can contribute to the eventual development, maintenance, and intensification of psychopathic traits.

The insights of Evolutionary Theory, especially of the Adaptive Calibration Model, can enlighten this apparent paradox. This model argues that severely harsh environments can lead to a shift to a "fast" life-history strategy, and to the development of an unemotional pattern (reliably associated with psychopathy). For several reasons, in those psychosocial contexts, an unresponsive SRS (as it seems to be the case of subjects with psychopathic traits) is highly adaptive (Del Giudice et al., 2013; Ellis et al., 2013; Glenn et al., 2011). First, the unemotional pattern is frequently associated with faster life strategies (focused on mating rather than parental efforts, on gaining immediate/risky rather than long term advantages) that can be fitness-maximizing to the individual in these specific scenarios (Del Giudice et al., 2013; Ellis et al., 2013; Glenn et al., 2011, Mealey, 1995). Second, low stress responsivity helps to protect individuals from a set of overwhelming feelings they would have to deal if they experience the majority of emotions that this kind of environment is continuously inputting. In other words, in extremely severe and unpredictable rearing scenarios, filter massively the hostile information, with the support of an impassive SRS, seems the best adaptive approach for the subject itself (Del Giudice et al., 2011, 2013; Ellis et al., 2013; Glenn et al., 2011). Third, low stress responsivity may also improve the individual strengthen to negative physical/mental health outcomes, making them more resilient. Fourth, an unemotional pattern helps the individual to maintain calm and vigilance during aggressive/hostile interactions, sending a message to their opponents of invulnerability and fearlessness (Del Giudice et al., 2011, 2013; Ellis et al., 2013; Glenn et al., 2011). Finally, an unresponsive SRS is also an advantage for the extreme risk-taker and for the psychopathic

individual itself, since "adopting an exploitative/antisocial interpersonal style requires one to be shielded from social rejection, disapproval, and feelings of shame" (Del Giudice et al., 2011, p. 1578).

In summary, there is a considerable amount of research that presents a different interpretation of the historical conceptualizations linking psychopathy with a lack of emotional experience (Cleckley, 1941/1988; Hare, 2003). This line of research argues that psychopathy, or at least some variants of psychopathy, may, in fact, be positively associated with unpleasant emotions, but also with a predisposition to over control, deny/avoid, minimize the self-awareness of the emotional experience (Blackburn, 1971, 1993; Campbell & Ellison, 2005; Harper, 2011; Holmqvist, 2008; McWilliams, 1994/2011; Nathanson, 1992; Paulo et al., submitted for publication), and/or to a tendency to display an unemotional pattern, marked by low stress responsivity (Del Giudice et al., 2013; Ellis et al., 2013; Glenn et al., 2011, Mealey, 1995). Besides, "it is plausible that early environmental factors may act via the SRS to shift some individuals toward a faster life history strategy, facilitating the emergence of psychopathic traits" (Glenn et al., 2011, p. 375).

Psychopathy is a complex enough disorder, with several costs for the society and for the subject itself (DeLisi, 2009; DeLisi & Piquero, 2011; Leistico et al., 2008; Vaughn et al., 2008), which *per se* sustains the need of further study. The aforementioned theories and studies should be considered and explored as one potential mechanism, since they could contribute to adjust the way we conceptualize, prevent, and treat psychopathy. Regarding treatment, psychotherapeutic programs focused on the balance of the three emotion-regulation systems and on shame/dishonor (like Compassion-Focused Therapy; Gilbert, 2005, 2010), may be a promising approach for treating psychopathic disorder.

References

Alexander, R. D. (1989). Evolution of the human psyche. In P. Mellars, & C. Stringer (Eds.), *The human revolution: Behavioural and biological perspectives on the origins of modern humans* (pp. 455–513). Princeton, NJ: Princeton University Press.

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53,* 27–51.

Baumeister, R. E., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review, 103,* 5–33.

Baumgartner, T., Heinrichs, M., Vonlanthen, A., Fischbacher, U., & Fehr, E. (2008). Oxytocin shapes the neural circuitry of trust and trust adaptation in humans. *Neuron, 58,* 639–650.

Beck, A. T. (1999). *Prisoners of hate: The cognitive basis of anger, hostility, and violence*. New York: Harper Collins Publishers.

Berridge, K. C., & Kringelbach, M. L. (2008). Affective neuroscience of pleasure: Reward in humans and animals. *Psychopharmacology, 199,* 457–480.

Bird, A. (2007). Perceptions of epigenetics. Nature, 447, 396–398.

Bishop, S. J. (2008). Neural mechanisms underlying selective attention to threat. *Annals of the New York Academy of Sciences, 1129,* 141–152.

Blackburn, R. (1971). Personality types among abnormal homicides. *British Journal of Criminology, 37,* 166–178.

Blackburn, R. (1993). *The psychology of criminal conduct: Theory, research and practice*. New York: Wiley & Sons.

Blum, K., Chen, A. L. C., Chen, T. J. H., Braverman, E. R., Reinking, J., Blum, S. H., et al. (2008). Activation instead of blocking mesolimbic dopaminergic reward circuitry is a preferred modality in the long term treatment of reward deficiency syndrome (RDS): A commentary. *Theoretical Biology and Medical Modeling, 5,* 1–16.

Blum, K., Oscar-Berman, M., Giordano, J., Downs, B. W., Simpatico, T, Han, D, et al. (2012). Neurogenetic impairments of brain reward circuitry links to reward deficiency syndrome (RDS): Potential nutrigenomic induced dopaminergic activation. *Journal of Genetic Syndromes and Gene Therapy, 3,* 115–121.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.

Burnette, J. L., Taylor, K. W., Worthington, E. L., & Forsyth, D. R. (2007). Attachment and trait forgivingness: The mediating role of angry rumination. *Personality and Individual Differences, 42,* 1585–1596.

Burt, S. A. (2012). How do we optimally conceptualize the heterogeneity within anti-social behavior? An argument for aggressive versus non-aggressive behavioral dimensions. *Clinical Psychology Review, 32*, 263–279.

Caldwell, M. F., McCormick, D., Wolfe, J., & Umstead, D. (2012). Treatment-related changes in psychopathy features and behavior in adolescent offenders. *Criminal Justice and Behavior, 39,* 144–155.

Cale, E. M., & Lilienfeld, S. O. (2006). Psychopathic factors and risk for aggressive behavior: A test of the "threatened egotism" hypothesis. *Law and Human Behavior, 30,* 51–74.

Campbell, J. S., & Ellison, J. (2005). Shame coping styles and psychopathic personality traits. *Journal of Personality Assessment, 84,* 96–104.

Cannon,W. B. (1915). *Bodily changes in pain, hunger, fear and rage: An account of recent researches into the function of emotional excitement*. New York: Appleton.

Cashdan, E., & Downes, S. M. (2012). Evolutionary perspectives on human aggression: Introduction to the special issue. *Human Nature, 23,* 1–4.

Caspi, A., & Moffitt, T. E. (2006). Gene-environment interactions in psychiatry: joining forces with neuroscience. *Nature Reviews Neuroscience, 7,* 583–590.

Cleckley, H. (1988). *The mask of sanity* (6th ed.). St. Louis, MO: Mosby (Original work published 1941).

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Toward a hierarchical model. *Psychological Assessment, 13,* 171–188.

Cracraft, J., & Donoghue, M. J. (2004). *Assembling the tree of life*. Oxford: Oxford University Press.

Damasio, A. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. London: Heinemann.

Damasio, A. (2006). *Descartes' error: Emotion, reason and the human brain*. London: Vintage (Original work published in 1994).

Darwin, C. (1874). *The descent of man and selection in relation to sex*. New York: Rand, McNally & Company.

Darwin, C. (1965). *The expression of emotions in man and animals*. Chicago: University of Chicago Press (Original work published 1872).

Darwin, C. (2009). *Origin of species by means of natural selection*. London: John Murray (Original work published 1859).

Dawkins, R. (2006). *The selfish gene*. Oxford: Oxford University Press (Original work published in 1976).

de Duve, C. (2002). *Life evolving: Molecules, mind and meaning*. New York: Oxford University Press.

Del Giudice, M. (2014). An evolutionary life history framework for psychopathology. *Psychological Inquiry, 25,* 261–300.

Del Giudice, M., & Ellis, B. J. (2014s). Evolutionary foundations of developmental psychopathology. In D. Chicchetti (Ed.), *Developmental psychopathology, vol. 1: Theory and method* (3rd ed.). New York: Wiley (in press).

Del Giudice, M., Ellis, B. J., & Shirtcliff, E. A. (2011). The adaptive calibration model of stress responsivity. *Neuroscience & Biobehavioral Reviews, 35,* 1562–1592.

Del Giudice, M., Ellis, B. J., & Shirtcliff, E. A. (2013). Making sense of stress: An evolutionary: developmental framework. In G. Laviola, & S. Macrì (Eds.), *Adaptive and maladaptive aspects of developmental stress*. New York: Springer.

Delgado, M. R. (2008). Fool me once, shame on you; fool me twice, shame on oxytocin. *Neuron, 58,* 470–471.

DeLisi, M. (2009). Psychopathy is the unified theory of crime. *Youth Violence and Juvenile Justice, 7,* 256–273.

DeLisi, M., & Piquero, A. R. (2011). New frontiers in criminal careers research, 2000–2011: A state-of-the-art review. *Journal of Criminal Justice, 39,* 289–301.

Depue, R. A., & Morrone-Strupinsky, J. V. (2005). A neurobehavioral model of affiliative bonding: Implications for conceptualizing a human trait of affiliation. *Behavioral and Brain Sciences, 28,* 313–350.

Ekman, P. (1999). Basic emotions. In T. Dalgleish, & M. Power (Eds.), *Handbook of cognition and emotion* (pp. 45–60). Sussex, U.K.: John Wiley & Sons.

Elison, J., Lennon, R., & Pulos, S. (2006). Investigating the compass of shame: The development of the compass of shame scale. *Social Behavior and Personality, 34,* 221–238.

Ellis, B. J., Del Giudice, M., & Shirtcliff, E. A. (2013). Beyond allostatic load: The stress response system as a mechanism of conditional adaptation. In T.P. Beauchaine, & S.P. Hinshaw (Eds.), *Child and adolescent psychopathology* (pp. 251–284) (2nd ed.). New York: Wiley.

Esch, T., & Stefano, G. B. (2004). The neurobiology of pleasure, reward processes, addiction and their health implications. *Neuroendocrinology Letters, 25,* 235–251.

Farrington, D. P., Ullrich, S., & Salekin, R. T. (2010). Environmental influences on child and adolescent psychopathy. In R.T. Salekin, & D.R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 202–230). New York: Guilford Press.

Ferguson, C. J. (2010). Genetic contributions to antisocial personality and behavior: A meta-analytic review from an evolutionary perspective. *The Journal of Social Psychology, 150,* 160–180.

Flinn, M. V., Ponzi, D., & Muehlenbein, M. P. (2012). Hormonal mechanisms for regulation of aggression in human coalitions. *Human Nature, 23,* 68–88.

Frick, P. J., & Dickens, C. (2006). Current perspectives on conduct disorder. *Current Psychiatry Reports, 8,* 59–72.

Frick, P. J., & Morris, A. S. (2004). Temperament and developmental pathways to conduct problems. *Journal of Clinical Child and Adolescent Psychology, 33,* 54–68.

Frick, P. J., & White, S. F. (2008). The importance of callous-unemotional traits for developmental models of aggression and antisocial behavior. *Journal of Child Psychology and Psychiatry, 49,* 359–375.

Fuentes, A. (2004). It's not all sex and violence: Integrated anthropology and the role of cooperation and social complexity in human evolution. *American Anthropologist, 106,* 710–718.

Gangestad, S.W., & Simpson, J. A. (2007). *The evolution of mind: Fundamental questions and controversies.* New York: Guilford Press.

Gao, Y., Raine, A., Chan, F., Venables, P. H., & Mednick, S. A. (2010). Early maternal and paternal bonding, childhood physical abuse and adult psychopathic personality. *Psychological Medicine, 40,* 1007–1016.

Geen, R. G. (2001). *Human aggression* (2nd ed.). Buckingham: Open University Press (Original work published 1990).

Gilbert, P. (1995). Biopsychosocial approaches and evolutionary theory as aids to integration in clinical psychology and psychotherapy. *Clinical Psychology and Psychotherapy, 2,* 135–156.

Gilbert, P. (2005). Compassion and cruelty. In P. Gilbert (Ed.), *Compassion: Conceptualizations, research and use in psychotherapy* (pp. 9–74). New York: Routledge.

Gilbert, P. (2009). Introduction to compassion focused therapy. *Advances in Psychiatric Treatment, 5, 199–208.*

Gilbert, P. (2010). *Compassion focused therapy.* New York: Routledge.

Gilbert, P., McEwan, K., Mitra, R., Franks, L., Richter, A., & Rockliff, H. (2008). Feeling safe and content: A specific affect regulation system? Relationship to depression, anxiety, stress, and self-criticism. *The Journal of Positive Psychology, 3,* 182–191.

Glenn, A. L., Kuzban, R., & Raine, A. (2011). Evolutionary theory and psychopathy. *Agression and Violent Behavior, 16,* 371–380.

Gold, J., Sullivan, M. W., & Lewis, M. (2011). The relation between abuse and violent delinquency: The conversion of shame to blame in juvenile offenders. *Child Abuse & Neglect, 35,* 459–467.

Gould, S. J. (1991). Exaptation: A crucial tool for evolutionary psychology. *Journal of Social Issues, 47*, 43–65.

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review, 108,* 814–834.

Hare, R. D. (1993). *Without conscience: The disturbing world of the psychopaths among us.* New York: Simon & Schuster/Pocket.

Hare, R. D. (2003). *The Hare psychopathy checklist-revised* (2nd ed.). Toronto: Multi-Health Systems.

Harper, J. M. (2011). Regulating and coping with shame. In R. Trnka, K. Balcar, & M. Kuska (Eds.), *Reconstructing emotional spaces: From experience to regulation*. Prague: Prague of College of Psychological Studies Press.

Heinrichs, M., & Domes, G. (2008). Neuropeptides and social behavior: Effects of oxytocin and vasopressin in humans. *Progress in Brain Research, 170,* 337–350.

Heinzen, H., Koehler, D., Smeets, T., Hoffer, T., & Huchzermeier, C. (2011). Emotion regulation in incarcerated young offenders with psychopathic traits. *Journal of Forensic Psychiatry & Psychology, 22,* 809–833.

Holmqvist, R. (2008). Psychopathy and affect consciousness in young criminal offenders. *Journal of Interpersonal Violence, 23,* 209–224.

Horstmann, G., & Bauland, A. (2006). Search asymmetries with real faces: Testing the anger-superiority effect. *Emotion, 6,* 193–207.

Irons, C., Gilbert, P., Baldwin, M. W., Baccus, J., & Palmer, M. (2006). Parental recall, attachment relating and self-attacking/self-reassurance: Their relationship with depression. *British Journal of Clinical Psychology, 45,* 1–15.

Izard, C. E. (2007). Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on Psychological Science, 2*, 260–280.

Jablonka, E., & Lamb, M. N. (2005). *Evolution in four dimensions: Genetic, epigenetic, behavioral and symbolic variation in the history of life*. Massachusetts: MIT Press.

Josephs, R. A., Telch, M. J., Hixon, J. G., Evans, J. J., Lee, H., Knopik, V. S., et al. (2011). Genetic and hormonal sensitivity to threat: Testing a serotonin transporter genotype X testosterone interaction. *Psychoneuroendocrinology, 37,* 752–761.

Keverne, E. B., & Curley, J. P. (2008). Epigenetics, brain evolution and behavior. *Frontiers in Neuroendocrinology, 29,* 398–412.

Kirsch, P., Esslinger, C., Chen, Q., Mier, D., Lis, S., Siddhanti, S., et al. (2005). Oxytocin modulates neural circuitry for social cognition and fear in Humans. *Journal of Neuroscience, 25,* 11489–11493.

Krebs, D. (2007). Understanding evolutionary approaches to human behavior: Essay review of the evolution of mind: Fundamental questions and controversies by Steven W. Gangestad and Jeffry A. Simpson. *Human Development, 50,* 286–291.

Kubak, F. A., & Salekin, R. T. (2009). Psychopathy and anxiety in children and adolescents: New insights on developmental pathways to offending. *Journal of Psychopathology and Behavioral Assessment, 31,* 271–284.

LeDoux, J. (1998). *The emotional brain.* London: Weidenfeld & Nicolson.

LeDoux, J. (2003). The emotional brain, fear and the amygdala. *Cellular and Molecular Neurobiology, 23,* 727–738.

Lee, Z., Salekin, R. T., & Iselin, A. R. (2010). Psychopathic traits in youth: Is there evidence of primary and secondary subtypes? *Journal of Abnormal Child Psychology, 38,* 381–393.

Leistico, A. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis related the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior, 32,* 28–45.

Lewis, H. B. (1971). *Shame and guilt in neurosis.* New York: International University Press.

Lewis, M. (1992). *Shame: The exposed self*. New York: Free Press.

Lewis, M. (2001). Origins of the self-conscious child. In W. Ray Crozier, & A.A. Adden (Eds.), *International handbook of social anxiety: Concepts, research, and interventions related to the self and shyness* (pp. 101–105). Sussex, England: John Wiley & Sons.

Linden, D. J. (2007). *The accidental mind: How brain evolution has given us love, memory, dreams, and God.* Cambridge, MA: The Belknap Press of Harvard University Press.

Lombroso, C. (1895/2004). Criminal anthropology: Its origin and application. In D.M. Horton, & K.E. Rich (Eds.), *The Criminal Anthropological Writings of Cesare Lombroso Published in the English Language Periodical Literature During the Late 19th and Early 20th Centuries* (pp. 63–82). Lewiston, NY: Edwin Mellen Press.

Lotze, G. M., Ravindran, N., & Myers, B. J. (2010). Moral emotions, emotion self-regulation, callous-unemotional traits, and problem behavior in children of incarcerated mothers. *Journal of Child and Family Studies, 19,* 702–713.

Lykken, D. T. (1957). A study of anxiety in the sociopathic personality. *Journal of Abnormal and Clinical Psychology, 55,* 6–10.

Lykken, D. T. (2006). Psychopathic personality: The scope of the problem. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 3–13). New York: Guildford Press.

Lynam, D. R. (2010). Child and adolescent psychopathy and personality. In R.T. Salekin, & D.R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 179–201). New York: Guilford Press.

Lynam, D. R., Caspi, A., Moffitt, T. E., Loeber, R., & Stouthamer-Loeber, M. (2007). Longitudinal evidence that psychopathy scores in early adolescence predict adult psychopathy. *Journal of Abnormal Psychology, 116,* 155–165.

Lynam, D. R., & Gudonis, L. (2005). The development of psychopathy. *Annual Review of Clinical Psychology, 1,* 381–407.

MacDonald, K., & MacDonald, T. M. (2010). The peptide that binds: A systematic review of oxytocin and its prosocial effects in humans. *Harvard Review of Psychiatry, 18,* 1–21.

MacLean, P. D. (1990). *The triune brain in evolution: Role in paleocerebral functions.* New York: Plenum Press.

Marsee, M. A., & Frick, P. J. (2007). Exploring the cognitive and emotional correlates to proactive and reactive aggression in a sample of detained girls. *Journal of Abnormal Child Psychology, 35,* 969–981.

McWilliams, N. (2011). *Psychoanalytic diagnosis. Understanding personality structure in the clinical process.* New York, NY: Guilford Press (Original work published 1994).

Mealey, L. (1995). The sociobiology of sociopathy: An integrated evolutionary model. *The Behavioral and Brain Sciences, 18,* 523–599.

Meloy, J. R. (1988). *The psychopathic mind: Origins, dynamics, and treatment*. Northvale, NJ: Aronson.

Mikulincer, M., Shaver, P. R., Gillath, O., & Nitzberg, R. A. (2005). Attachment, caregiving, and altruism: Boosting attachment security increases compassion and helping. *Journal of Personality and Social Psychology, 89,* 817–839.

Mills, R. S. L., Arbeau, K. A., Lall, D. I. K., & De Jaeger, A. E. (2010). Parenting and child characteristics in the prediction of shame in early and middle childhood. *Merrill-Palmer Quarterly, 56,* 500–528.

Morrison, D., & Gilbert, P. (2001). Social rank, shame and anger in primary and secondary psychopaths. *Journal of Forensic Psychiatry & Psychology, 12,* 330–356.

Murrough, J. W., Huang, Y., Hu, J., Henry, S., Williams, W., Gallezot, J. D., et al. (2011). Reduced amygdala serotonin transporter binding in posttraumatic stress disorder. *Biological Psychiatry, 70,* 1033–1038.

Nairne, J. S., & Pandeirada, J. N. S. (2010). Adaptive memory: Ancestral priorities and the mnemonic value of survival processing. *Cognitive Psychology, 61,* 1–22.

Nathanson, D. L. (1992). *Shame and pride: Affect, sex and the birth of the self*. New York: W. W. Norton.

Nyström, M. B. T., & Mikkelsen, F. (2012). Psychopathy-related personality traits and shame management. *Journal of Interpersonal Violence, 28,* 519-537.

Panksepp, J. (1998). *Affective neuroscience*. New York: Oxford University Press.

Pardini, D. A., Lochman, J. E., & Powel, N. (2007). The development of callous-unemotional traits and antisocial behavior in children: Are there shared and/or unique predictors? *Journal of Child and Adolescent Psychology, 36,* 319–333.

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology, 21,* 913–928.

Paulo, M., da Motta, C., Ribeiro da Silva, D., & Rijo, D. (2013n). *Early shame experiences, coping with shame and psychopathic traits in youth.* (Manuscript submitted for publication).

Perry, B. D., Pollard, R. A., Blakley, T. L., Baker, W. L., & Vigilante, D. (1995). Childhood trauma, the neurobiology of adaptation, and "use dependent" development of the brain: How "states" become "traits". *Infant Mental Health Journal, 16,* 271–291.

Pinkham, A. E., Griffin, M., Baron, R., Sasson, N. J., & Gur, R. C. (2010). The face in the crowd effect: Anger superiority when using real faces and multiple identities. *Emotion, 10,* 141–146.

Pinto-Gouveia, J., & Matos, M. (2011). Can shame memories become a key to identity? The centrality of shame memories predicts psychopathology. *Applied Cognitive Psychology, 25,* 281–290.

Plutchik, R. (1980). *Emotion: A psychoevolutionary synthesis*. New York: Harper & Row.

Porges, S. W. (2007). *The polyvagal perspective*. Biological Psychology, 74, 116–143.

Reysen, M. B., Talbert, N. G., Dominko, M., Jones, A. N., & Kelley, M. R. (2011). The effects of collaboration on recall of social information. *British Journal of Psychology, 102,* 646–661.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2012). Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories. *Journal of Criminal Justice, 40*, 269–277.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2013). Child and adolescent psychopathy: Assessment issues and treatment needs. *Aggression and Violent Behavior, 18,* 71–78.

Salekin, R. T. (2002). Psychopathy and therapeutic pessimism: Clinical lore or clinical reality? *Clinical Psychology Review, 22,* 79–112.

Salekin, R. T. (2010). Treatment of child and adolescent psychopathy: Focusing on change. In R.T. Salekin, & D.R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 343–373). New York: Guilford Press.

Salekin, R. T., Brannen, D. N., Zalot, A. A., Leistico, A. R., & Neumann, C. S. (2006). Factor structure of psychopathy in youth: Testing the applicability of the new four factor model. *Criminal Justice and Behavior, 33,* 135–157.

Salekin, R. T., Leistico, A. R., Trobst, K. K., Schrum, C. L., & Lochman, J. E. (2005). Adolescent psychopathy and personality theory— The interpersonal circumplex: Expanding evidence of a nomological net. *Journal of Abnormal Child Psychology, 33,* 445–460.

Salekin, R. T., & Lochman, J. E. (2008). Child and adolescent psychopathy: The search for protective factors. *Criminal Justice and Behavior, 35,* 159–172.

Salekin, R. T., & Lynam, D. R. (2010). Child and adolescence psychopathy: The road ahead. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 401–420). New York: Guilford Press.

Salekin, R. T., Tippey, J. G., & Allen, A. D. (2012). Treatment of conduct problem youth with interpersonal callous traits using mental models: Measurement of risk and change. *Behavioral Sciences & the Law, 30,* 470–486.

Saltaris, C. (2002). Psychopathy in juvenile offenders: Can temperament and attachment be considered as robust developmental precursors? *Clinical Psychology Review, 22,* 729–752.

Schauer, M., & Elbert, T. (2010). Dissociation following traumatic stress etiology and treatment. *Journal of Psychology, 218,* 109–127.

Schore, A. N. (2001). Effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal, 22,* 7–66.

Schore, A. N. (2009). Relational trauma and the developing right brain: The neurobiology of broken attachment bonds. In T. Baradon (Ed.), *Relational trauma in infancy* (pp. 19–47). London: Routledge.

Schultz, D., Izard, C. E., & Bear, G. G. (2004). Children's emotion processing: Relations to emotionality and aggression. *Development and Psychopathology, 16,* 371–387.

Sell, A., Hone, L., & Pound, N. (2012). The importance of physical strength to human males. *Human Nature, 23,* 30–44.

Silk, K. R. (2008). Commentary: Personality disorder in adolescence: The diagnosis that dare not speak its name. *Personality and Mental Health, 2*, 46–48.

Skeem, J. L., & Cooke, D. J. (2010). Is criminal behavior a central component of psychopathy? Conceptual directions for resolving the debate. *Psychological Assessment, 22,* 433–445.

Smith, A. (2006). Cognitive empathy and emotional empathy in human behavior and evolution. *The Psychological Record, 56,* 3–19.

Spitzer, C., Barnow, S., Freyberger, H. J., & Grabe, H. J. (2006). Recent developments in the theory of dissociation. *World Psychiatry, 5,* 82–86.

Striedter, G. F. (2005). *Principles of brain evolution.* Sunderland: Sinauer Association.

Sussman, R. W., Garber, P. A., & Cheverud, J. M. (2005). The importance of cooperation and affiliation in the evolution of primate sociality. *American Journal of Physical Anthropology, 128,* 84–97.

Tangney, J. P., & Dearing, R. L. (2003). *Shame and guilt*. New York: The Guilford Press.

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behavior. *Annual Review of Psychology, 58,* 345–372.

Tangney, J. T., & Tracy, J. L. (2012). Self-conscious emotions. In M.R. Leary, & J.P. Tangney (Eds.), *Handbook of self and identity* (pp. 446–480). New York: The Guilford press.

Tollefsbol, T. (2010). Epigenetics: The new science in genetics. In T. Tollefsbol (Ed.), *Handbook of epigenetics: The new molecular and medical genetics* (pp. 1–6). London: Elsevier.

Tomkins, S. S. (1991). *Affect, imagery, consciousness: Vol 2. The negative affects.* New York: Springer (Original work published 1962).

Tooby, J., & Cosmides, L. (1990). The past explains the present: Emotional adaptations and the structure of ancestral environments. *Ethology and Sociobiology, 11,* 375–424.

Trivers, R. L. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology, 46,* 35–57.

Vaughn, M. G., Howard, M. O., & DeLisi, M. (2008). Psychopathic personality traits and delinquent careers: An empirical examination. *International Journal of Law and Psychiatry, 31,* 407–416.

Viding, E., & Larson, H. (2010). Genetics of child and adolescent psychopathy. In R.T. Salekin, & D.R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 113–134). New York: Guilford Press.

Wang, S. (2005). A conceptual framework for integrating research related to the physiology of compassion and the wisdom of Buddhist teachings. In P. Gilbert (Ed.), *Compassion: Conceptualization, research and use in psychotherapy* (pp. 75–120). New York: Routledge.

Wrangham, R. W., & Glowacki, L. (2012). Intergroup aggression in chimpanzees and war in nomadic huntergatherers: Evaluating the chimpanzee model. *Human Nature, 23,* 5–29.

Zhang, T. Y., & Meaney, M. J. (2010). Epigenetics and the environmental regulation of the genome and its function. *Annual Review of Psychology, 61,* 439–466.

Study III |

Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls

Current Psychology, Advance online publication
2019, doi: 10.1007/s12144-019-00353-3

Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls

Diana Ribeiro da Silva[a], Paula Vagos[ab], and Daniel Rijo[a],

[a] Research Center for Neuropsychology and Cognitive-Behavioral Intervention
Faculty of Psychology and Educational Sciences, University of Coimbra
[b] Universidade Portucalense Infante D. Henrique

Abstract

Background: Although psychopathy has historically been associated with a lack of emotion, recent research has suggested that psychopathy may represent a tendency to externalize the experience of unpleasant emotions, including shame, which could be seen as an adaptive strategy within an evolutionary framework. However, more empirical research is needed to build on this argument.

Objective: This study tested a novel evolutionary-based model involving pathways associating the impact of harsh rearing experiences (warmth and safeness experiences and traumatic shameful experiences) with psychopathic traits as well as the indirect effects of external shame and shame coping strategies in this association. This study also tested the invariance of this model across gender.

Method: A youth community sample (*N* = 703; 58.9% girls) completed self-report questionnaires on the impact of harsh rearing experiences, external shame, shame coping strategies, and psychopathic traits.

Results: The results suggested that the impact of harsh rearing experiences was directly and indirectly (through external shame and shame coping strategies) associated with psychopathic traits. The model partially explained the endorsement of psychopathic traits in boys and girls, although gender differences were found in some of the pathways.

Conclusions: These findings offer support for conceptualizing psychopathic traits as an adaptive strategy to cope with the impact of harsh rearing experiences, opening new perspectives for prevention and treatment.

Keywords: harsh rearing experiences; external shame; shame coping strategies; psychopathic traits; evolutionary approach

Introduction

In forensic settings, psychopathic traits (i.e., the constellation of Grandiose-Manipulative: GM, Callous-Unemotional: CU, and Impulsive-Irresponsible: II traits; Cooke and Michie 2001; Hare 2003) seem to be associated with the most early, severe, and stable forms of antisocial behavior and become less responsive to treatment with age (Caldwell et al. 2012; Gretton et al. 2004; Hare and Neumann 2006; Kubak and Salekin 2009; Salekin et al. 2012). However, psychopathic traits are continuously distributed throughout the population, differing from normality in degree rather than kind in both adult and youth samples (Edens et al. 2006; Ribeiro da Silva et al. 2019a). Thus, several authors reinforce the need to study the etiological pathways of psychopathic traits from different perspectives in both forensic and community samples, while also considering the potential influence of gender (e.g., Hare and Neumann 2008; Neumann et al. 2012; Ribeiro da Silva et al. 2012, 2013; Verona et al. 2010). One etiological perspective that has been gaining increasing interest by researchers is evolutionary theory, which argues that psychopathic traits can be seen as an adaptive[10] strategy to survive and thrive in harsh rearing scenarios, i.e., rearing environments marked by a lack of warmth and safeness experiences and/or by the presence of traumatic experiences (Del Giudice and Ellis 2015; Ferguson 2010; Glenn 2019; Glenn et al. 2011; Jonason et al. 2016; Mealey 1995; Ribeiro da Silva et al. 2015). Research has shown that the extent to which the harshness of rearing experiences impacts individuals is more important than those experiences *per se* (Berntsen and Rubin 2006; Richter et al. 2009). Therefore, it seems important to elucidate the mechanisms linking the impact of harsh rearing experiences and psychopathic traits from the perspective of an evolutionary framework.

Although several studies have noted that harsh rearing scenarios are important risk factors for the prediction, development, and/or maintenance of psychopathic traits (e.g., Auty et al. 2015; Gao et al. 2010; Sevecke et al. 2016; Waller et al. 2014), few studies have used evolutionary arguments to discuss their research findings (Patch and Figueredo 2016; Ribeiro da Silva et al. 2019b). According to evolutionary theory, despite evident societal and individual costs, psychopathic traits are seen as adaptive in harsh rearing environments. Specifically, psychopathic traits seem to protect individuals from the constant and distressing emotions that these environments continuously input and make them appear dominant, invulnerable, and fearless to their rivals (Del Giudice 2016). These assumptions raise questions about the possible role of emotion and emotion regulation dysfunctions in the mechanisms linking the impact of harsh rearing experiences and psychopathic traits (Ribeiro da Silva et al. 2015).

Emotions and emotion regulation strategies in general and shame and shame regulation in particular are valued products of evolution (Damasio 2006; Gilbert 2015). Shame is considered adaptive as a temporary emotional experience (Harper 2011), but it can be

[10] From an evolutionary perspective, an adaptive response does not necessarily mean psychological well-being or socially valued outcomes. On the contrary, it means that, at least in the short run and in that particular environment, those strategies/traits are increased based on evolutionary tradeoffs (Del Giudice 2016).

harmful if it covers overwhelming and persistent feelings of being inadequate, inferior, and valueless (Goss et al. 1994). In fact, research has shown that shame and emotion regulation problems are important transdiagnostic features linking harsh rearing scenarios with several internalizing and externalizing psychopathological disorders in both males and females (e.g., Bennett et al. 2005; Gold et al. 2011; Gross 2014; Gross and Hansen 2000; Harper and Arias 2004; Hejdenberg and Andrews 2011; Heleniak et al. 2016; Kim et al. 2009; Kivisto et al. 2011). However, while individuals with internalizing disorders tend to make internal attributions, to recognize and internalize the shame experience as negative and valid, withdrawing from the shameful situation (Withdrawal coping strategy) and/or verbally/physically attacking the self (Attack Self coping strategy) (Elison et al. 2006; Gilbert 2010; Nathanson 1992), individuals with externalizing disorders tend to make external attributions, to minimize and externalize the shame experience, avoiding the negative experience by distracting the self and others (Avoidance coping strategy) and/or attacking others by adopting dominant/aggressive strategies (Attack Other coping strategy) (Elison et al. 2006; Harper 2011; Harper and Arias 2004; Hejdenberg and Andrews 2011; Kivisto et al. 2011; Nathanson 1992).

Psychopathy is traditionally associated with a lack of emotional experience, including the lack of shame (Cleckley 1941/1988; Mullins-Nelson et al. 2006; Tangney et al. 2011). However, recent studies have found that emotional dysfunctions are a central component of psychopathy; that is, it seems that individuals with psychopathic traits do feel emotions but struggle to regulate them and that these difficulties may be related mostly to CU and II traits (e.g., Garofalo and Neumann 2018; Garofalo et al. 2018; Hare and Neumann 2008; Kosson et al. 2016; Schriber et al. 2017). Research has also shown that in potentially shameful scenarios, individuals with psychopathic traits tend to regulate shame mostly by using Avoidance and/o Attack Other coping strategies (Campbell and Elison 2005; Hejdenberg and Andrews 2011; Kivisto et al. 2011; Nyström and Mikkelsen 2012; Velotti et al. 2016). Together, these data raise the question of whether psychopathic traits are related to a lack of emotion or a tendency to deny/avoid and externalize the experience of unpleasant emotions, particularly shame (Baumeister et al. 1996; Campbell and Elison 2005; Holmqvist 2008; Meloy 1988; Millon and Davis 1998; Morrison and Gilbert 2001; Nyström and Mikkelsen 2012; Schriber et al. 2017; Spice et al. 2015; Velotti et al. 2016). In any case, it is challenging to assess shame and shame regulation in individuals with psychopathic traits via self-report measures, which may account for the contradictory findings across studies (see Ribeiro da Silva et al. 2015 for a review). These difficulties could be overcome, at least partially, by assessing external shame (i.e., the perception that others hold negative beliefs and thoughts about the self) instead of internal shame (i.e., the perception that the self is inferior, inadequate, and worthless). Even if internal shame and external shame are found to be highly correlated, because the burden is placed on others and not on the self, this may be easier for individuals with psychopathic traits to grasp (Goss et al. 1994). Another approach is to assess ways of reacting to situations that generally induce shame (Elison et al. 2006).

It is conceivable that multiple pathways to psychopathy may exist (e.g., Ribeiro da Silva et al. 2012; Viding and Larson 2010). One of these pathways may involve linking the impact of harsh rearing experiences and psychopathic traits as well as the indirect effects of external shame and shame coping strategies in this association. However, only one study has tested this evolutionary-based model using both forensic and community male youth samples (Ribeiro da Silva et al. 2019b). The results of this study suggested that: (1) the impact of harsh rearing experiences was positively and directly associated with external shame as well as with CU and II traits and positively and indirectly (through external shame and shame coping strategies) linked to all psychopathic traits; (2) reporting external shame was positively and directly associated with CU and II traits in addition to maintaining positive and indirect pathways (through shame coping strategies) to all psychopathic traits; (3) Avoidance and Attack Other shame coping strategies were positively associated with psychopathic traits, while Attack Self and Withdrawal shame coping strategies were negatively linked to psychopathic traits; and (4) differences were found not only in some of the mean scores between forensic and community male participants but also in some of the pathways, which were more pronounced for forensic male youth (Ribeiro da Silva et al. 2019b). Thus, it seems important to build on this model and to study it in boys and girls from the community to better understand possible differences in these mechanisms across gender and to enlighten preventive practices (Ribeiro da Silva et al. 2013; Shiner 2009; Verona et al. 2010).

Current Study

This study aimed to explore, in a youth community sample, an evolutionary-based model involving pathways linking the impact of harsh rearing experience (warmth and safeness experiences and traumatic shameful experiences) and psychopathic traits (GM, CU, and II) as well as the indirect effects of external shame and shame coping strategies in this association. This study also aimed to test the invariance of this model across gender. We hypothesized that the impact of harsh rearing experiences would be positively associated with psychopathic traits and external shame (e.g., Auty et al. 2015; Gao., et al. 2010; Henry et al. 2018; Ribeiro da Silva et al. 2019b; Sevecke et al. 2016). In turn, external shame was expected to be positively associated with all maladaptive shame coping strategies (Nathanson 1992; Vagos et al. 2016). Additionally, Attack Self and Withdrawal shame coping strategies were expected to be negatively associated with psychopathic traits, while Avoidance and Attack Other shame coping strategies were expected to be positively associated with psychopathic traits (e.g., Nyström and Mikkelsen 2012; Ribeiro da Silva et al. 2019b; Velotti et al. 2016). Although there is narrow and inconsistent literature regarding the associations between shame and psychopathic traits (see Ribeiro da Silva et al. 2015 for a review), as measured in the current work, we also expected to find positive and direct associations between external shame and psychopathic traits (especially CU and II traits) given that psychopathy may be associated with difficulties in regulating emotions rather than experiencing them (Garofalo et al. 2018; Ribeiro da Silva et al. 2019b). Regarding gender

differences, boys were expected to score higher on psychopathic traits than girls (Pechorro et al. 2017), while girls were expected to resort more to internalizing shame coping strategies than boys (Nyström and Mikkelsen 2012; Vagos et al. 2019). No gender differences were expected to be found regarding the impact of harsh rearing experiences neither on external shame levels (Else-Quest et al. 2012; Vagos et al. 2017, 2018). Finally, as there are no available research findings for comparison, we refrain from formulating hypotheses regarding potential differences in the pathways across samples.

Method

Participants

The participants in this study were 703 students from secondary schools. The participants' mean age was 16.46 years (*SD* = 1.09; age ranging from 15 to 18 years old). Regarding gender, 58.9% were female (*n* = 414) and 41.1% were male (*n* = 289). Boys (*M* = 14.44, *SD* = 1.08) and girls (*M* = 16.47, *SD* = 1.11) had similar mean ages [$t_{(701)}$ = -.032, *p* = .751]. On average, they had been enrolled in school for 9.97 years (*SD* = 1.17; ranging from 6 to 12), with girls, on average (*M* = 10.07, *SD* = 1.13), having been enrolled in school for significantly more years than boys [*M* = 9.82, *SD* = 1.22; $t_{(701)}$ = -2.77, *p* = .006]. Concerning socioeconomic status[11] (SES), 30.6% of the participants had low SES (*n* = 215); 51.4% had medium SES (*n* = 361), and 18.1% had high SES (*n* = 127). Boys and girls were uniformly distributed by SES [$x^2_{(2)}$ = .97, *p* = .620].

[11] Examples of professions in the high socioeconomic status groups are judges, higher education teachers, or MDs; examples for the medium socioeconomic status group are nurses, psychologists, or school teachers; and examples for the low socioeconomic group are farmers, cleaning staff, or undifferentiated worker. When the mothers' and fathers' professions were classified into different socioeconomic status, the highest SES coding was attributed to the family.

Table 1. *Correlations Between Variables and Descriptive of Measures for the Boys and Girls (N = 703)*

	1	2	3	4	5	6	7	8	9	10	Boys (n = 289)	Girls (n = 414)	*t*
1. EMWSSA-SV	-										3.03 (.75)	3.15 (.73)	-2.06*
2. CESA-SV	-.22***	-									2.35 (.93)	2.31 (.95)	.51
3. OASB-A	-.30***	.38***	-								1.21 (.70)	1.19 (.68)	.35
4. CoSSAV	.02	.12**	.23***	-							1.64 (.63)	1.59 (.52)	1.08
5. CoSSAS	-.14***	.29***	.60***	.24***	-						1.52 (.84)	1.79 (.86)	-4.19***
6. CoSSW	-.17***	.32***	.62***	.33***	.78***	-					1.39 (.75)	1.51 (.75)	-3.51***
7. CoSSAO	-.19***	.24***	.40***	.43***	.39***	.50***	-				1.08 (. 69)	.97 (.64)	2.18*
8. YPI-S-GM	-.09*	.01	.02	.28***	-.16***	.08*	.27***	-			2.05 (.55)	1.72 (.47)	8.19***
9. YPI-S-CU	-.23***	.11**	.12**	.18***	.09*	.02	.29***	.43***	-		1.97 (.48)	1.66 (.45)	8.97***
10. YPI-S-II	-.19***	.18***	.23***	.18***	.14***	.18***	.30***	.24***	.22***	-	2.31 (.43)	2.29 (.51)	.64

Note: EMWSSA-SV = Early Memories of Warmth and Safeness Scale for Adolescents: Short Version; CESA-SV = Centrality of Event Scale for Adolescents: Short Version; OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale (CoSSAV – Avoidance; CoSSAS - Attack Self; CoSSW – Withdrawal; CoSSAO – Attack Other); YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-GM - Grandiose-Manipulative; YPI-S-CU - Callous-Unemotional; YPI-S-II - Impulsive-Irresponsible).

Descriptive of measures are presented as *M (SD)*.

*** $p < .001$, ** $p < .01$, * $p < .05$

Measures

Impact of harsh rearing experiences

The Early Memories of Warmth and Safeness Scale for Adolescents-Short Version EMWSSA-SV (Vagos et al. 2017) is a 9-item shorter version for adolescents of the original Early Memories of Warmth and Safeness Scale (Richter et al. 2009). The EMWSSA-SV is a self-report scale designed to measure recall of one's feeling of being warm, safe, and cared for in childhood, i.e., how these memories impact the individual. Items (e.g., "I felt safe and secure") are rated on a five-point frequency scale (0= "No, never", 4 = "Yes, most of the time"). In the original study (Vagos et al. 2017), this measure was highly correlated with the original longer version of the scale and was presented as a one-factor measurement model with a very good internal consistency value for both male and female community samples. In addition, the one-factor measurement model of the EMWSSA-SV has proven to be invariant across Portuguese boys and girls from the community (Vagos et al. 2017). This one-factor measurement model achieved acceptable fit using the current sample (cf. Table 2) and a very good internal consistency value (α = .91).

The Centrality of Event Scale for Adolescents-Short Version (CESA-SV; Gauer et al. 2013; Portuguese version for adolescents by Vagos et al. 2018) is a 7-item shorter version of the Centrality of Event Scale (Berntsen and Rubin, 2006). The CESA-SV is a self-report scale that measures the extent to which a memory of a shameful/traumatic event impacted an individual; that is, it became a reference point for an individual's everyday references, a turning point in one's life story, and a central component of personal identity. The CESA-SV gives the following prompt to participants: "Please think back on the most shameful or traumatic event in your life and answer the following questions". Items (e.g., "I feel that this event has become a central part of my life story") are then rated on a five-point frequency scale (1= "Totally disagree", 5= "Totally agree"). Vagos and colleagues (2018) found that the CESA-SV was highly correlated with the original longer version of the scale and presented a one-factor measurement model with a good internal consistency value for both male and female community samples. Moreover, the one-factor measurement model of the CES-SV has proven to be invariant across Portuguese boys and girls from the community (Vagos et al. 2018). This one-factor measurement model achieved acceptable fit using the current sample (cf. Table 2). It also achieved a very good internal consistency value (α = .90).

External Shame

The Other as Shamer Scale Brief-Adolescent version (OASB-A; Vagos et al. 2016) is the adolescent version of the OAS 2 (Matos et al. 2015), both of which are shorter versions of the Other as Shamer Scale (Goss et al. 1994). The OASB-A is an 8-item self-report scale that measures external shame, i.e., the subject's perception of being negatively judged by others. Items (e.g., "Other people see me as small and insignificant") are rated on a five-point frequency scale (0= "Never"; 4-"Almost Always") and report on how frequently one experiences the feelings described in each statement. Vagos and colleagues (2016) found that

the OASB-A was highly correlated with the original longer version of the scale and presented a one-factor measurement model with a very good internal consistency value within male and female community participants. Furthermore, the one-factor measurement model of the OASB-A has proven to be invariant across Portuguese boys and girls from the community (Vagos et al., 2016). This one-factor measurement model achieved acceptable fit using the current sample (cf. Table 2) and a good internal consistency value (α = .88).

Shame coping strategies

The Compass of Shame Scale (CoSS; Elison et al. 2006; Portuguese version for Adolescents by Vagos et al. 2019) is a 48-item self-report scale that assesses the individual's use of shame-coping strategies described by Nathanson's (1992) Compass of Shame Model. The 48 items are distributed across 12 scenarios. Participants are asked to imagine that the situation described in each scenario (e.g., "When an activity makes me feel like my strength or skill is inferior") has just happened to them and are then presented with four items (presented in rotating order) referring to different possible reactions to the situation. These reactions correspond to the four maladaptive shame-coping strategies: (1) "Avoidance" (e.g., "I act as if it isn't so"); (2) "Attack Self" (e.g., "I get mad at myself for not being good enough"); (3) "Withdrawal" (e.g., "I withdraw from the activity"); and (4) "Attack Other" (e.g., "I get angry with them"). All items are rated on a five-point frequency scale (0 = "Never" to 4 = "Almost always"). Vagos and colleagues (2019) found evidence in favor of a four-factor measurement model for the CoSS with acceptable to very good internal consistency values within male and female participants for each of the four maladaptive coping strategies. Furthermore, the measurement model of the CoSS has proven to be invariant across Portuguese boys and girls from the community (Vagos et al. 2019). In the present study, this four-factor measurement model achieved acceptable adjustment indicators (cf. Table 2). All factors additionally achieved at least acceptable internal consistency values (α = .74 for "Avoidance"; α = .91 for "Attack Self"; α = .88 for "Withdrawal"; and α = .87 for "Attack Other").

Psychopathic traits

The Youth Psychopathic Traits Inventory-Short (YPI-S; van Baardewijk et al. 2010; Portuguese version by Pechorro et al. 2015) is an 18-item self-report version of the original Youth Psychopathic Traits Inventory (YPI; Andershed et al. 2002). The YPI-S assesses psychopathic traits in youth based on three factors: Grandiose-Manipulative (GM; e.g., "It's easy for me to manipulate people"), Callous-Unemotional (CU; e.g., "I think that crying is a sign of weakness, even if no one sees you"), and Impulsive-Irresponsible (II; e.g., "It often happens that I talk first and think later"). Each factor is assessed by a set of six items. Each item in the YPI-S is rated on a four-point frequency scale (1 = "Does not apply at all" to 4 = "Applies very well"). The three-factor structure of the YPI-S was confirmed in a Portuguese youth community sample, and this measurement model has proven to be invariant across

Portuguese boys and girls from the community (Pechorro et al. 2017). The YPI-S has also revealed strong convergence with the original YPI and has been demonstrated to have good psychometric proprieties (Pechorro et al. 2015, 2017; van Baardewijk et al. 2010). In the present study, this three-factor measurement model attained acceptable fit indicators (cf. Table 2). All factors additionally achieved at least acceptable internal consistency values (α = .78 for GM; α = .66 for CU, and α = .63 for II).

Table 2. *Fit indicators for measurement models analyses and structural equation models*

	x^2	df	RMSEA	90% CI for RMSEA	CFI	SRMR
Measurement models						
EMWSSA-SV	87.04**	27	0.056	0.043; 0.070	0.968	0.029
CESA-SV	40.87*	14	0.052	0.034; 0.071	0.983	0.024
OASB-A	102.42**	20	0.077	0.062; 0.092	0.955	0.037
CoSS	3426.24**	1074	0.056	0.054; 0.0.58	0.791	0.077
YPI-S	456.15**	132	0.059	0.053; 0.065	0.861	0.065
Structural equation models						
Baseline	516.66**	14	0.226	0.210; 0.243	0.720	0.083
Specific	42.35**	15	0.051	0.033; 0.069	0.985	0.029
Boys	45.59**	15	0.084	0.057; 0.112	0.960	0.049
Girls	18.67 ns	15	0.024	0.000; 0.055	0.996	0.024
Unrestrictive model	64.71**	30	0.057	0.038; 0.077	0.981	0.037
All pathways equal	141.24**	56	0.066	0.052; 0.079	0.952	0.071
16/22 pathways equal	95.17**	52	0.049	0.033; 0.064	0.976	0.051
All means equal	221.18**	62	0.085	0.073; 0.098	0.911	0.092
4/10 means equal	102.37**	56	0.049	0.033; 0.063	0.974	0.052

Note: Note: EMWSSA-SV = Early Memories of Warmth and Safeness Scale for Adolescents: Short Version; CESA-SV = Centrality of Event Scale for Adolescents: Short Version; OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale (CoSSAV – Avoidance; CoSSAS - Attack Self; CoSSW – Withdrawal; CoSSAO – Attack Other); YPI-S = Youth Psychopathic Traits Inventory-Short. RMSEA = Root Mean Square Error of Approximation; CI for RMSEA = Confidence Interval for RMSEA; CFI = Comparative Fix Index; SRMR = Standardized Root Mean Square Residual. ** $p < .001$, * $p < .01$, ns $p > .05$

Procedure

The sample was collected from the Portuguese general population, recruited within students of public secondary schools after the ethics committee of the Faculty of Psychology and Education Sciences of the University of Coimbra and the National Data Protection Agency approved the study's procedures. The institutions' boards were contacted, the research aims were explained, and authorizations from these institutions' boards were obtained. Subsequently, participants were informed about the nature of the study and were asked to voluntarily participate. They were told that their decision about participation would have no bearing on their marks or the quality of teaching and that no payment or extra credit would be offered. Confidentiality and anonymity of their responses were also guaranteed. Written informed consent was requested from parents of students under 18 years of age in addition to verbal consent from the students themselves. Students aged 18 years old gave written

informed consent themselves. Exclusion criteria were the presence of psychotic symptoms, suspicion of cognitive impairment, and/or the presence of any behavioral problems (all of these exclusion criteria were identified by the institutions' boards and/or parents). A total of 43 students declined to participate in the study or presented one or more exclusion criteria.

A set of self-report questionnaires designed to measure the impact of harsh rearing experiences, external shame, shame coping strategies, and psychopathic traits was provided to students alongside a front sheet that generally explained the goals of the study and asked for the above-mentioned sociodemographic data (c.f. Measures section). The research protocol took approximately 25 minutes to answer and was completed in classrooms in the presence of a researcher during time provided by the teachers.

Data Analysis

Data were analyzed with the IBM SPPS Statistics 21 and M*plus* v7.0 (Muthén and Muthén, 2010) software. The IBM SPPS Statistics 21 software was used for initial statistical analysis, and Mp*lus* was used for confirmatory factor analyses (CFAs), structural equation modelling (SEM), and testing the moderating effect of gender.

Missing values were found for two participants on the CESA-SV; specifically, each participant had one missing value, representing 0.041% of the missing values for this scale. These missing values were missing completely at random [$MCAR_{(12)}$ = 4.104, p = .98]. Considering both the randomness and the scarceness of missing values, we opted for a listwise approach with consistency and stability of the results (e.g., using the same sample size considered for all analyzes using either Mp*lus* or SPSS). These participants were excluded from the sample of the current work (i.e., not included in the description of participants or in the data to be analyzed). The data for all measures were never multivariate normal (i.e., Mardia's test of multinormality), so the Maximum Likelihood Robust estimator was used for the preliminary factor analyses (cf. Measures section and Table 2) and for the SEM (cf. Results section and Table 2) because it is viable when analyzing non-normal data with no missing values.

Prior to testing for the SEM, CFAs were performed for the measurement models underlying each of the self-report measures used in this research. To achieve model identification in the SEM, it was necessary to use the composite scale measures as observable variables, which could only be done after obtaining the overall adjustment of the measurement models on which they were based. Given that these measures had been validated for the Portuguese youth population, we accepted only a reasonable fit of the models as indicative of the latent variables being adequately measured by the observed variables. In judging for the CFA overall adjustment, we considered the guidelines provided by Hu and Bentler (1999) and thus considered a Standardized Root Mean Square Residual (SRMR) value ≤ 0.09 combined either with a Comparative Fit Index (CFI) value ≥ .95 or with a Root Mean Square Error of Approximation (RMSEA) value ≤ 0.06.

The data analyzes relied on SEM positing psychopathic traits as dependent variables and the impact of harsh rearing experiences measures as independent variables. Indirect effects between the independent and dependent variables were also considered through external shame and shame coping strategies. We adopted a model generation approach in which an *a priori* model was tested on the data and was sequentially improved (i.e., only one modification was made at a time) based on theoretical considerations and statistical indications. The same guidelines as those used to assess the models' fit for CFA were used when considering the structural models (cf. Hu and Bentler 1999).

The moderating effect of gender was then investigated in the modified specific model following a four-stage approach: 1) testing for the adequacy of the model for boys and girls separately (i.e., configural structural invariance), 2) testing for the equality of patterns between boys and girls, 3) testing for the equality of pathways between boys and girls, and 4) testing for the equality of means between boys and girls. Concerning the third and fourth stages, when the fit of the model was not significantly worsened by adding a new equality constraint, equality could be assumed.

Results

Regarding the SEM, the initial model included all three psychopathic traits (i.e., GM, CU, and II) as dependent variables. The impacts of harsh rearing experiences (i.e., warmth and safeness experiences and traumatic shameful experiences) were entered as the independent variables associated either directly or indirectly (through external shame and shame coping strategies; i.e., Attack Other, Attack Self, Avoidance, and Withdrawal) with psychopathic traits. External shame was also linked to shame coping strategies.

The baseline model did not achieve acceptable fit (cf. Table 2)[12]. Subsequent changes were sequentially made to the model: 1) the exclusion of all non-significant pathways and 2) the inclusion of pathways that could be both theoretically relevant and were suggested by the modification indices one at a time. Specifically, in line with the assumption that recourse to different shame coping strategies may occur simultaneously (Elison et al. 2006) and considering the high correlations between shame coping strategies found in the current sample (cf. Table 1), these were integrated into the model. This resulted in a specific model that achieved very good fit indicators (cf. Table 2)[13]. The model and the variance explained by this model are depicted in Figure 1.

[12] We also tested an alternative model in which psychopathic traits were used as independent variables and the impacts of harsh rearing experiences were used as dependent variables. Indirect effects between the independent and dependent variables were also considered through external shame and shame coping strategies. The model fit indicators were not acceptable ($X^2(18) = 719.459$, $p < .000$; RMSEA = .235; CFI = .579; SRMR = .110) and were worse than those found for the baseline model under scrutiny in the current work.

[13] For additional information on the fit indicators of all sequential models, please contact the corresponding author.

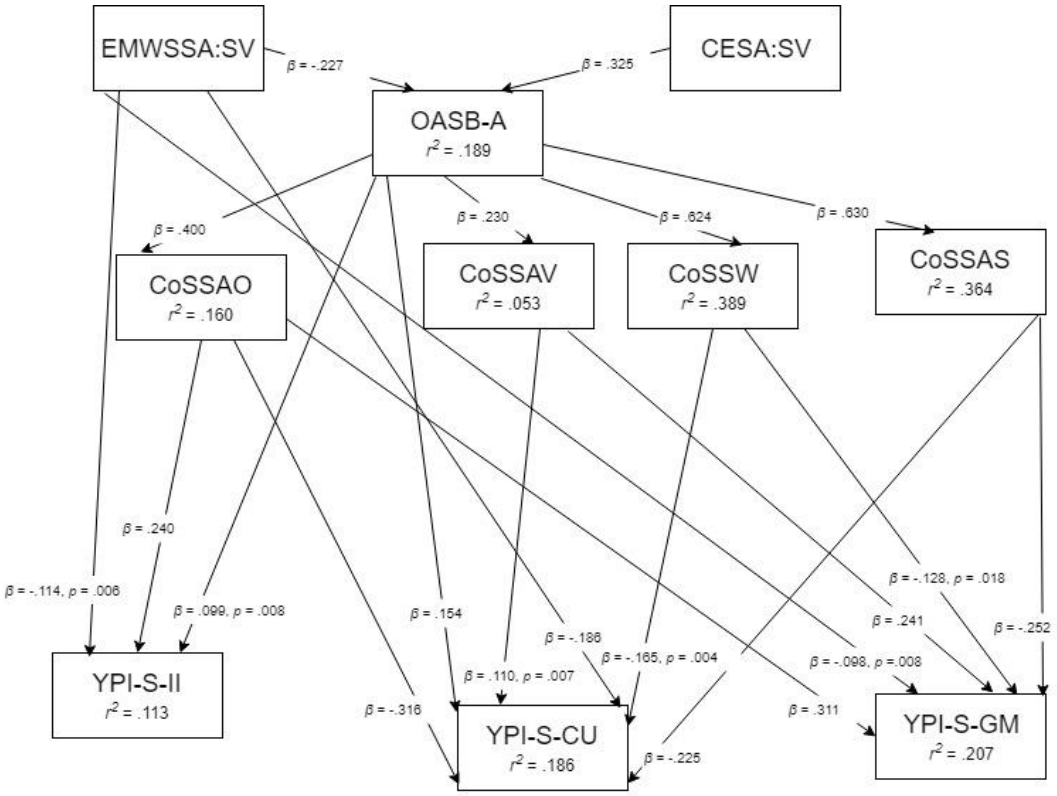


Figure 1: An evolutionary model to conceptualize psychopathic traits
Note: EMWSSA:SV= Early Memories of Warmth and Safeness Scale for Adolescents: Short Version; CESA:SV = Centrality of Event Scale for Adolescents: Short Version; OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale (CoSSAV – Avoidance; CoSSAS - Attack Self; CoSSW – Withdrawal; CoSSAO – Attack Other); YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-GM - Grandiose-Manipulative; YPI-S-CU - Callous-Unemotional; YPI-S-II - Impulsive-Irresponsible)

All pathways were significant at p<.001, unless stated otherwise

Early memories of warmth and safeness were directly and indirectly (through external shame and shame coping strategies) associated with all psychopathic traits. The more one recalls such experiences, the less likely one is to endorse these traits. Having a history of a shameful/traumatic event that impacted the individual was positively and indirectly (through external shame and shame coping strategies) associated with psychopathic traits (for a description of indirect pathways, see Table 3). Reporting external shame was positively and directly linked to all shame coping strategies and to CU and II traits. Reporting external shame was also positively and indirectly linked to all psychopathic traits. All maladaptive shame coping strategies were directly associated with GM and CU traits. Specifically, Attack Self and Withdrawal were negatively associated with GM and CU traits, while Attack Other and Avoidance were positively associated with these traits. Finally, the Attack Other strategy was also positively and directly linked with II traits.

Table 3. *Indirect pathways*

Independent variable	In-between variable	In-between variable	Dependent variable	Indirect effect
CESA-SV	OASB-A	CoSSAV	YPI-S-GM	0.018***
CESA-SV	OASB-A	CoSSAS	YPI-S-GM	-0.050***
CESA-SV	OASB-A	CoSSW	YPI-S-GM	-0.026*
CESA-SV	OASB-A	CoSSAO	YPI-S-GM	0.040***
EMWSSA-SV	OASB-A	CoSSAV	YPI-S-GM	-0.013***
EMWSSA-SV	OASB-A	CoSSAS	YPI-S-GM	0.035***
EMWSSA-SV	OASB-A	CoSSW	YPI-S-GM	0.018*
EMWSSA-SV	OASB-A	CoSSAO	YPI-S-GM	-0.028***
CESA-SV	OASB-A	-	YPI-S-CU	0.050**
CESA-SV	OASB-A	CoSSAV	YPI-S-CU	0.008*
CESA-SV	OASB-A	CoSSAS	YPI-S-CU	-0.044**
CESA-SV	OASB-A	CoSSW	YPI-S-CU	-0.33**
CESA-SV	OASB-A	CoSSAO	YPI-S-CU	0.041***
EMWSSA-SV	OASB-A	-	YPI-S-CU	-0.035**
EMWSSA-SV	OASB-A	CoSSAV	YPI-S-CU	-0.006*
EMWSSA-SV	OASB-A	CoSSAS	YPI-S-CU	0.031**
EMWSSA-SV	OASB-A	CoSSW	YPI-S-CU	0.023**
EMWSSA-SV	OASB-A	CoSSAO	YPI-S-CU	-0.029***
CESA-SV	OASB-A	-	YPI-S-II	0.032*
CESA-SV	OASB-A	CoSSAO	YPI-S-II	0.031***
EMWSSA-SV	OASB-A	-	YPI-S-II	-0.022*
EMWSSA-SV	OASB-A	CoSSAO	YPI-S-II	-0.022***

Note: EMWSSA-SV = Early Memories of Warmth and Safeness Scale for Adolescents: Short Version; CESA-SV = Centrality of Event Scale for Adolescents: Short Version; OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale (CoSSAV – Avoidance; CoSSAS - Attack Self; CoSSW – Withdrawal; CoSSAO – Attack Other); YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-GM - Grandiose-Manipulative; YPI-S-CU - Callous-Unemotional; YPI-S-II - Impulsive-Irresponsible). *** $p < .001$, ** $p < .01$, * $p < .05$

The fit indicators of the sequential models that were tested to investigate the moderating effect of gender are presented in Table 2. The specific model fitted equally well for boys and girls separately, so configural structural invariance between genders could be assumed. Furthermore, the equal patterns (i.e., unrestrictive) model also achieved also a good fit when simultaneously considering boys and girls. Forcing an equality constraint on the structural weights of all pathways, despite resulting in acceptable fit indicators, significantly worsened the fit of the model in comparison with the unrestrictive mode ($\Delta x2$ (26) = 76.62, $p < .001$). Therefore, not all structural weights should be considered equal. Specifically, four out of 22 pathways had to be allowed to differ between boys and girls (cf. Table 4) so that a non-significant worsening of the model was found ($\Delta x2$ (22) = 30.62, $p > .10$), indicating only partial invariance at this level. As expected due to the different mean scores across samples (cf., Table 1), the subsequent constraint of all variables' intercepts to be equal across groups again significantly worsened the fit of the model in comparison with the partially invariant pathway model ($\Delta x2$ (10) = 35.75, $p < .001$). More precisely, the intercept value of 6 out of 10

variables had to be allowed to differ between groups in order for a non-significant worsening of the models' fit to be found ($\Delta X2$ (4) = 7.17, $p > .05$).

Table 4: *Estimated variant structural weights for boys and girls*

Independent variable	Dependent variable	Boys	Girls
CoSSAS	YPI-S-GM	-0.250***	-0.070 ns
EMWSSA-SV	OASB-A	-0.082 ns	-0.309***
OASB-A	CoSSAV	0.314***	0.095 ns
OASB-A	CoSSAO	0.498***	0.294***

Note: EMWSSA-SV = Early Memories of Warmth and Safeness Scale for Adolescents: Short Version; OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale (CoSSAV – Avoidance; CoSSAS - Attack Self; CoSSAO – Attack Other); YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-GM - Grandiose-Manipulative).

*** $p < .001$, ns non-significant (i.e., $p > .05$)

Discussion

Although evolutionary theory argues that psychopathic traits may be seen as an adaptive strategy to survive and thrive in harsh rearing scenarios, few studies have tested this hypothesis (Del Giudice 2016; Del Giudice and Ellis 2015; Ferguson 2010; Glenn et al. 2011; Jonason et al. 2016; Mealey 1995; Ribeiro da Silva et al. 2015). Nonetheless, recent research has suggested that the association between harsh rearing experiences and psychopathic traits may involve emotional dysfunctions and emotion regulation problems, including increased attempts to suppress the experience of shame and/or to attack others in potentially shameful situations (Campbell and Elison 2005; Elison et al. 2006; Ferguson 2010; Hare and Neumann 2008; Kosson et al. 2016; Nyström and Mikkelsen, 2012; Ribeiro da Silva et al. 2019b). The relevance of this study relied on building on this approach by exploring in both boys and girls from a community sample a novel evolutionary-based model testing the associations between the impact of harsh rearing experiences (warmth and safeness experiences and traumatic shameful experiences) and psychopathic traits (GM, CU, and II) as well as the indirect effects of external shame and shame coping strategies in this association. In addition, this study tested the invariance of this model across gender.

In this work, early memories of warmth and safeness were both directly and indirectly (through external shame and shame coping strategies) associated with GM, CU, and II traits; i.e., the more one recalls such experiences, the less likely one is to endorse these traits. As measured in the current work, a history of a shameful/traumatic event that impacted the individual was positively and indirectly (through external shame and shame coping strategies) associated with GM, CU, and II traits; i.e., the more one recalls such experiences, the more likely one is to endorse those traits. Therefore, not only harsh rearing experiences (e.g., Auty et al. 2015; Gao et al. 2010; Sevecke et al. 2016; Waller et al. 2014) but also the impact of those experiences seem to be important predictors of psychopathic traits (Henry et al. 2018; Ribeiro da Silva et al. 2019b). Thus, it seems that when the environment is constantly

inputting negative experiences (such as traumatic shameful experiences), but mostly when there is a lack/absence of positive experiences (such as being cared for), filtering those inputs and displaying CU, GM, and II traits may be seen as an adaptive path from an evolutionary perspective (Del Giudice 2016; Ribeiro da Silva et al. 2015).

When testing the indirect effects, unsurprisingly, external shame was negatively linked to early memories of warmth and safeness and positively associated with the impact of traumatic shameful experiences (Bennett et al. 2005; Berntsen and Rubin 2006; Gross 2014; Gross and Hansen 2000; Kim et al. 2009) as well as positively linked with all maladaptive shame coping strategies (Elison et al. 2006; Gilbert 2010; Nathanson 1992). As in Ribeiro da Silva and colleagues (2019b), external shame was also directly and positively associated with CU and II traits, which is an interesting finding to compare with the mixed results in the literature regarding the associations between shame and psychopathy. In other words, while some theoretical and empirical research has pointed to a lack of shame in psychopathy (Cleckely 1941/1988; Hare 2003; Mullins-Nelson et al. 2006), other studies have suggested positive associations between shame and psychopathic traits (Campbell and Elison 2005; Holmqvist 2008; Morrison and Gilbert 2001; Nyström and Mikkelsen 2012; Ribeiro da Silva et al. 2019b; Spice et al. 2015; Velotti et al. 2016). These contradictory findings can be explained, at least to some extent, by the difficulties in assessing shame among individuals with psychopathic traits and by the diverse ways shame has been measured across studies (see Ribeiro da Silva et al. 2015 for a review). The fact that a measure of external shame was used in the current study might have helped to capture this emotion more accurately as it places the burden on others and not on the self. Either way, these results support the argument that individuals with psychopathic traits may feel shame and other unpleasant emotions (Garofalo and Neumann 2018; Garofalo et al. 2018; Ribeiro da Silva et al. 2019b). Moreover, it seems that the more individuals perceive that others are judging them negatively, the more they tend to endorse CU and II traits, which is consistent with recent studies suggesting that emotion regulation difficulties may be linked with this specific set of traits (Garofalo et al. 2018; Ribeiro da Silva et al. 2019b).

Regarding the indirect effects of shame coping strategies, the results were in line with previous studies that showed that shame is possibly externalized in these individuals (Campbell and Elison 2005; Nyström and Mikkelsen 2012; Velotti et al. 2016). Specifically, Attack Other was positively associated with GM, CU, and II traits, while Avoidance was positively associated with GM and CU traits. In contrast, Withdrawal and Attack Self were negatively associated with GM and CU traits. These results, along with former research, reinforce the assumption that both adults and youth with psychopathic traits may tend to use shame coping strategies that massively externalize this emotion, which, in turn, may help to reinforce these same traits (Campbell and Elison 2005; Nyström and Mikkelsen 2012; Ribeiro da Silva et al. 2019b; Velotti et al. 2016). From an evolutionary perspective, externalizing shame coping strategies (i.e., Attack Other and Avoidance) can be seen as an adaptive pathway for individuals living in harsh rearing scenarios. Specifically, externalizing shame

may help to shield the self from submission and from the unbearable emotions that these kinds of environments continuously input about oneself. Both of these seem to be highly avoided by individuals with psychopathic traits, who fight back to rapidly recover their sense of power and dominance (Campbell and Elison 2005; Kivisto et al. 2011; Morrison and Gilbert 2001; Ribeiro da Silva et al. 2015).

Concerning gender differences, although configural invariance of the tested model was established, the findings indicated differences not only in some of the mean scores between boys and girls but also in some of the pathways. Specifically, early memories of warmth and safeness were negatively associated with external shame in girls but not in boys. This result suggests that those memories may have a different impact across gender, and it appears to be more important for girls than for boys to experience warmth sand safeness during early developmental stages (Vagos et al. 2017). The pathways between shame and externalizing shame coping strategies (i.e., Avoidance and Attack Other) were more pronounced for boys than for girls. Although these results cannot be compared with other works, they suggest that boys may tend to use more externalizing coping strategies to deal with shame than girls do. Considering the pathways between shame coping strategies and psychopathic traits, gender differences were found for only one of these pathways. Specifically, the Attack Self coping strategy was negatively linked with GM traits only in boys. Again, this result cannot be compared with previous findings, although it is somewhat consistent with the works of Nyström and Mikkelsen (2012) and Ribeiro da Silva and colleagues (2019b), reaffirming that the Attack Self coping strategy may be an important buffer for GM traits in boys.

Lastly, it is important to restate that the variance explained by this model is somewhat limited, which highlights the need to explore the role of other biological and environmental etiological factors in psychopathy (Viding and Larson 2010).

There are some limitations in this research that should be considered when interpreting the results. First, this study used a convenience sample, which limits the findings to this particular sample. Second, this study relied only on self-report measures. Although their psychometric proprieties were carefully tested *a priori* (Pechorro et al., 2017; Vagos et al. 2016, 2017, 2018, 2019), this raises some reliability and validity issues, particularly in relation to the shared variance between these self-report measures. Third, because this work tested an indirect effect model with a cross-sectional design, the results need to be considered with caution (Weems and Stickle 2012). Given these limitations, future research on this topic should attempt to develop representative samples, other assessment methods and informants, and a longitudinal design.

Despite the mentioned limitations, the results of the present study indicate that not only harsh rearing experiences (e.g., Auty et al. 2015; Gao., et al. 2010; Patch and Figueredo 2016; Sevecke et al. 2016) but also the impact of these experiences (Henry et al. 2018; Ribeiro da Silva et al. 2019b) seem to be important predictors of psychopathic traits. Not surprisingly, the findings also reaffirm that while the impact of harsh rearing experiences may have an important role in the endorsement of psychopathic traits, warmth and safeness

experiences may buffer these risky pathways (Gao et al. 2010; Henry et al. 2018; Ribeiro da Silva et al. 2019b). Moreover, the results suggest that external shame is likely to play an important role in psychopathy, although it seems to be regulated mostly in externalizing ways in these individuals (Campbell and Elison 2005; Nyström and Mikkelsen 2012; Velotti et al. 2016; Ribeiro da Silva et al. 2015; 2019b). These findings may help to give credence to evolutionary theory, specifically to the idea that psychopathic traits may be seen as an adaptive strategy to survive and thrive in harsh rearing scenarios (Del Giudice 2016; Del Giudice and Ellis 2015; Ferguson 2010; Glenn et al. 2011; Jonason et al. 2016; Mealey 1995). The results highlight that at least some individuals with psychopathic traits may present emotional dysfunctions and emotion regulation problems behind their apparent sanity, including increased attempts to avoid the experience of shame and/or to attack others in potentially shameful situations (Campbell and Elison 2005; Elison et al. 2006; Garofalo et al. 2018; Hare and Neumann 2008; Kosson et al. 2016; Nyström and Mikkelsen 2012; Ribeiro da Silva et al. 2012, 2015, 2019b). These findings may also have important research and clinical implications, highlighting the need to continue to study the role of emotional dysfunctions in psychopathy and stressing that preventive practices should encourage positive parental practices and target shame and shame regulation problems.

References

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-referred youths: A new assessment tool. In E. Blaauw, & L. Sheridan (Eds.), *Psychopaths: Current international perspectives* (pp. 131-158). Den Haag: Elsevier.

Auty, K. M., Farrington, D. P., & Coid, J. W. (2015). Intergenerational transmission of psychopathy and mediation via psychosocial risk factors. *The British Journal of Psychiatry, 206,* 26-31. doi: 10.1192/bjp.bp.114.151050

Baumeister, R. E., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review, 103,* 5-33

Bennett, D., Sullivan, M., & Lewis, M. (2005). Young children's adjustment as a function of maltreatment, shame, and anger. *Child Maltreatment, 10*, 311-323. doi: 10.1177/1077559505278619

Berntsen, D., & Rubin, D. C. (2006). Centrality of Event Scale: A measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. *Behaviour Research and Therapy*, *44*, 219–231. doi: 10.1016/j.brat.2005.01.009

Caldwell, M. F., McCormick, D., Wolfe, J., & Umstead, D. (2012). Treatment-related changes in psychopathy features and behavior in adolescent offenders. *Criminal Justice and Behavior, 39,* 144-155. doi: 10.1177/0093854811429542

Campbell, J. S., & Elison, J. (2005). Shame Coping Styles and Psychopathic Personality Traits. *Journal of Personality Assessment*, *84*, 96-104. doi: 10.1207/s15327752jpa8401_16

Cleckley, H. (1988). *The mask of sanity: An attempt to clarify some issues about the so-called psychopathic personality* (6th ed.). St. MO: Mosby (original work published in 1941).

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Towards a hierarchical model. *Psychological Assessment*, *13*, 171-188. doi: 10.1037/1040-3590.13.2.171

Damasio, A. (2006). *Descartes' error: Emotion, reason and the human brain*. London: Vintage (Original work published in 1994).

Del Giudice, M. (2016). The evolutionary future of psychopathology. *Current Opinion in Psychology, 7,* 44-50. doi: 10.1016/j.copsyc.2015.07.010

Del Giudice, M., & Ellis, B. J. (2015). Evolutionary foundations of developmental psychopathology. In D. Cicchetti (Ed.), *Developmental Psychopathology, Vol. 2: Developmental neuroscience* (3rd ed.) (pp. 1-58). New York: Wiley.

Edens J. F., Marcus D. K., Lilienfeld S. O., Poythress N. G., Jr. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology, 115,* 131–144. doi: 10.1037/0021-843X.115.1.131

Elison, J., Pulos, S., & Lennon, R. (2006). Investigating the compass of shame: the development of the compass of shame scale. *Social Behavior and Personality*, *34*, 221-238. doi: 10.2224/sbp.2006.34.3.221

Else-Quest, N. M., Higgins, A., Allison, C., & Morton, L. C. (2012). Gender differences in self-conscious emotional experience: A meta-analysis. *Psychological Bulletin*, *138*, 947-81. doi: 10.1037/a0027930

Ferguson, C. J. (2010). Genetic contributions to antisocial personality and behavior: A meta-analytic review from an evolutionary perspective. *The Journal of Social Psychology, 150,* 160-180. doi: 10.1080/00224540903366503

Gao, Y., Raine, A., Chan, F., Venables, P. H., & Mednick, S. A. (2010). Early maternal and paternal bonding, childhood physical abuse and adult psychopathic personality. *Psychological Medicine*, *40,* 1007-1016. doi: 10.1017/S0033291709991279

Garofalo, C., & Neumann, C. S. (2018). Psychopathy and emotion regulation: Taking stock and moving forward. In M. DeLisi (Ed.). *Routledge International Handbook of Psychopathy and Crime* (pp. 76-97). London, UK: Routledge.

Garofalo, C., Neumann, C. S., & Velotti, P. (2018). Difficulties in emotion regulation and psychopathic traits in violent offenders. *Journal of Criminal Justice, 57,* 116-125. doi: 10.1016/j.jcrimjus.2018.05.013

Gauer, G., Souza, J. A., Silveira, A. M., & Sediyama, C. Y. N. (2013). Stressful events in autobiographical memory processing: Brazilian version of the Centrality of Event Scale. *Psicologia, Reflexão e Critica, 26,* 98-105. doi: 10.1590/S0102-79722013000100011

Gilbert, P. (2010). *Compassion Focused Therapy*. London: Routledge.

Gilbert, P. (2015). An evolutionary approach to emotion in mental health with a focus on affiliative emotions. *Emotion Review, 7,* 230-237. Doi: 10.1177/1754073915576552

Glenn, A. L. (2019). Early life predictors of callous-unemotional and psychopathic traits. *Infant Mental Health Journal, 40,* 39-53. doi: 10.1002/imhj.21757

Glenn, A. L., Kuzban, R., & Raine, A. (2011). Evolutionary theory and psychopathy. *Aggression and Violent Behavior, 16,* 371-380. doi: 10.1016/j.avb.2011.03.009

Gold, J., Sullivan, M., & Lewis, M. (2011). The relation between abuse and violent delinquency: the conversion of shame to blame in juvenile offenders. *Child Abuse & Neglect, 35*, 459-467. doi: 10.1016/j.chiabu.2011.02.007

Goss, K., Gilbert, P., & Allan, S. (1994). An exploration of shame measures-I: The "Other as Shamer Scale". *Personality and Individual Differences*, *17*, 713–717. doi: 10.1016/0191-8869(94)90149-X

Gretton, H. M., Hare, R. D., & Catchpole, R. E. H. (2004). Psychopathy and offending from adolescence to adulthood: A 10-year follow-up. *Journal of Consulting and Clinical Psychology*, *72*, 636–645. doi: 10.1037/0022-006X.72.4.636

Gross, C. A., & Hansen, N. E. (2000). Clarifying the experience of shame: the role of attachment style, gender, and investment in relatedness. *Personality and Individual Differences*, *28*, 897-907. doi: 10.1016/S0191-8869(99)00148-8

Gross, J. J. (2014). Emotion regulation: Conceptual and empirical foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3-20). New York, NY, US: Guilford Press.

Hare, R. D. (2003). *The Hare Psychopathy Checklist-Revised* (2nd ed.). Toronto: Multi-Health Systems.

Hare, R. D., & Neumann, C. S. (2006). The PCL-R assessment of psychopathy: Development, structural proprieties, and new directions. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 58-90). New York: Guildford Press.

Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a clinical and empirical construct. *Annual Review of Clinical Psychology, 4,* 217–246. doi: 10.1146/annurev.clinpsy.3.022806.091452

Harper, F., & Arias, I. (2004). The role of shame in predicting adult anger and depressive symptoms among victims of child psychological maltreatment. *Journal of Family Violence*, *19*, 367-375. doi: 10.1007/s10896-004-0681-x

Harper, J. M. (2011). Regulating and coping with shame. In R. Trnka, K. Balcar, & M. Kuska (Eds.), *Reconstructing emotional spaces: from experience to regulation* (pp. 189-206). Prague: Prague of College of Psychological Studies Press

Hejdenberg, J., & Andrews, B. (2011). The relationship between shame and different types of anger: A theory-based investigation. *Personality and Individual Differences*, *50*, 1278-1282. doi: 10.1016/j.paid.2011.02.024

Heleniak, C., Jenness, J. L., Vander Stoep, A., McCauley, E., & McLaughlin, K. A. (2016). Childhood maltreatment exposure and disruptions in emotion regulation: A transdiagnostic pathway to adolescent internalizing and externalizing psychopathology. *Cognitive Therapy and Research, 40,* 394-415. doi: 10.1007/s10608-015-9735-z

Henry, J., Dionne, G., Viding, E., Vitaro, F., Brendgen, M., Tremblay, R. E., & Boivin, M. (2018). Early warm-rewarding parenting moderates the genetic contributions to callous–unemotional traits in childhood. *Journal of Child Psychology and Psychiatry, 59,* 1282-1288. doi: 10.1111/jcpp.12918

Holmqvist, R. (2008). Psychopathy and affect consciousness in young criminal offenders. *Journal of Interpersonal Violence*, 23, 209-224. doi: 10.1177/0886260507309341

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55. doi: 10.1080/10705519909540118

Jonason, P. K., Icho, A., & Ireland, K. (2016). Resources, harshness, and unpredictability: The socioeconomic conditions associated with the dark triad traits. *Evolutionary Psychology, 14,* 1-11. doi: 10.1177/1474704915623699

Kim, J., Talbot, N., & Cicchetti, D. (2009). Childhood abuse and current interpersonal conflict: the role of shame. *Child Abuse & Neglect*, *33*, 362-371. doi: 10.1016/j.chiabu.2008.10.003

Kivisto, J., Kivisto, L., Moore, T., & Rhatigan, D. (2011). Antisociality and Intimate Partner Violence: The Facilitating Role of Shame. *Violence and Victims*, *26*, 758-773. doi: 10.1891/0886-6708.26.6.758

Kosson, D. S., Vitacco, M. J., Swogger, M. T., & Steuerwald, B. L. (2016). Emotional experiences of the psychopath. In C. B. Gacono (Ed.), *Personality and clinical psychology series. The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 73-95). New York, NY, US: Routledge/Taylor & Francis Group.

Kubak, F. A., & Salekin, R. T. (2009). Psychopathy and anxiety in children and adolescents: New insights on developmental pathways to offending. *Journal of Psychopathology Behavior and Assessment, 31,* 271-284. doi: 10.1007/s10862-009-9144-2

Matos, M., Pinto-Gouveia, J., Gilbert, P., Duarte, C., & Figueiredo, C. (2015). The Other as Shamer Scale — 2: Development and validation of a short version of a measure of external shame. *Personality and Individual Difference, 74,* 6–11. doi: 10.1016/j.paid.2014.09.037

Mealey, L. (1995). The sociobiology of sociopathy: An integrated evolutionary model. *The Behavioral and Brain Sciences, 18,* 523–599.

Meloy, J. R. (1988). *The psychopathic mind: Origins, dynamics, and treatment*. Northvale, NJ: Aronson.

Millon, T., & Davis, R. D. (1998). Ten subtypes of psychopathy. In T. Millon, M. Simonsen, M. Birket-Smith, & R. Davis (Eds.), *Psychopathy: Antisocial, criminal and violent behaviour* (pp. 161–170). New York: Guildford Press.

Morrison, D. & Gilbert, P. (2001). Social rank, shame and anger in primary and secondary psychopaths. *Journal of Forensic Psychiatry & Psychology, 12*, 330-356. doi: 10.1080/09585180110056867

Mullins-Nelson, J. L., Salekin, R. T., & Leistico, A. M. R. (2006). Psychopathy, empathy, and perspective-taking ability in a community sample: Implications for the successful psychopathy concept. *International Journal of Forensic Mental Health, 5,* 133-149. doi: 10.1080/14999013.2006.10471238

Nathanson, D.L. (1992). *Shame and pride: Affect, sex, and the bird of the self*. New York: Norton.

Neumann, C. S., Schmitt, D. S., Carter, R., Embley, I., & Hare, R. D. (2012). Psychopathic traits in females and males across the globe. *Behavioral Sciences & the Law, 30, 557-*574. doi: 10.1002/bsl.2038

Nyström, M., & Mikkelsen, F. (2012). Psychopathy-related personality traits and shame management strategies in adolescents. *Journal of Interpersonal Violence*, *20*, 519-537. doi: 10.1177/0886260512455512

Patch, E. A., & Figueredo, A. J. (2017). Childhood stress, life history, psychopathy, and sociosexuality. *Personality and Individual Differences, 115,* 108-113. doi: 10.1016/j.paid.2016.04.023

Pechorro, P., Andershed, H., Ray, J. V., Maroco, J., & Gonçalves, R. A. (2015). Validation of the Youth Psychopathic Traits Inventory and Youth Psychopathic Traits Inventory – Short Version Among Incarcerated Juvenile Delinquents. *Journal of Psychopathology and Behavioral Assessment, 37,* 576-586. doi: 10.1007/s10862-015-9490-1

Pechorro, P., Ribeiro Da Silva, D., Andershed, H., Rijo, D., & Gonçalves, R. A. (2017). Psychometric properties and measurement invariance of the youth psychopathic traits inventory - short version among Portuguese youth. *Journal of Psychopathology and Behavioral Assessment, 37,* 576-586. doi: 10.1007/s10862-017-9597-7

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2012). Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories. *Journal of Criminal Justice, 40,* 269-277. doi: 10.1016/j.jcrimjus.2012.05.005

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2013). Child and adolescent psychopathy: Assessment issues and treatment needs. *Aggression and Violent Behavior, 18,* 71-78. doi: 10.1016/j.avb.2012.10.003

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2015). The evolutionary roots of psychopathy. *Aggression and Violent Behavior, 21,* 85-96. doi: 10.1016/j.avb.2015.01.006

Ribeiro da Silva, D., Salekin, R. T., & Rijo, D. (2019a). Psychopathic severity profiles: A Latent Profile Analysis in youth samples with implications for the diagnosis of Conduct Disorder. *Journal of Criminal Justice, 60,* 74-83. doi: 10.1016/j.jcrimjus.2018.12.003

Ribeiro da Silva, D., Vagos, P., & Rijo, D. (2019b). An evolutionary model to conceptualize psychopathic traits across community and forensic male youth. *Journal of Offender Therapy and Comparative Criminology, 63,* 574-596. doi: 10.1177/0306624X18823624

Richter, A., Gilbert, P., & McEwan, K. (2009). Development of an early memories of warmth and safeness scale and its relationship to psychopathology. *Psychology and Psychotherapy: Theory. Research and Practice, 82*, 171-184. doi: 10.1348/147608308X395213

Salekin, R. T., Tippey, J. G., & Allen, A. D. (2012). Treatment of conduct problem youth with interpersonal callous traits using mental models: Measurement of risk and change. *Behavioral Sciences & the Law, 30,* 470–486. doi: 10.1002/bsl.2025

Schriber, R. A., Chung, J. M., Sorensen, K. S., & Robins, R. W. (2017). Dispositional contempt: A first look at the contemptuous person. *Journal of Personality and Social Psychology, 113,* 280-309. doi: 10.1037/pspp0000101

Sevecke, K., Franke, S., Kosson, D., & Krischer, M. (2016). Emotional dysregulation and trauma predicting psychopathy dimensions in female and male juvenile offenders. *Child and Adolescent Psychiatry and Mental Health, 10,* 43-56. doi: 10.1186/s13034-016-0130-7

Shiner, R. (2009). The development of personality disorders: perspectives from normal personality development in childhood and adolescence. *Development and Psychopathology*, *21,* 715-734. doi: 10.1017/S0954579409000406

Spice, A., Viljoen, J. L., Douglas, K. S., & Hart, S. D. (2015). Remorse, psychopathology, and psychopathy among adolescent offenders. *Law and Human Behavior, 39,* 451-462. doi: 10.1037/lhb0000137

Tangney, J. P., Stuewig, J., Mashek, D., & Hastings, M. (2011). Assessing jail inmates' proneness to shame and guilt: Feeling bad about the behavior or the self?. *Criminal Justice and Behavior, 38,* 710-734. doi: 10.1177/0093854811405762

Vagos, P., Ribeiro da Silva, D., Brazão, N., & Rijo, D. (2018). The Centrality of Event Scale in Portuguese adolescents: Validity evidence based on internal structure and on relations to other variables. *Assessment, 25,* 527–538. doi: 10.1177/1073191116651137

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Elison, J. (2019). Psychometric properties of the Compass of Shame Scale: Testing for measurement invariance across community and forensic adolescent samples. *Child Youth Care Forum, 48,* 93-110. DOI 10.1007/s10566-018-9474-x

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2016). Dimensionality and measurement invariance of the Other as Shamer Scale across diverse adolescent samples. *Personality and Individual Differences, 98,* 289-296. doi: 10.1016/j.paid.2016.04.046

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2017). The Early Memories of Warmth and Safeness Scale for adolescents: Cross-Sample Validation of the Complete and Brief Versions. *Clinical Psychology & Psychotherapy, 24,* 793-804. doi: 10.1002/cpp.2059

van Baardewijk, Y., Andershed, H., Stegge, H., Nilsson, K., Scholte, E., & Vermeiren, R. (2010). Development and tests of short versions of the Youth Psychopathic Traits Inventory and the Youth Psychopathic Traits Inventory-Child Version. European *Journal of Psychological Assessment, 26,* 122–128. doi: 10.1027/1015-5759/a000017.

Velotti, P., D'aguanno, M., Garofalo, C., & Rogier, G. (2016). Dealing with shame–the 'Psychopathic Way': Preliminary investigation for a new developmental framework of psychopathic traits. *European Psychiatry, 33,* S465. doi: 10.1016/j.eurpsy.2016.01.1692

Verona, E., Sadeh, N., & Javdani, S. (2010). The influences of gender and culture on child and adolescent psychopathy. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 317-342). New York: Guilford Press.

Viding, E., & Larson, H. (2010). Genetics of child and adolescent psychopathy. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 113-134). New York: Guilford Press.

Waller, R., Gardner, F., Viding, E., Shaw, D. S., Dishion, T. J., Wilson, M. N., & Hyde, L. W. (2014). Bidirectional associations between parental warmth, callous unemotional behavior, and behavior problems in high-risk preschoolers. *Journal of Abnormal Child Psychology, 42,* 1275-1285. doi: 10.1007/s10802-014-9871-z

Weems, C. F., & Stickle, T. R. (2012, December). Mediation, incremental validity, and novel intervention development: Introduction to a special issue on youth anxiety and related problems. *Child & Youth Care Forum, 41,* 509-515. doi: 10.1007/s10566-012-9191-9

Study IV |

An evolutionary model to conceptualize psychopathic traits across community and forensic male youth

International Journal of Offender Therapy and Comparative Criminology, *63,* 574-596
2019, doi: 10.1016/j.jcrimjus.2018.12.003

An evolutionary model to conceptualize psychopathic traits across community and forensic male youth

Diana Ribeiro da Silva[a], Paula Vagos[ab], and Daniel Rijo[a],

[a] Research Center for Neuropsychology and Cognitive-Behavioral Intervention
Faculty of Psychology and Educational Sciences, University of Coimbra

[b] Universidade Portucalense Infante D. Henrique

Abstract

Psychopathy has been historically associated with a lack of emotion. However, some authors argue that psychopathy may represent a tendency to externalize the experience of unpleasant emotions, including shame, what could be seen as an adaptive strategy within an evolutionary framework. Nevertheless, empirical research investigating this hypothesis is scarce. Using community (*n* = 295) and forensic (*n* = 300) male youth samples and a set of self-report measures, this study tested an evolutionary model involving pathways linking the impact of harsh rearing experiences (traumatic shameful experiences and warmth and safeness experiences) to psychopathic traits, as well as the indirect effects of external shame and shame coping strategies in that association. In addition, this study tested the invariance of this model across samples. Results indicated that the impact of harsh rearing experiences was directly and indirectly (through external shame and shame coping strategies) linked with psychopathic traits. The model explained psychopathic traits in forensic and community samples, though differences in some of the pathways were found across groups. Findings offer support for conceptualizing psychopathic traits as an adaptive strategy to cope with the impact of harsh rearing experiences, opening new pathways to prevention and intervention efforts.

Keywords: rearing experiences, shame, shame coping strategies, psychopathic traits, evolutionary theory

Introduction

Psychopathy covers a set of interpersonal (i.e., Grandiose-Manipulative: GM) affective (i.e., Callous-Unemotional: CU), and behavioral (i.e., Impulsive Irresponsible: II) deviant traits (Cooke & Michie, 2001; Hare, 2003). According to several research findings, psychopathy has been conceptualized as a progressive condition that worsens (Kubak & Salekin, 2009; Lee, Salekin, & Iselin, 2010) and becomes less responsive to psychotherapeutic interventions over time (Caldwell, McCormick, Wolfe, & Umstead, 2012; Ribeiro da Silva, Rijo, & Salekin, 2013; Salekin, Tippey, & Allen, 2012). Moreover, several studies pointed out that psychopathy, especially when associated with a Conduct Disorder (CD) diagnosis, is linked with the most early, stable, and severe forms of antisocial behavior (Gretton, Hare, & Catchpole, 2004; Hare & Neumann, 2006; Leistico, Salekin, DeCoster, & Rogers, 2008). Overall, this knowledge strengthens the need for early screening and intervention efforts, also highlighting the importance of continuing to study the etiological pathways of psychopathy from different perspectives (Ribeiro da Silva, Rijo, & Salekin, 2012). Evolutionary theory is one of those perspectives, though it is not yet widely investigated in psychopathy (Ferguson, 2010; Glenn, Kuzban, & Raine, 2011; Ribeiro da Silva, Rijo, & Salekin, 2015). Research has shown the extent to which the harshness of rearing experiences (e.g., presence of traumatic experiences and/or absence of warmth and safeness experiences) impacted on individuals to be more important than those experiences *per se* (Berntsen & Rubin, 2006; Richter, Gilbert, & McEwan, 2009). Thus, it seems particularly crucial to shed light on the mechanisms linking the impact of harsh rearing experiences and psychopathic traits under the lens of an evolutionary framework.

Though there is a large body of developmental studies showing that harsh rearing scenarios are important risk factors for the prediction, development, and/or maintenance of psychopathic traits (e.g., Auty, Farrington, & Coid, 2015; Gao, Raine, Chan, Venables, & Mednick, 2010; McCrory, De Brito, & Viding, 2012; Sevecke, Franke, Kosson, & Krischer, 2016; Waller et al., 2016), those works rarely adopted an evolutionary framework when discussing their research findings (Patch & Figueredo, 2016). According to evolutionary theory, psychopathic traits can be seen as an adaptive[14] "fast" life strategy (functioning according to the principle "Live fast, die young") to survive and thrive in harsh rearing scenarios (Del Giudice, 2016; Del Giudice & Ellis, 2015; Ferguson, 2010; Glenn et al., 2011; Jonason, Icho, & Ireland, 2016; Mealey, 1995; Neumann, Schmitt, Carter, Embley, & Hare, 2012; Patch & Figueredo, 2016). Accordingly, psychopathic traits seem to more be predominant among individuals raised in harsh backgrounds (Del Giudice & Ellis, 2015; Mealey, 1995). Although with obvious society and individual costs, the emergence psychopathic traits in harsh rearing scenarios seems to be adaptive, at least in a short run, probably due to a fitness advantage of those traits, and associated genes, in such environments (Jonason et al., 2016; Patch &

[14] In an evolutionary framework, an adaptive response does not necessarily mean psychological well-being or socially valued outcomes. On the contrary, it means that, at least in a short run and in that particular environment, those strategies/traits are increased based on evolutionary tradeoffs (Del Giudice, 2016).

Figueredo, 2016). Among others, psychopathic traits seem to shield individuals from the continuous and overwhelming emotions that those kinds of environment are continuously inputting, also making them appear dominant, invulnerable, and fearlessness to their opponents (Del Giudice, 2016; Ribeiro da Silva et al., 2015). Taken together, these assumptions raise important questions about the potential role of emotion and emotion regulation (how emotions themselves are regulated; Gross, 2014) in psychopathy from an evolutionary perspective.

Emotions and emotion regulation are valuable products of evolution, being shaped by our ancestral past, but also by the particular life story of each individual (Damasio, 2006; Gilbert, 2015). One of the most powerful emotions seems to be shame, which is considered adaptive as a temporary emotional experience (Harper, 2011), but can also be detrimental if encompassing unbearable and persistent feelings of being inferior, inadequate, and worthless (Goss, Gilbert, & Allan, 1994). According to the Evolutionary and Biopsychosocial Model of Shame (Gilbert, 2015), all humans share the need to create positive feelings about themselves in the mind of others (e.g., be cared, wanted, and valued). However, if they felt devalued, neglected, and/or abused since early ages, they tend to became vulnerable to shame. In fact, research is finding evidence for the role of shame and emotion regulation problems as transdiagnostic features linking harsh rearing scenarios with several psychopathological disorders (e.g., Bennett, Sullivan, & Lewis, 2005; Gold, Sullivan, & Lewis, 2011; Harper & Arias, 2004; Hejdenberg & Andrews, 2011; Heleniak, Jenness, Vander Stoep, McCauley, & McLaughlin, 2016; Kim, Talbot, & Cicchetti, 2009; Kivisto, Kivisto, Moore, & Rhatigan, 2011). Therefore, it seems that it is not the experience of shame *per se* that could be maladaptive, but rather the way shame is experienced and regulated by individuals (Elison, Pulos, & Lennon, 2006; Harper, 2011; Nathanson, 1992).

The Nathanson's (1992) Compass of Shame Model states that there are four different ways to regulate shame, by which shame can be either denied, ignored, or intensified. They are Attack Self, wherein the person recognizes the shaming experience as negative and valid, bears shame in order to maintain relationships with others, and turns anger inward; Withdrawal, wherein the person also recognizes the experience of shame as negative and valid, but, because s/he is unable tolerate it, moves away from others and from the shameful situation; Attack Other, referring to the person trying to minimize the shaming experience by externalizing it and turning anger outward; and Avoidance, as in the person also trying to minimize the experience of shame, by distracting the self and others from that experience. Attack Self and Withdrawal can be considered internalizing shame coping strategies and are commonly found in individuals with internalizing disorders, while Attack Other and Avoidance can be considered externalizing shame coping strategies and are usually found in individuals with externalizing disorders (Elison et al., 2006; Vagos, Ribeiro da Silva, Brazão, Rijo, & Elison, 2018)

Though psychopathy is historically associated with a lack of emotional experience, including with a lack of shame (Cleckley, 1941/1988; Mullins-Nelson, Salekin, & Leistico,

2006; Salekin, Chen, Sellbom, Lester, & MacDougall, 2014; Tangney, Stuewig, Mashek, & Hastings, 2011), some authors argued that psychopathic traits probably act like a mask of invulnerability that hides a shameful nucleus (Nathanson, 1992; Ribeiro da Silva et al., 2015). In fact, some studies considered emotional dysfunctions as a central component of psychopathy (e.g., Hare & Neumann, 2008; Kosson, Vitacco, Swogger, & Steuerwald, 2016). Recent research goes further, pointing out that individuals with psychopathic traits do feel emotions, but have difficulty in regulating them and that these difficulties may be related mostly with CU and II traits (Garofalo & Neumann, 2018; Garofalo, Neumann, & Velotti, 2018). Another recent study (Schriber, Chung, Sorensen, & Robins, 2017) found that individuals with psychopathic traits possibly channel negative inner experiences to other-directed emotions, like contempt, and that contempt was related not only with psychopathy, but also with self-depreciation and a fragile self. Research has also shown that in potential shameful scenarios, individuals with psychopathic traits tend to regulate shame by denying/avoiding it (Avoidance coping strategy) and/or by attacking others by using dominant/aggressive strategies (Attack Other coping strategy; Campbell & Elison, 2005; Hejdenberg & Andrews, 2011; Kivisto et al., 2011; Nystrom & Mikkelsen, 2012; Velotti, D'aguanno, Garofalo, & Rogier, 2016). These contributions raise the question of psychopathy being associated with a lack of emotion or with a propensity to deny/avoid and externalize the experience of unpleasant emotions (Baumeister, Smart, & Boden, 1996; Meloy, 1988; Millon & Davis, 1998; Schriber et al., 2017), including shame (Campbell & Elison, 2005; Heinze, 2017; Holmqvist, 2008; McWilliams, 1994/2011; Morrison & Gilbert, 2001; Nystrom & Mikkelsen, 2012; Spice, Viljoen, Douglas, & Hart, 2015; Velotti et al., 2016). Either way, shame and shame regulation seem to be difficult to assess in individuals with psychopathic traits via self-report measures, which may account for the conflicting findings found in the literature (see Ribeiro da Silva et al., 2015, for a review). These difficulties could be bypassed, at least partially, if studies assess external shame (perception that others hold negative beliefs and thoughts about the self), instead of shame itself (i.e., perception that the self is inferior, inadequate, and worthless). This way, the burden is placed on others and not on the self, which may make it easier for individuals with these characteristics to grasp, even if shame *per se* and external shame were found to be highly correlated (Goss et al., 1994). Another strategy would be to assess ways of reacting to situations that generally elicit shame in humans (Elison et al., 2006).

Insights from evolutionary theory and emotion regulation strategies have been gaining relevance in cognitive-behavioral therapies (Gross, 2014; Wilson, Hayes, Biglan, & Embry, 2014). Moreover, emotion regulation seems to be shaped throughout the development (Zimmermann & Iwanski, 2014) and represents a dynamic factor that can be targeted during prevention or treatment efforts (Modecki, Zimmer-Gembeck, & Guerra, 2017). Thus, resorting to evolutionary arguments to help to disentangle the mechanisms linking the impact of harsh rearing experiences to GM, CU, and II traits based on external shame and ways of coping with it may be useful to enhance etiological models and treatment approaches.

Current Study

Using both forensic and community male youth samples, this study aimed to test an evolutionary model involving pathways linking the impact of harsh rearing experience (traumatic shameful experiences and warmth and safeness experiences) and psychopathic traits (GM, CU, and II), as well as the indirect effects of external shame and shame coping strategies in that association. This study also aimed to test the invariance of this model across samples. The impact of harsh rearing experiences is expected to be positively associated with psychopathic traits, especially CU ones (e.g., Auty et al., 2015; Gao et al., 2010; Sevecke et al., 2016), and external shame (e.g., Bennett et al., 2005; Kim et al., 2009). Moreover, it is expected that external shame would be positively associated with all maladaptive shame coping strategies (Nathanson, 1992; Vagos et al., 2018). In turn, Attack Self and Withdrawal shame coping strategies are expected to be negatively associated with psychopathic traits, while Avoidance and Attack Others shame coping strategies are expected to be positively associated with psychopathic traits (e.g., Nystrom & Mikkelsen, 2012; Velotti et al., 2016). Though there is limited and contradictory literature regarding associations between shame and psychopathic traits (see Ribeiro da Silva et al., 2015, for a review), as measured in the current work, we also anticipated to find positive and direct associations between external shame and psychopathic traits, given that we propose psychopathy to be associated with difficulties in regulating emotions, rather than on experiencing them. In addition, it is expected that the forensic sample would have increased levels of the impact harsh rearing experiences (Vagos, Ribeiro da Silva, Brazão, & Rijo, 2016; Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2017), external shame (Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016), Avoidance and Attack Others shame coping strategies (Vagos et al., 2018), and psychopathic traits (Pechorro, Ribeiro da Silva, Andershed, Rijo, & Gonçalves, 2017; Weidacker, O'Farrell, Gray, Johnston, & Snowden, 2017), when compared with the community sample. Finally, as there are no available research findings for comparisons, we would refrain from formulating hypothesis regarding potential differences in the pathways across samples.

Method

Participants

Participants in this study were 595 male youth, 52.6% (*n* = 300) recruited from forensic settings (i.e., the forensic sample) and 47.4% (*n* =295) recruited from secondary schools (i.e., the community sample). Participant's mean age was 16.41 years old (*SD* = 1.35; age ranging from 12 to 20 years), with forensic (*M* = 16.33, *SD* = 1.53) and community (*M* = 16.49, *SD* = 1.13) participants having similar mean ages, *t* (551.491) = 1.405, *p* = 1.61. On average, participants had been enrolled in school for 8.14 years (*SD* = 2.29, ranging from 1 to 12), with community participants, on average (*M* = 9.89, *SD* = 1.24), having been enrolled in school for significantly more years than forensic participants (*M* = 6.44, SD=1.76); *t*(531.319) = 27.335, *p*

< .001. Regarding socioeconomic status (SES)[15], 141 (23.7%) participants had a low SES, 306 (51.4%) had a medium SES, and 96 (16.1%) had a high SES; 52 (8.7%) youth had missing values on this variable. Forensic and community participants were evenly distributed by SES, x^2 (2) = 3.08, *p* = .22. Descriptive statistics of measures on interest for the current work (see Measure section) for the forensic and community samples, as well as correlations between those variables are presented at Table 1.

Measures

Conduct disorder

The Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID; Sheehan et al., 2010; Portuguese Authorized Version b Rijo et al., 2016) is a structured clinical diagnostic interview, which assesses DSM-IV ICD-10 Axis I disorders in children and adolescents. MINI-KID is divided in diagnostic sections, each one starting with two to four screening questions for each disorder and additional symptom questions. All questions are in a binary "yes/no" format. For the purpose of the current study, only the diagnosis of CD was assessed. In a previous study (Sheehan et al., 2010), inter-rater reliability was excellent for the above mentioned disorder assessed with the MINI-KID.

Impact of harsh rearing experiences

The Early Memories of Warmth and Safeness Scale for Adolescents: Short Version EMWSSA:SV (Vagos et al., 2017) is a nine-item shorter version for adolescents of the original Early Memories of Warmth and Safeness Scale (Richter et al., 2009). The EMWSSA:SV is a self-report scale designed to measure one's recall of feeling warm, safe, and cared for in childhood; that is, how these memories impacted on the individual. Items (e.g., "I had feelings of connectedness") are rated on a 5-point frequency scale (0= No, never, 4= Yes, most of the time). Vagos and colleagues (2017) found that this measure was highly correlated with the original longer version of the scale and presented a one-factor measurement model with very good internal consistency values within forensic and community participants. Besides, the one-factor measurement model of the EMWSSA:SV has proved to be invariant across both types of samples (Vagos et al., 2017). This one-factor measurement model attained acceptable fit using the current sample (see Table 2) and an excellent internal consistency value (α = .91).

[15] Examples of professions in the high SES groups are judges, higher education teachers, or MDs; for the medium SES group are nurses, psychologists, or school teachers; for the low SES group are farmers, cleaning staff, or undifferentiated worker. When the mother and fathers' professions were classified into different socioeconomic status, the highest SES coding was attributed to the family.

Table 1: *Correlations Between Variables and Descriptive of Measures for the Forensic and Community Samples (N = 595)*

	1	2	3	4	5	6	7	8	9	10	Forensic (n = 300)	Community (n = 295)	t
1. EMWSSA:SV	-										2.63 (.90)	3.04 (.75)	6.05***
2. CESA:SV	-.14*	-									2.68 (1.03)	2.30 (.94)	-4.71***
3. OASB-A	-.19**	.28***	-								1.32 (.81)	1.20 (.71)	-1.95
4. CoSSAV	.04	.17**	.44***	-							1.51 (.72)	1.63 (.63)	2.19*
5. CoSSAS	-.02	.27***	.57***	.57***	-						1.24 (.87)	1.52 (.84)	3.95***
6. CoSSW	-.06	.29***	.60***	.62***	.79***	-					1-32 (.86)	1.38 (.75)	.88
7. CoSSAO	-.06	.27***	.54***	.62***	.61***	.68***	-				1.19 (. 82)	1.01 (.69)	1.98*
8. YPI-S-GM	-.01	.01	.05	.29***	-.01	.05	.26***	-			2.13 (.54)	2.05 (.54)	-1.75
9. YPI-S-CU	-.15*	.18**	.21***	.13*	.05	.12*	.28***	.38***	-		2.14 (.52)	1.96 (.48)	-4.21***
10. YPI-S-II	-.13*	.21***	.30***	.23***	.15*	.21***	.31***	.29***	.36***	-	2.64 (.58)	2.32 (.42)	-7.72***

Note: EMWSSA:SV = Early Memories of Warmth and Safeness Scale for Adolescents: Short Version; CESA:SV = Centrality of Event Scale for Adolescents: Short Version; OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale (CoSSAV – Avoidance; CoSSAS - Attack Self; CoSSW – Withdrawal; CoSSAO – Attack Other); YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-GM - Grandiose-Manipulative; YPI-S-CU - Callous-Unemotional ; YPI-S-II - Impulsive-Irresponsible).

Descriptive of measures are presented as M (SD).

*** $p < .001$, ** $p < .01$, * $p < .05$

The Centrality of Event Scale for Adolescents: Short Version (CESA:SV; Gauer, Souza, Silveira, & Sediyama, 2013; Portuguese version for adolescents by Vagos, Ribeiro da Silva, Brazão, & Rijo, 2016) is a seven-item shorter version of the Centrality of Event Scale (Berntsen & Rubin, 2006). The CESA:SV is a self-report scale that measures the extent to which a traumatic memory of a shameful event impacted on an individual; that is, became a reference point for individual's everyday references, a turning point in one's life story, and a central component of personal identity. The CESA:SV gives the following prompt to participants: "Please think back on the most traumatic shameful event in your life and answer the following questions"; items (e.g., "I feel that this event has become a central part of my life story") are then rated on a 5-point frequency scale (1 = Totally disagree, 5 = Totally agree). Vagos, Ribeiro da Silva, Brazão, and Rijo (2016) found that the CESA:SV was highly correlated with the original longer version of the scale and presented a one-factor measurement model with good internal consistency values within forensic and community participants. The one-factor measurement model of the CES:SV has also proved to be invariant across both types of samples (Vagos, Ribeiro da Silva, Brazão, & Rijo, 2016). This one-factor measurement model attained acceptable fit and a good internal consistency value (α = .89) using the current sample (see Table 2).

External shame

The Other as Shamer Scale Brief–Adolescent version (OASB-A; Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016) is the adolescent version of the OAS2 (Matos, Pinto-Gouveia, Gilbert, Duarte, & Figueiredo, 2015), both shorter versions of the Other as Shamer Scale (Goss et al., 1994). The OASB-A is an eight-item self-report scale that measures external shame, that is, a subject's perception of being negatively judged by others. Items (e.g., "Other people see me as not good enough") are rated on a 5-point frequency scale (0 = Never; 4 = Almost Always), reporting how frequently one experiences the feelings described in each statement. Vagos, Ribeiro da Silva, Brazão, Rijo, and Gilbert (2016) found that this measure was highly correlated with the original longer version of the scale and presented a one-factor measurement model with very good internal consistency values within forensic and community participants. Furthermore, the one-factor measurement model of the OASB-A has proved to be invariant across these types of samples (Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016). This one-factor measurement model attained acceptable fit using the current sample (see Table 2) and a good internal consistency value (α = .89).

Shame coping strategies

The Compass of Shame Scale (CoSS; Elison et al., 2006; Portuguese version for Adolescents by Vagos et al., 2018) is a 48-item self-report scale that assesses the individual's use of shame coping strategies described in Nathanson's (1992) Compass of Shame Model. The 48 items are distributed across 12 scenarios. Participants are asked to imagine that the situation described in each scenario (e.g., "When I feel humiliated") has just happened to them, and then are presented with four items (presented in rotating order) referring to different possible reactions

to the situation. Those reactions correspond to the four maladaptive shame coping strategies, namely, (a) Avoidance (e.g., "I cover up the humiliation by keeping busy"); (b) Attack Self (e.g., "I get angry with myself"); (c) Withdrawal (e.g., "I isolate myself from other people"); and (d) Attack Other (e.g., "I get mad at people for making me feel this way"). All items are rated on a 5-point frequency scale (0 = Never to 4 = Almost always). Vagos and colleagues (2018) found evidence in favor of a four-factor measurement model for the CoSS with acceptable to very good internal consistency values within forensic and community participants for each one of the four maladaptive coping strategies. The measurement model of the CoSS additionally proved to be invariant across these types of samples (Vagos et al., 2018). In the present study, this four-factor measurement model achieved acceptable adjustment indicators (see Table 2); all factors attained at least good internal consistency values (α = .81 for Avoidance; α = .92 for Attack Self; α = .89 for Withdrawal; and α = .89 for Attack Other).

Psychopathic traits

The Youth Psychopathic Traits Inventory–Short (YPI-S; Van Baardewijk et al., 2010; Portuguese version by Pechorro, Andershed, Ray, Maroco, & Gonçalves, 2015) is an 18-item shorter version of the Youth Psychopathic Traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002). The YPI-S is a self-report scale that assesses psychopathic traits in youth on account of three factors: Grandiose-Manipulative (GM; e.g., "It's easy for me to manipulate people"), Callous-Unemotional (CU; e.g., "I think that crying is a sign of weakness, even if no one sees you"), and Impulsive-Irresponsible (II; e.g., "It often happens that I talk first and think later"). Each factor is estimated by a set of six items. Each item in the YPI-S is rated on a 4-point frequency scale (1 = Does not apply at all to 4 = Applies very well). The three-factor structure of the YPI-S was confirmed in Portuguese community and forensic samples and this measurement model has proven to be invariant across these samples (Pechorro et al., 2017). The YPI-S has also showed to be highly correlated with the original YPI and has demonstrated to have good psychometric proprieties (Pechorro et al., 2015; Pechorro et al., 2017; Van Baardewijk et al., 2010). In the present study, this three-factor measurement model attained acceptable fit indicators (see Table 2); all factors additionally attained at least acceptable consistency values (α = .79 for GM, α = .67 for CU, and α = .67 for II).

Table 2: *Fit indicators for measurement models analyses and structural equation models*

	x^2	df	RMSEA	90% CI for RMSEA	CFI	SRMR
Measurement models						
CESA:SV	52.99**	14	0.068	0.049; 0.088	0.968	0.033
EMWSSA:SV	72.08**	27	0.056	0.041; 0.071	0.969	0.029
OASB-A	53.07**	20	0.053	0.036; 0.070	0.977	0.028
CoSS	2795.44**	1074	0.052	0.050; 0.054	0.828	0.06
YPI-S	322.51**	132	0.049	0.042; 0.056	0.890	0.059
Structural equation models						
Baseline	642.59**	14	0.275	0.257;0.293	0.632	0.122
Specific	39.05**	16	0.049	0.030; 0.069	0.986	0.035
Forensic	27.10ns	16	0.046	0.000; 0.,77	0.990	0.036
Community	39.19**	16	0.070	0.043; 0.098	0.971	0.043
Unrestrictive model	65.06**	32	0.059	0.038; 0.079	0.982	0.040
All pathways equal	160.83**	57	0.078	0.064; 0.093	0.943	0.096
13/23 pathways equal	87.62**	47	0.054	0.036; 0.071	0.978	0.051
All intercepts equal	213.31**	57	0.096	0.082; 0.011	0.915	0.085
4/10 intercepts equal	93.68**	51	0.053	0.036; 0.070	0.977	0.055

Note: EMWSSA:SV = Early Memories of Warmth and Safeness Scale for Adolescents: Short Version; CESA:SV = Centrality of Event Scale for Adolescents: Short Version; OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale; YPI-S = Youth Psychopathic Traits Inventory-Short

** $p < .001$, ns $p > .05$

Procedures

The sample was collected both from forensic (i.e., juvenile detention facilities and foster care facilities) and school settings (i.e., secondary schools) after the ethics committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra and the National Data Protection Agency approved the study's procedures. Institutions' boards were contacted, the research aims were explained, and authorizations from these institutions' boards were gathered. Afterward, participants were informed about the nature of the study and were asked to voluntarily participate, explaining that their decision about participation would not impact on their sentencing/school grades in any possible way. Confidentiality and anonymity of their responses were also guaranteed. Written informed consent was also asked of parents/legal guardians of youth below 18 years of age in addition to verbal assent of participants themselves; youth aged 18 years old or older gave written informed consent themselves. Exclusion criteria for both samples were the presence of psychotic symptoms and/or suspicious of cognitive impairment, while exclusion criterion for the community sample was also the presence of any behavioral problems (all these exclusion criteria were assigned by institutions' boards and/or parents). As research has shown that the association between CD and psychopathic traits predicts a worse prognosis (Lee et al., 2010), inclusion criteria for forensic participants were the presence of severe behavioral problems (assigned by boards' institution) and a CD diagnosis (assessed with the MINI-KID; see Measures section).

Data collection in the forensic sample consisted of a two-time assessment: (a) a clinical interviewing procedure, to assess the presence/absence of CD in participants, and (b) the self-report assessment (see Measures section). The clinical interviewing procedure was made individually by the first author of this study and by five trained psychologists; it took between 15 to 25 min for each participant. All evaluators received a 1 day's training workshop in the management and rating of the CD section of the MINI-KID. From this effort, 23 youth did not fulfill the diagnostic criteria for CD and were excluded from the study (i.e., not included in the description of participants nor in the data to be analyzed). The remaining participants further completed the abovementioned set of self-report measures (see Measures section). Data collection in the community sample consisted only in the self-report assessment (see Measure section), which took about 25 min and was conducted in the presence of a researcher. The filling in of the self-report measures happened in small groups (six to eight youth) in the case of forensic participants and during classes in the case of community participants.

Data Analysis

Data were analyzed with the IBM SPPS Statistic 21 and Mplus v7.0 software. The IBM SPPS Statistic 21 software was used for initial statistical analysis and Mplus was used for confirmatory factor analyses (CFAs), structural equation modeling (SEM), as well as for testing the moderating effect of sample type (i.e., forensic/community). Missing values were found for 37 participants in as much as each of those participants had at least one missing value on the assessed self-report measures, representing 5.85% of the total sample. These missing values were missing completely at random, MCAR (2129) = 1971, p = .99. Considering both the randomness and scarceness of missing values, we opted for a listwise approach bearing consistency and stability of the results (e.g., using the same sample size as considered for all analyses, either using the MPlus or the SPSS). Thus, these participants were excluded from the sample of the current work (i.e., included neither in the description of participants nor in the data to be analyzed). The data for all measures were found to deviate from multivariate normal distribution (i.e., Mardia's test of multinormality) and so the Maximum Likelihood Robust estimator was used for the preliminary CFAs (see Measures section and Table 2) and for the SEM (see Results section and Table 2), because it is viable when analyzing nonnormal data with no missing values.

Prior to testing for the SEM, CFAs were performed for the measurement models proposed to be underlying each one of the self-report measures used in this research. To achieve model identification in the SEM, it was necessary to use the composite scale measures as observable variables, which could only be done after securing the overall adjustment of the measurement models on which they were based. Given that these measures had been validated for the forensic and community Portuguese youth population, we accepted only reasonable fit of the models as indicative of the latent variables being adequately measured by the observed variables. In judging for the CFA overall adjustment, we considered the guidelines provided by Hu and Bentler (1999), and so considered a standardized root mean square residual (SRMR) value ≤ 0.09 combined either with a comparative fit index (CFI) value $\geq .95$ or with a root mean square error of approximation (RMSEA) value ≤ 0.06.

Data analyses then relied on SEM positing psychopathic traits as dependent variables and the impact of harsh rearing experiences measures as independent variables. Indirect effects between the independent and dependent variables were also considered, through external shame and shame coping strategies. We took on a model generation approach, in which *a priori* model was tested upon the data and was sequentially improved (i.e., only one modification was made at a time) based on theoretical considerations and statistical indications. The same guidelines as those used for assessing the models' fit for CFA were used when considering the structural models (cf. Hu & Bentler, 1999).

The moderating effect of sample type (i.e., forensic/community) was then investigated upon the modified specific model, following a four-stage approach: (a) testing for the adequacy of the model for forensic and community participants separately (i.e., configural structural invariance), (b) testing for the equality of patterns between forensic and community participants, (c) testing for the equality of pathways between forensic and community participants, and (d) testing for the equality of intercepts between forensic and community participants. When the fit of the model was not significantly worsened by adding a new equality constraint within each new model, equality could be assumed.

Results

Regarding the SEM, the initial model included all three psychopathic traits (i.e., GM, CU, and II) as dependent variables. The impact of harsh rearing experiences (i.e., warmth and safeness experiences and traumatic shameful experiences) were entered as the independent variables associated to psychopathic traits either directly or indirectly (through external shame and shame coping strategies; i.e., Attack Other, Attack Self, Avoidance, and Withdrawal). The baseline model did not achieve acceptable fit (see Table 2)[16]. Subsequent changes were sequentially made to the model: (a) exclusion of all non-significant pathways and (b) inclusion of pathways that could be both theoretically relevant and were suggested by the modification indices, one at a time. In specific, and in line with the assumption that shame coping strategies are concomitant and not mutually exclusive (Elison et al., 2006), correlations between them were sequentially integrated into the model (such correlation values ranged from .686, $p < .001$ between "Attack Self" and "Withdrawal" and .434, $p < .001$ between "Attack Self" and "Attack Other"). This resulted in a specific model that achieved very good fit indicators (see Table 2)[17]. The model and the variance of each dependent variable explained by this model are depicted in Figure 1.

Early memories of warmth and safeness were negatively and directly associated with CU traits and negatively and indirectly (through external shame and shame coping strategies) linked to all psychopathic traits. Having a traumatic shameful experience(s) that impacted on the

[16] We also tested an alternative model, where psychopathic traits were taken as independente variables and the impact of harsh rearing experiences were taken as dependent variables. Indirect effects between the independent and dependent variables were also considered, through external shame and shame coping strategies. Model fit indicators were not acceptable, $x^2(18) = 729.11$, $p < .000$; RMSEA = .275; CFI = .549; SRMR = .126, and were worse than those found for the baseline model under scrutiny in the current work.

[17] For additional information on the fit indicators of all sequential models, please contact the corresponding author.

individual was positively and directly associated with CU and II traits and positively and indirectly (through external shame and shame coping strategies) linked to all psychopathic traits (for a description of indirect pathways, see Table 3). Reporting external shame was positively and directly associated to all shame coping strategies, to CU and II traits, in addition to holding positive and indirect pathways to all psychopathic traits. Attack Self and Attack Other were associated with all psychopathic traits; specifically, the more one tends to attack the self, the less likely one is to endorse those traits, and the more one tends to attack others, the more likely one is to endorse psychopathic traits. Finally, Withdrawal and Avoidance were linked only to GM traits; that is, the more one tends to withdrawal when experiencing shame, the less likely one is to endorse GM traits, and the more one tends to avoid the emotional experience of shame, the more likely one is to endorse GM traits.

Table 3: *Indirect pathways*

Independent variable	In-between variable	In-between variable	Dependent variable	Indirect effect
CESA:SV	OASB-A	CoSSAV	YPI-S-GM	0.039***
CESA:SV	OASB-A	CoSSAS	YPI-S-GM	-0.043**
CESA:SV	OASB-A	CoSSW	YPI-S-GM	-0.023*
CESA:SV	OASB-A	CoSSAO	YPI-S-GM	0.046***
EMWSSA:SV	OASB-A	CoSSAV	YPI-S-GM	-0.023**
EMWSSA:SV	OASB-A	CoSSAS	YPI-S-GM	0.026**
EMWSSA:SV	OASB-A	CoSSW	YPI-S-GM	0.014ns
EMWSSA:SV	OASB-A	CoSSAO	YPI-S-GM	-0.028**
CESA:SV	-	-	YPI-S-CU	0.112**
CESA:SV	OASB-A	-	YPI-S-CU	0.037**
CESA:SV	OASB-A	CoSSAS	YPI-S-CU	-0.039**
CESA:SV	OASB-A	CoSSAO	YPI-S-CU	0.045***
EMWSSA:SV	-	-	YPI-S-CU	-0.089*
EMWSSA:SV	OASB-A	-	YPI-S-CU	-0.022*
EMWSSA:SV	OASB-A	CoSSAS	YPI-S-CU	0.023**
EMWSSA:SV	OASB-A	CoSSAO	YPI-S-CU	-0.027**
CESA:SV	-	-	YPI-S-II	0.127**
CESA:SV	OASB-A	-	YPI-S-II	0.059***
CESA:SV	OASB-A	CoSSAS	YPI-S-II	-0.026**
CESA:SV	OASB-A	CoSSAO	YPI-S-II	0.036***
EMWSSA:SV	OASB-A	-	YPI-S-II	-0.035**
EMWSSA:SV	OASB-A	CoSSAS	YPI-S-II	0.015*
EMWSSA:SV	OASB-A	CoSSAO	YPI-S-II	-0.022**

Note: EMWSSA:SV = Early Memories of Warmth and Safeness Scale for Adolescents: Short Version; CESA:SV = Centrality of Event Scale for Adolescents: Short Version; OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale (CoSSAV – Avoidance; CoSSAS - Attack Self; CoSSW – Withdrawal; CoSSAO – Attack Other); YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-GM - Grandiose-Manipulative; YPI-S-CU - Callous-Unemotional ; YPI-S-II - Impulsive-Irresponsible).

*** $p < .001$, ** $p < .01$, * $p < .05$, ns $p > .05$.

Fit indicators of the sequential models that were tested to investigate the moderating effect of sample type are presented in Table 2. The specific model fitted equally well for forensic and community participants taken separately and so configural invariance could be

assumed. Furthermore, the equal patterns (i.e., unrestrictive) model was also a good fit when simultaneously considering forensic and community participants. Forcing an equality constraint on the structural weights of all pathways, though resulting in acceptable fit indicators, significantly worsened the fit of the model, in comparison with the unrestrictive model, Δx2(25) = 95.77, $p < .001$. So, not all structural weights should be considered equal. In specific, 10 out of 23 pathways had to be allowed to differ between forensic and community participants (see Table 4), so that a non-significant change in model fit was found, Δx^2 (15) = 22.56, $p > .05$, indicating only partial invariance at this level. As expected, due to the different mean scores across samples (see Table 1), the subsequent constraint of all variable's intercepts to be equal across groups again significantly worsened the fit of the model, in comparison with the partially invariant pathway model, $\Delta x^2(10) = 125.69$, $p < .001$. More precisely, the intercept value of 6 out of 10 variables had to be allowed to differ between groups in order for a non-significant worsening of the models' fit to be found, Δx^2 (4) = 5.94, $p > .05$.

Table 4: *Estimated variant structural weights for forensic and community participants*

Independent variable	Dependent variable	Forensic	Community
CoSSAS	YPI-S-GM	-0.088^{ns}	-0.244***
CoSSAS	YPI-S-CU	-0.098*	-0.165***
CoSSAO	YPI-S-II	0.245***	0.050^{ns}
OASB-A	CoSSAV	0.489***	0.311^{ns}
CoSSAO	CoSSAS	0.316***	0.087**
CoSSAS	CoSSAV	0.283***	0.074**
CoSSW	CoSSAV	0.278***	0.105***
CoSSAO	CoSSW	0.314***	0.130***
CoSSAO	CoSSAV	0.261***	0.138***
CoSSW	CoSSAS	0.374***	0.232***

Note: OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale (CoSSAV – Avoidance; CoSSAS - Attack Self; CoSSW – Withdrawal; CoSSAO – Attack Other); YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-GM - Grandiose-Manipulative; YPI-S-CU - Callous-Unemotional; YPI-S-II - Impulsive-Irresponsible).

$^{***}p < .001$, $^{**}p < .01$, $^{*}p < .05$, $^{ns}p > .05$.

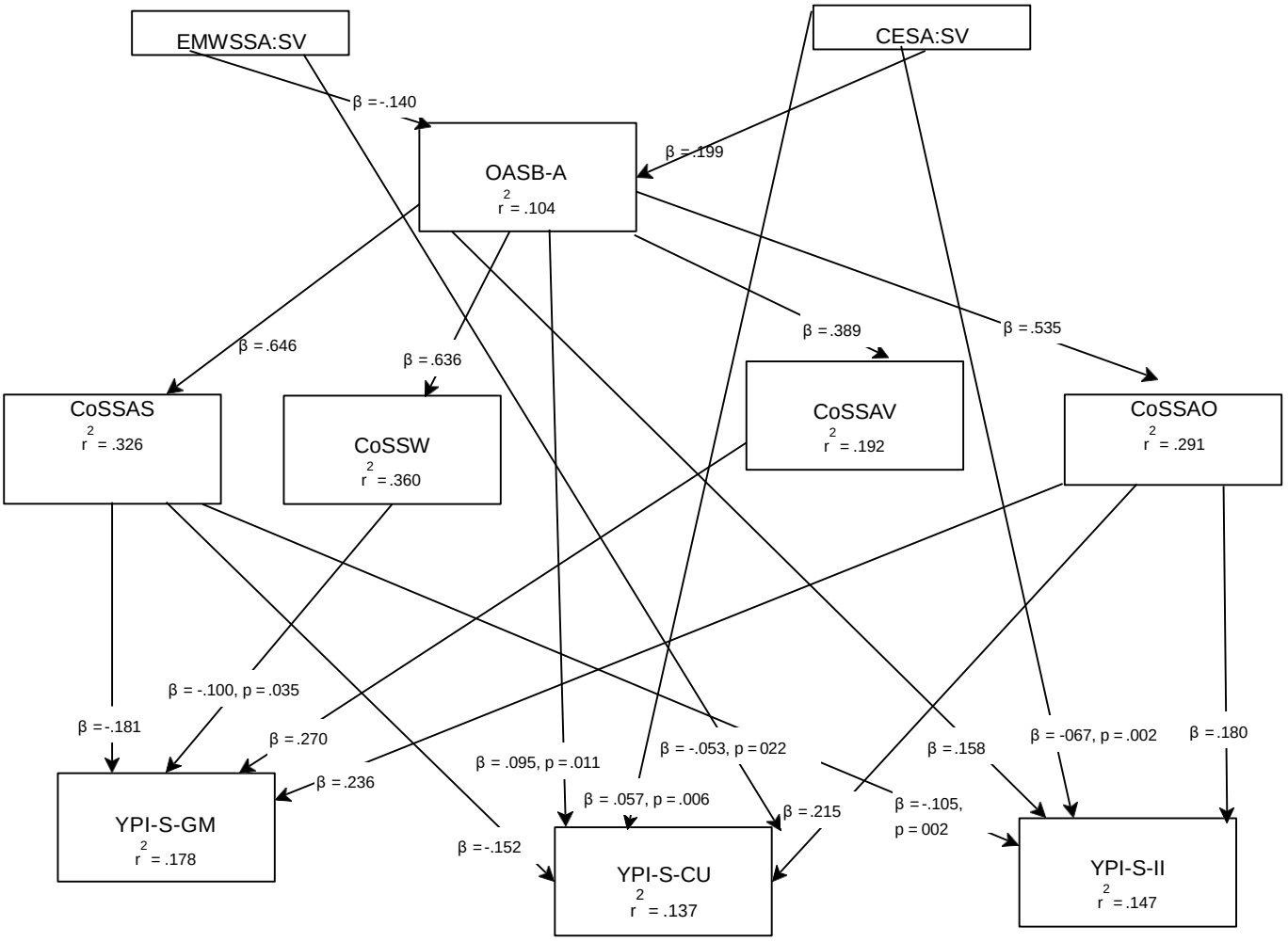


Figure 1. *An evolutionary-based model to conceptualize psychopathic traits*

Note: EMWSSA:SV= Early Memories of Warmth and Safeness Scale for Adolescents: Short Version; CESA:SV = Centrality of Event Scale for Adolescents: Short Version; OASB-A = Other as Shamer Scale Brief-Adolescent version; CoSS = Compass of Shame Scale (CoSSAV – Avoidance; CoSSAS - Attack Self; CoSSW – Withdrawal; CoSSAO – Attack Other); YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-GM - Grandiose-Manipulative; YPI-S-CU - Callous-Unemotional; YPI-S-II - Impulsive-Irresponsible)
All pathways were significant at $p<.001$, unless stated otherwise

Discussion

According to evolutionary theory, psychopathic traits can be seen as an adaptive strategy to survive and thrive in harsh rearing scenarios (Del Giudice, 2016; Del Giudice & Ellis, 2015; Ferguson, 2010; Glenn et al., 2011; Jonason et al., 2016; Mealey, 1995). However, it is plausible that the mechanisms linking the impact of harsh rearing environments to psychopathic traits may involve emotion regulation problems, though masked by a lack of emotional experience (Ribeiro da Silva et al., 2012, 2015). In fact, some studies found that individuals with psychopathic traits present emotional dysfunctions and emotion regulation problems (Garofalo et al., 2018; Hare &

Neumann, 2008; Kosson, Vitacco, Swogger, & Steuerwald, 2016), including increased attempts to bar the experience of shame and/or to attack others in potential shameful situations (Campbell & Elison, 2005; Elison et al., 2006; Nyström & Mikkelsen, 2012). As such, the relevance of this study relied on grasping these gaps of existing research, by exploring, both in forensic and community samples of male youth, an evolutionary model testing associations between the impact of harsh rearing experiences (traumatic shameful experiences and warmth and safeness experiences) and psychopathic traits (GM, CU, and II) and the indirect effect of external shame and shame coping strategies in that association. Moreover, this study also tested the invariance of this model across samples.

In the current study, early memories of warmth and safeness were negatively an directly associated with CU traits and negatively and indirectly (through external shame and shame coping strategies) associated with GM, CU, and II traits; that is, the more one recalls such experiences, the less likely one is to endorse those traits. So, not only the actual lack of parental warmth (e.g., Gao et al., 2010) but also the subjective perception of that experience seems an important predictor of psychopathic traits, specially CU ones (Waller et al., 2016). As measured in the current work, the impact of traumatic shameful experiences was positively and directly linked not only to CU but also to II traits and positively and indirectly (through external shame and shame coping strategies) linked to GM, CU, and II traits. Though the presence of harsh rearing experiences has been regarded in the literature as an important risk factor for the development of psychopathic traits (Auty et al., 2015; Gao et al., 2010; Sevecke et al., 2016), the impact of those experiences in the individual and the mechanisms behind that association were still not clear. According to an evolutionary perspective, when the environment is marked by high rates of traumatic experiences and by a scarcity/lack of positive experiences, filtering those inputs by becoming cold, detached, and callous (CU traits) and by adopting a dominant/aggressive and risk-taking strategy (GM and II traits) can be the most protective path for children and youth raised in that kind of environments (Del Giudice, 2016; Ribeiro da Silva et al., 2015). To break these risky pathways, positive parenting and prevention/intervention protocols encompassing positive parental practices should be encouraged.

In testing the indirect effects, as expected, external shame was negatively associated with early memories of warmth and safeness and positively linked to the impact of traumatic shameful experiences (Bennett et al., 2005; Berntsen & Rubin, 2006; Kim et al., 2009). External shame was also positively associated with all maladaptive shame coping strategies (Elison et al.,

2006; Nathanson, 1992). In addition, external shame was positively and directly associated with CU and II traits, which is an interesting finding taking into account previous conflicting results regarding the associations between shame and psychopathy (see Ribeiro da Silva et al., 2015, for a review). These conflicting findings can be explained, at least partially, by the different ways shame was measured across studies and also by the difficulties in assessing shame among individuals with psychopathic traits (see Ribeiro da Silva et al., 2015, for a review). The fact that we used a measure of external shame, which despite being highly correlated with shame itself (Goss et al., 1994), places the burden on others and not on the self, might have helped to capture this emotion more accurately. Either way, these findings strengthen the argument that individuals with psychopathic traits possibly do feel shame and other unpleasant emotions (Garofalo & Neumann, 2018; Garofalo et al., 2018), though also presenting with dysfunctions in acknowledging, expressing, and managing them (e.g., Hare & Neumann, 2008; Kosson et al., 2016). Moreover, it seems that the more individuals think that they are being negatively judged by others, the more they tend to endorse CU and II traits, which is somehow consistent with recent studies highlighting that: emotion regulation difficulties may be linked with these specific set of traits (Garofalo et al., 2018); psychopathic traits are associated with a fragile self and with a tendency to channel negative inner experiences to other-directed emotions (Schriber et al., 2017), and that shame is possibly externalized in these individuals (Campbell & Elison, 2005; Nystrom & Mikkelsen, 2012; Ribeiro da Silva et al., 2015; Velotti et al., 2016).

In the current work, when testing the role of shame coping strategies, results were in line with previous findings (Campbell & Elison, 2005; Nystrom & Mikkelsen, 2012; Velotti et al., 2016). In specific, Attack Self was negatively associated with GM, CU, and II traits, while Attack Other was positively associated with GM, CU, and II traits; Withdrawal was negatively associated with GM traits and Avoidance was positively linked to GM traits. These findings, along with previous research, strengthen the hypothesis that both adults (Campbell & Elison, 2005; Velotti et al., 2016) and youth (Nystrom & Mikkelsen, 2012) with psychopathic traits may tend to use shame coping strategies that massively externalize this emotion, which may then reinforce those same traits. Specifically, externalizing shame coping strategies can be seen as an effort of individuals to shelter the self from shame. Moreover, these efforts seem also to be attuned to higher levels of callousness, coldness, and emotional overcontrol (resembling and strengthening CU traits); a self-image of dominance, superiority, grandiosity, and manipulation (resembling and strengthening GM traits); and increased levels of risk-taking, impulsivity, and aggressive behaviors (resembling and strengthening II traits). From an evolutionary perspective, externalizing shame coping strategies (i.e., Attack Other and Avoidance) can be seen as an adaptive pathway for individuals living in harsh rearing scenarios. In detail, externalizing shame can help to shield the self from submission and from the unbearable emotions that these kinds of environment are continuously inputting about oneself, both of which are highly avoided by faster-life strategists like the ones with psychopathic traits, which fight back to rapidly recover their sense of power and dominance (Campbell & Elison, 2005; Kivisto et al., 2011; Morrison & Gilbert, 2001).

Regarding sample type differences, though configural invariance of the tested model was assumed, findings indicated differences not only in some of the mean scores between forensic and community participants (which was expected considering the different nature of the samples and previous research) but also in some of the pathways. Considering pathways weights between external shame and the Avoidance shame coping strategy, those were more pronounced for forensic than for community youth. Considering pathways between shame coping strategies and psychopathic traits, differences were found on three of these pathways: Attack Self was negatively associated with GM traits for community, but not for forensic youth; Attack Self was also negatively associated with CU traits, especially for community youth; and Attack Other was positively associated with II traits just for forensic youth. These data restate that youth with aggressive behavior, especially with a CD diagnosis (like the ones in the forensic sample), seem to tend to avoid the experience of shame; psychopathic traits are possibly negatively associated with internalizing shame coping strategies, particularly Attack Self; and Attack Other is an important coping strategy mostly for the endorsement of II traits (Ribeiro da Silva et al., 2015; Velotti et al., 2016).

Finally, it is important to reaffirm that the variance explained by this model is somehow limited, restating that other biological and environmental etiological factors still need be explored, not ignoring the insights from evolutionary theory (Ribeiro da Silva et al., 2015; Viding & Larson, 2010).

Though methodological rigor (including the use of a clinical interview to select participants to the forensic sample) and correctness of statistical procedures may be considered strengths, the current work is not free of limitations, which should be carefully considered when interpreting the results. Namely, this study used a convenience sample, a cross-sectional design, and relied on self-report measures, which, regardless of their psychometric proprieties that were thoroughly tested *a priori* (Pechorro et al., 2017; Vagos, Ribeiro da Silva, Brazão, & Rijo, 2016, Vagos et al., 2018, Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016, Vagos et al., 2017), raise some reliability and validity issues, namely, related to the shared variance between those self-report measures. Therefore, future research on this topic should try to include representative samples, a longitudinal design, and other assessment methods and informants.

Despite these limitations, results restate that not only harsh rearing experiences (e.g., Auty et al., 2015; Gao et al., 2010; Patch & Figueredo, 2016; Sevecke et al., 2016), but also the impact of those experiences, seem important predictors of psychopathic traits. Moreover, findings also pointed out that shame possibly plays a central role in psychopathy (Nathanson, 1992; Ribeiro da Silva et al., 2015), though this emotion seems to be regulated mostly by externalizing ways in these individuals (Campbell & Elison, 2005; Nystrom & Mikkelsen, 2012; Velotti et al., 2016). These data may help to give ground to some theories arguing that at least some individuals with psychopathic traits may not have a lack of emotional experience, but a tendency to externalize unpleasant emotions, denying/avoiding them and/or attacking the source of the threat (e.g., Baumeister et al., 1996; Heinze, 2017; Millon & Davis, 1998; Ribeiro da Silva et al., 2015). Current research findings may also have important research and clinical implications, namely, for the study of the evolutionary roots of psychopathy and for the design

of prevention and intervention programs, which probably should address shame and shame regulation and embrace positive parenting training into their designs to try to buffer these risky pathways. Finally, results once again showed that boys in forensic settings, when compared with community boys, present higher rates of the impact of harsh rearing experiences (Vagos, Ribeiro da Silva, Brazão, & Rijo, 2016, Vagos et al., 2017), external shame (Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016), maladaptive shame coping strategies (Vagos et al., 2018), and psychopathic traits (Pechorro et al., 2017; Weidacker et al., 2017). These differences, *per se*, reinforce the need for a full mental health assessment of these youth and the urgency to develop intervention programs specifically focused on their treatment needs.

Acknowledgments

We are extremely grateful to all youth who took part in this study, as well as to institutions for their help in facilitating data collection.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Portuguese Foundation for Science and Technology (Grant SFRH/BD/99795/2014); by FEDER—Fundo Europeu de Desenvolvimento Regional funds through the COMPETE 2020–Operational Program for Competitiveness and Internationalization (POCI) and Portuguese Foundation for Science and Technology (Grant POCI-01-0145-FEDER-016724). The funding sources had no involvement in the study.

References

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-referred youths: A new assessment tool. In E. Blaauw & L. Sheridan (Eds.), *Psychopaths: Current international perspectives* (pp. 131-158). The Hague, The Netherlands: Elsevier.

Auty, K. M., Farrington, D. P., & Coid, J. W. (2015). Intergenerational transmission of psychopathy and mediation via psychosocial risk factors. *The British Journal of Psychiatry*, *206*, 26-31.

Baumeister, R. E., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review*, *103*, 5-33.

Bennett, D., Sullivan, M., & Lewis, M. (2005). Young children's adjustment as a function of maltreatment, shame, and anger. *Child Maltreatment*, *10*, 311-323.

Berntsen, D., & Rubin, D. C. (2006). Centrality of Event Scale: A measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. *Behaviour Research and Therapy*, *44*, 219-231.

Caldwell, M. F., McCormick, D., Wolfe, J., & Umstead, D. (2012). Treatment-related changes in psychopathy features and behavior in adolescent offenders. *Criminal Justice and Behavior*, *39*, 144-155.

Campbell, J. S., & Elison, J. (2005). Shame coping styles and psychopathic personality traits. *Journal of Personality Assessment*, *84*, 96-104.

Cleckley, H. (1988). *The mask of sanity: An attempt to clarify some issues about the so-called psychopathic personality* (6th ed.). St. Louis, MO: Mosby. (Original work published 1941)

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Towards a hierarchical model. *Psychological Assessment*, *13*, 171-188.

Damasio, A. (2006). *Descartes' error: Emotion, reason and the human brain*. London, England: Vintage. (Original work published 1994)

Del Giudice, M. (2016). The evolutionary future of psychopathology. *Current Opinion in Psychology*, *7*, 44-50.

Del Giudice, M., & Ellis, B. J. (2015). Evolutionary foundations of developmental psychopathology. In D. Cicchetti (Ed.), *Developmental Psychopathology, Vol. 2: Developmental neuroscience* (3rd ed., pp. 1-58). New York, NY: Wiley.

Elison, J., Pulos, S., & Lennon, R. (2006). Investigating the compass of shame: The development of the compass of shame scale. *Social Behavior and Personality*, *34*, 221-238.

Ferguson, C. J. (2010). Genetic contributions to antisocial personality and behavior: A meta-analytic review from an evolutionary perspective. *The Journal of Social Psychology*, *150*, 160-180.

Gao, Y., Raine, A., Chan, F., Venables, P. H., & Mednick, S. A. (2010). Early maternal and paternal bonding, childhood physical abuse and adult psychopathic personality. *Psychological Medicine*, *40*, 1007-1016.

Garofalo, C., & Neumann, C. S. (2018). Psychopathy and emotion regulation: Taking stock and moving forward. In M. DeLisi (Ed.), *Routledge international handbook of psychopathy and crime* (pp. 58-79). London, England: Routledge.

Garofalo, C., Neumann, C. S., & Velotti, P. (2018). Difficulties in emotion regulation and psychopathic traits in violent offenders. *Journal of Criminal Justice*, *57*, 116-125.

Gauer, G., Souza, J. A., Silveira, A. M., & Sediyama, C. Y. N. (2013). Stressful events in autobiographical memory processing: Brazilian version of the Centrality of Event Scale. *Psicologia, Reflexão e Critica*, *26*, 98-105

Gilbert, P. (2015). An evolutionary approach to emotion in mental health with a focus on affiliative emotions. *Emotion Review*, *7*, 230-237.

Glenn, A. L., Kuzban, R., & Raine, A. (2011). Evolutionary theory and psychopathy. *Aggression and Violent Behavior*, *16*, 371-380.

Gold, J., Sullivan, M., & Lewis, M. (2011). The relation between abuse and violent delinquency: The conversion of shame to blame in juvenile offenders. *Child Abuse, & Neglect*, *35*, 459-467.

Goss, K., Gilbert, P., & Allan, S. (1994). An exploration of shame measures-I: The "Other as Shamer Scale." *Personality and Individual Differences*, *17*, 713-717.

Gretton, H. M., Hare, R. D., & Catchpole, R. E. H. (2004). Psychopathy and offending from adolescence to adulthood: A 10-year follow-up. *Journal of Consulting and Clinical Psychology*, *72*, 636-645.

Gross, J. J. (2014). Emotion regulation: Conceptual and empirical foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3-20). New York, NY: Guilford Press.

Hare, R. D. (2003). *The Hare Psychopathy Checklist-Revised* (2nd ed.). Toronto, Ontario, Canada: Multi-Health Systems.

Hare, R. D., & Neumann, C. S. (2006). The PCL-R assessment of psychopathy: Development, structural proprieties, and new directions. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 58-90). New York, NY: Guildford Press.

Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a clinical and empirical construct. *Annual Review of Clinical Psychology*, *4*, 217-246.

Harper, F., & Arias, I. (2004). The role of shame in predicting adult anger and depressive symptoms among victims of child psychological maltreatment. *Journal of Family Violence*, *19*, 367-375.

Harper, J. M. (2011). Regulating and coping with shame. In R. Trnka, K. Balcar, & M. Kuska (Eds.), *Reconstructing emotional spaces: From experience to regulation* (pp. 189-206). Prague: Prague of College of Psychological Studies Press.

Heinze, P. (2017). Psychopathy, unconscious shame and attachment: Considering the psychodynamics of psychopathy. *Psychodynamic Practice*, *23*, 7-32.

Hejdenberg, J., & Andrews, B. (2011). The relationship between shame and different types of anger: A theory-based investigation. *Personality and Individual Differences*, *50*, 1278-1282.

Heleniak, C., Jenness, J. L., Vander Stoep, A., McCauley, E., & McLaughlin, K. A. (2016). Childhood maltreatment exposure and disruptions in emotion regulation: A transdiagnostic pathway to adolescent internalizing and externalizing psychopathology. *Cognitive Therapy and Research*, *40*, 394-415.

Holmqvist, R. (2008). Psychopathy and affect consciousness in young criminal offenders. *Journal of Interpersonal Violence*, *23*, 209-224.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1-55.

Jonason, P. K., Icho, A., & Ireland, K. (2016). Resources, harshness, and unpredictability: The socioeconomic conditions associated with the dark triad traits. *Evolutionary Psychology*, *14*, 1-11.

Kim, J., Talbot, N., & Cicchetti, D. (2009). Childhood abuse and current interpersonal conflict: The role of shame. *Child Abuse & Neglect*, *33*, 362-371.

Kivisto, J., Kivisto, L., Moore, T., & Rhatigan, D. (2011). Antisociality and intimate partner violence: The facilitating role of shame. *Violence and Victims*, *26*, 758-773.

Kosson, D. S., Vitacco, M. J., Swogger, M. T., & Steuerwald, B. L. (2016). Emotional experiences of the psychopath. In C. B. Gacono (Ed.), *Personality and clinical psychology series. The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 73-95). New York, NY: Routledge.

Kubak, F. A., & Salekin, R. T. (2009). Psychopathy and anxiety in children and adolescents: New insights on developmental pathways to offending. *Journal of Psychopathology Behavior and Assessment*, *31*, 271-284.

Lee, Z., Salekin, R. T., & Iselin, A. M. R. (2010). Psychopathic traits in youth: Is there evidence for primary and secondary subtypes? *Journal of Abnormal Child Psychology*, *38*, 381-393.

Leistico, A. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis related the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior*, *32*, 28-45.

Matos, M., Pinto-Gouveia, J., Gilbert, P., Duarte, C., & Figueiredo, C. (2015). The Other as Shamer Scale–2: Development and validation of a short version of a measure of external shame. *Personality and Individual Difference*, *74*, 6-11.

McCrory, E., De Brito, S. A., & Viding, E. (2012). The link between child abuse and psychopathology: A review of neurobiological and genetic research. *Journal of the Royal Society of Medicine*, *105*, 151-156.

McWilliams, N. (2011). *Psychoanalytic diagnosis. Understanding personality structure in the clinical process*. New York, NY: Guilford Press. (Original work published 1994)

Mealey, L. (1995). The sociobiology of sociopathy: An integrated evolutionary model. *The Behavioral and Brain Sciences*, *18*, 523-599.

Meloy, J. R. (1988). *The psychopathic mind: Origins, dynamics, and treatment*. Northvale, NJ: Aronson.

Millon, T., & Davis, R. D. (1998). Ten subtypes of psychopathy. In T. Millon, M. Simonsen, M. Birket-Smith, & R. Davis (Eds.), *Psychopathy: Antisocial, criminal and violent behaviour* (pp. 161-170). New York, NY: Guildford Press.

Modecki, K. L., Zimmer-Gembeck, M. J., & Guerra, N. (2017). Emotion regulation, coping, and decision making: Three linked skills for preventing externalizing problems in adolescence. *Child Development*, *88*, 417-426.

Morrison, D., & Gilbert, P. (2001). Social rank, shame and anger in primary and secondary psychopaths. *Journal of Forensic Psychiatry & Psychology*, *12*, 330-356.

Mullins-Nelson, J. L., Salekin, R. T., & Leistico, A. M. R. (2006). Psychopathy, empathy, and perspective-taking ability in a community sample: Implications for the successful psychopathy concept. *International Journal of Forensic Mental Health*, *5*, 133-149.

Nathanson, D. L. (1992). *Shame and pride: Affect, sex, and the bird of the self*. New York, NY: W.W. Norton.

Neumann, C. S., Schmitt, D. S., Carter, R., Embley, I., & Hare, R. D. (2012). Psychopathic traits in females and males across the globe. *Behavioral Sciences & the Law*, *30*, 557-574.

Nyström, M., & Mikkelsen, F. (2012). Psychopathy-related personality traits and shame management strategies in adolescents. *Journal of Interpersonal Violence*, *20*, 519-537.

Patch, E. A., & Figueredo, A. J. (2016). Childhood stress, life history, psychopathy, and sociosexuality. *Personality and Individual Differences*, *115*, 108-113.

Pechorro, P., Andershed, H., Ray, J. V., Maroco, J., & Gonçalves, R. A. (2015). Validation of the Youth Psychopathic Traits Inventory and Youth Psychopathic Traits Inventory–Short Version among incarcerated juvenile delinquents. *Journal of Psychopathology and Behavioral Assessment*, *37*, 576-586.

Pechorro, P., Ribeiro, Da Silva, D., Andershed, H., Rijo, D., & Gonçalves, R. A. (2017). Psychometric properties and measurement invariance of the youth psychopathic traits inventory short version among Portuguese youth. *Journal of Psychopathology and Behavioral Assessment*, *39*, 486-597.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2012). Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories. *Journal of Criminal Justice*, *40*, 269-277.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2013). Child and adolescent psychopathy: Assessment issues and treatment needs. *Aggression and Violent Behavior*, *18*, 71-78.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2015). The evolutionary roots of psychopathy. *Aggression and Violent Behavior*, *21*, 85-96.

Richter, A., Gilbert, P., & McEwan, K. (2009). Development of an early memories of warmth and safeness scale and its relationship to psychopathology. *Psychology and Psychotherapy: Theory. Research and Practice*, *82*, 171-184.

Rijo, D., Brazão, N., Barroso, R., Ribeiro da Silva, D., Vagos, P., Vieira, A., . . . Macedo, A. M. (2016). Mental health problems in male young offenders in custodial versus community based-programs: Implications for juvenile justice interventions. *Child and Adolescence Psychiatry and Mental Health*, *10*, 40-48.

Salekin, R. T., Chen, D. R., Sellbom, M., Lester, W. S., & MacDougall, E. (2014). Examining the factor structure and convergent and discriminant validity of the Levenson Self-Report Psychopathy Scale: Is the two-factor model the best fitting model? *Personality Disorders: Theory, Research, and Treatment*, *5*, 289-304.

Salekin, R. T., Tippey, J. G., & Allen, A. D. (2012). Treatment of conduct problem youth with interpersonal callous traits using mental models: Measurement of risk and change. *Behavioral Sciences & the Law*, *30*, 470-486.

Schriber, R. A., Chung, J. M., Sorensen, K. S., & Robins, R. W. (2017). Dispositional contempt: A first look at the contemptuous person. *Journal of Personality and Social Psychology*, *113*, 280-309.

Sevecke, K., Franke, S., Kosson, D., & Krischer, M. (2016). Emotional dysregulation and trauma predicting psychopathy dimensions in female and male juvenile offenders. *Child and Adolescent Psychiatry and Mental Health*, 10, Article 43.

Sheehan, D. V., Sheehan, K. H., Shytle, R. D., Janavsm, J., Bannon, Y., Rogersm, J. E., . . . Wilkinsonm, B. (2010). Reliability and validity of the Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID). *Journal of Clinical Psychiatry*, *71*, 313-326. doi:10.4088/JCP.09m05305whi

Spice, A., Viljoen, J. L., Douglas, K. S., & Hart, S. D. (2015). Remorse, psychopathology, and psychopathy among adolescent offenders. *Law and Human Behavior*, *39*, 451-462.

Tangney, J. P., Stuewig, J., Mashek, D., & Hastings, M. (2011). Assessing jail inmates' proneness to shame and guilt: Feeling bad about the behavior or the self? *Criminal Justice and Behavior*, *38*, 710-734.

Vagos, P., Ribeiro, da Silva, D., Brazão, N., & Rijo, D. (2016). The Centrality of Event Scale in Portuguese adolescents: Validity evidence based on internal structure and on relations to other variables. *Assessment*, *25*, 227-238.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Elison, J. (2018). Psychometric properties of the Compass of Shame Scale: Testing for measurement invariance across community and forensic adolescent samples. *Child Youth Care Forum*. Advance online publication. doi:10.1007/s10566-018-9474-x

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2016). Dimensionality and measurement invariance of the Other as Shamer Scale across diverse adolescent samples. *Personality and Individual Differences*, *98*, 289-296.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2017). The Early Memories of Warmth and Safeness Scale for adolescents: Cross-Sample Validation of the Complete and Brief Versions. *Clinical Psychology & Psychotherapy*, *24*, 793-804.

Van Baardewijk, Y., Andershed, H., Stegge, H., Nilsson, K., Scholte, E., & Vermeiren, R. (2010). Development and tests of short versions of the Youth Psychopathic Traits Inventory and the Youth Psychopathic Traits Inventory-Child Version. European. *Journal of Psychological Assessment*, *26*, 122-128.

Velotti, P., D'aguanno, M., Garofalo, C., & Rogier, G. (2016). Dealing with shame–the "Psychopathic Way": Preliminary investigation for a new developmental framework of psychopathic traits. *European Psychiatry*, *33*, S465.

Viding, E., & Larson, H. (2010). Genetics of child and adolescent psychopathy. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 113-134). New York, NY: Guilford Press.

Waller, R., Trentacosta, C. J., Shaw, D. S., Neiderhiser, J. M., Ganiban, J. M., Reiss, D., . . . Hyde, L. W. (2016). Heritable temperament pathways to early callous–unemotional behaviour. *The British Journal of Psychiatry*, *209*, 475-482.

Weidacker, K., O'Farrell, K. R., Gray, N. S., Johnston, S. J., & Snowden, R. J. (2017). Psychopathy and impulsivity: The relationship of the triarchic model of psychopathy to different forms of impulsivity in offenders and community participants. *Personality an Individual Differences*, *114*, 134-139.

Wilson, D. S., Hayes, S. C., Biglan, A., & Embry, D. D. (2014). Evolving the future: Toward a science of intentional change. *The Behavioral and Brain Sciences*, *37*, 395-416.

Zimmermann, P., & Iwanski, A. (2014). Emotion regulation from early adolescence to emerging adulthood and middle adulthood: Age differences, gender differences, and emotion specific developmental variations. *International Journal of Behavioral Development*, *38*, 182-194

CHAPTER 5 |

The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits

The PSYCHOPATHY.COMP program|

Introduction

The PSYCHOPATHY.COMP (Ribeiro da Silva et al., 2017) is an individual psychotherapeutic program based on Compassion Focused Therapy (CFT), which is aimed to reduce antisocial/disruptive behavior and psychopathic traits through the development of a compassionate motivation in young offenders. This program was developed during this doctoral research project with the support of the members of the project "Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention" (PTDC/MHC-PCL/2189/2014).

In this chapter the conceptual model underlying CFT will be presented as well as an overview of the program, along with some considerations about the therapists, the manual, and the therapeutic setting.

Compassion Focused Therapy

CFT emerged from developments within the cognitive-behavioral therapies (CBT), but stands out by its evolutionary underpinning and by its focus on the promotion of a compassionate motivation in individuals (Gilbert, 2014). Compassion can be conceptualized as a motivation to be sensitive to the suffering of the self and others, allied with the wisdom, strength, and commitment to prevent and/or alleviate that same suffering (Gilbert, 2010). Therapists serve as models, guiding and helping individuals to overcome their fears, blocks, and resistances to compassion and bridging forth the different flows of compassion: compassion towards the self, giving compassion to others, and receiving compassion from others (Gilbert, 2017, 2019).

Case formulation

Case formulation in CFT is different from standard formulation processes and encompasses a series of interconnected stages (Gilbert, 2016):

Background and historical influences; i.e., early attachment experiences, memories, and life events that might be linked to neglect, abuse/harm, and rejection, lighting up emotional memories of feeling (un)safe and (un)cared for and/or easily threatened

Key threats; i.e., external and internal key threats around archetypal and innate themes of abandonment, rejection, shame, and abuse/harm. External threats relate to what the world or others might do to threaten the self; so, the attention is focused on others, monitoring others in terms of whether they are, for instance, trustworthy, threatening, shaming, demanding, dominant, abusive, and/or (un)helpful. In turn, internal threats are associated with what emerges inside the self; so, the attention is focused in threats arising inside the self.

Safety strategies; i.e., ways of coping with external and/or internal threats in an attempt to protect the self. These can be either internalizing (e.g., submission, self-criticism) or externalizing (e.g., attack others).

Unintended consequences; i.e., unwittingly, efforts of individuals to deal with their key threats often lead to unintended consequences, which usually worse those same threats, creating self-perpetuating cycles.

In a CFT based intervention, therapists compassionately guide patients to discover the universal and evolutionary role of the human functioning (in a mind/body duality) and the adaptive role of the individual's own functioning, taking into account his/her background and current life context (Carter, Bartel, & Porges, 2017; Cowan, Callaghan, Kan, & Richardson, 2016; Gilbert, 2014; Shirtcliff et al., 2009). In detail, CFT resorts to evolutionary models that underline that humans have a variety of potential motivational systems, either prosocial or antisocial, which can be seen as adaptive according to specific contexts; i.e., useful in the pursuit of survival, prosperity, and reproduction.

As humans, we all have universal, automatic, and instinctive reactions to threats (linked to our reptilian brain, part of the "old" brain area), which are crucial to survival and thrive (MacLean, 1985; Ribeiro da Silva, Rijo, & Salekin, 2015). Most problems arise when the reptilian brain conflicts with affiliative motivations (linked to the mammalian brain, also part of our "old" brain) and with the unique cognitive skills of the human cerebral cortex (linked to the "new" brain) (MacLean, 1985; Ribeiro da Silva et al., 2015).

To regulate emotional states, which always combine a multiplicity of emotional patterns (i.e., multiple selves: angry self, sad self, anxious self), humans may resort to three emotion regulation systems (Gilbert, 2015):

- The **threat system** - shared by all species; its function is to protect individuals from threats;
- The **drive system** - its function is to allow individuals to experience positive feelings that guide, motivate, and encourage them to seek out resources to survive and prosper;
- The **soothing system** - its function is to allow individuals to experience peacefulness and safeness.

Psychopathological symptoms and disorders arise when there is an unbalance of between these three emotion regulation systems, particularly, when the threat activation commands the individual's functioning. In this respect, shame (encompassing unbearable and persistent feelings of being inferior, inadequate, and worthless), and shame regulation, play a major role in CFT. Thus, as we all share the need to create positive feelings about ourselves in the mind of others, when one felts devalued, neglected, and/or abused since early ages, one tends to became vulnerable to shame, which, in turn, over-stimulates the threat system and its archaic responses (freeze, flight, fight; Gilbert, 2015, 2017). In fact, research has found evidence for the key role of shame and shame regulation problems in several psychopathological disorders

(Ribeiro da Silva et al., 2015). When individuals tend to internalize the shame experience (e.g., "I am inferior and worthless"), they usually develop internalizing psychopathology. In turn, when individuals tend to externalize the shame experience (e.g., "The others are trying to put me down"), they are more prone to develop externalizing psychopathology (Elison, Pulos, & Lennon, 2006; Nathanson, 1992; Ribeiro da Silva, Vagos, & Rijo, 2019a, 2019b; Vagos, Ribeiro da Silva, Brazão, Rijo, & Elison, 2019).

In sum, in a CFT based intervention, therapists compassionately guide patients to discover that our functioning is actually not our fault, as we are just one version of ourselves, which was shaped by evolutionary, genetic, epigenetic, and environmental influences that we did not choose (Cowan et al., 2016; Gilbert, 2019). However, it is also our responsibility, once we can know ourselves better, learn and practice new regulation strategies, guiding our automatic responses, instead of being guided by them. To do so, CFT provides training on specific practices that are designed to deal with the triggering of the threat system, to balance the emotion regulation systems, and to cultivate compassion in individuals. This is called Compassionate Mind Training (CMT), a cross-cutting ingredient throughout a CFT intervention (Gilbert, 2016, 2019).

The PSYCHOPATHY.COMP program

As stated, the PSYCHOPATHY.COMP program is based on CFT, which conceptualizes antisocial behavioral patterns and psychopathic traits as evolutionary rooted responses (fitness-maximizing) to deal with harsh rearing scenarios (Ribeiro da Siva et al., 2015). In detail, if the human brain is evolutionarily designed to survive and thrive in adverse environments, when individuals are raised in hostile psychosocial backgrounds, like the majority of juvenile detainees, their brains also become calibrated for such environments (Abram et al., 2015; Vagos, Ribeiro da Silva, Brazão, & Rijo, 2018; Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016, 2017). Thus, these youth tend to present an overdeveloped threat system, which functions mostly according to survival principles (e.g., "Better safe than sorry"), as well as central emotional dysfunctions (e.g., Garofalo, Neumann, & Velotti, 2018; Hare & Neumann, 2008; Kosson, Vitacco, Swogger, & Steuerwald, 2016). These emotional dysfunctions comprise, among others, high levels of shame and shame regulation problems; i.e., shame seems to be massively externalized by compensation (GM traits), avoidance (CU traits) and/or attack mechanisms (II traits) (Del Giudice & Ellis, 2015; Nyström & Mikkelsen, 2012; Ribeiro da Silva et al., 2019a, 2019b; Shirtcliff et al., 2009). In sum, though early conceptualizations emphasized the sanity appearance and the lack of emotional experience as core features of psychopathy (Cleckley, 1941/1988), a growing body of research is finding evidence that psychopathic traits probably act like a mask of invulnerability that hides a real deep suffering, a shameful nucleus (Nathanson, 1992; Ribeiro da Silva et al., 2015, 2019a, 2019b).

CFT has been applied in the treatment of several mental health problems, some of them previously considered difficult to treat, and has been shown to be suitable for children, adolescents, and adults (Braehler et al., 2013, Carona, Rijo, Salvador, Castilho, & Gilbert, 2017; Kirby, Tellegen, & Steindl, 2017; Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, 2018). The growing empirical support that CFT has been gaining (see Leaviss & Uttley, 2015 for a

review), the reliability of conceptual models explaining psychopathic traits under the lens of a CFT approach (Ribeiro da Silva et al., 2019a, 2019b), and the compelling theoretical support of CFT as an adequate treatment for these youth (Ribeiro da Silva et al., 2013, 2015), lead Ribeiro da Silva and colleagues (2017) to develop the PSYCHOPATHY.COMP - An individual compassion-based psychotherapeutic intervention for young offenders with psychopathic traits.

An overview of the PSYCHOPATHY.COMP program

Modules and change strategy

The PSYCHOPATHY.COMP is a manualized program of 20 60 min sessions, which runs on a weekly basis. The program's structure follows a progressive strategy of change, which occurs in four sequential modules (see Table 1): (1) The basics of our mind; (2) Our mind according to CFT; (3) Compassionate Mind Training (CMT); and (4) Recovery, relapse prevention, and finalization. As a common feature to all therapeutic sessions, therapists are focused in: developing a secure therapeutic relationship; assessing the motivational stage of the youth (acting accordingly by using motivational interviewing strategies aligned with a CFT framework; Steindl, Kirby, & Tellegan, 2018); and stimulating the CMT (see also **Appendix C** for an overview of each session).

The main goal of **Module 1** is to promote insights about the evolutionary roots of humans' basic motives, needs, and emotions, including the automatic and universal responses to social and physical threats. Adopting a non-pathological, non-judgmental and de-shaming perspective, youth are experientially encouraged to understand that even if we cannot change events, emotions, and thoughts themselves, we can always change the way we interact with them, act on them and, accordingly, we can change our behavioral response. CMT is introduced in this module, as a fundamental platform to begin the process of building participants' compassionate mind and awareness.

Module 2 brings awareness about the functioning of the human mind according to a CFT formulation and continues the CMT. Therapists compassionately enable youth to discover that although we are "just one version of ourselves" (i.e., we probably would be different if genetic or contextual factors in our lives had been different), our evolutionary, genetic, epigenetic, and contextual inheritance is not determinism, as we all can make conscious actions as we increase our knowledge about our own functioning. To do so, beyond the importance of CMT, youth are experientially guided to understand the concepts of: emotion regulation systems, which may help us to regulate our emotional states; shame; and shame regulation strategies.

Table 1. *An overview of the PSYCHOPATHY.COMP program*

Module	Session	Theme	Key messages of the sessions	Exercise (Mindfulness/CMT)
1. The basics of our mind	1	Presentations	Humans have a lot of things in common. Most of the things that happen to us are not chosen by us.	One minute of mindfulness
	2	Our basic ingredients	We all have the same instinctive reactions to threats.	Soothing Rhythm Breathing
2. Our mind according to CFT	3	Old brain/New brain = tricky brain	Humans have a tricky mind	3 minutes of Mindfulness
	4	Multiple versions	We are just one version of ourselves	Mindfulness with fingers
	5	Responsibility and freedom	We are not prisoners of our evolutionary, genetic, and environmental past experiences.	Mindfulness checking-in
	6	Emotion regulation systems	It is important to be aware that we all have three emotion regulation systems	STOP
	7	Emotion regulation systems (cont.)	A good way to achieve stability is to balance the functioning of our emotion regulation systems	Mindfulness checking-in
	8	Outputs of the threat system	We are all sensitive to shame	Brief Compassion check-in
	9	Coping strategies	What is the best strategy to deal with shame	Compassionate Touch
	10	Motivations and recovery	Knowing our motivations helps us to follow a path of recovery	Compassionate Smile
3. Compassionate Mind Training	11	Compassion: What is and what is not	No matter what, we can always choose compassion	Compassionate Check-in
	12	Multiple selves	We all encompass a multiplicity of selves, to differentiate and integrate that multiplicity is key	Compassionate-Self
	13	Fears of compassion	We all have fears, blocks, and resistances to compassion that we should face and overcome	Compassionate-Color
	14	Flows of compassion	All the flows of compassion are important, though they may encounter roadblocks.	Compassion flowing
	15	Self-compassion	Self-compassion is the only tool we have available 24/7	Compassion flowing into the self
	16	Flows of compassion revised	Compassion always gives us an outlet	Compassionate walking
	17	Safe place	We can go to our safe place and reach our compassionate self whenever we need it	Safe place/Compassionate friend
	18	Compassionate letter	Compassion is powerful and can impact in our lives.	Compassionate letter
4. Recovery, relapse prevention, finalization	19	Revisiting motivation/recovery	Alhough not our fault, we now have the tools to be responsible for our choices.	Exercise chosen by the youth
	20	What has changed? An overview	Life is always going to be bittersweet, learn to bear and face difficult moments compassionately is the challenge	Compassionate eating

Although CMT started in module 1 and continued during module 2, **module 3** is explicitly focused in CMT. Using experiential exercises, youth are gradually exposed to the triggering of the threat system (mostly anger and shame exposure), in order to allow them to understand its outputs (in the mind and body), to differentiate and integrate their multiple-selves, and to seek out and test compassionate strategies to tolerate and cope in healthy ways with their own distress.

Finally, **module 4** is aimed at revisiting the motivations for recovery and to prevent relapse, always under the lens of compassion. Youth are encouraged to deeply understand that although suffering will always be part of our lives, this therapeutic journey offered them several compassionate emotion regulation strategies to deal with suffering. However, therapists always emphasize youth's control and personal choices, as well as their responsibility over change.

Sessions

Desirably, sessions should have an approximate duration of 60 minutes and occur on a weekly basis. Sessions present a predefined structure (see Table 2), though some (e.g., the initial and the final ones) have a slightly different structure. The **Session Backstage** comprises a grounding exercise that therapists should do before all sessions. This grounding exercise is aimed to bring the compassionate self of therapists into the sessions, focusing them into the present moment, into their compassionate wisdom, commitment, and intentions. Sessions are then divided into three parts: **Part 1** (Check in), **Part 2** (Session theme), and **Part 3** (Check out).

Table 2. *Sessions structure*

SESSION BACKSTAGE – therapist grounding exercise
PART 1 – Check in
Grounding exercise
Overview of the last session
Insights from the week
PART 2 – Session theme
Exercise/Dynamic about the session theme
Development of the session theme
PART 3 – Check out
Session summary
Final exercise
Magic card
ASSESSMENT

Part 1 starts with a grounding exercise (i.e., Soothing Rhythm Breathing; Gilbert, 2010) aimed to help youth to be mindful/compassionate before starting the session. The overview of the last session is aimed to assess the youth level of understanding about the previous session, and to address any possible difficulties. When exploring insights from the week,

youth are invited to think about their week; both positive and negative events should be elicited. This part of the session is very important, not only because it can bring youth's improvements into therapy, but also his difficulties and needs.

Part 2 encompasses the new theme of the session itself and starts with an exercise about that issue. All exercises were developed considering the session's theme and aiming to be as experiential as possible. Each exercise should be adjusted to best fit the youth's issues and needs. A clinical decision needs to be beyond the choice of a given exercise, which should be based: on the therapist's knowledge about the youth (e.g., interests, level of motivation, cognitive skills) and on what the youth brought in the insights from the week section of Part 1. Having those in mind, it is easier to achieve the aims proposed for each session, but also to increase the motivation of the youth to the therapeutic process. Exercises are not an aim in sessions, but a way to achieve a given aim. So, therapists can and should develop other exercises if necessary, bearing in mind the specific goals of the session and the needs of the youth. The exercise is followed by the development of the session theme, where youth are guided to a deeper level of understanding.

Part 3 starts with a session summary, which offers a synthesis of the theme explored in part 2. Afterwards, youth are invited to do a final exercise, which in the initial sessions is more attuned to mindfulness training and after to CMT. Finally, a magic card is given to the youth, which works like a keyword that mirrors and summarizes the session's theme.

At the end of each session, the assessment of the session is carried out, in which the therapist and youth fill out their own assessment sheets (see **Appendix D** - The PSYCHOPATHY.COMP program: Sessions' assessment).

Between sessions, youth are invited to practice the exercises and to be aware of daily events that may be related to the session's theme, trying to use the magic card (i.e., the knowledge acquired during the session) accordingly. The idea behind the magic card is that by the end of therapy, youth can have their own deck of cards, which can be played throughout life.

Therapists

Therapists delivering the PSYCHOPATHY.COMP program must have training in CFT and deeply understand its conceptual model when applied to antisocial behavior and psychopathic traits. Preferably, therapists should also have regular supervision sessions with senior psychologists skilled in CFT.

Therapists should also know the program in detail, in order to achieve the specific goals of each session and its ultimate goal - to develop a compassionate motivation in youth. However, although sessions have a predefined script to attain specific goals, adjustments are encouraged so the program can fit the needs of youth needs and/or overcome their possible difficulties/idiosyncrasies. In other words, it is the program that must be fitted to the youth and not the youth to the program. Thus, our experience with PSYCHOPATHY.COMP has shown that a careful preparation of the sessions is essential in order to allow the therapist to be

available and attentive to the attitudes and comments of youth, seeking to promote a secure therapeutic relationship. It is up to the therapist to motivate youth to develop a compassionate motivation and to adhere to the program, providing relational experiences that gradually let them feel safe and open to find compassionate ways to tolerate and cope in healthy ways with their own distress. This can be achieved not only because of the exercises performed in the sessions, but also because of the type and style of the therapeutic relationship. If therapeutic skills (positive regard; genuineness; empathy; openness; curiosity) are important in all psychotherapeutic interventions, in CFT they are of utmost importance. Therapists should also be aware that micro skills (e.g., non-verbal communication: facial expression, voice tone, body posture, silence management) are part of human communication and are central to the development of a compassionate therapeutic relationship, guided discovery and change process. It is because of these reasons that therapists are encouraged to assess each session and his/her own performance and to give the opportunity for the youth to do the same, in order to monitor and improve the therapeutic process.

The handbook and the therapeutic setting

When reading the PSYCHOPATHY.COMP handbook, therapists can found a broad introduction, followed by the conceptual bases for the development of the program. Afterwards, general considerations are made regarding the therapist (e.g., expertise, training, supervision, skills, and micro skills), the use of compassionate motivational interview techniques and strategies, and the process of case formulation in CFT. Next, it is presented the program overview, as well as the target population and ethical issues. A detailed protocol for each module/session is then presented; i.e., each module starts with a brief introduction, showing the function and the specific goals of each module, followed by a script for each session. The scripts for each session start with a brief description of the session, its specific goals, the methodology, and the experiential exercises.

Sessions should preferably occur in a comfortable place that, most of all, can be felt as safe and secure, free of distractions or possible interruptions. Desirably, the therapist and the youth should be seated face to face, with no desk or other furniture item in between them. All materials for sessions are easily acquired and/or developed by therapists with no/few costs.

Study V |

The efficacy of a compassion-focused therapy–based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee

Clinical Case Studies, Advance online publication
2019, doi: 10.1177/1534650119849491

The efficacy of a compassion-focused therapy–based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee

Diana Ribeiro da Silva[a], Daniel Rijo[a], Paula Castilho[a], and Paul Gilbert[b]

[a] Research Center for Neuropsychology and Cognitive-Behavioral Intervention
Faculty of Psychology and Educational Sciences, University of Coimbra

[b] University of Derby

Abstract

The presence of a CD diagnosis, especially when associated with psychopathic traits, contributes to a poor prognosis, high recidivism rates, and low responsivity to treatment in these youth. Although group intervention programs have proven to be effective in decreasing antisocial behavior, studies testing their efficacy in reducing psychopathic traits are scarce and limited. Moreover, there is a lack of research focused on the efficacy of individual treatment approaches specifically designed to reduce psychopathic traits and disruptive behavior in juvenile detainees. Compassion-focused therapy (CFT) shows promising results in the treatment of several psychopathological disorders. Besides, there is some theoretical support to consider CFT a suitable approach to treating juvenile detainees. However, there are no treatment programs based on CFT that are designed to target psychopathic traits and disruptive behavior in these youth. Consequently, treatment outcome research in this area is absent. This clinical case study presents the treatment of a juvenile detainee with CD, a high psychopathic profile, and a very high risk for criminal recidivism using the PSYCHOPATHY.COMP program (a 20-session individual CFT program), which was specially designed to reduce psychopathic traits and disruptive behavior. The treatment outcome data revealed a significant reduction in psychopathic traits and disruptive behavior. Th treatment gains were maintained and/or increased over time (3 months after program completion). This clinical case study demonstrates the feasibility and efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits and disruptive behavior in a juvenile detainee.

Keywords: compassion-focused therapy, conduct disorder, disruptive behavior, juvenile detainees, psychopathic traits

1. Theoretical and Research Basis for Treatment

The high prevalence of the conduct disorder (CD) diagnosis among juvenile detainees is wel established in the literature (Abram et al., 2015; Rijo et al., 2016). In addition, psychopathi traits (i.e., grandiose–manipulative [GM], callous–unemotional [CU], and impulsive-Irresponsible [II] traits) are more prevalent in detained youth than in normative youth (Andershed, Kerr, Stattin, & Levander, 2002; Ribeiro da Silva, Salekin, & Rijo, 2019). Several studies have noted that the combination of a CD diagnosis with high levels of psychopathic traits is linked to a more persistent and severe pattern of antisocial behavior, higher recidivism rates and less engagement and responsivity to treatment than when CD is not associated with high levels of psychopathic traits (Herpers, Rommelse, Bons, Buitelaar, & Scheepers, 2012; Leistico, Salekin, DeCoster, & Rogers, 2008). In the early 1940s, Cleckley (1941/1988) wrote that "We do not at present have any kind of psychotherapy that can be relied upon to change the psychopath fundamentally" (p. 478). After almost 80 years, there is still a lack of studies testing the efficacy of intervention programs specifically tailored for juvenile detainees with CD in reducing psychopathic traits and disruptive behavior.

Treatment Efforts

Behavioral and cognitive-behavioral interventions are among the most effective in the treatment of antisocial behavior problems, in both adult and youth criminal samples (Andrews & Bonta, 2010; Koehler, Lösel, Akoensi, & Humphreys, 2013; Lipsey, 2009; MacKenzie & Farrington, 2015). However, regarding psychopathic traits, there is a long debate about whether or not they are treatable (see Frick, Ray, Thornton, & Kahn, 2014; Ribeiro da Silva, Rijo, & Salekin, 2013; Wilkinson, Waller, & Viding, 2015 for a review). Some authors (e.g., Harris & Rice, 2006) argued that psychopathy is a non-treatable condition and that therapeutic efforts may even worsen psychopathic traits, antisocial behavior, and recidivism risk, making individuals avoid legal detention in more successful ways. Other authors contended that psychopathic traits and disruptive behaviors seem to be changeable, especially, but not exclusively, if individuals are identified early in life (during childhood or adolescence) and treated properly (Hecht, Latzman, & Lilienfeld, 2018; Salekin, 2002; Salekin, Worley, & Grimes, 2010; Wilkinson et al., 2015). In this respect, behavioral interventions, cognitive-behavioral interventions, and parent/family-based interventions seem to be the most effective in reducing psychopathic traits and disruptive behaviors (e.g., Caldwell, McCormick, Wolfe, & Umstead, 2012; Datyner, Kimonis, Hunt, & Armstrong, 2016; Fleming, Kimonis, Datyner, & Comer, 2017; Hecht et al., 2018; Kimonis & Armstrong, 2012; McDonald, Dodson, Rosenfield, & Jouriles, 2011; Mills, Babinski, & Waschbusch, 2018; Polaschek & Skeem, 2018; Salekin, 2002). Another promising avenue to treat these youth is interventions based on positive and/or prosocial/affiliative emotions (Dadds, Cauchi, Wimalaweera, Hawes, & Brennan, 2012; Salekin, Tippey, & Allen, 2012).

Nevertheless, the scientific literature on the treatment of psychopathic traits is scarce, the rigor of treatment designs is limited, and the assessment of treatment efficacy presents

several methodological problems (Hecht et al., 2018; Polaschek & Skeem, 2018; Ribeiro da Silva et al., 2013; Wilkinson et al., 2015). In addition to being scarce, most studies on this field were conducted before the 1980s, few used methodological rigorous designs, and even fewer were conducted in forensic settings, namely, with young offenders (Hecht et al., 2018; Polaschek & Skeem, 2018; Salekin, 2002). Only three studies, meeting ethical requirements and basic methodological standards (a relatively large sample size and a control group), examined whether the treatment reduces criminal behavior and/or psychopathic traits in young offenders (Butler, Baruch, Hickey, & Fonagy, 2011; Caldwell, Skeem, Salekin, & Van Rybroek, 2006; Manders, Deković, Asscher, van der Laan, & Prins, 2013). Overall, the results of these studies showed that psychopathic traits and/or criminal behavior can be reduced after the delivery of an intensive treatment approach using cognitive-behavioral techniques (Caldwell et al., 2006) or an intensive multimodal family intervention (Butler et al., 2011; Manders et al., 2013).

Several promising pathways to the treatment of young offenders with psychopathic traits have been identified (see Hecht et al., 2018 for a review). First, the past few decades have seen significant gains regarding the scientific understanding about the etiology and assessment of CD and psychopathic traits (Hecht et al., 2018; Ribeiro da Silva, Rijo, & Salekin, 2012, 2015), which is fundamental to the development and delivery of intervention programs targeting theoretically sound mechanisms of change (Hecht et al., 2018; Salekin, 2002). Second, new forms of cognitive-behavioral therapies (CBTs) have been developed in recent years, showing growing empirical support (Kahl, Winter, & Schweiger, 2012). Unlike traditional CBT, these new therapeutic approaches mainly focus on changing the function of psychological events (e.g., cognitions, motives, and emotions) rather than on changing their particular content or frequency (Kahl et al., 2012). However, no research has been published testing the efficacy of these new CBT approaches in treating juvenile detainees.

Compassion-Focused Therapy

Compassion-focused therapy (CFT) emerged from developments within this CBT movement but stands out because of its evolutionary underpinning and its focus on the promotion of a compassionate motivation in individuals (Gilbert, 2014). Compassion can be conceptualized as a motivation to be sensitive to the suffering of the self and others, allied with the wisdom, strength, and commitment to prevent and/or alleviate that same suffering (Gilbert, 2010). Therapists serve as models, guiding and helping individuals overcome their fears, blocks, and resistances to compassion and bringing forth the different flows of compassion: having compassion toward the self, giving compassion to others, and receiving compassion from others (Gilbert, 2017, 2019).

Case formulation in CFT is similar to the standard formulation processes, encompassing a series of interconnected stages (Gilbert, 2016): background and historical influences, that is, early attachment experiences and life events, which light up emotional memories of feeling (un)safe and (un)cared for and/or easily threatened; key threats (i.e., external and

internal key threats around archetypal and innate themes of abandonment, rejection, shame, and abuse/harm; external threats relate to what the world or others might do, while internal threats are associated with what emerges inside the self); safety strategies (i.e., ways of coping with external and/or internal threats; these can be either internalizing or externalizing); and unintended consequences (i.e., efforts of individuals to deal with their key threats often lead to unintended consequences, which usually worsen those same threats).

In a CFT-based intervention, therapists compassionately guide patients to discover the universal and evolutionary role of human functioning (in a mind/body duality) and the adaptive role of the individual's own functioning, taking into account his or her background and current life context (Carter, Bartel, & Porges, 2017; Cowan, Callaghan, Kan, & Richardson, 2016; Gilbert, 2014; Shirtcliff et al., 2009). As humans, we all have universal, automatic, and instinctive reactions to threats (linked to our reptilian brain, part of the "old" brain area), which are crucial for surviving and thriving (MacLean, 1985). Most problems arise when the reptilian brain conflicts with affiliative motivations (linked to the mammalian brain, also part of our "old" brain) and with the unique cognitive skills of the human cerebral cortex (linked to the "new" brain) (MacLean, 1985). To regulate emotional states, which always combine a multiplicity of emotional patterns (i.e., our multiple selves: angry self, sad self, anxious self . . .), humans may resort to three emotion regulation systems: the threat system (shared by all species; its function is to protect individuals from threats); the drive system (its function is to allow individuals to experience positive feelings that guide, motivate, and encourage them to seek out resources to survive and prosper); and the soothing system (its function is to allow individuals to experience peacefulness and safeness) (Gilbert, 2015). Psychopathological symptoms and disorders arise when there is an unbalance of these three emotion regulation systems, particularly when the threat activation commands the individual's functioning. In this respect, shame (encompassing unbearable and persistent feelings of being inferior, inadequate, and worthless) and shame regulation play a major role in CFT. Thus, as we all share the need to create positive feelings about ourselves in the mind of others, when individuals feel devalued, neglected, and/or abused since early ages, they tend to become vulnerable to shame, which, in turn, over-stimulates the threat system and its archaic responses (freeze, flight, fight; Gilbert, 2015, 2017). In fact, research has found evidence for the key role of shame and shame regulation problems in several psychopathological disorders (Ribeiro da Silva et al., 2015). When individuals tend to internalize the shame experience (e.g., "I am inferior and worthless"), they usually develop internalizing psychopathology. In turn, when individuals tend to externalize the shame experience (e.g., "Others are trying to put me down"), they are more prone to develop externalizing psychopathology (Elison, Pulos, & Lennon, 2006; Nathanson, 1992; Vagos, Ribeiro da Silva, Brazão, Rijo, & Elison, 2018).

Overall, in a CFT-based intervention, therapists compassionately guide patients to discover that our functioning is actually not our fault, as we are just one version of ourselves,

which was shaped by evolutionary, genetic, epigenetic, and environmental influences that we did not choose (Cowan et al., 2016; Gilbert, 2019). However, it is also our responsibility, once we can know ourselves better, learn and practice new regulation strategies and guide our automatic responses instead of being guided by them (Gilbert, 2017, 2019). To encourage this responsibility, CFT provides training on specific practices that are designed to address the triggering of the threat system, balance the emotion regulation systems and cultivate compassion in individuals. This is called compassionate mind training (CMT), a cross-cutting ingredient throughout a CFT intervention (Gilbert, 2016, 2019).

From a CFT perspective, antisocial behavior patterns and psychopathic traits are conceptualized as evolutionary rooted responses to deal with harsh rearing scenarios (Ribeiro da Silva et al., 2015). In detail, if the human brain is evolutionarily designed to survive and thrive in adverse environments, when individuals are raised in hostile psychosocial backgrounds, as are most juvenile detainees, their brains also become calibrated for such environments (Abram et al., 2015; Vagos, Ribeiro da Silva, Brazão, & Rijo, 2018; Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016, 2017). Thus, these youth tend to present an overdeveloped threat system, which functions mostly according to survival principles (e.g., "better safe than sorry"), as well as central emotional dysfunctions (e.g., Garofalo, Neumann, & Velotti, 2018; Kosson, Vitacco, Swogger, & Steuerwald, 2016). These emotional dysfunctions comprise, among others, high levels of shame and shame regulation problems; that is, shame seems to be massively externalized by compensation (GM traits), avoidance (CU traits), and/or attack mechanisms (II traits) (Del Giudice & Ellis, 2015; Nyström & Mikkelsen, 2012; Ribeiro da Silva, Vagos, & Rijo, 2019; Shirtcliff et al., 2009). Overall, although early conceptualizations emphasized the appearance of sanity and the lack of emotional experience as core features of psychopathy (Cleckley, 1941/1988), a growing body of research is finding evidence that psychopathic traits probably act as a mask of invulnerability that hides deep suffering and a shameful nucleus (Nathanson, 1992; Ribeiro da Silva et al., 2015; Ribeiro da Silva, Vagos, & Rijo, 2019).

CFT is applied in the treatment of several mental health problems in adulthood, some of them previously considered difficult to treat (Braehler et al., 2013; Kirby, Tellegen, & Steindl, 2017; Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, 2018). Moreover, CFT has been indicated as a suitable treatment approach for children and youth (Carona, Rijo, Salvador, Castilho, & Gilbert, 2017). Finally, there is some theoretical support to consider CFT as an appropriate approach to treat juvenile detainees (Ribeiro da Silva et al., 2015). However, until now, no study has tested this hypothesis.

PSYCHOPATHY.COMP

The growing empirical support of CFT (see Leaviss & Uttley, 2015 for a review), the reliability of conceptual models explaining psychopathic traits under the lens of a CFT approach (Ribeiro da Silva, Vagos, & Rijo, 2019), and the compelling theoretical support of CFT as an adequate treatment for youth with disruptive behavior and psychopathic traits

(Ribeiro da Silva et al., 2013, 2015) lead Ribeiro da Silva et al. (2017) to develop the PSYCHOPATHY.COMP program: an individual compassion-based psychotherapeutic intervention for juvenile detainees with CD and psychopathic traits. The main goal of this program is to reduce psychopathic traits and disruptive behavior through the development of a compassionate motivation in these youth, toward both the self and others.

The PSYCHOPATHY.COMP program was developed by a research team that included experts in CFT and/or CBT (including Paul Gilbert, the founder of CFT), most of them with clinical experience in the assessment and treatment of antisocial individuals. In the first stage, the research team had intensive training on CFT and discussed the program's structure and methodologies. From this effort, a draft of the PSYCHOPATHY.COMP program was developed, manualized, and tested individually with a small group of young offenders. Based on the qualitative feedback data from this feasibility study and on supervision sessions with Paul Gilbert, content-related changes were identified and conducted to develop the final version of the PSYCHOPATHY.COMP program. The PSYCHOPATHY.COMP program has many similarities with other CFT programs (e.g., strategy of change, CMT; Gilbert, 2010) but stands out by being highly experiential and tailored for the specific difficulties and life experiences of juvenile detainees. Moreover, as individuals with psychopathic traits tend to present poor treatment engagement (Hecht et al., 2018; Herpers et al., 2012; Leistico et al., 2008), the PSYCHOPATHY.COMP program was designed taking into account motivational interviewing strategies aligned with a CFT framework (Steindl, Kirby, & Tellegan, 2018).

PSYCHOPATHY.COMP is a manualized program of 20 60-min sessions, which runs on a weekly basis. Sessions must be delivered by therapists skilful in CFT. The program's structure follows a progressive strategy of change, which occurs in four sequential modules (Table 1): (a) the basics of our mind; (b) our mind according to CFT; (c) CMT; and (d) recovery, relapse prevention, and finalization. As a common feature of all therapeutic sessions, therapists are focused on developing a secure therapeutic relationship, assessing the motivational stage of the youth (acting accordingly by using motivational interviewing strategies aligned with a CFT framework; Steindl et al., 2018) and stimulating the CMT.

The main goal of Module 1 is to offer youth insights about the evolutionary roots of humans' basic motives, needs, and emotions, including the automatic and universal responses to social and physical threats. Adopting a nonpathological and deshaming perspective, the youth are dynamically encouraged to understand that even if we cannot change events, emotions, and thoughts themselves, we can change the way we interact with them and act on them, and accordingly, we can change our behavioral response. CMT is introduced in Module 1 as a fundamental platform to begin the process of building participants' compassionate mind and awareness.

Module 2 brings awareness to youth about the functioning of the human mind according to a CFT formulation and continues the CMT. Therapists compassionately enable youth to discover that although we are "just one version of ourselves" (i.e., we probably would be different if genetic or contextual factors in our lives have been different), our evolutionary,

genetic, epigenetic, and contextual inheritance does not lead to determinism, as we all could make conscious actions as we increase our knowledge about our own functioning. To encourage such conscious actions, beyond the importance of CMT, youth are experientially guided to understand the concepts of emotion regulation systems, which may help us regulate our emotional states, shame, and shame regulation strategies.

Although CMT started in Module 1 and continued during Module 2, Module 3 is explicitly focused on CMT. Using experiential exercises, youth are gradually exposed to the triggering of the threat system (mostly anger/shame exposure) to allow them to understand its outputs (in the mind and body), differentiate and integrate their multiple selves, seek out and test compassionate strategies to tolerate and cope in healthy ways with their own distress.

Finally, Module 4 is aimed at revisiting the motivations for recovery and preventing relapse, always under the lens of compassion. Youth are encouraged to deeply understand that although suffering will always be part of our lives, this therapeutic journey offered them several compassionate emotion regulation strategies to deal with suffering. However, therapists always emphasize youth's control and personal choices, as well as their responsibility for change.

Sessions present a predefined structure, starting with the therapist making a grounding exercise before the session, which is aimed to bring the compassionate self of the therapists into the session. The sessions themselves are then divided into three parts. Part 1 starts with a grounding exercise (i.e., soothing rhythm breathing; Gilbert, 2010), which is aimed at helping youth to be compassionate before starting the session itself, followed by an overview of the last session and, finally, by a moment to explore any insights and/or events that occurred during the week. Part 2 starts with an exercise, which is followed by the development of the session theme, where youth are guided to a deeper level of understanding. Finally, Part 3 starts with a session summary, and afterwards, youth are invited to do a CMT practice. At the end, a "Magic Card" is given to the youth, which works like a keyword that mirrors and summarizes the session's theme.

Despite PSYCHOPATHY.COMP's compelling theoretical support for changing psychopathic traits and disruptive behavior in juvenile detainees, this is the first study to report on the application of this program.

Table 1. *Brief Overview of the PSYCHOPATHY.COMP Program*

Module	Session	Theme	Key messages of the sessions
1. The basics of our mind	1	Presentations	Humans have a lot of things in common. Most of the things that happen to us are not chosen by us.
	2	Our basic ingredients	We all have the same instinctive reactions to threats.
2. Our mind according to CFT	3	Old brain/New brain = tricky brain	Humans have a tricky mind
	4	Multiple versions	We are just one version of ourselves
	5	Responsibility and freedom	We are not prisoners of our evolutionary, genetic, and environmental past experiences.
	6	Emotion regulation systems	It is important to be aware that we all have three emotion regulation systems
	7	Emotion regulation systems (cont.)	A good way to achieve stability is to balance the functioning of our emotion regulation systems
	8	Outputs of the threat system	We are all sensitive to shame
	9	Coping strategies	What is the best strategy to deal with shame
	10	Motivations and recovery	Knowing our motivations helps us to follow a path of recovery
3. Compassionate Mind Training	11	Compassion: What is and what is not	No matter what, we can always choose compassion
	12	Multiple selves	We all encompass a multiplicity of selves, to differentiate and integrate that multiplicity is key
	13	Fears of compassion	We all have fears, blocks, and resistances to compassion that we should face and overcome
	14	Flows of compassion	All the flows of compassion are important, though they may encounter roadblocks.
	15	Self-compassion	Self-compassion is the only tool we have available 24/7
	16	Flows of compassion revised	Compassion always gives us an outlet
	17	Safe place	We can go to our safe place and reach our compassionate self whenever we need it
	18	Compassionate letter	Compassion is powerful and can impact in our lives.
4. Recovery, relapse prevention, and finalization	19	Revisiting motivation and recovery: The role of compassion	Although not our fault, we now have the tools to be responsible for our choices.
	20	What has changed? An overview	Life is always going to be bittersweet, learn to bear and face difficult moments compassionately is the challenge

2. Case Introduction

Peter (pseudonym) is a 16-year-old boy who was detained in a Portuguese maximum-security juvenile detention facility for the first time. Peter was convicted to 26 months after being charged with 35 counts of offenses against people (e.g., armed robberies and physical aggression). Before detention and since the age of 14, Peter lived in a foster care facility; he was registered in the seventh grade but had dropped out of school, having been previously held back 3 years. Peter was invited to voluntarily participate in this study. All ethical requirements were guaranteed, including institutional authorizations, his parents' written consent, his own oral consent, confidentiality, and anonymity.

According to the Portuguese legal system, detention in a maximum-security unit is the most severe consequence a court can apply to youth who have committed an offense between the ages of 12 and 16. Under this sentence, youth are monitored and controlled 24/7 in the detention facility using a token economy system. However, regardless of their behavior, youth leave the facility only when they are released; that is, school, medical appointments, and visits all occur inside the facility. Exceptions are made if clearly justified (e.g., medical urgency and court assignments) or if there is a very clear and consistent behavioral improvement (e.g., youth can spend Christmas at home).

The therapist was a psychologist with 14 years of clinical experience. She had had training in CFT for the last 7 years and had clinical experience in delivering CFT-based interventions with young offenders. During this case study, the therapist had weekly supervised sessions with a CFT expert.

3. Presenting Complaints

Peter presented with significant antisocial symptoms consistent with oppositional defiant disorder (ODD) and CD (childhood-onset type, severe). He also reported alcohol and substance abuse before detention. Peter showed poor insight about the impact of his behavior on others, blamed others for the detention, was very resistant to change, and reported difficulties in the adjustment to the juvenile detention facility rules: "There was no need for this (detention). Yes, I committed some robberies, but I was ok when the judge convicted me. I did not change anything since I come in here and I am never going to change, never!"

According to Peter's juvenile justice record file, before the detention, he was highly impulsive, self-centered, oppositional, defiant, violent; presented low empathy, poor frustration tolerance, antisocial cognitions and behavior, tended to minimize his conduct; and had little insight about the impact of his behavior on others and was associated with delinquent peer groups.

According to Peter's results on the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge, Andrews, & Leschied, 2002), he presented a "very high" risk for criminal recidivism (on a scale from "low" to "very high"). In detail, Peter showed high scores in all the domains of the YLS/CMI: *Prior and Current Offenses/Disposition* (4 out of 5 points);

Family Circumstances/Parenting (4 out of 5 points); *Education/Employment* (6 out of 7 points); *Peer Relations* (4 out of 4 points); *Substance Abuse* (4 out of 5 points); *Leisure/Recreation* (3 out of 3 points); *Personality/Behavior* (6 out of 7 points); and *Attitudes/Orientation* (4 out of 5 points); Total score = 35 points. This assessment was completed by a probation officer before Peter's detention.

4. History

A personal history was obtained via interviews with Peter, his family (mother, father, and grandparents), and by consulting his juvenile justice record file. Peter's mother became pregnant at the age of 18. He was born to term, and no complications were reported. Peter reached developmental milestones on time and had no significant medical concerns. He is an only child of both his parents, though he now has one younger brother from his father and a younger sister from his mother. Peter grew up in a large city in Portugal and lived with both parents until he was 8 years old. However, the relationship between his parents was marked by domestic violence, and they ended up getting divorced at that time. His father was described as absent, impulsive, and violent and was said to engage frequently in thrill-seeking behaviors; he also had two guns at home. Peter's father used to beat him, including with objects (e.g., once he threw a chair at him). Peter also witnessed several fights between his father and other adults. For instance, he remembers a fight between his father and two other men, during which his father shot at their house windows. After the divorce, his parents continued to have a conflict-ridden relationship, especially concerning issues related to child-rearing practices, which affected Peter's relationship with both parents. Against this background with his parents, Peter always had a very positive and consistent bond with his maternal grandparents.

Peter was described as a temperamentally difficult child since he was at least 1 year old, with little tolerance for frustration and poor self-control. He started to display oppositional defiant behaviors and insensitivity to punishment at the age of 3. At the age of 5, Peter was sent to therapy for the first time (for about a year and a half), but he was not able to establish a good therapeutic relationship with the psychologist ("I did not like her"), and his behavior did not improve. After the divorce of his parents (at the age of 8), Peter's behavior became even more problematic, both at school and at home. Less than a year after the divorce, his parents went to live with other partners, who are now his stepmother/stepfather. Peter had difficulties accepting both of them, becoming even more defiant to his parents, to his stepmother/stepfather and to his teachers and peers. Consequently, at the age of 9, Peter was sent again to therapy (for about a year), but his behavior did not improve, and he was not able to establish a good therapeutic relationship with this psychologist, either ("I did not like her, either"). Although Peter was living with his mother/stepfather, he often ran away to his father's house (for the first time when he was 10 years old), but when the relationship with his father/stepmother became more problematic, he would eventually return to his mother's house. At the age of 11, Peter began to engage in

physical fights with peers, became a member of delinquent groups, missed school, smoked weed and hashish, and ran away from home again. When his stepfather found him, he brutally spanked Peter (he broke his nose and caused him several contusions and wounds on his face and body—this was the only time Peter's stepfather was physically abusive to him). Peter felt that his mother did not protect him, since she continued to live with his stepfather and said to him, "You need to learn not to run away from home and to behave properly." She also forbade him to leave the house until he had no wounds; it was his grandparents who took care of his injuries. When Peter talked to his father again (more than 2 weeks later), he contacted the police, but with no physical evidence and with his mother saying that he was lying, his stepfather was not charged. Finally, his mother said to Peter, "You are dead to me." Peter lived for a year with his father, although he regularly visited his grandparents, but his antisocial behavior worsened. At the age of 13, he went to live with his grandparents, but there was no improvement in his behavior. Peter said, "I was living with my grandparents, but the rules were my mother's rules." With the worsening of his antisocial behavior pattern (Peter completely missed school, often ran away from home and frequently engaged in physical fights, etc.), the judge determined that he should be placed in a foster care facility. Peter entered the foster care facility at the age of 14, and he started therapy with the psychologist of the institution, with whom he was able to establish a good therapeutic relationship ("I did like her, she was nice to me"). However, his behavior rapidly worsened. He began to shoplift, carry out robbery, and then hold armed robberies. He did not respect any of the foster care facility rules (e.g., he ran away, missed school, lied, was disrespectful and physically aggressive toward adults/peers), and he tried to set the institution on fire. Some of the victims of the armed robberies and physical aggression episodes pressed charges against Peter, which led him to a juvenile justice court and then to the juvenile detention facility.

5. Assessment

Semi-Structured Clinical Interview

At baseline, Peter was assessed with the Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID; Sheehan et al., 2010; Portuguese Authorized Version by Rijo et al., 2016). This baseline assessment took place 4 months after Peter's placement in the detention facility. The MINI-KID is a structured clinical diagnostic interview that assesses DSM (Diagnostic and Statistical Manual of Mental Disorders, DSM-5; American Psychiatric Association, 2013) Axis I disorders in children and adolescents in a way that is both comprehensive and concise. The MINI-KID is organized into diagnostic sections, each starting with 2 to 4 screening questions for each specific disorder. Additional symptom questions within each disorder section are asked only if the screen questions are positively answered. All questions are in a binary "yes/no" format. The MINI-KID takes into account not only DSM Criteria A but also the impairment and duration of the symptoms and is considered a short

and accurate instrument to diagnose Axis I disorders, namely, mood disorders, anxiety disorders, substance-related disorders, tic disorders, disruptive disorders and attention-deficit hyperactivity disorder, psychotic disorders, eating disorders, and adjustment disorders. Moreover, items are included to address ruling out medical, organic, and/or drug causes for disorders. Diagnostic criteria are summarized and documented within each disorder section and on a summary sheet. The MINI-KID takes between 30 and 90 minutes to administer. Interrater reliability was found to be excellent for all mental health disorders assessed with the MINI-KID (Sheehan et al., 2010). Peter met the criteria for CD (childhood-onset type, severe) as the main diagnosis, but he also met the criteria for ODD and substance use disorders (alcohol and cannabis). Peter was diagnosed with no other mental health disorders, either in the past or in the present.

Psychopathic Traits

Psychopathic traits were assessed using the Youth Psychopathic Traits Inventory-Short (YPI-S; Van Baardewijk et al., 2010; Portuguese version by Pechorro, Andershed, Ray, Maroco, & Gonçalves, 2015) at three time points: at baseline (4 months after Peter's placement in the detention facility), at the end of the PSYCHOPATHY.COMP program (posttreatment assessment), and at a 3-month follow up (follow-up assessment, which was completed while Peter was stilldetained). The YPI-S is an 18-item self-report version of the original YPI (Andershed et al., 2002), which assesses psychopathic traits in youth via ratings within three different factors: GM (e.g., "It's easy for me to manipulate people"), CU (e.g., "I think that crying is a sign of weakness, even if no one sees you"), and II (e.g., "I like to do exciting and dangerous things, even if it is forbidden or illegal"). Each factor is estimated by a set of six items; each item is rated on a four-point scale (1 = *Does not apply at all* to 4 = *Applies very well*). Both the total YPI-S and the YPI-S factor scores range from 0 to 4, with higher scores indicating higher levels of psychopathic traits (Van Baardewijk et al., 2010). The YPI-S has shown strong convergence with the original YPI and good psychometric proprieties (Van Baardewijk et al., 2010). In a study with a Portuguese sample of young male offenders, the YPI showed a three-factor structure, acceptable internal consistency based on alpha (alphas for the GM, CU, and II factors were .79 .69, and.73, respectively), and high correlations between the YPI-S factors and the total YPI-S (ranging from .74 to .79) (Ribeiro da Silva, Salekin, & Rijo, 2019). Taking into account the psychopathic severity profiles found in the study by Ribeiro da Silva, Salekin, and Rijo (2019) (ranging from a low psychopathic profile to a high psychopathic profile), Peter's baseline scores were consistent with a high psychopathic profile. Peter's baseline, posttreatment, and 3-month follow-up scores on the YPI-S are reported in Table 2.

Table 2. *Peter's Scores on the YPI-S, Disruptive Behavior Indicators, and Reliable Change Indices for Pretreatment to Post-treatment and 3-month follow-up*

Measures	T0	T1	T2	T3	RCI-1	RCI-2
YPI-S-T	-	3.11	1.89	1.67	-3.29	-3.89
YPI-S-GM	-	2.83	2	1.83	-1.86	-2.23
YPI-S-CU	-	2.67	1.5	1.17	-2.25	-2.89
YPI-S-II	-	3.83	2.17	2	-3.24	-3.57
Disruptive behavior						
Disciplinary infractions	4	1	0	0	-	-
Days in punishment	7	2	0	0	-	-

Note: YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-T = Total score; YPI-S-GM = Grandiose-Manipulative; YPI-S-CU = Callous-Unemotional; YPI-S-II = Impulsive-Irresponsible).

Psychopathic traits outcome measure was collected in three time-points: pre-treatment (T1), post-treatment (T2), and 3 moth follow-up (T3). Disruptive behavior outcome measures were collected for four time-intervals: during the 3 months before the beginning of the program (T0), during the PSYCHOPATHY.COMP's first 3 months (T1); during the PSYCHOPATHY.COMP's last 3 month s (T2) and during the 3 months after PSYCHOPATHY.COMP completion (T3). RCI = Reliable Change Index (RCI-1 = from pre-treatment to post-treatment; RCI-2 = from pre-treatment to 3-month follow-up).

Disruptive Behaviors

A grid was developed by researchers to collect the following behavioral data from Peter's record file (these data were reported by staff members of the juvenile detention facility): the total number of disciplinary infractions he committed (e.g., school absence, defiant/oppositional behavior, aggressive and violent behavior, destruction of detention facility property), as well as the total number of days in punishment (as a consequence of these disciplinary infractions). Behavioral data were collected for four time intervals: during the 3 months before the beginning of the PSYCHOPATHY.COMP program (the first month of detention was not considered because it corresponds to an adaptation period), during the first 3 months of the program, during the last 3 months of the program, and during the 3 months after the completion of PSYCHOPATHY.COMP (which was completed while Peter was still detained). Peter's behavioral data across time were computed for each time interval and taken as disruptive behavior indicators (Table 2).

6. Case Conceptualization

In conceptualizing Peter's difficulties according to a CFT framework, different aspects of his own functioning must be integrated into a comprehensive case formulation. In addition to the evolutionary predisposition that makes humans react quickly and instinctively to threats (Del Giudice & Ellis, 2015; Ferguson, 2010), Peter seemed to present some genetic predispositions that lead him to be a temperamentally difficult child (Lykken, 2006), and he was raised in a harsh environment (Cowan et al., 2016; Shirtcliff et al., 2009). In detail, Peter was described as a temperamentally difficult child (with little tolerance for frustration and poor self-control since he was at least 1 year old), who started to show oppositional defiant behaviors and insensitivity to punishment early in life (at the age of 3). In addition, in the first 8 years of his life, Peter witnessed several episodes of domestic violence between his

parents, and he was frequently physically punished for presenting misbehaviors. After his parents divorced, things became worse, as his parents continued to have a conflict-ridden relationship and to be emotionally, verbally, and physically abusive toward Peter. Peter's parents also had difficulties in setting boundaries for him and in applying effective parental discipline strategies; moreover, they were frequently in conflict regarding those boundaries. In addition, Peter felt that he was not truly loved by his parents, especially after they went to live with other partners (which occurred less than a year after the divorce). Finally, Peter witnessed several unpredictable and violent fights between his father and other adults.

With the combination of these evolutionary, genetic, epigenetic, and environmental influences, Peter developed a hypersensitive, vigilant, and reactive threat system. His threat system was easily triggered by his key threats, both external (abuse, abandonment, and rejection) and internal (e.g., feelings of being worthless, unlovable, inferior, and lonely). To address these key threats, Peter started to externalize the experience of shame and other unpleasant emotions very soon in life, either through avoidance (e.g., "I remember that I did not care about my parents beating me, it did not hurt!") or through oppositional behaviors (e.g., "If they said to me that I could not go for a walk, I would find a way to go anyway"). According to a CFT case formulation, although dysfunctional, these oppositional behaviors can be seen as heroic efforts in trying to find independence from a harsh authority (building the courage to choose for himself, rather than being frightened and adopting submissive/compliant behaviors).

Over time, Peter's avoidance strategies worsened; he started to drink and to smoke weed and hashish and stated that "I did not care about the ones I hurt, I did not care about anything"; that is, he was apparently unemotional toward others' distress (including the distress he caused) and to his own distress (i.e., CU traits). He also started to display GM traits (e.g., "I was the boss. I could make people to do whatever I want"), as well as II traits and antisocial behaviors (e.g., lie, run away from home, miss school, blame other for his behavior, attack others). These safety strategies lead Peter to be placed in a foster care facility (separated from his family; unintended consequences). As his antisocial behavior quickly escalated to severe offenses against people (e.g., physical aggressions, armed robberies), he was then placed in a juvenile detention facility. In sum, Peter was caught in a vicious cycle, unwittingly reinforcing his own external and internal key threats of abandonment and rejection and of being worthless, inferior, and lonely.

7. Course of Treatment and Assessment of Progress

Peter's treatment progressed through the four PSYCHOPATHY.COMP modules.

Module 1

During the first module, Peter was very resistant to the detention process and to changing his behavior. For instance, he stated, "They took my freedom away"; "I cannot be with my family, I cannot go outside to take some fresh air, this place is driving me crazy"; "I

am losing my time"; "I am losing the best years of my life"; "I am losing my mind," "No one is helping me, everyone is just punishing me"; "I just want to destroy this place, to run away, and go home"; "I am not going to change, ever! No one is going to change me. I don't need to change, I don't want to change." Despite this initial resistance, he quickly managed to establish a good relationship with the therapist. Peter also easily understood the evolutionary value of humans' automatic and universal responses to threats, as well as the possibility we all have to change the way we cope with these threats across life. In addition, by using motivational interviewing strategies aligned with the CFT framework (Steindl et al., 2018), in Session 2, Peter started to move into the contemplation stage by stating: "I want to find a way to be helped"; I want to find a way to calm myself down"; "I want to find new ways of thinking." No resistances to CMT were detected. In contrast, Peter found CMT useful and practiced it between sessions (namely, at night in his bedroom).

Module 2

During the initial sessions of this module, Peter showed even more ambivalence toward change. On one hand, he started to understand the benefits of change, but he also maintained some resistance: "You know, it is not easy, I just want to leave this place, but time drags on"; "On one side it was good to have been caught. Here, I can change, I can learn to calm myself down, but not because of others, I just don't like to be incarcerated." However, his rage was out of control, especially with some peers and staff members: "I am so angry, everything about this place pisses me off"; "People want to shut me up, to make me behave this way, or that way. But no one buys me; I do what I want, when I want"; that is, Peter was using the same externalizing safety strategies that led him to the juvenile detention facility. Most likely, for these reasons, his behavior was not improving, which was observable from his record file.

After Session 6, Peter became more conscious about his own functioning; he realized that he was constantly trying to regulate his emotional states using the threat regulation system. By doing so, he could only use the automatic responses of the threat system (especially the fight response), which led him to be caught by anger and to display disruptive behaviors. For instance, every time he started to think that it was best for him to behave properly, his mind automatically stated that he would not be able to do that ("I want to behave properly, but I can't, I just can't"). Therefore, he started to get angry, to feel tension in his jaw and hands, to feel threatened, to be overwhelmed by angry thoughts ("I just want to hit people, to destroy all of this") and to act accordingly. These insights, along with the knowledge and practice of other emotion regulation tools (resort to drive and soothing systems to balance the functioning of the three emotion regulation systems; test different and nondestructive ways to express his rebellion and courage) and CMT, probably contributed to a clear improvement in his behavior from the middle of this module.

Module 3

During this module, which is mainly focused on CMT, Peter continued to improve his behavior at the juvenile detention facility. This improvement was probably due to the effect of compassion and the nature of the session's exercises; that is, these are very experiential, allowing for anger and shame exposure (and exposure of all the negative emotions that may arise when the threat system is triggered), but always offer the opportunity to reframe the experience in a During this module, which is mainly focused on CMT, Peter continued to improve his behavior at the juvenile detention facility. This improvement was probably due to the effect of compassion and the nature of the session's exercises; that is, these are very experiential, allowing for anger and shame exposure (and exposure of all the negative emotions that may arise when the threat system is triggered), but always offer the opportunity to reframe the experience in a compassionate way. In addition, Peter clearly moved from the stage of denying his antisocial conduct, shame, and externalizing shame regulation strategies to acknowledging the shame experience, tolerating it and starting to feel guilty about the harm he caused others and himself.

One event was probably crucial for this change. In Session 13, Peter was very anxious, and for the first time, he was not able to perform the CMT practice at the beginning of the session. Validating his emotional state and genuinely showing concern for him, the therapist asked him what was going on. After several attempts, Peter was able to tell, in tears, that he and his peers had been breaking a rule of the juvenile detention facility for 2 weeks (they were secretly using a cell phone). He was clearly disturbed by this, feeling shame, remorse, and guilt: "I do not deserve all you people do for me, you trusted me and I broke that trust":

You know, it is a stupid cell phone, but when I saw it I could not resist. Yes, I made a few phone calls to my family and friends, and I knew that it was against the rules. All you people were thinking that I was getting better, and I just disappointed you.

Compassionately guiding and holding his distress, the therapist said to Peter that this confession was an act of courage and kindly asked him if he had ever felt this way before: "No, I never felt this way before. Even when I robbed people, when I knockout people, I never felt like this. I can't sleep, I can't eat. I don't know what is wrong with me." The therapist maintained a compassionate attitude and led Peter to acknowledge that he was starting to develop consciousness about the impact his behaviors may have on others, and consequently, he was starting to feel guilt. When Peter became calmer, the therapist suggested alternative actions he may take after this episode: keep it a secret, talk to the head of the facility, or talk to the head of the facility in the presence of the therapist. First, Peter thought that confessing would be "stupid" because he could never be caught. The therapist kindly stated that that was true, but there was one person who knew the truth. Peter acknowledged that that person was himself and that he was unable to deal with it. Therefore, he decided to confess to the head of the facility in the presence of the therapist. While confessing, Peter was again very disturbed, crying, and sweating, but at the end, he stated that he felt relieved. The therapist normalized his behavior, as we all make mistakes,

validated his courage, and told him that what he had done was an act of compassion, as he was able to acknowledge his own distress and the suffering he might have caused others and actually did something to prevent/alleviate that suffering. The next day, Peter moved forward, convincing his peers to confess to the head of the facility that they were also using the cell phone.

The remaining sessions of Module 3 flowed naturally, with Peter increasing and expanding his compassionate motivation to other areas: he was more attentive to the suffering of others (peers, staff, and family members) and made efforts to alleviate that suffering (e.g., after a session he saw a peer, and acknowledging that he was distressed, approached him, placed his hand on his shoulder, and kindly asked him what was going on); he was also more willing to receive compassion from others (e.g., when facing difficult moments, he asked for help from the therapist but also from his social worker, some members of the staff, and peers); and he started to act compassionately toward himself. In this respect, he wrote letters to his family members (mother, father, grandfather, and grandmother) and expressed gratitude for the good things they had done for him. In the letters to his mother and father, he also compassionately specified that some of their attitudes toward him had made him suffer and feel bad about himself. Moreover, role-playing an armed robbery, Peter was able to display guilt and compassion toward his victims. Acknowledging that he never looked into his victims eyes, he stated, "No, I never looked at their faces. Although I was very aggressive, I think that I could not bear that distress. I would acknowledge that they were someone else's son, someone else's grandson . . . and they were indeed."

Module 4

During the last module, Peter continued to show improvements, but concerns about the end of the therapeutic process emerged, which probably spurred his fears of abandonment. This issue was addressed according to a compassionate framework. Moreover, Peter felt reassured by understanding that the therapist would be available for booster sessions any time he needed. At the end of therapy, Peter was compassionately challenged to describe himself before and after treatment: "Do you remember saying that you would never change? You are in the same environment, in the same difficult context, but your behavior has clearly improved. Can you tell me what changed?" and Peter quickly answered, *It was me, I changed, and I am grateful for being detained and for being in here with you every week. If I was not caught at that time, I would end up hurting people severely, or even killing someone*.

8. Complicating Factors

The major complicating factors were related to the juvenile justice system services and policies. First, it took almost a year after Peter's detention to determine the exact time of his detention period, which hindered Peter's emotional, cognitive, and behavioral regulation ("I am always thinking about this. My mind doesn't stop. I have no idea when I am leaving this

place”). After this period, the court decided to shorten the detention period from 26 to 18 months; however, Peter considered that his improvements were not fully taken into account: “They put me in here so I could get better. Now I am better, and they are just punishing me, so what was the point of this.” Second, the nature of the maximum-security juvenile detention facility is very restrictive. In detail, although the token economy system is crucial to control youth’s disruptive behaviors, even if youth do not present any disruptive behavior for a considerable amount of time, they still have few privileges; that is, they may have access to an mp3 player, keep their own clothes, and make phone calls every day, but they are not allowed to receive extra visits (e.g., on their birthday) or to leave the detention facility until release. However, as Peter’s behavior was clearly and consistently improving, the court made an exception and allowed him to spend Christmas at home.

9. Access and Barriers to Care

There were no apparent access issues or barriers to care considerations because of the inherent characteristics of the juvenile detention facility; this allowed Peter to be available for the entire treatment process and follow-up period. Moreover, the juvenile detention facility administration and staff provided the logistics for all treatment sessions (e.g., schedules and setting). Although PSYCHOPATHY.COMP is not a family intervention program; the regular and consistent presence of Peter’s family during the weekly visit and their encouraging attitude toward him were also crucial. In detail, after detention, Peter’s family called him regularly, wrote him encouraging letters, and always visited him during the allowed weekly visit, being supportive and kind. In addition, the communication between his parents exponentially improved: “Now they talk without screaming or attacking each other, I think that they finally understood that they were driving me nuts!”

10. Follow-Up

To examine the changeability of psychopathic traits in Peter’s case, from pretreatment to posttreatment and from pretreatment to 3-month follow up, we used the Reliable Change Index (RCI; Jacobson & Truax, 1991). The RCI is considered to have high reliability for testing the efficacy of a particular therapy or program and can show whether an individual improves or deteriorates in comparison to baseline; the threshold for significant improvement at $p < .05$ lies at a z-score ≤ -1.96 (z-scores lower than −0.84 or −1.28 indicate, with a confidence interval of 80% or 90%, respectively, that real, reliable, and significant change has also been verified; Wise, 2004). To determine whether the observed change is in fact reliable, the RCI also takes into account normative data and the measurement error of the instrument (Jacobson & Truax, 1991). Thus, the RCI is computed using the formula:

$$RCI = \frac{(x2-x1)}{\sqrt{2\left(SD0\sqrt{1-\alpha}\right)^2}}$$ where x2 represents the results of the individual in the posttreatment/follow-up, x1 represents the results of the individual in the pretreatment, SD0 represents the standard deviation of the variable in a normative sample, and α represents the

internal consistency of the scale in that same sample. To compute the RCI, we relied on the data of the normative/community sample used in the study by Ribeiro da Silva, Salekin, and Rijo (2019) (i.e., YPI-S-GM: α = .79, SD0 = 3.20; YPI-S-CU r: α = .69, SD0 = 2.85; and YPI-S-II: α = .73; SD0 = 2.62).

To examine the indicators for disruptive behavior, as there were no normative data for computing the RCI, we were able to focus on only the differences across time, considering the number of disciplinary infractions and the number of days in punishment.

Table 2 reports Peter's improvements in psychopathic traits and disruptive behaviors. His YPI-S total score and YPI-S factor scores decreased significantly from pretreatment to posttreatment (the threshold for significant improvement at $p < .05$ was not reached only for the GM factor; RCI = −1.86) and continued to decrease at the follow up (the threshold for significant improvement at $p < .05$ was reached both for the YPI-S total score and for all the YPI-S factor scores). Peter's behavior also clearly improved since the beginning of the program (when he committed the last disciplinary infraction), but especially after the middle of the program.

11. Treatment Implications of the Case

This is the first study to examine the efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits and disruptive behaviors in juvenile detainees with CD. Although group intervention programs have proven to be effective in decreasing antisocial behavior (Andrews & Bonta, 2010; Koehler et al., 2013; Lipsey, 2009; MacKenzie & Farrington, 2015), the literature testing the efficacy of interventions in reducing psychopathic traits is scarce and limited (see Hecht et al., 2018 for a review). To the best of our knowledge, this is the first psychotherapeutic program specifically tailored for reducing psychopathic traits and disruptive behaviors in juvenile detainees and the first study to use a CFT-based intervention to treat these youth. As an individual intervention, the PSYCHOPATHY.COMP program can be easily adjusted for each youth (maintaining its core aims and design), offering an in-depth treatment alternative to surpass the limitations of group programs.

This case study demonstrated that the PSYCHOPATHY.COMP was effective in reducing psychopathic traits and disruptive behaviors in a 16-year-old boy detained in a maximum-security juvenile detention facility, who presented a very high risk for criminal recidivism, CD (childhood-onset type, severe; and comorbidity with ODD and substance use disorders), and a high psychopathic profile. In detail, Peter's YPI-S scores improved from a high psychopathic profile (pretreatment) to normative scores in the posttreatment, but mostly at the follow up (Ribeiro da Silva, Salekin, & Rijo, 2019). Peter's behavior also improved over time and after the beginning of the program (Table 2); these improvements were evident enough to lead the court to make an exception to the rules and allow him to spend Christmas at home.

The PSYCHOPATHY.COMP program seemed to be suitable for treating Peter, as it followed a compassionate approach that gradually and respectfully helped him to understand his own difficulties, first related to resistance to the detention process and change and then

to his own fears of compassion, which were disguised by his psychopathic traits, among others (Ribeiro da Silva, Vagos, & Rijo, 2019). The therapeutic relationship and the compassionate bridging between Peter and the therapist probably helped him to gradually feel safe and to start to find compassionate ways to balance the functioning of his emotion regulation systems.

Despite these findings, it is possible that CFT in general and the PSYCHOPATHY.COMP program in particular may raise some concerns when applied to juvenile detainees with psychopathic traits. Namely, some clinicians and researchers may argue that this approach may help to cover-up or worsen psychopathic traits more efficiently than other treatment approaches, allowing youth to more successfully achieve their antisocial goals. However, if we take into account recent research conceptualizing psychopathic traits as an adaptive response that masks central emotional dysfunctions and a shameful nucleus (Garofalo et al., 2018; Kosson et al., 2016; Ribeiro da Silva et al., 2015; Ribeiro da Silva, Vagos, & Rijo, 2019), PSYCHOPATHY.COMP might be an effective alternative to address and reduce psychopathic traits and disruptive behaviors. In detail, and as verified in this case study, psychopathic traits may be conceptualized as a mask of invulnerability that externalizes unpleasant emotions by compensation (GM traits), avoidance (CU traits), and/or attack mechanisms (II traits) (Ribeiro da Silva, Vagos, & Rijo, 2019). In this sense, although psychopathic traits seem to be the opposite of compassion (Shirtcliff et al., 2009), building a compassionate motivation in these individuals is not only what they need, but it is also an effective alternative to change those same traits. Thus, PSYCHOPATHY.COMP may offer these youth a safe environment that allows them to (a) process their own unpleasant memories and emotions compassionately; (b) build the wisdom, strength, and courage to start to become more self-aware, in control, and responsible for their emotional states, gradually dropping out their mask of invulnerability; and (c) find and test compassionate alternative strategies to bear and cope in healthy ways with their own distress and/or the distress of others.

Nevertheless, the findings from this case study must be considered within the context of some limitations. As a clinical case study, it is difficult to clearly ascertain whether Peter's improvements were due to the PSYCHOPATHY.COMP program or other external variables, namely, the juvenile detention facility interventions, which include a token economy system. Thus, future empirical research may help to disentangle whether improvements are due to the program, to the juvenile detention facility interventions, or both. However, it is important to highlight that Peter began the program 4 months after detention and, during that period, no improvements were noticed. Another important limitation is that all assessments were made while Peter was still detained. Thus, we cannot assure whether Peter's improvements will be maintained after release and/or whether these improvements will have an impact on his risk of criminal recidivism/recidivism rate. Future studies should therefore test the effects of the PSYCHOPATHY.COMP program over time (i.e., after release), including the risk of criminal recidivism and criminal recidivism rates as outcome measures.

Given that youth with CD and high levels of psychopathic traits usually have poorer treatment outcomes than youth with lower levels of psychopathic traits (see Hecht et al., 2018 and Polaschek & Skeem for a review), there is a critical need to test novel interventions targeting theoretically sound mechanisms of change in these youth. The encouraging research findings from this case study suggest that CFT in general and PSYCHOPATHY.COMP in particular may fit the intervention needs of this population. However, additional research on the efficacy of this therapeutic program in treating juvenile detainees is needed.

12. Recommendations to Clinicians and Students

This case study demonstrates meaningful clinical improvements in Peter's levels of psychopathic traits and disruptive behaviors after completion of a 20-session individual program based on CFT. These gains were maintained/increased after a 3-month follow-up period, which indicates that this was an effective treatment approach for this youth. The findings from this case study provide initial support for the efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits and disruptive behaviors in juvenile detainees. However, future research is needed to extend these findings, testing its efficacy in a clinical trial design, as findings from case studies are not always replicated in rigorous trials (CONSORT; Moher et al., 2010). Finally, it will be important to track the progress of youth after release, as there is a large risk for juvenile detainees to relapse into crime and to face prison sentences in the future (Herpers et al., 2012).

Efforts to design and test the efficacy of intervention programs specifically tailored for changing psychopathic traits in juvenile detainees may help to ameliorate the significant negative impact that antisocial behavior and psychopathic traits have on society and on the individuals themselves. These preliminary findings also support the need for future clinical research with juvenile detainees, holding promise for reducing psychopathic traits and disruptive behavior over time.

Acknowledgments

The authors want to thank to "Peter," his family, and detention facility staff members.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research has been supported by the first author PhD Grant (SFRH/BD/99795/2014), sponsored by the Portuguese Foundation for Science and Technology (FCT). This work was also financed by FEDER—European Social Fund—through the COMPETE 2020-Operational Program for Competitiveness and Internationalization (POCI), and by Portuguese funds through FCT in the framework of the project POCI-01-0145-FEDER-016724.

References

Abram, K. M., Zwecker, N. A., Welty, L. J., Hershfield, J. A., Dulcan, M. K., & Teplin, L. A. (2015). Comorbidity and continuity of psychiatric disorders in youth after detention: A prospective longitudinal study. *JAMA Psychiatry, 72,* 84-93.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-reffered youth: Initial test of a new assessment tool. In E. Blaauw & I. Sheridan, (Eds.), *Psychopaths: Current international perspectives* (pp. 131-158). Hague, The Netherlands: Elsevier.

Andrews, D. A., & Bonta, J. (2010). Rehabilitating criminal justice policy and practice. *Psychology, Public Policy and Law, 16,* 39–55.

Braehler, C., Gumley, A., Harper, J., Wallace, S., Norrie, J., & Gilbert, P. (2013). Exploring change processes in compassion focused therapy in psychosis: Results of a feasibility randomized controlled trial. *British Journal of Clinical Psychology, 52,* 199-214.

Butler, S., Baruch, G., Hickey, N., & Fonagy, P. (2011). A randomized controlled trial of multisystemic therapy and a statutory therapeutic intervention for young offenders. *Journal of the American Academy of Child and Adolescent Psychiatry, 50,* 1220–1235.

Caldwell, M. F., McCormick, D., Wolfe, J., & Umstead, D. (2012). Treatment-related changes in psychopathy features and behavior in adolescent offenders. *Criminal Justice and Behavior, 39,* 144-155.

Caldwell, M., Skeem, J., Salekin, R., & Van Rybroek, G. (2006). Treatment response of adolescent offenders with psychopathy features: A 2-year follow-up. *Criminal Justice and Behavior, 33,* 571-596.

Carona, C., Rijo, D., Salvador, C., Castilho, P., & Gilbert, P. (2017). Compassion-focused therapy with children and adolescents. *BJPsych Advances, 23*, 240-252.

Carter, S. C., Bartel, I. B. A & Porges, E. C. (2017). The roots of compassion: An evolutionary and neurobiological perspective. In, E. Seppala, E. Simon-Thomas, S. Brown, M. Worline, C.D. Cameron, & J. Doty (Eds). *Oxford Handbook of Compassion Science* (pp.173-188). New York: Oxford University Press

Cleckley, H. (1988). *The mask of sanity: An attempt to clarify some issues about the so-called psychopathic personality* (6th ed.). St. MO: Mosby (original work published in 1941).

Cowan, C. S. M., Callaghan, B. L., Kan, J. M., & Richardson, R. (2016). The lasting impact of early-life adversity on individuals and their descendants: Potential mechanisms and hope for intervention. *Genes, Brain and Behavior, 15,* 155-168.

Dadds, M. R., Cauchi, A. J., Wimalaweera, S., Hawes, D. J., & Brennan, J. (2012). Outcomes, moderators, and mediators of empathic-emotion recognition training for complex conduct problems in childhood. *Psychiatry Research, 199,* 201–207

Datyner, A., Kimonis, E. R., Hunt, E., & Armstrong, K. (2016). Using a Novel Emotional Skills Module to Enhance Empathic Responding for a Child With Conduct Disorder With Limited Prosocial Emotions. *Clinical Case Studies, 15,* 35–52.

Del Giudice, M., & Ellis, B. J. (2015). Evolutionary foundations of developmental psychopathology. In D. Cicchetti (Ed.), *Developmental Psychopathology, Vol. 2: Developmental neuroscience* (3th ed., pp. 1-58). New York: Wiley.

Elison, J., Pulos, S., & Lennon, R. (2006). Investigating the compass of shame: The development of the compass of shame scale. *Social Behavior and Personality*, *34*, 221-238.

Ferguson, C. J. (2010). Genetic contributions to antisocial personality and behavior: A meta-analytic review from an evolutionary perspective. *The Journal of Social Psychology, 150,* 160-180.

Fleming, G. E., Kimonis, E. R., Datyner, A., & Comer, J. S. (2017). Adapting internet-delivered parent-child interaction therapy to treat co-occurring disruptive behavior and callous-unemotional traits: A case study. *Clinical Case Studies, 16,* 370-387.

Frick, P. J., Ray, J. V., Thornton, L. C., & Kahn, R. E. (2014). Can callous-unemotional traits enhance the understanding, diagnosis, and treatment of serious conduct problems in children and adolescents? A comprehensive review. *Psychological Bulletin*, *140*, 1-57.

Garofalo, C., Neumann, C. S., & Velotti, P. (2018). Difficulties in emotion regulation and psychopathic traits in violent offenders. *Journal of Criminal Justice, 57,* 116-125.

Gilbert, P. (2010) *Compassion focused therapy: The CBT distinctive features series*. London: Routledge.

Gilbert, P. (2014). The origins and nature of compassion focused therapy. *British Journal of Clinical Psychology, 53,* 6–41

Gilbert, P. (2015). An evolutionary approach to emotion in mental health with a focus on affiliative emotions. *Emotion Review, 7,* 230-237.

Gilbert, P. (2016). A biopsychosocial and evolutionary approach to formulation In, N. Tarrier. (Ed). *Case Formulation in Cognitive Behaviour Therapy: The Treatment of Challenging Cases* (pp. 50-89). Chichester: Wiley.

Gilbert, P. (2017). Compassion as a social mentality: An evolutionary approach. In: P. Gilbert (ed). *Compassion: Concepts, Research and Applications.* (p. 31-68). London: Routledge.

Gilbert, P. (2019). Explorations into the nature and function of compassion. *Current Opinion in Psychology, 28,* 108-114.

Harris, G. T., & Rice, M. E. (2006). Treatment of psychopathy: A review of empirical findings. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 555-572). New York: Guildford Press.

Hecht, L. K., Latzman, R. D., & Lilienfeld, S. O. (2018). The Psychological Treatment of Psychopathy. In D. David, S. J. Lynn, & G. H. Monegomery (Eds.), *Evidence-Based Psychotherapy: The State of the Science and Practice* (pp. 271-298). Hoboken, NJ, USA

Herpers, P. C., Rommelse, N. N., Bons, D. M., Buitelaar, J. K., Scheepers, F. E. (2012). Callous–unemotional traits as a cross-disorders construct. *Social Psychiatry and Psychiatric Epidemiology, 47,* 2045-64.

Hoge, R. D., Andrews, D. A., & Leschied, A. (2002). *The Youth Level of Service/Case Management Inventory.* Toronto: Multi Health Systems.

Jacobson, N. S., & Truax, P. (1991). Clinical significance: a statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, *39*, 12–19.

Kahl, K. G., Winter, L., & Schweiger, U. (2012). The third wave of cognitive behavioural therapies: What is new and what is effective? *Current Opinion in Psychiatry, 25,* 522-528.

Kimonis, E. R., & Armstrong, K. (2012). Adapting parent–child interaction therapy to treat severe conduct problems with callous-unemotional traits: A case study. *Clinical Case Studies, 11*, 234-252.

Kirby, J. N., Tellegen, C. L., & Steindl, S. R. (2017). A meta-analysis of compassion-based interventions: Current state of knowledge and future directions. *Behavior Therapy, 48,* 778–792.

Koehler, J. A., Lösel, F., Akoensi, T. D., & Humphreys, D. K. (2013). A systematic review and meta-analysis on the effects of young offender treatment programs in Europe. *Journal of Experimental Criminology, 9,* 19-43.

Kosson, D. S., Vitacco, M. J., Swogger, M. T., & Steuerwald, B. L. (2016). Emotional experiences of the psychopath. In C. B. Gacono (Ed.), *Personality and clinical psychology series. The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 73-95). New York, NY, US: Routledge/Taylor & Francis Group.

Leaviss, J., & Uttley, L. (2015). Psychotherapeutic benefits of compassion-focused therapy: An early systematic review. *Psychological Medicine, 45,* 927-945.

Leistico, A. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis related the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior, 32,* 28-45.

Lipsey, M. W. (2009). The primary factors that characterize effective interventions with juvenile offenders: A meta-analytic overview. *Victims and Offenders, 4,* 124–147.

Lykken, D. T. (2006). Psychopathic personality: The scope of the problem. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 3-13). New York: Guildford Press.

MacKenzie, D. L., & Farrington, D. P. (2015). Preventing future offending of delinquents and offenders: What we have learned from experiments and meta-analyses? *Journal of Experimental Criminology, 11,* 565-595.

MacLean, P. D. (1985). Evolutionary psychiatry and the triune brain. *Psychological Medicine, 15,* 219-221.

Manders, W. A., Deković, M., Asscher, J. J., van der Laan, P. H., & Prins, P. J. (2013). Psychopathy as predictor and moderator of multisystemic therapy outcomes among

adolescents treated for antisocial behavior. *Journal of Abnormal Child Psychology, 41,* 1121–1132.

Mills, S. L., Babinski, D. E., & Waschbusch, D. A. (2018). Maternal PTSD and behavioral parent training treatment for a girl with Conduct Disorder and callous–unemotional traits. *Clinical Case Studies, 17,* 482-498.

McDonald, R., Dodson, M., Rosenfield, D., & Jouriles, E. (2011). Effects of a parenting interventions on features of psychopathy in children. *Journal of Abnormal Child Psychology, 39,* 1013–1023.

Moher, D., Hopewell, S., Schulz, K.F., Montori, V., Gotzsche, P.C., Devereaux, P.J. … Altman, D.G., (2010). CONSORT 2010 Explanation and Elaboration: Updated guidelines for reporting parallel group randomised trials. *BMJ, 340,* 698-702.

Nathanson, D.L. (1992). *Shame and pride: Affect, sex, and the bird of the self*. New York: Norton.

Nyström, M., & Mikkelsen, F. (2012). Psychopathy-Related Personality Traits and Shame Management Strategies in Adolescents. *Journal of Interpersonal Violence, 20,* 519-537.

Pechorro, P., Andershed, H., Ray, J. V., Maroco, J., & Gonçalves, R. A. (2015). Validation of the Youth Psychopathic Traits Inventory and Youth Psychopathic Traits Inventory – Short Version Among Incarcerated Juvenile Delinquents. *Journal of Psychopathology and Behavioral Assessment, 37,* 576-586.

Polaschek, D. L., & Skeem, J. L. (2018). Treatment of adults and juveniles with psychopathy. In C. Patrick (Ed.), *Handbook of Psychopathy* (pp. 710-731). New York: The Guilford Press

Ribeiro da Silva, D., Castilho, P., Miguel, R., Paulo, M., Gilbert, P., & Rijo, D., (2017). The *PSYCHOPATHY.COMP program: An individual Compassion-based psychotherapeutic intervention for young offenders with psychopathic traits.* Unpublished intervention manual.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2012). Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories. *Journal of Criminal Justice, 40,* 269-277.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2013). Child and adolescent psychopathy: Assessment issues and treatment needs. *Aggression and Violent Behavior, 18,* 71-78.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2015). The evolutionary roots of psychopathy. *Aggression and Violent Behavior, 21,* 85-96.

Ribeiro da Silva, D., Salekin, R. T., & Rijo, D. (2019a). Psychopathic severity profiles: A Latent Profile Analysis in youth samples with implications for the diagnosis of Conduct Disorder. *Journal of Criminal Justice, 60, 74-83.*

Ribeiro da Silva, D., Vagos, P., & Rijo, D. (2019b). An evolutionary model to conceptualize psychopathic traits across community and forensic male youth. *International Journal of Offender Therapy and Comparative criminology, 63*, 574-596.

Rijo, D., Brazão, N., Barroso, R., Ribeiro da Silva, D., Vagos, P., Vieira, A., Lavado, A., & Macedo, A. M (2016). Mental health problems in male young offenders in custodial versus community based-programs: Implications for juvenile justice interventions. *Child and Adolescence Psychiatry and Mental Health, 10,* 40, 52.

Salekin, R. T. (2002). Psychopathy and therapeutic pessimism: Clinical lore or clinical reality? *Clinical Psychology Review, 22,* 79-112.

Salekin, R. T., Tippey, J. G., & Allen, A. D. (2012). Treatment of conduct problem youth with interpersonal callous traits using mental models: Measurement of risk and change. *Behavioral Sciences & the Law, 30,* 470–486.

Salekin, R. T., Worley, B., & Grimes, R. D. (2010). Treatment of psychopathy: A review and brief introduction to the mental model approach for psychopathy. *Behavioral Sciences and the Law, 28,* 235-266.

Sheehan, D. V., Sheehan, K. H., Shytle, R. D., Janavsm J., Bannon, Y., Rogersm J. E.,… Wilkinsonm B. (2010). Reliability and validity of the Mini International Neuropsychiatric Interview for Children and Adolescents. *Journal of Clinical Psychiatry, 71,* 313–326.

Shirtcliff, E. A., Vitacco, M. J., Graf, A. R., Gostisha, A. J., Merz, J. L., & Zahn-Waxler, C. (2009). Neurobiology of empathy and callousness: Implications for the development of antisocial behavior. *Behavioral Sciences & the Law, 27,* 137-171.

Sommers-Spijkerman, M. P. J., Trompetter, H. R., Schreurs, K. M. G., & Bohlmeijer, E. T. (2018). Compassion-focused therapy as guided self-help for enhancing public mental health: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 86,* 101-115.

Steindl, S. R., Kirby, J. N., & Tellegan, C. (2018). Motivational interviewing in compassion-based interventions: Theory and practical applications. *Clinical Psychologist, 22,* 265-279.

Vagos, P., Ribeiro da Silva, D., Brazão, N., & Rijo, D. (2018a). The Centrality of Events Scale in Portuguese adolescents: Validity evidence based on internal structure and on relations to other variables. *Assessment*, *25*, 527-538.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Elison, J. (2018b). Psychometric properties of the Compass of Shame Scale: Testing for measurement invariance across community and forensic adolescent samples. *Child Youth Care Forum, 48*, 93-110.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2016). Dimensionality and measurement invariance of the Other as Shamer Scale across diverse adolescent samples. *Personality and Individual Differences*, *98*, 289-296.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2017). The Early Memories of Warmth and Safeness Scale for adolescents: Cross-Sample Validation of the Complete and Brief Versions. *Clinical Psychology & Psychotherapy*, *24*, 793-804.

Van Baardewijk, Y., Andershed, H., Stegge, H., Nilsson, K., Scholte, E., & Vermeiren, R. (2010). Development and tests of short versions of the Youth Psychopathic Traits

Inventory and the Youth Psychopathic Traits Inventory-Child Version. *European Journal of Psychological Assessment, 26,* 122–128.

Wilkinson, S., Waller, R, & Viding, E. (2015). Practitioner Review: Involving young people with callous unemotional traits in treatment – does it work? A systematic review. *Journal of Child Psychology and Psychiatry, 5*, 552-565

Wise, E. A. (2004). Methods for analyzing psychotherapy outcomes: A review of clinical significance, reliable change, and recommendations for future directions. *Journal of Personality Assessment, 82,* 50–59.

Study VI |

Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth

Journal of Experimental Criminology, *in revision*
2019

Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth

Diana Ribeiro da Silva[a], Daniel Rijo[a], Randall T. Salekin[b], Marlene Paulo[a], Rita Miguel[a], and Paul Gilbert[c]

[a] Research Center for Neuropsychology and Cognitive-Behavioral Intervention
Faculty of Psychology and Educational Sciences, University of Coimbra
[b] University of Alabama
[c] University of Derby

Abstract

Objective: The PSYCHOPATHY.COMP is a 20-session structured individual compassion focused therapy-based intervention, which was specifically designed to target psychopathic traits. The goal of this study was to assess the preliminary efficacy of the PSYCHOPATHY.COMP in reducing psychopathic traits among male detained youth.

Method: In this controlled trial, a treatment group (*n* = 24) and a control group (*n* = 22) answered the Youth Psychopathic Traits Inventory-Short at baseline and post-treatment. Treatment participants attended the PSYCHOPATHY.COMP program, in addition to the Treatment As Usual (TAU) delivered at Portuguese juvenile detention facilities. Participants in the control group only received TAU. The treatment effects were tested using a 2x2 mixed ANOVA design with condition (treatment group *vs*. control group) as the between-group factor and time (before and after the PSYCHOPATHY.COMP) as the within-group factor. To assess significant clinical change, the Reliable Change Index was also computed.

Results: At baseline, no significant differences between conditions were found. Mixed ANOVAs revealed a significant interaction time x group effects for all psychopathic traits. A high percentage of treatment participants presented improvements in psychopathic traits, while the majority of controls showed significant deterioration or no change in the same variables.

Conclusions: This study offered preliminary evidence that the PSYCHOPATHY.COMP can reduce psychopathic traits among male detained youth. Results suggested that psychotherapeutic interventions targeting psychopathic traits should be considered in the rehabilitation of these youth, as the absence of tailored interventions may increase the levels of psychopathic traits and its associated risks.

Keywords: Compassion Focused Therapy; Conduct Disorder; Detained Youth; Individual Psychotherapeutic Interventions; Juvenile Justice System; Psychopathic Traits.

Introduction

Conduct Disorder (CD) is the most diagnosed psychopathological disorder in detained youth (Abram et al., 2015; Rijo et al., 2016). Additionally, detained youth with CD and high levels of psychopathic traits (i.e., Grandiose-Manipulative/GM, Callous-Unemotional/CU; and Impulsive-Irresponsible/II traits) present a more persistent and severe pattern of antisocial behavior, higher recidivism rates and less engagement and responsivity to treatment than detained youth with CD only (Edens, Campbell, & Weir, 2007; Gretton, Hare, & Catchpole, 2004; Leistico, Salekin, DeCoster, & Rogers, 2008; Ribeiro da Silva, Salekin, & Rijo, 2019b; Ribeiro da Silva, Rijo, & Salekin, 2012, 2013). Although there is a long debate whether psychopathic traits are treatable or not (Cleckley, 1941/1988; Harris & Rice, 2006; Salekin, 2002), few studies tested the efficacy of intervention programs in reducing psychopathic traits and there is still a scarcity of psychotherapeutic interventions specifically tailored to target psychopathic traits (Ribeiro da Silva, Rijo, Castilho, & Gilbert, 2019a; Salekin Tippey, & Allen, 2012). Considering the high risk for detained youth with psychopathic traits to reoffend and to face prison sentences in adulthood (Edens et al., 2007; Gretton et al., 2004), there is a clear need to build on previous research, developing and testing the efficacy of psychotherapeutic interventions specifically tailored to reduce psychopathic traits in this at-risk population (Hecht, Latzman, & Lilienfeld, 2018; Polaschek & Skeem, 2018).

While a considerable number of systematic reviews and meta-analytic studies demonstrated that criminal recidivism rates and other behavioral, emotional and cognitive correlates of antisocial behavior were reduced after the delivery of behavioral and cognitive-behavioral group interventions to detained youth (e.g., Andrews & Bonta, 2010; Koehler, Lösel, Akoensi, & Humphreys, 2013; MacKenzie & Farrington, 2015), few studies tested the efficacy of psychotherapeutic interventions in reducing psychopathic traits among these youth (e.g., Butler, Baruch, Hickey, & Fonagy, 2011; Caldwell, 2011; Caldwell, Skeem, Salekin, & Van Rybroek, 2006; Manders, Deković, Asscher, van der Laan, & Prins, 2013; Salekin et al., 2012). Moreover, just four of these studies (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006; Manders et al., 2013) used a treatment group and a control group to ascertain that treatment effects were the result of the intervention (Hollin, 2008). The findings from two of these studies suggested that criminal recidivism rates can be reduced after the delivery of a cognitive-behavioral-based intervention to detained youth with psychopathic traits (Caldwell, 2011; Caldwell et al., 2006). The study of Butler and colleagues (2011) found that psychopathic traits rated by parents (but not by youth) can be decreased with a family-based intervention; no data were reported regarding each psychopathic trait separately. In turn, the study of Manders and colleagues (2013) reporting on the changeability of psychopathic traits rated by youth (i.e., GM, CU, and II traits separately) found that while GM and II traits were reduced with a family-based intervention, no changes on CU traits was observable.

Despite the encouraging results, these studies presented some limitations. Two studies included a mixed sample of male and female young offenders from clinical and forensic settings (Butler et al., 2011, Manders et al., 2013), which may bias results, as different types

of participants usually present different treatment needs (Hecht et al., 2018). Treatment description was lacking in two studies (Caldwell, 2011; Caldwell et al., 2006) and treatment integrity was not controlled in three studies (Caldwell, 2011; Caldwell et al., 2006; Manders et al., 2013), both essential criteria for empirical testing of interventions' efficacy as well as for the dissemination of evidence-based practices (Perepletchikova, 2011). Finally, in one study, the measures of psychopathic traits were not previously validated in the country where the study was carried out (Manders et al., 2013), which may account for reliability issues.

As psychopathic traits are associated with distinctive biological, emotional, cognitive, and social dysfunctions and therefore require a tailored intervention (Hecht et al., 2018; Polaschek & Skeem, 2018), it is also noteworthy that none of these four studies used an intervention program that was specifically designed to target psychopathic traits. Moreover, no study tested the efficacy of an individual intervention program in reducing psychopathic traits. Individual interventions can offer an in deep treatment alternative that can be easily tailored for the specific mental health needs of detained youth and may facilitate therapeutic engagement and the establishment of a strong therapeutic alliance; both considered critical issues in the treatment of individuals with psychopathic traits (Salekin, 2002; Wilkinson, Waller, & Viding, 2015). Finally, no clinical trials have been published testing the efficacy of new forms of cognitive-behavioral therapies (CBT) in reducing psychopathic traits in detained youth.

In order to overcome some of these shortcomings, Ribeiro da Silva and colleagues (2017) developed a new individual intervention, the PSYCHOPATHY.COMP program, which was specifically designed to target psychopathic traits (for a detailed description of the program, see Interventions section). The PSYCHOPATHY.COMP is based on Compassion Focused Therapy (CFT), an evolution-based approach to mental functioning that showed promising results in the treatment of several mental health problems in adulthood, some of them previously considered difficult to treat (see Leaviss & Uttley, 2015 and Kirby, Tellegen, & Steindl, 2017 for a review).

CFT recognizes that humans have an innate set of basic motivations, crucial to surviving and thriving, which include universal and automatic reactions to physical and social threats/opportunities as well as basic attachment and affiliative instincts (Kumsta, 2019; Sheskin, Chevalier Lambert & Baumard, 2014). To integrate these motivations and to regulate emotional states, humans may recourse to the threat system (common to all species; its function is to protect individuals from threats through archaic and automatic responses - freeze, flight, fight), to the drive system (its function is to allow individuals to experience positive feelings that encourage, guide, and motivate them to seek out resources to survive and thrive), and to the soothing system (its function is to allow individuals to experience tranquility and safeness) (Gilbert, 2015). According to a CFT framework, mental health problems emerge when there is an unbalance of these emotion regulation systems, particularly when the threat activation commands individuals' functioning. Central to the activation of the threat system is shame (unbearable and persistent feelings of being

inadequate, inferior, and valueless) and shame regulation problems, which seem to have a key role in several mental health problems (Elison, Pulos, & Lennon, 2006; Gilbert, 2015, 2019; Nathanson, 1992; Vagos, Ribeiro da Silva, Brazão, Rijo, & Elison, 2018b).

CFT conceptualizes antisocial behavior patterns and psychopathic traits as evolutionary rooted responses to deal with harsh rearing scenarios; i.e., rearing environments marked by traumatic experiences (e.g., unpredictability, threat, child abuse) and/or by the absence of affiliative signals (e.g., lack of warmth and safeness experiences) (Cowan, Callaghan, Kan, & Richardson, 2016; Del Giudice & Ellis, 2015; Ribeiro da Siva, Rijo, & Salekin, 2015). In detail, if the human brain is evolutionarily designed to survive and thrive in adverse environments, when individuals are raised in harsh rearing scenarios, as are the majority of detained youth, their brains also become calibrated for such environments (Sheskin et al., 2014; Vagos, Ribeiro da Silva, Brazão, & Rijo, 2018; Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016, 2017). However, while the presence of traumatic experiences seems to contribute to threat focused and antisocial behaviors, psychopathic traits seems to be predicted by rearing environments that are marked by both the presence of traumatic experiences as well as by the absence of warmth and safeness experiences (Henry et al., 2018; Pasalich, Dadds, Hawes & Brennan; 2011; Ribeiro da Silva, Vagos, & Rijo, 2019c). Young offenders with psychopathic traits tend therefore to be focused on short-term goals, presenting an overdeveloped and hypervigilant threat system and an under responsive soothing system as well as central emotional dysfunctions (Ribeiro da Siva, Rijo, & Salekin, 2015). These emotional dysfunctions comprise, among others, high levels of shame and emotion regulation problems; i.e., these youth tend to bar the experience of shame and other unpleasant emotions and/or attack others in potential shameful/threatening situations (Garofalo, Neumann, & Velotti, 2018; Kosson, Vitacco, Swogger, Steuerwald, & Gacono, 2016; Ribeiro da Silva et al., 2019c; Sheskin et al., 2014). Thus, although early conceptualizations emphasized the appearance of sanity and the lack of emotional experience as core features of psychopathy (Cleckley, 1941/1988), increasing research is finding evidence that psychopathic traits probably act as a mask of invulnerability that hides deep suffering and a shameful nucleus (Garofalo et al., 2018; Kosson et al., 2016; Ribeiro da Silva et al., 2015, 2019c).

In a CFT-based intervention, such as the PSYCHOPATHY.COMP program, individuals are guided to discover that our functioning is actually not our fault, as we are just one version of ourselves, which was shaped by evolutionary, genetic, epigenetic, and environmental influences that we did not choose (Cowan et al., 2016; Gilbert, 2019). Nonetheless, it is also our responsibility to live to be helpful and not harmful to ourselves and others (Gilbert, 2019). To encourage this responsibility, CFT-based interventions include the Compassionate Mind Training (CMT); i.e., training on specific practices that are designed to: cope with the triggering of the threat system; develop the soothing system; balance the emotion regulation systems; overcome fears, blocks, and resistances to compassion; and promote the development of the different flows of compassion - give compassion to others, receive compassion from others, and self-compassion (Gilbert, 2019).

A clinical case study demonstrated that the PSYCHOPATHY.COMP program was effective in reducing psychopathic traits and disruptive behavior in a juvenile detainee with CD and high levels of psychopathic traits (Ribeiro da Silva et al., 2019a). However, clinical trial designs are needed to test the effectiveness of this psychotherapeutic intervention. Using a controlled design, this study aimed to test the preliminary efficacy of the PSYCHOPATHY.COMP in reducing psychopathic traits among male detained youth. Taking into account that this program was specifically designed to target psychopathic traits, surpassing the limitations of previous interventions, and considering previous research findings (Ribeiro da Silva et al, 2019a), it was expected that the PSYCHOPATHY.COMP would reduce psychopathic traits in detained youth.

Method

This trial was designed in accordance with the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND Statement; Des Jarlais et al., 2004) and was registered as a controlled trial at ClinicalTrials.gov (ID: NCT03971682).

Trial design and participants

This study was a controlled trial with blind assessments, carried out between March 2018 and March 2019. Participants were selected from male detained youth aged between 14 and 18 years old from the six Portuguese juvenile detention facilities. The initial selection of detained youth met a set of exclusion criteria: (1) non-Portuguese speaking (to avoid communication issues); (2) remaining in the juvenile detention facility less than 12 months since the beginning of the program (taking into account PSYCHOPATHY.COMP length and assessment period); (3) presence of cognitive disabilities (because PSYCHOPATHY.COMP is not suitable for cognitively-impaired youth); (4) presence of psychotic symptoms (the experiential exercises used in the program are contraindicated for psychotic patients); (5) presence of autism spectrum disorders (because PSYCHOPATHY.COMP was not designed considering the social impairments of these youth). Female detained youth were also excluded from this study, as they represent a small percentage of the total young offenders detained in Portuguese juvenile detention facilities, and any possible idiosyncrasies from this cohort would be underrepresented (Rijo et al., 2016). As research has shown that the association between CD and psychopathic traits predicts a worse prognosis (Edens et al., 2007; Gretton et al., 2004; Leistico et al., 2008; Ribeiro da Silva et al., 2019b), inclusion criteria for this study was the presence of a CD diagnosis as the main diagnosis (assessed with the MINI-KID; see Measures section).

A power analysis showed that a sample of 46 detained youth was necessary to detect medium effects with a significance level of .05 and a power of .90.

Interventions

The PSYCHOPATHY.COMP program is an individual CFT-based intervention for detained youth, which was specifically designed to reduce psychopathic traits and disruptive behavior through the development of a compassionate motivation in these youth.

The PSYCHOPATHY.COMP was developed by a research team that included experts in CFT and/or CBT, most of them with clinical experience in the assessment and treatment of detained youth. In the first stage, the research team had intensive training on CFT and discussed the program´s structure and methodologies. From this effort, a draft of the PSYCHOPATHY.COMP program was developed, manualized, and tested individually with a small group of young offenders. Based on the qualitative feedback data from this feasibility study and on supervision sessions with a CFT expert, content-related changes were identified and conducted to develop the final version of the PSYCHOPATHY.COMP program. This program has many similarities with other CFT programs (e.g., strategy of change, CMT; Gilbert, 2010) but stands out by being highly experiential and tailored for the specific issues and life experiences of detained youth; i.e., the contents and methodology was adapted to the features of the target population. Moreover, as detained youth with psychopathic traits tend to present poor treatment engagement (Hecht et al., 2018; Leistico et al., 2008), the PSYCHOPATHY.COMP program was designed taking into account motivational interviewing strategies aligned with a CFT background (Steindl, Kirby, & Tellegan, 2018).

The PSYCHOPATHY.COMP is a manualized program of 20 60-min sessions, which runs on a weekly basis. Sessions must be delivered by therapists skillful in CFT. The program's structure follows a progressive strategy of change, which occurs in four successive modules (see Table 1): (1) The basics of our mind; (2) Our mind according to CFT; (3) Compassionate Mind Training; and (4) Recovery, relapse prevention, and finalization. As a common feature of all therapeutic sessions, therapists are focused on developing a secure therapeutic relationship, evaluating the motivational stage of the youth, and stimulating the CMT.

The main goal of module 1 is to offer youth insights about the evolutionary roots of humans' basic emotions, motives, and needs, including the instinctive and universal responses to social and physical threats. Assuming a non-pathological, non-judgmental, and de-shaming perspective, youth are encouraged to understand that even if we cannot change events, emotions, and thoughts themselves, we can change the way we interact with them and act on them. CMT is introduced in module 1 as an essential platform to begin the process of building participants' compassionate mind and awareness.

Table 1. *Overview of the PSYCHOPATHY.COMP Program*

Module	Session	Theme	Key messages of the sessions
1. The basics of our mind	1	Presentations	Humans have a lot of things in common. Most of the things that happen to us are not chosen by us.
	2	Our basic ingredients	We all have the same instinctive reactions to threats.
2. Our mind according to CFT	3	Old brain/New brain = tricky brain	Humans have a tricky mind
	4	Multiple versions	We are just one version of ourselves
	5	Responsibility and freedom	We are not prisoners of our evolutionary, genetic, and environmental past experiences.
	6	Emotion regulation systems	It is important to be aware that we all have three emotion regulation systems
	7	Emotion regulation systems (cont.)	A good way to achieve stability is to balance the functioning of our emotion regulation systems
	8	Outputs of the threat system	We are all sensitive to shame
	9	Coping strategies	What is the best strategy to deal with shame
	10	Motivations and recovery	Knowing our motivations helps us to follow a path of recovery
3. Compassionate Mind Training	11	Compassion: What is and what is not	No matter what, we can always choose compassion
	12	Multiple selves	We all encompass a multiplicity of selves, to differentiate and integrate that multiplicity is key
	13	Fears of compassion	We all have fears, blocks, and resistances to compassion that we should face and overcome
	14	Flows of compassion	All the flows of compassion are important, though they may encounter roadblocks.
	15	Self-compassion	Self-compassion is the only tool we have available 24/7
	16	Flows of compassion revised	Compassion always gives us an outlet
	17	Safe place	We can go to our safe place and reach our compassionate self whenever we need it
	18	Compassionate letter	Compassion is powerful and can impact in our lives.
4. Recovery, relapse prevention, and finalization	19	Revisiting motivation and recovery: The role of compassion	Although not our fault, we now have the tools to be responsible for our choices.
	20	What has changed? An overview	Life is always going to be bittersweet, learn to bear and face difficult moments compassionately is the challenge

Note. Adapted from "The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee," by D. Ribeiro da Silva, D. Rijo, P. Castilho and P. Gilbert, 2019, *Clinical Case Studies.* Advance online publication. doi: 10.1177/1534650119849491.

Module 2 brings awareness to youth about the functioning of the human mind according to a CFT framework and continues the CMT. Therapists compassionately allow youth to discover that even though we are "just one version of ourselves" (i.e., we probably would be different if genetic or background factors in our lives have been different), our evolutionary, genetic, and contextual inheritance does not lead to determinism, as we all could make conscious actions as we increase our knowledge about our own functioning. To encourage such conscious actions, beyond the importance of CMT, youth are guided to understand the concepts of emotion regulation systems, shame, and shame coping strategies.

Module 3 is explicitly focused on CMT, although CMT started in module 1 and continued during module 2. Using experiential exercises, youth are gradually exposed to the triggering of the threat system (mostly anger and shame exposure) to allow them to understand its outputs (in their mind/body), differentiate and integrate their multiple selves (i.e., angry self, sad self …), search for and test compassionate strategies to bear and manage in healthy ways with their own distress.

Lastly, module 4 is aimed at revisiting the motivations for recovery and preventing relapse below the lens of compassion. Youth are encouraged to genuinely understand that although suffering will always be part of our lives, this therapeutic journey presented them several compassionate emotion regulation strategies to deal with suffering. Nevertheless, therapists always emphasize youth's control and personal choices, as well as their responsibility for change.

Sessions present a default structure, starting with the therapist making a grounding exercise before the session, which is aimed to bring the compassionate self of the therapists into the session. The sessions themselves are then divided into three parts. Part 1 starts with a grounding exercise (i.e., Soothing Rhythm Breathing; Gilbert, 2010), which is aimed at helping youth to be compassionate before starting the session itself, followed by an overview of the last session, and by a moment to explore any insights and/or events that occurred during the week. Part 2 starts with an experiential exercise, which is followed by the development of the session theme, where youth are guided to a deeper level of understanding. Lastly, part 3 starts with a session summary, and subsequently, youth are invited to do a CMT practice. At the end, a "Magic Card" is given to youth; this card displays a keyword that summarizes the session theme.

The treatment group attended the PSYCHOPATHY.COMP program for about 6 months (in a total of 480 individual therapeutic sessions); in addition to the treatment as usual (TAU) delivered at Portuguese juvenile detention facilities. The TAU in Portuguese juvenile detention facilities is primarily aimed to increase educational and professional qualifications, as well as to promote behavioral regulation and encompasses: school frequency, a token economy system for behavior control, the frequency of a cognitive-behavioral group program (the GPS—Growing Pro-Social; Rijo et al., 2007) and individual counseling sessions delivered

by psychologists from the juvenile justice system[18] (the treatment group did not attend these sessions). Participants in the control group only received TAU, including the individual counseling sessions, and did not attend the PSYCHOPATHY.COMP during the research period.

Measures

Participants were assessed with a clinical interview and completed a self-report measure of psychopathic traits. Additionally, demographic, legal and criminal data on participants were collected from juvenile justice record file files, including their risk for criminal recidivism according to the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge, Andrews, & Leschied, 2002). The YLS/CMI was completed by a probation officer before youth´s detention. Based on the total score of the YLS/CMI, youth can be categorized into four levels of recidivism risk: low, moderate, high, or very high.

Semi-Structured Clinical Interview

In order to investigate mental health inclusion/exclusion criteria, participants from treatment and control groups were interviewed with the Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID; Sheehan et al., 2010; Portuguese Authorized Version by Rijo et al., 2016) at baseline. The MINI-KID is a structured clinical diagnostic interview that assesses DSM (Diagnostic and Statistical Manual of Mental Disorders, DSM-5; American Psychiatric Association, 2013) disorders in children and adolescents in a way that is both comprehensive and concise. The MINI-KID is organized into diagnostic sections, each starting with two to four screening questions for each specific disorder. Additional symptom questions within each disorder section are asked only if the screen questions are positively answered. All questions are in a binary "yes/no" format. The MINI-KID takes into account not only DSM criteria A but also the impairment and duration of the symptoms and is considered a short and accurate instrument to diagnose mood disorders, anxiety disorders, substance-related disorders, tic disorders, disruptive disorders, attention-deficit hyperactivity disorder, psychotic disorders, eating disorders, and adjustment disorders. The interview also has a section that allows the screening of autism spectrum disorders. Moreover, items are included to address ruling out medical, organic, and/or drug causes for disorders. Diagnostic criteria are summarized and documented within each disorder section and on a summary sheet, allowing the interviewer to decide which disorder should be the major focus of clinical attention (i.e., the main diagnosis). The MINI-KID takes between 30 and 90 minutes to administer. Inter-rater reliability was found to be excellent for all mental health disorders assessed with the MINI-KID (Sheehan et al., 2010).

[18] These individual sessions are not structured and depend on the theoretical background of the psychologist as well as on his/her availability.

Outcome measure - Psychopathic Traits

In order to assess the PSYCHOPATHY.COMP efficacy on psychopathic traits, participants completed the Youth Psychopathic Traits Inventory-Short (YPI-S; Van Baardewijk et al. 2010; Portuguese version by Pechorro, Andershed, Ray, Maroco, & Gonçalves, 2015) at two time points: baseline and post-treatment assessment. The YPI-S is an 18-item self-report version of the original Youth Psychopathic Traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002), which assesses psychopathic traits in youth via ratings within three different factors: GM (e.g., "It's easy for me to manipulate people"), CU (e.g., "I think that crying is a sign of weakness, even if no one sees you"), and II (e.g., "I like to do exciting and dangerous things, even if it is forbidden or illegal"). Each factor is estimated by a set of six items; each item is rated on a four-point scale (1 = "Does not apply at all" to 4 = "Applies very well"). Both the total YPI-S and the YPI-S factors can be scored by simply adding the item ratings; higher scores are indicators of increased levels of psychopathic traits (Van Baardewijk et al. 2010). The YPI-S has shown strong convergence with the original YPI and good psychometric proprieties (Van Baardewijk et al. 2010). In studies with Portuguese samples of male young offenders, the YPI showed a three-factor structure, acceptable tp good internal consistency based on alpha, and high correlations between the YPI-S factors and the total YPI-S (Pechorro, Ribeiro da Silva, Andershed, Rijo, & Gonçalves, 2017; Ribeiro da Silva et al., 2019b). In the present study the YPI-S and its factors showed acceptable internal consistency based on alpha. Specifically, the alphas for the YPI-S total score and for the GM, CU, and II factors were .75, .73, .76, and.60, respectively.

Procedures

This study was approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra, by the Portuguese Data Protection Authority, and by the Portuguese Ministry of Justice.

As Portuguese juvenile detention facilities usually have no more than 150 detained youth (about 30 youth per juvenile detention facility), facing 6 to 36 months of detention, around 10 youth enter and leave Portuguese juvenile detention facilities per month, which makes it difficult to randomly assign participants to conditions. To try to minimize this roadblock and to maximize time and human resources as well as the quality of the trial design (Hollin, 2008), the research team opted to assign the first 30 youth entering in the juvenile detention facilities during the research period to the treatment group, and the following 30 youth to the control group (in a total of 60 participants; 12 more participants than required were enrolled in the study in order to overcome potential attrition issues).

For participants eligible for the study (participants fulfilling exclusion criteria 1 and 2 were immediately excluded), a first meeting with the research team was carried out after the first month of detention, as this is considered an adaptation period. At this meeting, the researchers explained the goals of the study and presented a brief overview of the PSYCHOPATHY.COMP program to participants. It was also explained that their participation in

the study would not impact their sentencing/school grades in any way and that no payment or extra credit would be offered. Confidentiality and anonymity of their responses were also guaranteed. Youth were then invited to participate voluntarily in the study and informed if they would be allocated to the treatment group or to the control group. Participants older than 18 years gave verbal and written consent for their own participation and participants younger than 18 years verbally assented to their own participation in addition to their parents/legal guardians' written consent. All youth who agreed to participate in the study were interviewed with the MINI-KID (see the Measure section) to assess the remaining inclusion/exclusion criteria and the presence of other mental health disorders. Participants who did not meet any exclusion criteria were assigned to the treatment condition or to the control condition as previously specified.

All participants assigned to the treatment or to the control group were then assessed at baseline with the YPI-S (see the Measure section). Participants in the treatment group were assessed before the first session of the program (baseline assessment) and right after its terminus (i.e., post-treatment assessment - about 6 months after the baseline assessment). Participants in the control group were assessed with the same time interval using the same measure.

Independent research assistants blind to condition assignment participated in data collection. Respondent-specific codes were used to link the data from one time-point to the next one. These researchers received intensive training on the assessment measures (a three-day workshop on the administration and rating of the MINI-KID and training on the administration and rating of the self-report questionnaire) and had supervision sessions with a senior researcher during data collection.

Considering therapeutic engagement and treatment integrity assessment, as video-tapping and/or audio-tapping was not authorized by Portuguese Ministry of Justice due to ethical and confidential constrictions, researchers tried to overcome this shortcoming in numerous ways. First, therapists were three psychologists, who had at least six years of clinical experience as well as intensive training and experience in delivering the PSYCHOPATHY.COMP program to young offenders. Second, during this study, the therapists had weekly supervised sessions with a CFT expert. Third, therapists and youth rated every session on their subjective perception regarding the usefulness of the session (1 = “nothing useful” to 10 = “extremely useful”) and the therapeutic relationship (1 = “very bad” to 10 = “very good”); therapists additionally rated every session on their subjective perception regarding how they follow the manualized protocol of the session (1 = “completely different” to 10 = “very similar”) and how globally they rated the session (1 = “very bad” to 10 = “very good”). Fourth, around 5% of the sessions (26 sessions; 12 from each therapists) were observed by an independent ratter in order to assess treatment integrity; independent ratters were 3 CFT experts who used a therapy assessment guide developed by the research team to evaluate the global quality of the session (taking into account a CFT approach and the protocol for the session itself), the therapeutic relationship and the therapeutic skills of the

therapist. The global score of this assessment ranged from 1 ("inappropriate") to 10 ("skillful"). Finally, the PSYCHOPATHY.COMP's structured and manualized design also ensured treatment integrity, at least partially.

Data analysis

The SPSS v24 (IBM SPSS, 2016) software was used to run the analysis in this study. Preliminary analyses included comparisons between the treatment and control group on demographic, legal, criminal, and clinical variables. Independent-samples *t*-tests or chi-square tests were used for comparisons depending on the nature of the data. Groups were also compared on the outcome measure at baseline, using independent-samples *t*-tests. The internal consistency of the outcome measure was calculated based on Cronbach's alpha.

To test treatment effects, 2x2 mixed ANOVAs with time (before and after the PSYCHOPATHY.COMP) as the within-group factor and condition (treatment group vs. control group) as the between-group factor were carried out. Effect sizes were computed using partial eta squares (η^2p), with η^2p = .01 referring to a small effect size, .06 to a medium effect size and .14 to a large effect size (Tabachnick & Fidell, 2013).

Several authors argued that significant clinical change should also be addressed in the assessment of any treatment efficacy (Atkins, Bedics, McGlinchey, & Bauchaine, 2005; Jacobson & Truax 1991; Maaseen, 2001; Wise, 2004). In order to assess significant clinical change after the delivery of the PSYCHOPATHY.COMP program, the Reliable Change Index (RCI) was computed (Jacobson & Truax, 1991). The RCI is considered an index with high reliability (Atkins et al., 2005), which was designed to test the efficacy of a particular therapy or program by evaluating intra-subject clinical individual change. Instead of focusing on the differences of mean scores, it provides information about treatment effects for each individual, allowing testing whether an individual improves or deteriorates in comparison to baseline (Wise 2004). In order to ascertain whether the observed change is in fact genuine and not just due to measurement errors, and whether the change places the individual inside the norms of functional groups (Wise, 2003), the RCI allows the testing of the null hypothesis of no clinically meaningful change, depending on the normal distribution (Maaseen, 2001), and taking into account the measurement error of the instruments (Jacobson & Truax, 1991). This index is computed using the formula: a: $RCI = \frac{(x2-x1)}{\sqrt{2\left(SD0\sqrt{1-\alpha}\right)^2}}$ where x2 represents the result of the individual in the post-treatment, x1 represents the result of the individual in the baseline, SD0 represents the standard deviation of the variable in a normative sample (in this case we relied on the data of the normative sample used in the study by Ribeiro da Silva et al., 2019b), and α represents the internal consistency of the scale at baseline.

According to Wise (2004), if the RCI scores are > 0.84 we can assert, with a confidence interval of 80%, that real, reliable and significant change has been verified; however, if the result exceeds 1.28 or 1.96, that confidence interval increases to 90% and 95%, respectively. On the contrary, if the result is less than -0.84, we can say that deterioration occurred. All

values between 0.84 and -0.84 indicate that no change was observed. For the interpretation of the RCI in this study, three broad categories were defined: ‘‘Global Improvement’’ (GI), ‘‘Global Deterioration’’ (GD) and ‘‘No Change’’ (NC). In this study, to compare both groups in the distributions by clinical change categories, Chi square statistics with Fisher’s exact tests with a .05 level of significance were performed. Effect sizes of the associations found in the distributions by clinical change category between groups were calculated with *Cramer’s V* (.00 and under .10 = negligible association; .10 and under .20 = weak association; .20 and under .40 = moderate association; .40 and under .60 = relatively strong association; .60 and under .80 = strong association; and .80 and under 1.00 = very strong association).

To assess therapeutic engagement and treatment integrity, means and standard deviations of youth and therapists’ ratings of the sessions were computed, as well as the means and standard deviation of the independent ratters’ assessments.

Results

Recruitment and retention

A sample of 60 male detained youth was invited to participate in the study (see Figure 1). After assessing exclusion criteria (consulting the juvenile justice record file and/or interviewing participants with the MINI-KID), 9 (15%) participants were excluded from the study: 2 (3.3%) were non-Portuguese speaking, 4 (6.7%) would stay in the juvenile detention facility for less than 12 months, 2 (3.3%) were suspected to have cognitive impairments, and 1 (1.7%) was suspected to have an autism spectrum disorder. Additionally, 1 (1.7%) detained youth declined to participate in the study. From this initial selection, 50 (83.3%) detained youth completed the baseline assessment and were allocated to the treatment group or to the control group.

From the initial 26 treatment group participants, 24 (92.3%) completed the PSYCHOPATHY.COMP and the post-treatment assessment. Only 2 (7.7%) detained youth from the treatment group were not assessed at the post-treatment: 1 (3.8%) was released earlier than expected and 1 (3.8%) dropped out the program. From the initial 24 control participants, 22 (91.7%) completed the post-treatment assessment and 2 (8.3%) did not complete the post-treatment assessment: 1 (4.2%) decline the assessment and 1 (4.2%) was released earlier than expected.

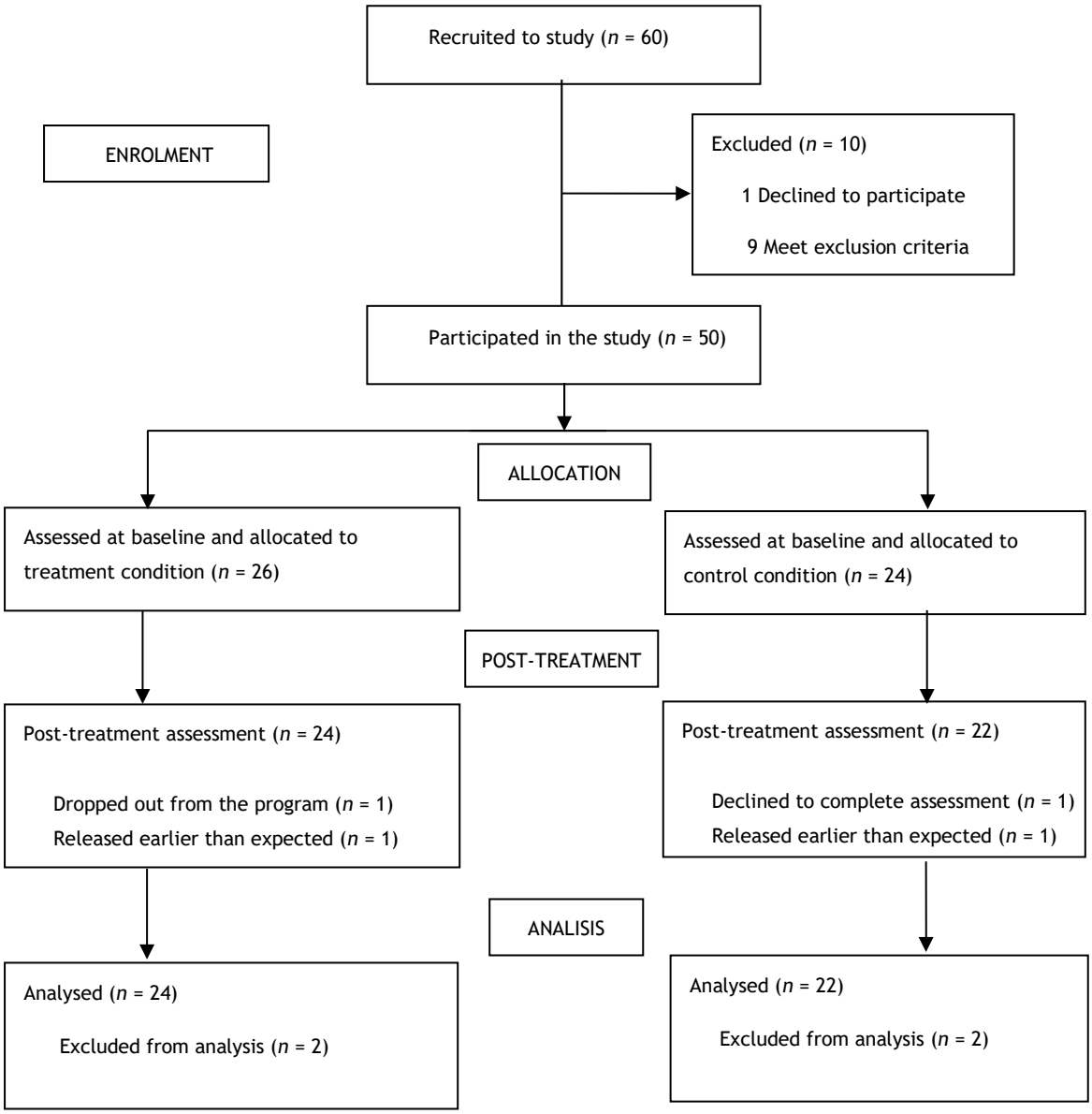


Figure 1. Flowchart of detained youth participation

Baseline differences

Treatment and control groups were compared on demographic characteristics, as well as on legal, criminal and clinical features at baseline. As presented at Table 2, no significant differences were found in any of these variables (all $p > .05$). Baseline differences between groups were also tested for the total score of the YPI-S and its factors; no differences were found between conditions at the onset of the study (all $p > .05$; see Table 3).

Table 2. *Demographic, Legal, Criminal, and Clinical Sample Characteristics by Group*

	Treatment group (*n* = 24)	Control group (*n* = 22)	*t*/*x2*	*P*
Age	15.67 (.92)	15.45 (1.18)	.68	.499
Years of education	5.75 (1.23)	5.45 (1.26)	.81	.425
SES				
Low	23 (95.8)	19 (86.4)		
Medium	1 (4.2)	2 (9.1)	1.63	.405
High	0 (0)	1 (4.5)		
Previous contact with the child protection system				
No	1 (4.2)	0 (0)		
Foster care	11 (45.8)	11 (50)	.96	1.000
Other	12 (50)	11 (50)		
Previous contact with the juvenile justice system				
No	7 (29.2)	10 (45.5)		
Community-based programs	10 (41.7)	9 (40.9)	2.50	.505
Detention	1 (4.2)	0 (0)		
Other	6 (25)	3 (13.6)		
Detention length (in months)	22.13 (7.66)	20.32 (5.00)	.94	.353
Type of crimes				
Against people	19 (79.2)	21 (95.5)		
Against property	4 (16.7)	1 (4.5)	2.82	.261
Drug trafficking	1 (4.2)	0 (0)		
Quantity of crimes				
Single crime	1 (4.2)	0 (0)		
Several crimes of the same type	11 (45.8)	10 (45.5)	.96	1.000
Several crimes of different types	12 (50)	12 (54.5)		
Criminal recidivism risk - YLS/CMI-T [a]				
Low	0 (0)	0 (0)		
Moderate	3 (13.6)	13 (15.8)	1.83	.419
High	13 (59.1)	14 (73.7)		
Very High	6 (27.3)	2 (10.5)		
Number of diagnosis – MINI-KID	3.50 (1.35)	3.91 (1.60)	.94	.353
Type of comorbidities – MINI.KID				
Oppositional Defiant Disorder	4 (14.7)	3 (3.6)		
Alcohol dependence/abuse disorder	1 (4.2)	0 (0)		
Substance dependence/abuse disorder	3 (12.5)	3 (3.6)	2.09	1.000
Anxiety related disorders	1 (4.2)	0 (0)		
Multiples	15 (62.5)	16 (72.7)		

Note. Information for SES, previous contact with child and protection system, previous contact with the juvenile justice system, type of crimes, quantity of crimes, criminal recidivism risk , and type of comorbidities are presented as *n* (%); information for age, years of education, detention length, and number of diagnosis are presented as *M (SD)*. SES = Socioeconomic Status; YLS/CMI-T = Youth Level of Service/Case Management Inventory, Total Score; Number of diagnosis - MINI-KID = Number of diagnosis established with the MINI-KID (Mini-International Neuropsychiatric Interview for Children and Adolescents), including Conduct Disorder (CD); Type of comorbidities – MINI.KID = Type of comorbidities with CD established with the MINI.KID.Crimes against people include homicide, attempted homicide, physical aggression, armed robbery, and rape; Crimes against property include theft and destruction of property.

Intervention effects on psychopathic traits

Table 3 displays the mean scores and standard deviations of the outcome measure at baseline and post-treatment by group as well as mixed 2x2 ANOVAs results. Significant time x condition effects were observed for the YPI-S total score and its factors (i.e., psychopathic traits reduced in the treatment group but not in the control group); these effects had a large effect size for the YPI-S total score and for the II factor and a medium effect size for the GM and CU factors.

Table 3. *Means and Standard Deviations for Psychopathic Traits by Groups at Baseline and Post-Treatment and Mixed ANOVA with TTime X Condition Effects*

	Baseline		*t*	*p*	Post-treatment		Time x Condition
	Treatment group *M (SD)*	Control group *M (SD)*			Treatment group *M (SD)*	Control group *M (SD)*	
YPIS-T	43.58 (7.03)	46.32 (6.27)	-1.39	.173	35.67 (8.24)	46.23 (5.67)	F = 22.257; p < .001; η^2p = .336
YPIS-GM	14.17 (3.77)	15.59 (3.17)	-1.38	.175	12.08 (3.77)	15.68 (4.33)	F = 6.065; p = .018; η^2p = .121
YPIS-CU	12.42 (2.65)	13.18 (3.89)	-.79	.436	9.42 (2.60)	12.00 (3.32)	F = 6.155; p = .017; η^2p = .123
YPIS-II	17.00 (3.01)	17.55 (2.52)	-.66	.511	14.17 (3.01)	18.55 (2.87)	F = 27.151; p < .001; η^2p = .382

Note. YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-T = Total score; YPI-S-GM = Grandiose-Manipulative; YPI-S-CU = Callous-Unemotional; YPI-S-II = Impulsive-Irresponsible)

Data relating to clinical change in psychopathic traits on both groups are presented at Table 4. Results indicated significant differences between groups in the distribution by clinical change categories for the total score of the YPI-S and its factors; i.e., a high percentage of participants from the treatment group showed improvements for the total score of the YPI-S and its factors, while a high percentage of controls fell into the deterioration or no change categories. Differences in the distributions between groups for the YPI-S total score and the II factor had a strong effect size, while for the GM and CU factors the effect size was moderate.

Table 4. *Reliable Change Index for Psychopathic Traits by Group.*

Measures	Categories	Treatment group		Control Group		*Fisher's*	*p*	*Cramer's V*
		n	%	n	%			
YPI-S-T	GI	21	87.5	8	36.4			
	NC	3	12.5	3	13.6	18.23	< .001	.60
	GD	0	0	11	50			
YPI-S-GM	GI	14	58.3	6	27.3			
	NC	8	33.3	8	36.4	6.58	.039	.38
	GD	2	8.3	8	36.4			
YPI-S-CU	GI	21	87.5	13	59.1			
	NC	3	12.5	4	18.2	6.83	.026	.39
	GD	0	0	5	22.7			
YPI-S-II	GI	18	75	2	9.1			
	NC	4	16.7	13	59.1	21.09	< .001	.66
	GD	2	8.3	7	31.7			

Note: YPI-S = Youth Psychopathic Traits Inventory-Short (YPI-S-T = Total score; YPI-S-GM = Grandiose-Manipulative; YPI-S-CU = Callous-Unemotional; YPI-S-II = Impulsive-Irresponsible); GI = Global Improvement; NC = No Change; GD = Global Deterioration.

Assessment of therapeutic engagement and treatment integrity

Considering therapeutic engagement and treatment integrity, the mean score of the usefulness of the sessions rated by youth was 9.25 (*SD* = 1.02), while the mean score of the usefulness of the sessions rated by therapists was 8.44 (*SD* = .94). The mean score of the therapeutic relationship rated by youth was 9.75 (*SD* = .50), whereas the mean score of the therapeutic relationship rated by therapists was 9.09 (*SD* = .76). The mean score of the therapists subjective perception regarding how they follow the manualized protocol of sessions was 8.87 (*SD* = .73) and the mean score of the how globally therapists rated the sessions was 8.78 (*SD* = .74). Finally, the independent ratters assessments of the sessions was 8.75 (*SD* = .81). Taking into account that all these assessments ranged between 1 and 10, these results were very positive.

Discussion

This controlled trial aimed to test the preliminary efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits in detained youth. At baseline, no differences were found between treatment and control groups in demographic, legal, criminal, and clinical variables, as well on psychopathic traits scores. The groups were therefore similar regarding all these variables, reducing possible bias associated with the absence of randomization (Hollin, 2008). Intervention effects were analyzed both at a group level as well as at an individual level (through clinical change observed in each participant). Therapeutic engagement and treatment integrity were also examined.

The results demonstrated that the PSYCHOPATHY.COMP was effective in reducing psychopathic traits in a sample of male detained youth. Considering the total score of the YPI-S, differences between treatment and control groups were found; i.e., with a large effect

size, psychopathic traits reduced in the treatment group but not in the control group. A strong effect size was also observed concerning clinical change; i.e., while the majority of participants from the treatment group improved on the total score of the YPI-S and none treatment participant deteriorated, the majority of participants from the control group deteriorated over time. These findings suggested that the PSYCHOPATHY.COMP program may be an accurate therapeutic intervention to reduce psychopathic traits among male detained youth. Moreover, these data also indicated that the TAU may contribute to maintain or increase psychopathic traits in detained youth. These findings support the idea that the absence of tailored interventions targeting psychopathic traits may account for an important deterioration in the levels of psychopathic traits in detained youth, which may increase the odds of these youth to display disruptive and antisocial behavior after release (Edens et al., 2007; Gretton et al., 2004; Hecht et al., 208; Leistico et al., 2008; Ribeiro da Silva et al., 2019b). Taking into account previous research, showing that it is the combination of all psychopathic traits that is particularly relevant for the display of disruptive and antisocial behaviors and, consequently, for criminal recidivism in detained youth (Edens et al., 2007; Leistico et al., 2008; Ribeiro da Silva et al., 2019b), it seems crucial to deliver tailored intervention programs to these youth that are able to reduce psychopathic traits (Ribeiro da Silva et al., 2019a).

Regarding GM traits, differences between groups were also found; GM traits reduced in the treatment group but not in the control group (with a medium effect size). A moderate effect size was also observed concerning clinical change in GM traits; i.e., while the majority of participants from the treatment group improved on the GM factor, the majority of participants at the control group deteriorated or showed no change over time. These findings suggest that the PSYCHOPATHY.COMP program may be able to provide substantial improvements on GM traits, compared to TAU. As GM traits are regarded in the literature as an important roadblock in the efficacy of intervention efforts (because they are linked to manipulation, deceitfulness, dishonesty, and lying; Harris & Rice, 2002; Salekin, 2016, 2017), it seems essential that therapeutic efforts take into account and accurately address this set of traits (Ribeiro da Silva et al., 2019a; Salekin, 2017).

Differences between groups were also found for CU traits; CU traits reduced in the treatment group but not in the control group and the observed difference corresponded to a medium effect size. A moderate effect size was also verified regarding clinical change. In specific, while the majority of participants from the treatment group improved on the CU factor and none participant from the treatment group deteriorated, a high percentage of participants from the control group deteriorated or showed no change over time. Thus, it seems that the strategy of change of the PSYCHOPATHY.COMP program was also effective in reducing CU traits. These results go against literature pointing out that CU traits may be particularly resistant to treatment efforts (Butler et al., 2011; Wilkinson et al., 2015), highlighting that this set of traits may be effectively reduced if a tailored intervention

protocol (which takes into account callous and unemotional features) is delivered to these youth.

Finally, differences between groups were also found on II traits; II traits reduced in the treatment group but not in the control group and these differences achieve a large effect size. A strong effect size was also observed regarding clinical change in II traits; i.e., while the majority of participants from the treatment group improved on the II factor, the majority of participants at the control group showed no change or deteriorated over time. These results indicated that the PSYCHOPATHY.COMP was able to reduce II traits, whereas the TAU contributed to maintain or deteriorate this set of traits. Considering that II traits are frequently associated with aggressive and risk-taking behaviors, it seems crucial to try to reduce this set of traits during the detention length (Edens et al., 2007; Gretton et al., 2004).

In the current study, the therapeutic engagement assessment and the integrity of PSYCHOPATHY.COMP' delivery were ensured by several factors, namely through the training and supervision of the therapists who run the program, through assessing the perception of the youth and of the therapists about each sessions, and through the integrity assessment of a percentage of delivered sessions by independent raters. Results indicated that both youth and therapists perception was very positive, as well as the independent ratters' assessments. Moreover, the attrition rate was residual. These findings are somehow contrary to previous research suggesting that detained youth with psychopathic traits tend to present poor therapeutic engagement (Hecht et al., 2018; Polaschek & Skeem, 2018; Wilkinson et al., 2015), indicating that the PSYCHOPATHY.COMP program may help to solve therapeutic engagement issues in detained youth with psychopathic traits.

Overall, findings of the present study offer preliminary evidence of the PSYCHOPATHY.COMP's efficacy in reducing psychopathic traits among detained youth, buffering the tendency of these youth to maintain or to get worse their levels of psychopathic traits across time (Edens et al., 2007; Gretton et al., 2004). Results also offer support for the PSYCHOPATHY.COMP program as a useful therapeutic intervention protocol to solve therapeutic engagement issues in detained youth with psychopathic traits (Hecht et al., 2018 and Polaschek & Skeem, 2018). The strategy of change of the PSYCHOPATHY.COMP program seems therefore attuned to the intervention needs of this at-risk population. In detail, if we take into account recent research conceptualizing psychopathic traits as an adaptive response that masks central emotional dysfunctions (Garofalo et al., 2018; Kosson et al., 2016; Ribeiro da Silva et al., 2015, 2019a, 2019c), this program may offer these youth a safe and warmth environment that allows them to (1) process their own unpleasant memories and emotions in a compassionate way (2) build the courage, strength, and wisdom, to start to become more self-aware, in control, and responsible for their emotional states, gradually dropping out their mask of invulnerability; and (c) find and test compassionate alternative strategies to tolerate and cope in healthy ways with their own suffering and/or the suffering of others.

Findings of the current study may also suggest that psychopathic traits may not be effectively addressed by the current practices delivered at Portuguese juvenile detention

facilities, both analyzing the data at a group level and at an individual level. However, when analyzing the data at an individual level, although the majority of participants from the treatment group improved on their levels of psychopathic traits (both considering the total score of the YPI-S and its factors), compared to the deterioration or no change of the majority of participants from the control group, some youth from the control group also improved on their levels of psychopathic traits. These findings can be related with specific features of the Portuguese juvenile detention facilities, which present a structured environment, with few youth and a large number of adults that are daily responsible not only for their education and behavior control but also for their protection and care. Considering that according to a CFT framework psychopathic traits are seen as an adaptive strategy to deal with harsh rearing environments, the structured and protective environment of Portuguese juvenile detention facilities may help some detained youth to balance the triggering of the threat system and to be more responsive to the affiliative signals of others, which, *per se*, may facilitate the decreasing of psychopathic traits in some of these youth (Ribeiro da Silva et al., 2015). Nevertheless, it is noteworthy that, in fact, the majority of participants from the control group showed considerably high clinical deterioration rates or no change in all psychopathic traits. These results were especially problematic considering the combination of all psychopathic traits (an half of participants from the control group deteriorated on the total score of the YPI-S), which are regarded in the literature as particularly relevant for the display of high criminal recidivism rates (Edens et al., 2007; Gretton et al., 2004; Leistico et al., 2008; Ribeiro da Silva et al., 2019b).

The findings of this study, coupled with previous research on criminal recidivism risk/rates of detained youth with psychopathic traits (Caldwell, 2011; Caldwell et al., 2006; Edens et al., 2007; Gretton et al., 2004; Ribeiro da Silva et al., 2019b), are of considerable relevance to current practices in juvenile justice systems. In addition to recidivism risk assessment, it seems crucial to perform a full mental health assessment of all youth entering in contact with juvenile justice systems, combining the assessment of mental health disorders with the assessment of psychopathic traits (Ribeiro da Silva et al., 2019b; Rijo et al., 2016; Salekin, 2017). In turn, the full mental health assessment coupled with the recidivism risk assessment should help to decide about the nature, intensity, and length of interventions delivered to detained youth (Andrews & Bonta, 2010; Ribeiro da Silva et al., 2019b; Rijo et al., 2016; Salekin, 2017). In order to maximize their rehabilitation potential, detained youth with high levels of psychopathic traits should have the possibility to receive evidence-based intervention programs tailored for their specific mental health needs.

This study presented several strengths in comparison to the few experimental or quasi-experimental studies on the changeability of psychopathic traits in detained youth (Butler et al., 2011; Caldweel, 2011; Caldwell et al., 2006; Manders et al., 2013). Firstly, this study was the first to use a controlled trial design with male detained youth with CD, which is considered of utmost importance as it seems that is the combination of a CD diagnosis with high levels of psychopathic traits that lead youth to present a persistent and severe pattern

of antisocial behavior (Edens et al., 2007; Gretton et al., 2004; Leistico et al., 2008; Ribeiro da Silva et al., 2019b). Secondly, this is among the first treatment studies with detained youth where treatment description was clearly detailed (Butler et al., 2011; Manders et al., 2013) and where treatment integrity was controlled, at least partially (Butler et al., 2011), both essential requirements for the dissemination of evidence-based practices (Perepletchikova, 2011). Thirdly, this study was the second study to assess the changeability of psychopathic traits after an intervention with a validated measure of psychopathic traits (Butler et al., 2011) and the only study that assessed the changeability of psychopathic traits both considering the overall score as well as each set of traits separately. Finally, this was the first study to assess the changeability of psychopathic traits after an individual CFT-based intervention that was specifically designed to target psychopathic traits in detained youth.

Bearing in mind that these are only preliminary findings of a controlled trial, which included a small sample of male detained youth (not randomly allocated to conditions) with baseline and post-treatment assessment, this study presented important limitations. Thus, generalizations should be carefully addressed in further research. Future studies, with a controlled or randomized controlled design, a larger sample and follow-up assessments are required prior to establish the PSYCHOPATHY.COMP efficacy. Further research should also assess psychopathic traits with at least two validated measures and assess other relevant variables associated with antisocial behavior (e.g., aggression, emotion regulation). Variables that do not rely exclusively on self-report measures should also be included in future studies (e.g., physiological/neural correlates of psychopathic traits). It will be also important to track the progress of detained youth after release (e.g., recidivism rates, school and social functioning), as there is a large risk for these youth to reoffend and to face prison sentences in the future (Edens et al., 2007; Gretton et al., 2004). Tracking the progress of these youth would also be important to clarify if improvements observed during the detention period are maintained after release.

Considering that detained youth with CD and high levels of psychopathic traits usually have a more persistent and severe pattern of antisocial behavior as well as poorer treatment outcomes and poorer treatment engagement than youth with CD only (Butler et al., 2011; Hecht et al., 2018; Manders et al., 2013; Polaschek & Skeem, 2018; Wilkinson et al., 2015), there is a critical need to test the efficacy of intervention programs specifically tailored to change psychopathic traits in these youth (Ribeiro da Silva et al., 2019a). The encouraging research findings of the current study, coupled with the results of a previous clinical case study (Ribeiro da Silva et al., 2019a), suggests that CFT in general and PSYCHOPATHY.COMP in particular may fit the intervention needs of this at-risk population. These outcomes provide preliminary evidence of the program's potential to reduce psychopathic traits and to promote therapeutic engagement in detained youth. Although additional research on the efficacy of the PSYCHOPATHY.COMP program is still needed, results may have implications for the study and treatment of detained youth with psychopathic traits and also for the rehabilitation policies of juvenile justice systems.

References

Abram, K. M., Zwecker, N. A., Welty, L. J., Hershfield, J. A., Dulcan, M. K., & Teplin, L. A. (2015). Comorbidity and continuity of psychiatric disorders in youth after detention: A prospective longitudinal study. *JAMA Psychiatry, 72,* 84-93.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-reffered youth: Initial test of a new assessment tool. In E. Blaauw & I. Sheridan, (Eds.), *Psychopaths: Current international perspectives* (pp. 131-158). Hague, The Netherlands: Elsevier.

Andrews, D. A., & Bonta, J. (2010). Rehabilitating criminal justice policy and practice. *Psychology, Public Policy and Law, 16,* 39–55.

Atkins, C. D., Bedics, J. D., McGlinchey, J. B., & Bauchaine, T. (2005). Assessing clinical significance: Does it matter which method we use? *Journal of Consulting and Clinical Psychology, 73,* 982–989.

Butler, S., Baruch, G., Hickey, N., & Fonagy, P. (2011). A randomized controlled trial of multisystemic therapy and a statutory therapeutic intervention for young offenders. *Journal of the American Academy of Child and Adolescent Psychiatry, 50,* 1220–1235.

Caldwell, M. F. (2011). Treatment-related changes in behavioral outcomes of psychopathy facets in adolescent offenders. *Law and Human Behavior, 35,* 275-287.

Caldwell, M. F., Skeem, J., Salekin, R., & Van Rybroek, G. (2006). Treatment response of adolescent offenders with psychopathy features: A 2-year follow-up. *Criminal Justice and Behavior, 33,* 571-596.

Cleckley, H. (1988). *The mask of sanity: An attempt to clarify some issues about the so-called psychopathic personality* (6th ed.). St. MO: Mosby (original work published in 1941).

Cowan, C. S. M., Callaghan, B. L., Kan, J. M., & Richardson, R. (2016). The lasting impact of early-life adversity on individuals and their descendants: Potential mechanisms and hope for intervention. *Genes, Brain and Behavior, 15,* 155-168.

Del Giudice, M., & Ellis, B. J. (2015). Evolutionary foundations of developmental psychopathology. In D. Cicchetti (Ed.), *Developmental Psychopathology, Vol. 2: Developmental neuroscience* (3th ed., pp. 1-58). New York: Wiley.

Des Jarlais, D. C., Lyles, C., Crepaz, N., & the Trend Group (2004). Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: The TREND statement. *American Journal of Public Health, 94,* 361-366.

Edens, J. F., Campbell, J. S., & Weir, J. M. (2007). Youth psychopathy and criminal recidivism: A meta-analysis of the psychopathy checklist measures. *Law and Human Behavior, 31,* 53-75.

Elison, J., Pulos, S., & Lennon, R. (2006). Investigating the compass of shame: The development of the compass of shame scale. *Social Behavior and Personality*, *34*, 221-238.

Garofalo, C., Neumann, C. S., & Velotti, P. (2018). Difficulties in emotion regulation and psychopathic traits in violent offenders. *Journal of Criminal Justice, 57,* 116-125.

Gilbert, P. (2010) *Compassion focused therapy: The CBT distinctive features series*. London: Routledge.

Gilbert, P. (2015). An evolutionary approach to emotion in mental health with a focus on affiliative emotions. *Emotion Review, 7,* 230-237.

Gilbert, P. (2019). Explorations into the nature and function of compassion. *Current Opinion in Psychology, 28,* 108-114.

Gretton, H. M., Hare, R. D., & Catchpole, R. E. H. (2004). Psychopathy and offending from adolescence to adulthood: A 10-year follow-up. *Journal of Consulting and Clinical Psychology, 72,* 636–645.

Harris, G. T., & Rice, M. E. (2006). Treatment of psychopathy: A review of empirical findings. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 555-572). New York: Guildford Press.

Hecht, L. K., Latzman, R. D., & Lilienfeld, S. O. (2018). The Psychological Treatment of Psychopathy. In D. David, S. J. Lynn, & G. H. Monegomery (Eds.), *Evidence-Based Psychotherapy: The State of the Science and Practice* (pp. 271-298). Hoboken, NJ, USA.

Henry, J., Dionne, G., Viding, E., Vitaro, F., Brendgen, M., Tremblay, R. E., & Boivin, M. (2018). Early warm-rewarding parenting moderates the genetic contributions to callous–unemotional traits in childhood. *Journal of Child Psychology and Psychiatry*, *59*, 1282-1288.

Hoge, R. D., Andrews, D. A., & Leschied, A. (2002). *The Youth Level of Service/Case Management Inventory*. Toronto: Multi Health Systems.

Hollin, C. R. (2008). Evaluating offending behaviour programmes: Does only randomization glister?. *Criminology & Criminal Justice, 8,* 89-106.

Jacobson, N. S., & Truax, P. (1991). Clinical significance: a statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, *39*, 12–19.

Kirby, J. N., Tellegen, C. L., & Steindl, S. R. (2017). A meta-analysis of compassion-based interventions: Current state of knowledge and future directions. *Behavior Therapy, 48,* 778–792.

Koehler, J. A., Lösel, F., Akoensi, T. D., & Humphreys, D. K. (2013). A systematic review and meta-analysis on the effects of young offender treatment programs in Europe. *Journal of Experimental Criminology, 9,* 19-43.

Kosson, D. S., Vitacco, M. J., Swogger, M. T., & Steuerwald, B. L. (2016). Emotional experiences of the psychopath. In C. B. Gacono (Ed.), *Personality and clinical psychology series. The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 73-95). New York, NY, US: Routledge/Taylor & Francis Group.

Kumsta, R. (2019). The role of epigenetics for understanding mental health difficulties and its implications for psychotherapy research. Psychology and Psychotherapy: Theory, Research and Practice, 92, 190–207.

Leaviss, J., & Uttley, L. (2015). Psychotherapeutic benefits of compassion-focused therapy: An early systematic review. *Psychological Medicine, 45,* 927-945.

Leistico, A. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis related the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior, 32,* 28-45.

Maaseen, G. (2001). The unreliable change of reliable change indices. *Behaviour Research and Therapy, 39,* 495–498.

MacKenzie, D. L., & Farrington, D. P. (2015). Preventing future offending of delinquents and offenders: What we have learned from experiments and meta-analyses? *Journal of Experimental Criminology, 11,* 565-595.

Manders, W. A., Deković, M., Asscher, J. J., van der Laan, P. H., & Prins, P. J. (2013). Psychopathy as predictor and moderator of multisystemic therapy outcomes among adolescents treated for antisocial behavior. *Journal of Abnormal Child Psychology, 41,* 1121–1132.

Nathanson, D.L. (1992). *Shame and pride: Affect, sex, and the bird of the self*. New York: Norton.

Pechorro, P., Andershed, H., Ray, J. V., Maroco, J., & Gonçalves, R. A. (2015). Validation of the Youth Psychopathic Traits Inventory and Youth Psychopathic Traits Inventory – Short Version Among Incarcerated Juvenile Delinquents. *Journal of Psychopathology and Behavioral Assessment, 37,* 576-586.

Pechorro, P., Ribeiro Da Silva, D., Andershed, H., Rijo, D., & Gonçalves, R. A. (2017). Psychometric properties and measurement invariance of the youth psychopathic traits inventory - Short version among portuguese youth. *Journal of Psychopathology and Behavioral Assessment, 39,* 486–497.

Perepletchikova, F. (2011). On the topic of treatment integrity. *Clinical Psychology: Science and Practice, 18,* 148-153.

Polaschek, D. L., & Skeem, J. L. (2018). Treatment of adults and juveniles with psychopathy. In C. Patrick (Ed.), *Handbook of Psychopathy* (pp. 710-731). New York: The Guilford Press.

Ribeiro da Silva, D., Castilho, P., Miguel, R., Paulo, M., Gilbert, P., & Rijo, D., (2017). The *PSYCHOPATHY.COMP program: An individual Compassion-based psychotherapeutic intervention for young offenders with psychopathic traits.* Unpublished intervention manual.

Ribeiro da Silva, D., Rijo, D., Castilho, P., & Gilbert, P. (2019a). The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee. *Clinical Case Studies*. Doi:10.1177/1534650119849491

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2012). Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories. *Journal of Criminal Justice, 40,* 269-277.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2013). Child and adolescent psychopathy: Assessment issues and treatment needs. *Aggression and Violent Behavior, 18,* 71-78.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2015). The evolutionary roots of psychopathy. *Aggression and Violent Behavior, 21,* 85-96.

Ribeiro da Silva, D., Salekin, R. T., & Rijo, D. (2019b). Psychopathic severity profiles: A Latent Profile Analysis in youth samples with implications for the diagnosis of Conduct Disorder. *Journal of Criminal Justice, 60, 74-83.*

Ribeiro da Silva, D., Vagos, P., & Rijo, D. (2019c). An evolutionary model to conceptualize psychopathic traits across community and forensic male youth. *International Journal of Offender Therapy and Comparative criminology, 63*, 574-596.

Rijo, D., Brazão, N., Barroso, R., Ribeiro da Silva, D., Vagos, P., Vieira, A., Lavado, A., & Macedo, A. M (2016). Mental health problems in male young offenders in custodial versus community based-programs: Implications for juvenile justice interventions. *Child and Adolescence Psychiatry and Mental Health, 10,* 40, 52.

Rijo, D., Sousa, M. N., Lopes, J., Pereira, J., Vasconcelos, J., Mendonça, M. C., … Massa, S. (2007). *Gerar Percursos Sociais: Programa de prevenção e reabilitação para jovens com comportamento social desviante* [Growing Pro-Social: Prevention and rehabilitation program for youths with deviant social behavior]. Ponta Delgada: EQUAL.

Salekin, R. T. (2002). Psychopathy and therapeutic pessimism: Clinical lore or clinical reality? *Clinical Psychology Review, 22,* 79-112.

Salekin, R. T. (2017). Research review: What do we know about psychopathic traits in children. *Journal of Child Psychology and Psychiatry, 58*, 1180–1200.

Salekin, R. T., Tippey, J. G., & Allen, A. D. (2012). Treatment of conduct problem youth with interpersonal callous traits using mental models: Measurement of risk and change. *Behavioral Sciences & the Law, 30,* 470–486.

Sheehan, D. V., Sheehan, K. H., Shytle, R. D., Janavsm J., Bannon, Y., Rogersm J. E.,… Wilkinsonm B. (2010). Reliability and validity of the Mini International Neuropsychiatric Interview for Children and Adolescents. *Journal of Clinical Psychiatry, 71,* 313–326.

Sheskin, M., Chevallier, C., Lambert, S., & Baumard, N. (2014). Life-history theory explains childhood moral development. *Trends in Cognitive Sciences*, 18, 613-615.

Steindl, S. R., Kirby, J. N., & Tellegan, C. (2018). Motivational interviewing in compassion-based interventions: Theory and practical applications. *Clinical Psychologist, 22,* 265-279.

Tabachnick, B. & Fidell, L. (2013). *Using multivariate statistics.* Boston: Pearson.

Vagos, P., Ribeiro da Silva, D., Brazão, N., & Rijo, D. (2018). The Centrality of Events Scale in Portuguese adolescents: Validity evidence based on internal structure and on relations to other variables. *Assessment*, *25*, 527-538.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Elison, J. (2019). Psychometric properties of the Compass of Shame Scale: Testing for measurement invariance across community and forensic adolescent samples. *Child Youth Care Forum, 48*, 93-110.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2016). Dimensionality and measurement invariance of the Other as Shamer Scale across diverse adolescent samples. *Personality and Individual Differences*, *98*, 289-296.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2017). The Early Memories of Warmth and Safeness Scale for adolescents: Cross-Sample Validation of the Complete and Brief Versions. *Clinical Psychology & Psychotherapy*, *24*, 793-804.

Van Baardewijk, Y., Andershed, H., Stegge, H., Nilsson, K., Scholte, E., & Vermeiren, R. (2010). Development and tests of short versions of the Youth Psychopathic Traits Inventory and the Youth Psychopathic Traits Inventory-Child Version. *European Journal of Psychological Assessment, 26,* 122–128.

Wilkinson, S., Waller, R, & Viding, E. (2015). Practitioner Review: Involving young people with callous unemotional traits in treatment – does it work? A systematic review. *Journal of Child Psychology and Psychiatry, 5*, 552-565

Wise, E. A. (2004). Methods for analyzing psychotherapy outcomes: A review of clinical significance, reliable change, and recommendations for future directions. *Journal of Personality Assessment, 82,* 50–59.

PART IV

GENERAL DISCUSSION

CHAPTER 6 |

General discussion of the main findings

Almost 30 years after the first study reporting on psychopathic traits in children and youth (Forth et al., 1990), it is worth to mention that this research field vastly increased. This growing interest by researchers was mostly due to the relevance of the construct for risk assessment, risk prediction, and risk management in forensic settings (Colins & Andershed, 2018; Colins et al., 2018; Jambroes et al., 2016; McCuish et al., 2015; Salekin et al., 2018). Specifically, considering that the combination of a CD diagnosis with high levels of psychopathic traits is linked to a more persistent and severe pattern of antisocial behavior than when CD is not associated with high levels of psychopathic traits (Edens et al., 2007; Gretton et al., 2004; Herpers et al., 2012; Leistico et al., 2008), researchers found crucial to invest in the study of psychopathic traits in youthful populations. Nevertheless, the scientific literature on this topic still presents several gaps, namely issues related to the conceptualization of psychopathic traits in children and youth, to the study of its etiological pathways and to its treatment.

Several studies contributed to the conceptualization of psychopathic traits in children and youth. However, researchers have yet to come to a clear agreement concerning the boundaries of the construct within this age range, which may hinder its definition and, consequently, the study, assessment, and treatment of these individuals (Hecht et al., 2018; Johnstone & Cooke, 2004; Ribeiro da Silva et al., 2012, 2013; Salekin, 2016, 2017; Salekin et al., 2018). There is still under debate whether considering a dimensional and multifaceted model of psychopathy (i.e., combining GM, CU, and II traits) is more beneficial and accurate when diagnosing and specifying CD than considering CU traits only (Baskin-Sommers et al., 2015; Colins & Andershed 2015; Frick et al., 2013; Kumsta et al., 2012; Salekin, 2016, 2017; Salekin et al., 2018; Viding & McCrory, 2012; Waldman et al., 2018).

Concerning the etiology of psychopathic traits, research also clearly advanced in this topic during the last decades. It is almost consensual that like other psychiatric conditions, psychopathic traits are probably a multicausal phenomenon (Glenn, 2019; Murray et al., 2018; Ribeiro da Silva et al., 2012; Viding & McCrory, 2018; Waldman et al., 2018). Nevertheless, contrary to other mental health problems, evolutionary influences were not broadly examined in the study of psychopathic traits, which is reflected in the shortage of research on this topic (see Ferguson, 2010; Gilbert, 2005; Glenn, 2019; Glenn et al., 2011 for a review). Increasing research on the evolutionary roots of psychopathic traits seems therefore of utmost importance to clarify possible etiological pathways.

Finally, it is noteworthy that although there is still under debate whether psychopathic traits are treatable or not, treatment outcome research on this topic is still scarce and limited (Frick et al., 2013; Hawes et al., 2014; Ribeiro da Silva et al., 2013; Wilkinson et al., 2015). This issue is even more problematic in young offenders' samples, which present a high risk to reoffend and to face prison sentences in adulthood (Edens et al., 2007; Gretton et al., 2004). That is, few experimental or quasi-experimental studies tested the efficacy of treatment programs in reducing psychopathic traits among young offenders and several methodological flaws are transversal to these studies (Butler et al., 2011; Caldwell 2011;

Caldwell et al., 2006; Manders et al., 2013). More importantly, any of these studies used an intervention program specifically designed to target psychopathic traits. New CBT approaches have been developed in recent years, showing growing empirical support in the treatment of several psychopathological symptoms and disorders, some of them previously considered difficult to treat (e.g., Feliu-Soler et al., 2018). CFT, an evolution-based therapy, seems to be particularly promising to treat young offenders (Ribeiro da Silva et al., 2013). However, until now, no study has tested the efficacy of a CFT-based intervention in reducing antisocial/disruptive behavior and psychopathic traits among young offenders.

In an attempt to surpass some of these shortcomings, this thesis followed a strategy aimed to answer a major research question, embodied in its title – "Mask of sanity or mask of invulnerability? From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention". This major research question was then divided into three specific and sequential research questions that gave rise to the three chapters included in **Part III** (Empirical studies) of this thesis:

(1) What is the best way to conceptualize psychopathic traits in children and youth? – **Chapter 3** - Contribution to the conceptualization of psychopathic traits in children and youth;

(2) Can psychopathic traits be seen as an adaptive strategy towards certain life circumstances? – **Chapter 4** - The evolutionary roots of psychopathic traits in children and youth; and

(3) Can specific and tailored intervention efforts change psychopathic traits? – **Chapter 5** - The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits

Considering that the findings of each study were individually discussed in each empirical study, in this chapter we will present a synthesis and a general discussion of the main findings of this thesis and how they can contribute to the research field of psychopathic traits in children and youth. In detail, this chapter will explore how this thesis may contribute: (1) to the conceptualization of psychopathic traits in children and youth; (2) to the study of the evolutionary roots of psychopathic traits, particularly from a CFT framework, and (3) to the treatment of psychopathic traits among young offenders using a new individual CFT-based intervention, the PSYCHOPATHY.COMP program. This chapter will also discuss the main strengths and limitations of the studies included in this thesis and how future research may address those same limitations. Finally, we will highlight the clinical and forensic implications of this thesis for the assessment and treatment of young offenders, for the management of the juvenile justice system and for prevention efforts.

1. Synthesis and general discussion of the main findings

1.1. Contribution to the conceptualization of psychopathic traits in children and youth

In an attempt to reduce the heterogeneity of the CD diagnosis and in order to help to identify a severe subgroup of CD youth, the DSM-5 *(*APA, 2013) recently included CU traits as a specifier for CD (i.e., the "Limited Prosocial Emotions" specifier). This specifier describes those youth who meet diagnostic criteria for a CD, but also present at least two of four CU traits; i.e., lack of remorse or guilt; callous-lack of empathy; unconcern about performance; and shallow or deficient affect. The inclusion of this specifier for CD was based on a considerable amount of research indicating that CU traits were related to the earliest, most severe, and persistent forms of antisocial behavior, which, in turn, would predict long-term impairments at different levels of functioning (Baskin-Sommers et al., 2015; Frick et al., 2013; Viding & McCrory, 2012, 2018). However, several studies also suggested that the combination of CD with high levels of all psychopathic traits better predicted behavioral problems and criminal recidivism than any single psychopathic trait by itself (Colins & Andershed, 2015; Collins et al., 2018; Leistico et al., 2008; Salekin, 2017; Somma et al., 2018). In other words, significant evidence suggested that considering a multifaceted model of psychopathy (Cooke & Michie, 2001; Hare, 2003; Salekin & Hare, 2016), combining CU, GM and II traits, could be more beneficial when diagnosing and specifying CD than CU traits only (Salekin, 2016, 2017; Salekin et al., 2018a, 2018b). Taking into account these conflicting findings in the literature as well as the scarcity of studies using robust person-centered methods (which are closest to what happens in real clinical practice), there was a clear need to build on previous research to ascertain how psychopathic traits function and vary within youth and how different psychopathic profiles were associated with other mental health, criminal and behavioral variables. In short, considering the multitude of possible combinations of criteria that a youth may meet to receive a CD diagnosis (APA, 2013; Frick, 2001; Klahr & Burt, 2014), there was a need for person-centered studies to support and guide translational science, ascertaining for the clinical usefulness of subtyping CD according to the presence/absence of psychopathic traits *vs*. CU traits only (Salekin, 2016).

The study presented on **Chapter 3** (**Study I** - Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder) aimed therefore to contribute to the conceptualization of psychopathic traits in youth by exploring the benefits of including GM, CU, and II traits as CD specifiers. To attain this goal, a LPA (a robust person-centered method) was used to identify groups of forensic male youth based on their levels of psychopathic traits (combining GM, CU, and II and using GM, CU, and II traits separately) and to test if these findings would replicate in a male youth community sample. Additionally, this study sought to examine and compare the psychopathic profiles of the forensic sample on key outcome variables including: CD diagnosis, comorbidity, recidivism risk, and aggression.

The findings of this study suggested that a latent profile solution combining GM, CU, and II traits better characterizes both the forensic sample and the community sample than profiles resulting from GM, CU or II traits separately. These profiles encompassed three psychopathic severity profiles in both samples: a low Psychopathic Profile (LPP; low scores in all psychopathic traits), an Average Psychopathic Profile (APP; average scores in all psychopathic traits), and a High Psychopathic Profile (HPP; high scores in all psychopathic traits). As expected, the community sample profiles had lower scores in GM, CU, and II factors when compared to the similar profiles of the forensic sample. These results offered support to the notion that psychopathic traits tend to hang together and to be continuously distributed throughout the population, differing in degree rather than kind (Andershed et al., 2002; Edens et al., 2006; Frick et al., 2000; Kosson et al., 2013; Murrie et al., 2007; Neumann et al., 2012; Neumann & Hare, 2008). When comparing the different psychopathic profiles of the forensic sample on critical outcome variables, results showed that the profiles combining GM, CU, and II traits better predicted CD, comorbidity rates, recidivism risk, and aggression than profiles resulting from any psychopathic trait alone. Looking at the psychopathic severity profiles of the forensic sample, the HPP had the highest risk of a CD diagnosis, comorbidity, recidivism risk, and aggression, whereas the LPP was the one with the lowest risks concerning the same variables. These findings restated the importance of assessing psychopathic traits in youth with conduct problems, as the presence of this set of traits seems to increase the odds of mental health problems and criminal outcomes in these youth (Asscher et al., 2011; Colins et al., 2018; Colins & Andershed, 2015; Lansing et al., 2018; Leistico et al., 2008; Lorber, 2004; Salekin, 2016, 2017; Sevecke & Kosson, 2010; Somma et al., 2018).

Overall, findings from this study suggested that both for research purposes and clinical practice, a multifaceted model of psychopathy may be more informative and advantageous to specify CD than a model considering CU traits only (Colins & Andershed, 2015; Collins et al., 2018; Kosson et al., 2013; Lahey, 2014; Salekin, 2016, 2017; Somma et al., 2018). Firstly, it seems that including the multifaceted model of psychopathy to delimitate a specifier for CD may, more accurately, help to reduce the heterogeneity of this diagnosis, identifying a more severe antisocial subgroup of youth with CD (Colins et al., 2018; Salekin, 2016, 2017; Salekin, Andershed, & Clark, 2018). Secondly, learning more about the interface between CD diagnoses and GM, CU, and II traits may help to enhance our understanding of youth with CD, including the mechanisms that may underlie each trait and/or hamper the therapeutic process (Patrick, 2018; Ribeiro da Silva et al., 2013; Salekin, 2016, 2017; Salekin et al., 2018). Finally, this multifaceted model of psychopathy may allow clinicians to be more attentive in the assessment of psychopathic traits in individuals with conduct problems, which may be crucial to improve case conceptualization and to decide about the nature, intensity and length of psychotherapeutic interventions delivered to youth in forensic settings (Colins et al., 2018; Jambroes et al., 2016; Lahey, 2014; Ribeiro da Silva et al., 2013; Salekin, 2016, 2017; Salekin et al., 2018).

In sum, the study on **Chapter 3** (**Study I** - Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder) contributed to the conceptualization of psychopathic traits in children and youth and, consequently, to reinforce the need to continue to study the multifaceted model of psychopathy in youthful populations. Answering to the specific research question underlying this study - What is the best way to conceptualize psychopathic traits in children and youth? – it seems that the conceptualization of psychopathic traits in children and youth should encompass a multifaceted model of psychopathy, combining CU, GM and II traits (Cooke & Michie, 2001; Hare, 2003; Salekin & Hare, 2016).

1.2. The evolutionary roots of psychopathic traits in children and youth

As for other psychopathological disorders, it is almost consensual that the etiology and development of psychopathic traits are determined by a complex interplay between evolutionary, genetic, neural, temperamental, and environmental factors (Glenn, 2019; Murray et al., 2018; Viding & McCrory, 2018; Waldman et al., 2018). However, contrary to other psychopathological disorders, evolutionary influences were not broadly examined in the study of psychopathic traits, which is reflected in the shortage of comprehensive reviews on this topic and on the scarcity of studies using evolutionary arguments to discuss their research findings (see Ferguson, 2010; Gilbert, 2005; Glenn, 2019; Glenn et al., 2011 for a review). More importantly, because evolutionary mechanisms have been gaining a growing relevance and empirical support in the new CBT approaches, particularly in CFT (an evolutionary-based therapeutic approach that seems suitable for the treatment of individuals with psychopathic traits), it seems crucial to invest in this field (Feliu-Soler et al., 2018; Gilbert, 2010; Hayes, 2004; Kahl et al., 2012; Ribeiro da Silva et al., 2013).

To overcome these gaps in the literature, studies on **Chapter 4** (The evolutionary roots of psychopathic traits in children and youth) aimed to strengthen evolutionary theory and research when applied to the scientific literature on psychopathic traits, presenting and testing theoretical and empirical processes underlying the development and maintenance of of psychopathic traits from an evolutionary framework.

Considering the reviewed literature in **Study II** (The evolutionary roots of psychopathy), it was clear that psychopathic traits may be more predominant in specific rearing backgrounds due to a fitness-advantage of those traits (and associated genes) in such environments (Del Giudice et al., 2011, 2013; Ellis et al., 2013; Ferguson, 2010; Glenn et al., 2011; Salekin et al., 2005). According to the evolution-based framework of CFT, all humans have universal and instinctive reactions to threats (i.e., the “reptilian brain”), which are crucial to surviving and thriving (MacLean, 1985). Most problems emerge when the reptilian brain conflicts with affiliative motivations (i.e., the “mammalian brain”) and with the unique cognitive skills of the human cerebral cortex (MacLean, 1985). To regulate emotional states, which combine a diversity of emotional patterns, humans may recourse to three emotion regulation systems: the threat system, the drive system, and the soothing system (Gilbert,

2015). According to this theoretical framework, mental health problems emerge when there is an unbalance of these emotion regulation systems, particularly when the threat activation commands the individual's functioning. Central to the activation of the threat system there is shame and shame regulation problems, which seem to have a key role in several mental health problems, both internalizing and externalizing (Elison et al., 2006; Gilbert, 2015, 2019; Nathanson, 1992; Vagos et al., 2019). Individuals tending to internalize the shame experience (e.g., "I am inferior and valueless") usually develop internalizing psychopathology, while individuals tending to externalize the shame experience (e.g., "Others are trying to humiliate me") commonly develop externalizing psychopathology (Elison et al., 2006; Nathanson, 1992; Vagos et al., 2019).

Although psychopathic traits have been historically associated with a lack of emotional experience (Cleckley, 1944/1981; Hare, 2003), some authors argued that individuals with psychopathic traits may not have a lack of emotional experience but a tendency to deny/avoid and/or externalize the experience of unpleasant emotions, including shame (Baumeister et al., 1996; Blackburn, 1971, 1993; Campbell & Elison, 2005; Heinze, 2017; Holmqvist, 2008; McWilliams, 1994/2011; Meloy, 1988; Millon & Davis, 1998; Morrison & Gilbert, 2001; Nathanson, 1992; Nyström & Mikkelsen, 2012; Schriber et al., 2017; Spice et al., 2015; Velotti et al., 2016). According to evolutionary theory in general and to CFT in particular, antisocial behavior patterns and psychopathic traits can be seen as evolutionary rooted responses to deal with harsh rearing scenarios; i.e., an adaptive strategy to survive and thrive in rearing environments marked by traumatic experiences (e.g., unpredictability, threat, child abuse) and/or by the absence of affiliative signals (Del Giudice, 2016; Del Giudice & Ellis, 2015; Ferguson, 2010; Glenn et al., 2011; Jonason et al., 2016; Mealey, 1995). In specific, if the human brain is evolutionarily designed to survive and thrive in adverse environments, when individuals are raised in harsh rearing scenarios their brains also become calibrated for such environments. Therefore, these individuals seem to present an important unbalance of their emotion regulation systems (i.e., an overdeveloped threat system, an unstable drive system, and an underdeveloped soothing system), which is mirrored by the central emotional dysfunctions displayed by individuals with psychopathic traits (e.g., Garofalo et al., 2018; Kosson et al., 2016). These emotional dysfunctions seem to include, among others, high levels of shame and shame regulation problems; i.e., shame seems to be massively externalized by compensation (GM traits), avoidance (CU traits) and/or attack mechanisms (II traits) (Del Giudice & Ellis, 2015; Shirtcliff et al., 2009). Although these coping strategies can protect the individual with psychopathic traits from the experience of negative emotions, on the dark side, these set of strategies can contribute to the eventual development, maintenance, and intensification of psychopathic traits.

Despite the links made in the comprehensive review presented in **Study II** (The evolutionary roots of psychopathy), there was a need to empirically explore how different rearing experiences could be associated with psychopathic traits and whether shame and shame regulation problems could have a role in that association. Therefore, **Study III**

(Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) and **Study IV** (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth) aimed to explore, in different samples of youth, an evolutionary-based model testing the associations between the impact of rearing experiences (traumatic shameful experiences and warmth and safeness experiences) on psychopathic traits (GM, CU, and II) and the indirect effects of shame and shame coping strategies in that association. Considering that these links may vary within different samples of youth, these studies also tested the invariance of this model across samples (i.e., community male youth *vs.* community female youth and forensic male youth *vs.* community male youth).

Results of these studies suggested that the subjective perception of not feeling safe and not being cared for during childhood (lack of early memories of warmth and safeness) as well as the impact of shameful/traumatic experiences during childhood may contribute to the endorsement of psychopathic traits. Therefore, not only harsh rearing experiences (e.g., Auty et al., 2015; Gao et al., 2010; Sevecke et al., 2016; Waller et al., 2014) but also the impact of those experiences, seem to be important predictors of psychopathic traits (Henry et al., 2018; Waller et al., 2016). Addressing these data from an evolutionary perspective, it seems that when children and youth perceive their rearing environment as harsh and uncaring, filtering those inputs by becoming cold, detached, and callous (CU traits) and by adopting dominant/aggressive and risk-taking behaviors (GM and II traits), may be seen a protective and adaptive strategy to survive and thrive in such rearing environments (Del Giudice, 2016).

Considering the indirect effects, results of these studies indicated that external shame was: negatively associated with early memories of warmth and safeness and positively linked to the impact of traumatic/shameful experiences (Bennett et al., 2005; Berntsen & Rubin 2006; Gross 2014; Gross & Hansen 2000; Kim et al., 2009); positively associated with all maladaptive shame coping strategies (Elison et al., 2006; Gilbert 2010; Nathanson, 1992); and positively and directly associated with CU and II traits (see Ribeiro da Silva et al., 2015, for a review). Concerning the role of shame coping strategies, results of these studies were in line with previous research showing that shame is possibly externalized in individuals with psychopathic traits; i.e., Attack Other and Avoidance were positively associated with psychopathic traits, whereas Attack Self and Withdrawal were negatively associated with psychopathic traits (Campbell & Elison, 2005; Nystrom & Mikkelsen, 2012; Velotti et al., 2016). In sum, the findings of these studies pointed out that shame possibly plays a central role in psychopathy, although this emotion seems to be regulated mostly by externalizing strategies in individuals with psychopathic traits (Campbell & Elison, 2005; Nathanson, 1992; Nystrom & Mikkelsen, 2012; Velotti et al., 2016). Although some theoretical and empirical works have pointed to a lack of shame in psychopathy (Cleckely, 1941/1988; Hare, 2003; Mullins-Nelson et al., 2006), the findings of these studies are in agreement with recent research, suggesting positive associations between shame and psychopathic traits (Campbell & Elison 2005; Holmqvist, 2008; Morrison & Gilbert 2001; Nyström & Mikkelsen 2012; Spice et

al., 2015; Velotti et al., 2016). These findings are also in the agreement with the hypothesis that individuals with psychopathic traits may tend to use shame coping strategies that massively externalize this emotion, which may then help to reinforce those same traits (Campbell & Elison, 2005; Nystrom & Mikkelsen, 2012; Velotti et al., 2016). These findings strengthened the argument that individuals with psychopathic traits possibly do feel shame and other unpleasant emotions, although also presenting with dysfunctions in acknowledging, expressing, and managing them (e.g., Garofalo & Neumann, 2018; Garofalo et al., 2018; Hare & Neumann, 2008; Kosson et al., 2016). From an evolutionary framework, externalizing shame coping strategies can be seen as an adaptive pathway for individuals living in harsh rearing scenarios. In detail, externalizing shame coping strategies can be seen as an effort of individuals to shelter the self from shame (and other unbearable emotions that these kinds of environments continuously input about oneself) and from submission; both highly avoided by individuals with psychopathic traits, who fight back to rapidly recover their sense of power and dominance (Campbell & Elison 2005; Del Giudice, 2016; Kivisto et al., 2011; Morrison & Gilbert 2001). Furthermore, these efforts seem also to be attuned to higher levels of callousness, coldness, and emotional overcontrol (i.e., CU traits); a self-image of dominance, superiority, grandiosity, and manipulation (i.e., GM traits); and increased levels of risk-taking, impulsivity, and aggressive behaviors (i.e., II traits).

Regarding differences between samples, although configural invariance of the tested model was assumed in both studies, findings indicated differences in some of the means scores and pathways. Most notably, forensic male youth, when compared with community youth (male and female), presented higher scores on the impact of harsh rearing experiences, external shame, maladaptive shame coping strategies, and psychopathic traits (Pechorro et al., 2017; Vagos et al., 2016, 2017, 2018, 2019; Weidacker et al., 2017).

It seems also important to highlight that the variance explained by the evolutionary-based model was somehow limited, restating that other biological and environmental etiological factors still need be explored, not ignoring the insights from evolutionary theory (Glenn, 2019; Murray et al., 2018; Viding & Larson, 2010; Viding & McCrory, 2018; Waldman et al., 2018).

Overall, the findings from these studies may help to give ground to evolutionary theory, specifically to the idea that psychopathic traits can be seen as an adaptive strategy to survive and thrive in harsh rearing scenarios (Del Giudice 2016; Del Giudice & Ellis, 2015; Ferguson, 2010; Glenn et al., 2011; Jonason et al., 2016; Mealey, 1995). The findings also highlighted that at least some individuals with psychopathic traits may not have a lack of emotional experience, but rather central emotional dysfunctions behind their apparent sanity, including a tendency to externalize unpleasant emotions, denying/avoiding them and/or attacking the source of the threat (Baumeister et al., 1996; Campbell & Elison, 2005; Elison et al., 2006; Garofalo et al., 2018; Hare & Neumann, 2008; Heinze, 2017; Kosson et al., 2016; Millon & Davis, 1998; Nyström & Mikkelsen, 2012; Ribeiro da Silva et al. 2012). These findings, coupled with previous research, may have important research and clinical implications, highlighting

the need: (1) to continue to study the evolutionary roots of psychopathic traits; (2) to invest in the study of emotional dysfunctions behind psychopathic traits; (3) to invest in the mental health assessment of youth from forensic settings; and (4) to develop intervention programs specifically focused on the treatment needs of children and youth with psychopathic traits, which probably should address shame and shame regulation into their designs.

Answering to the specific research question - Can psychopathic traits be seen as an adaptive strategy toward certain life circumstances? - it seems that, for at least some individuals, psychopathic traits may be seen as an adaptive strategy to survive ad thrive in harsh rearing environments (Del Giudice 2016; Del Giudice & Ellis, 2015; Ferguson, 2010; Glenn et al., 2011; Jonason et al., 2016; Mealey, 1995). Studies on **Chapter 4** (The evolutionary roots of psychopathic traits in children and youth) were therefore crucial to understand the theoretical and empirical sound processes underlying the development and maintenance of psychopathic traits from an evolutionary framework, the basis of a CFT-based intervention.

1.3. The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits

Several authors argued that forensic youth should be considered an at-risk population, especially when they have a CD diagnosis and high levels of psychopathic traits (Edens et al., 2007; Frick et al., 2013; Gretton et al., 2004; Hawes et al., 2014; Ribeiro da Silva et al., 2013; Wilkinson et al., 2015). These data, *per se*, reinforce the need to assess psychopathic traits in youth with conduct problems and, mostly, the urgency to develop and test the efficacy of intervention programs specifically tailored to target antisocial/disruptive behavior and psychopathic traits in youth from forensic settings.

A considerable number of systematic reviews and meta-analytic studies demonstrated that criminal recidivism rates and other behavioral, emotional and cognitive correlates of antisocial behavior were reduced after the delivery of behavioral and cognitive-behavioral group interventions to detained youth (e.g., Andrews & Bonta, 2010; Koehler, Lösel, Akoensi, & Humphreys, 2013; MacKenzie & Farrington, 2015). However, although a considerable amount of literature has focused the description, etiology, and assessment of psychopathic traits, little research has addressed the treatment of psychopathic traits in young offender samples (Hecht et al., 2018; Ribeiro da Silva et al., 2013; Salekin, 2002). Only 13 studies tested the efficacy of psychotherapeutic interventions in reducing psychopathic traits among these youth and several methodological flaws are transversal to these studies (Butler et al., 2011; Caldwell 2011; Caldwell et al., 2006, 2007, 2012; Falkenbach et al., 2003; Gretton et al., 2001; Manders et al., 2013; O'Neill et al., 2003; Rogers et al., 2004; Salekin et al., 2012; Spain et al., 2004; White et al., 2013). In specific, just four of these studies had a control group to ascertain that treatment effects were a product of the interventions (Butler et al., 2011; Caldwell 2011; Caldwell et al., 2006; Manders et al., 2013). Analyzing these four studies, they also presented important limitations. Two of these studies included a mixed

sample of male and female young offenders from clinical and forensic settings (Butler et al., 2011, Manders et al., 2013), which may bias results, as different types of participants usually present different treatment needs (Hecht et al., 2018). Treatment description was lacking in two studies (Caldwell, 2011; Caldwell et al., 2006) and treatment integrity was not controlled in three on them (Caldwell, 2011; Caldwell et al., 2006; Manders et al., 2013), both essential requirements for dissemination of evidence-based practices (David & Montgomery, 2011; Perepletchikova, 2011). Moreover, in one study, the measures of psychopathic traits had not been previously validated (Manders et al., 2013), which may account for reliability issues.

As psychopathic traits are associated with distinctive biological, emotional, cognitive, and social dysfunctions, requiring therefore a tailored intervention (Hecht et al., 2018; Polaschek & Skeem, 2018), it is also noteworthy that none of the four aforementioned studies used an intervention program specifically designed to target psychopathic traits. Besides, no clinical case studies reported the treatment of young offenders with psychopathic traits. Clinical case studies are considered an important and unique clinical tool, as they usually detail the treatment process (Nissen & Wynn, 2014). Additionally, no study tested the efficacy of an individual intervention program in reducing psychopathic traits and disruptive/antisocial behavior among young offenders. Individual interventions can offer an in deep treatment alternative that can be easily tailored for the specific mental health needs of detained youth and may facilitate therapeutic engagement and the establishment of a strong therapeutic alliance; both considered critical issues in the treatment of individuals with psychopathic traits (Salekin, 2002; Wilkinson et al., 2015). Finally, no clinical trials have been published testing the efficacy of new forms of CBT in reducing psychopathic traits and disruptive/antisocial behavior in detained youth. Within these approaches, CFT seems to be particularly promising (Ribeiro da Silva et al., 2013). Nonetheless, more robust theoretical and empirical foundations as well as a matched therapeutic package needed be developed in order to test the efficacy of this approach in providing an appropriate treatment for young offenders with psychopathic traits. In sum, there was a need for further trials testing the efficacy of individual CFT-based programs specifically tailored for the mental health needs of young offenders with psychopathic traits through both clinical case studies and controlled trials designs.

Studies on **Chapter 3** (Contribution to the conceptualization of psychopathic traits in children and youth) and **Chapter 4** (The evolutionary roots of psychopathic traits in children and youth) were therefore crucial to clarify the conceptualization of psychopathic traits in children and youth and to better understand the evolutionary roots of psychopathic traits, the basis of a CFT intervention. These insights, coupled with the existing literature on psychopathic traits and the expertise of the research team of the R&D project (Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention - PTDC/MHC-PCL/2189/2014), in which this doctoral research project was nested, made it possible to develop an individual CFT-based intervention that was specifically tailored to reduce psychopathic traits and disruptive/antisocial behavior in

young offenders - The PYCHOPATHY.COMP program (see **Chapter 5** for a detailed description of this program). To the best of our knowledge, the PSYCHOPATHY.COMP program was among the first psychotherapeutic programs specifically designed to target psychopathic traits and disruptive/antisocial behavior in detained youth and it is also the first program to use an individual CFT approach tailored to the intervention needs of this at-risk population. However, there was a clear need to test the efficacy of this program, preferably through both clinical case studies and controlled trial designs. Hence, **Study V** (The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee) aimed to test the efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits and disruptive behavior in a 16-year-old boy detained in a maximum-security juvenile detention facility, who presented a very high risk for criminal recidivism, CD, and a high psychopathic profile. In turn, using a controlled trial design, **Study VI** (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth) aimed to test the preliminary efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits among detained youth.

The findings of these studies suggested that the PSYCHOPATHY.COMP was effective in reducing psychopathic traits in detained youth, both considering the total score of the YPI-S, as well as GM, CU, and II traits separately. The outcomes of these studies also indicated that this program may be a useful therapeutic intervention protocol to solve therapeutic engagement issues in detained youth with psychopathic traits. Additionally, the clinical case study presented in **Study V** (The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee) also indicated that this program was effective in reducing disruptive behaviors in a juvenile detainee with a very high risk for criminal recidivism, CD, and a high psychopathic profile.

The strategy of change of the PSYCHOPATHY.COMP program seemed therefore attuned to the intervention needs of detained youth with CD and psychopathic traits. If we take into account the findings of this thesis and recent research conceptualizing psychopathic traits as an adaptive response that masks central emotional dysfunctions and a shameful nucleus (Garofalo et al., 2018; Kosson et al., 2016), building a compassionate motivation in these individuals seems not only attuned to their intervention needs, but also an effective alternative to change those traits and associated risks. Therefore, the PSYCHOPATHY.COMP program may have offered these youth a safe and warmth environment that allowed them to (1) process their own unpleasant memories and emotions in a compassionate way (2) build the courage, strength, and wisdom, to start to become more self-aware, in control, and responsible for their emotional states, gradually dropping out their mask of invulnerability; and (3) find and test compassionate alternative strategies to tolerate and cope in healthy ways with their own suffering and/or the suffering of others.

Findings of these studies also suggested that psychopathic traits may not be effectively addressed by the TAU delivered at Portuguese juvenile detention facilities. Considering the outcomes from **Study VI** (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth), it is noteworthy that participants from the control group showed considerably high clinical deterioration rates or no change in all psychopathic traits. These results were especially problematic when looking at the combination of all psychopathic traits, which are regarded in the literature as particularly relevant for the display of antisocial behavior and high criminal recidivism rates (Edens et al., 2007; Gretton et al., 2004; Leistico et al., 2008; Ribeiro da Silva et al., 2019b).

Overall, findings of the studies on **Chapter 5** (The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits) offered preliminary evidence of the PSYCHOPATHY.COMP efficacy in reducing psychopathic traits and disruptive behavior among detained youth. The results of these studies also offered support for the PSYCHOPATHY.COMP program as a useful therapeutic intervention protocol to solve therapeutic engagement issues in detained youth with psychopathic traits (Hecht et al., 2018 and Polaschek & Skeem, 2018). The findings of these studies also indicated that the TAU may contribute to maintain or increase psychopathic traits in these youth, strengthening the idea that the absence of tailored interventions targeting psychopathic traits may account for an important deterioration in the levels of psychopathic traits in detained youth, which may increase the odds of these youth to display disruptive and antisocial behavior after release (Edens et al., 2007; Gretton et al., 2004; Hecht et al., 208; Leistico et al., 2008; Ribeiro da Silva et al., 2019b).

Answering to the specific research question - Can specific and tailored intervention efforts change psychopathic traits? – It appears that specific and tailored interventions can be a fundamental and effective strategy to change psychopathic traits and its associated risks. Studies on **Chapter 5** (The PSYCHOPATHY.COMP program and preliminary tests of its efficacy to treat young offenders with psychopathic traits) offered preliminary evidence of the PSYCHOPATHY.COMP's potential to reduce psychopathic traits and disruptive behavior and to promote therapeutic engagement in detained youth. Although additional research on the efficacy of the PSYCHOPATHY.COMP program is still needed, results of these studies suggested that this program may fit the intervention needs of this at-risk population, which may have implications for the rehabilitation policies of the juvenile justice system.

2. Strengths, limitations and recommendations for future research

As the strengths, limitations, and recommendations for future research of the studies included in this thesis were detailed in each individual study (see **Part III** – Empirical Studies), this section only outlines the main strengths and limitations of the current thesis and points out to directions for future inquiry.

2.1. Strengths

Following a sequential rationale and using robust methodological procedures, this thesis aimed to contribute both to the study and treatment of psychopathic traits in youthful populations. Considering the rationale behind this thesis, it is important to highlight that the studies were designed considering the gaps of previous research, following a strategy aimed to answer a major research question, embodied in the title of the current thesis (Mask of sanity or mask of invulnerability? From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention), which was then divided into three specific and sequential research questions: (1) What is the best way to conceptualize psychopathic traits in children and youth? (2) Can psychopathic traits be seen as an adaptive strategy toward certain life circumstances?, and (3) Can specific and tailored intervention efforts change psychopathic traits? This strategy allowed for a structured and coherent development and integration of the studies included in this thesis, which is fundamental to the progress of any research field.

Regarding methodological procedures (considering both the cross-sectional and the longitudinal empirical studies), it is important to underline that all procedures were in accordance with the ethical standards of the institutional and/or national research committees and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. It is also worth to mention that the studies carefully followed the mainstream guidelines for research (e.g., APA, 2010; Trend, 2004). Moreover, the majority of the studies included in this thesis used a validated clinical interview procedure to assess mental health problems in youth. It seems also important to highlight that all the empirical studies used a validated measure to assess psychopathic traits in different samples of youth, which, considering the available assessment tools of psychopathic traits in youthful populations, is the one that seems to present better psychometric proprieties. Besides, the psychometric properties of the majority of the self-report measures used in this thesis were thoroughly tested *a priori*, assuring for its validity, reliability, and invariance across different samples of youth (Pechorro et al., 2015, 2017; Vagos et al., 2016, 2017, 2018, 2019). Finally, the correctness of statistical procedures may also be considered a strength. The rigor of all the methodological procedures helped therefore to strengthen the quality and straightforwardness of this thesis.

When looking specifically at the cross-sectional studies and at the comprehensive review incorporated in this thesis, it seems also important to emphasize some of its methodological/statistical strengths. **Study I** (Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder) was among the first studies to use LPA to examine the broader set of psychopathic traits (GM, CU, and II) in youth samples. The comprehensive review presented at **Study II** (The evolutionary roots of psychopathy) was also an important contribution to research on the evolutionary roots of

psychopathy, and the first that gathered the insights of evolutionary theory and CFT into the conceptualization of psychopathic traits. In turn, **Study III** (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) and **Study IV** (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth) were the first studies to test the invariance of an evolutionary-based model across different samples of youth, which was hypothesized in accordance with an empirically supported theoretical framework (depicted in **Study II** – The evolutionary roots of psychopathy).

Most notably, one of the products of this thesis is a detailed psychotherapeutic manual, the PSYCHOPATHY.COMP program, which was developed in a close collaboration between the PhD student and the research team of the R&D project - Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention (PTDC/MHC-PCL/2189/2014). To the best of our knowledge, this is the first psychotherapeutic manual specifically designed to reduce psychopathic traits and disruptive/antisocial behavior in detained youth, and, consequently, the first individual CFT-based program tailored to the intervention needs of this at-risk population.

Finally, it seems crucial to mention some of the strengths of the longitudinal studies. **Study V** (The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee) was among the first clinical case studies reporting on the changeability of psychopathic traits and disruptive behavior in a detained youth with a high psychopathic profile after the delivery of an intervention program. In turn, **Study VI** (Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth) was: (1) the first study to use a controlled trial design to assess the changeability of psychopathic traits with a sample of male detained youth with CD; (2) among the first treatment studies with detained youth where treatment description was clearly detailed and where treatment integrity was controlled; (3) among the first studies to assess the changeability of psychopathic traits after an intervention with a validated measure of psychopathic traits; (4) the only clinical trial that assessed the changeability of psychopathic traits both considering the overall score as well as each set of traits separately; and (5) the first clinical trial to assess the changeability of psychopathic traits after an individual CFT-based intervention specifically designed to target psychopathic traits in detained youth. Moreover, the abovementioned longitudinal studies were the first using the RCI (Jacobson & Truax, 1991) to assess significant clinical change of psychopathic traits after the delivery of an intervention. It is also noteworthy that although only preliminary data are available, the longitudinal studies of this thesis pointed out that while the absence of tailored interventions to treat detained youth may increase the levels of psychopathic traits and its associated risks, the PSYCHOPATHY.COMP program may be an accurate and effective treatment approach to reduce psychopathic traits, disruptive behavior, and manage treatment engagement issues in these youth.

Finally, it seems important to emphasize that according to the evaluative framework for evidence-based psychotherapeutic interventions (David & Montgomery, 2011), this program can now be considered a scientifically oriented psychotherapy (Category IV - Investigational Psychotherapy; i.e., both the theory and the therapeutic package derived from that theory have preliminary data suggesting its efficacy) in the treatment of psychopathic traits and disruptive behavior among detained youth. Although additional research on the efficacy of the PSYCHOPATHY.COMP program is still needed to establish this program as an Evidence-Based Psychotherapy (Category I; David & Montgomery, 2011), the longitudinal studies of this thesis indicated that this program may be a useful clinical tool for the rehabilitation of young offenders with psychopathic traits, potentially reducing the toll that psychopathic traits have on the individuals themselves, on the juvenile justice services, and on the society at large.

2.2. Limitations and recommendations for future research

There are some limitations in this thesis that should be considered when interpreting the results and overcome in future studies. One of the major limitations is that the assessment of psychopathic traits relied only in a self-report measure of psychopathic traits that, in addition to the limitations of any self-report measure, does not include the antisocial factor of the psychopathic syndrome (Andershed et al., 2002; Salekin & Hare, 2016). Future research should therefore use at least two validated self/other-report measures of psychopathic traits that, preferably, encompass the assessment of GM, CU, and II traits as well as the assessment of antisocial behaviors.

It is also important to highlight that, with the exeption of the clinical interview, the recidivism risk assessment, and the disruptive behavior assessment, the majoriy of the measures included in this thesis were self-report questionnaires. Regardless of the psychometric proprieties of these measures, which were thoroughly tested *a priori* (Pechorro et al., 2017; Vagos et al., 2016, 2017, 2018, 2019), relying on self-report data can raise some reliability and validity issues, namely related to the shared variance between those self-report measures. Future studies should aim to reduce report biases by using other forms of data collection. For instance, it can be useful to use other sources of information, such as parents, teachers, and staff members of the detention facilities (in the case of youth from forensic settings) to report on their perception regarding youth's functioning (e.g., behaviors). The collection of physiological and neural correlates both within cros-sectional and longitudinal designs, can also improve future research as these markers are not susceptible to self/other-report bias. Moreover, the collection of observable data, such as recidivism rates as well as academic and social functioning should also be considered in further research.

The cross-sectional design of some studies included in this thesis can also be seen as a limitation that should be addressed in future research. Regarding **Study I** (Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis

of conduct disorder), it would be important to examine the stability of psychopathic profiles both throughout the lifespan and after the delivery of interventions. The cross-sectional design of **Study III** (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) and **Study IV** (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth) does not allow the inference of causality or conclusions on the direction of the tested associations. Thus, longitudinal research should be performed in the future to confirm the causality and directionality of the associations found in these cross-sectional studies. The use of convenience samples in these cross-sectional studies need also to be addressed in future studies. That is, in order to advance scientific knowledge on psychopathic traits in youthful populations, future research should resort to representative samples of youth.

Finally, bearing in mind that the longitudinal studies included in this thesis (**Study V** - The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee and **Study VI** - Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth) reported only on preliminary findings of a controlled trial, is seems also important to recognize some of its limitations. Besides the aforementioned limitations (e.g., the relying only on a self-report measure to assess the changeability of psychopathic traits), other shortcomings should also be pointed out, namely the non-randomization of participants to conditions (although no differences were found between treatment and control groups at baseline), the small sample size and the absence of follow-up assessments. Generalizations of the findings from the longitudinal studies should therefore be carefully interpreted and addressed in further research. Thus, future studies, with a controlled trial/RCT design, a larger sample and follow-up assessments are required prior to establish the PSYCHOPATHY.COMP program efficacy. Further research must also assess psychopathic traits with at least two validated measures and assess other relevant variables that are commonly associated with antisocial behavior (e.g., aggression, emotion regulation). Variables that do not rely exclusively on self-report measures should also be included in future research (e.g., physiological/neural correlates of psychopathic traits). It will also be important to track the progress of detained youth after release (e.g., assessment of psychopathic traits, recidivism rates, school and social functioning), in order to clarify if improvements observed in the treatment group during the detention period are maintained after release and to compare these outcomes with the ones of the control group. Moreover, investigating the process of change should also be considered in further studies, as the PSYCHOPATHY.COMP program was specifically designed to reduce psychopathic traits and disruptive/antisocial behavior through the development of a compassionate motivation in these youth. Finally, the severity of CD and the recidivism risk should also be tested in future studies as moderators of treatment effects in clinical outcomes.

3. Clinical and forensic implications

The current thesis may have important clinical and forensic implications, not only for the assessment and treatment of young offenders, but also for the management of the juvenile justice system and for prevention efforts.

This thesis corroborated the scientific literature stating that young offenders present several psychotherapeutic intervention needs, particularly young offenders with psychopathic traits (Abram et al., Rijo et al., 2016; Salekin et al., 2018; Vagos et al., 2016, 2017, 2018, 2018). Moreover, this thesis restated that the majority of detained youth have a CD diagnosis, high comorbidity rates, and moderate to high levels of psychopathic traits. Together, these data are of considerable relevance to current practices in the juvenile justice system, underlying the importance to perform a thorough and rigorous assessment of all youth that enter in contact with juvenile justice services. This assessment should encompass not only the criminal recidivism risk assessment, but also the assessment of mental health symptoms and disorders, not ignoring the assessment of psychopathic traits (Ribeiro da Silva et al., 2013; Rijo et al., 2016; Salekin et al., 2018). Although the identification of psychopathic traits in children and youth is still a controversial issue, especially for their likely stigmatizing connotations (Chanen & McCutchenon, 2008; Edens & Vincent, 2008; Murrie et al., 2007; Salekin et al., 2018; Seagrave & Grisso, 2002; Silk, 2008; Viding & McCrory, 2018), an early assessment of psychopathic traits is the best way to identify and effectively treat those same traits and associated risks, which, *per se*, would overcome eventual detrimental effects of that same early identification (Ribeiro da Silva et al., 2012, 2013; Salekin et al., 2018). From our point of view, only through a rigorous assessment of youth entering in contact with the juvenile justice services it will be possible to reduce the costs that antisocial behavior and psychopathic traits have on youth, on the juvenile justice system itself, and in the society at large.

Related to the previous point, this assessment should be performed by qualified psychologists from the juvenile justice services before the court's decision. In turn, this assessment, coupled with the offenses committed by the youth, should help the court to decide not only about the sentence type (e.g., community-based order, detention), but also about the nature, intensity, and length of psychotherapeutic interventions to be delivered to the youth (Andrews & Bonta, 2010; Rijo et al., 2016; Salekin, 2017). Taking into account the RNR model, youth who committed minor offenses and, concomitantly, present low criminal recidivism risk and less psychopathological symptoms and disorders, should be referred for supervised sentences in the community (e.g., payment of the damages, apologies to the victim, community service order, obligation of school attendance) and for psychotherapeutic interventions attuned to their mental health needs (Andrews & Bonta, 2010; Bonta & Andrews, 2016). In the other extreme, young offenders with CD and moderate to high levels of psychopathic traits, independently of the type of the sentence (e.g., community service order, detention), should be regarded for psychotherapeutic interventions specifically designed to reduce antisocial/disruptive behavior and psychopathic traits (Andrews & Bonta,

2010; Bonta & Andrews, 2016; Hecht et al., 2018; Polaschek & Skeem, 2018; Salekin, 2002, 2010; Wilkinson et al., 2015). This is especially relevant if we take into account, as found in this thesis, that the absence of tailored interventions may contribute to increase the levels of psychopathic traits and its associated risks (Butler et al., 2011; Caldwell 2011; Caldwell et al., 2006; Manders et al., 2013).

Bearing in mind these findings as well as the promising outcomes of the PSYCHOPATHY.COMP program in reducing disruptive behavior, psychopathic traits and in promoting therapeutic engagement, it seems important that the juvenile courts recommend the delivery of these kind programs to young offenders with CD and moderate/high levels of psychopathic traits as part of their rehabilitation process. Moreover, these programs should be delivered by trained psychologists. That is, we argue for the constitution of two independent teams of psychologists: a therapeutic team (the facilitators of the programs) and an assessment team (responsible for the baseline and follow-up assessments of youth and for periodically inform the court about their progress). This strategy may help to maximize the beneficts of a confidential and secure therapeutic relationship and minimize the potential bias of the assessments of youth.

In this sense, we would also argue that the sentences under the juvenile criminal law should be dynamic; i.e., attuned to the therapeutic progress of the youth. Bearing in mind that the main goal of the juvenile justice system is the rehabilitation of youth and not the punishment by their offenses (which have proved to increase criminal recidivism, especially in youth with psychopathic traits; Andrews & Bonta 2010; Bonta & Andrews, 2016; Lipsey, 2009; Lipsey et al., 2010; McGuire, 2013), sentences should be regularly reviewed taking into account the periodic reports of the juvenile justice services (including the reports of the team of psychologists responsible for the assessment of youth). Moreover, especially for detained youth, we believe that the sentence should be progressively adjusted taking into account their therapeutic progress. For instance, a youth who was initially detained in a maximum-security juvenile detention facility, considering his/her progress, should be able to start to spend some weekends with his family, then to frequent school outside the juvenile detention facility, then to be released with intensive supervision. This would gradually expose youth to their usual environment, allowing them to experiment and test alternative strategies to tolerate and cope in healthy ways with real life situations. This would also allow the juvenile detention services to ascertain whether (and when) youth are or are not rehabilitated and prepared for release.

The suggestion made above can eventually reduce the costs of the juvenile justice system in a long-run, although they would increase short-term costs (e.f., human resources; training). In detail, the thorough and rigorous baseline assessment of youth can increase the likelihood of these youth to receive a tailored intervention to their specific mental health needs, increasing therefore the odds of these youth to be rehabilitated and released earlier than expected. This informed and conscious management of young offenders referred for juvenile justice can also increase the number of young offenders effectively intervened by

the juvenile justice system, potentially decreasing the recidivism rates of a greater number of young offenders.

Although outside the scope of this thesis, considering that young offenders usually have several intervention needs (e.g., academic, social, familiar), it seems also essential to strengthen the collaboration between the professionals (e.g., psychologists, psychiatrists, teachers, social workers, and judges) that, in a way or another, are responsible for young offenders' rehabilitation. It seems also crucial to increase the age range of the juvenile criminal law in Portugal, as youth who committed an offense aged 16 or more are already penalised under the adult criminal law. This is contrary to the Universal Declaration of Humans Rigths, to the The United Nations Convention on the Rights of the Child, and to the juvenile criminal law of several European countries (e.g., Italy, Germany, Netherlands, and Switzerland). Thus, we argue that youth aged 12 to 21 who committed an offense should be judged under the juvenile criminal law, although a detention sentence should not be applied to youth under the age of 15; i.e., all youth who committed an offense under the age of 15 should be referred for sentences in the community, which should encompass community-based psychotherapeutic intervention programs.

This thesis also restated that the psychotherapeutic needs of young offenders can be tracked since their childhood (Abram et al., 2015; Rijo et al., 2016; Vagos et al., 2017, 2018). In detail, it was clear that the majority of young offenders were raised in harsh rearing environments, which, coupled with other etiological factors (e.g., genetic, neural, and evolutionary), may have contributed to the display of several psychopathological symptoms and disorders in these youth. Considering that the majority of young offenders were referred for child protection services during their childhood, it seems that the interventions delivered by these services were probably gapping in assessing and addressing the psychopathological needs of these children and youth. Thus, it seems crucial to invest in the delivery of prevention and intervention programs for parents of children/youth referred to child protection services, which probably should embrace positive parenting training into their designs to try to buffer these risky pathways. As suggested for the juvenile justice system, it seems also important to invest in the psychopathological assessment and in the delivery of psychotherapeutic intervention programs to children and youth referred for child protection services, providing appropriate answers to their intervention needs.

A repetitive and persistent pattern of antisocial behavior is suggestive of a mental health disorder, which is corroborated by national and international research reporting high prevalence rates of mental health symptoms and disorders in young offenders referred for child protection services or for juvenile justice services (Abram et al., 2015; Rijo et al., 2016). The presence of mental health problems (especially a CD diagnosis and psychopathic traits) in this population is, *per se*, an important risk factor for criminal recidivism, representing therefore several costs for the individual itself, for the state, and for the society as a whole. From our perspective, there is no point in referring young offenders for child protection/juvenile justice services if the aim is not to break their risky pathways. That is,

the child protection intervention and/or the sentence length should be recognized as privileged opportunities to identify and properly treat the mental health needs of young offenders. This is especially relevant at juvenile detention facilities, which, due to its structure (few youth and a large number of adults, including health and mental health professionals, and social workers), present favorable conditions to effectively rehabilitate young offenders. Only a rigorous, multidisplinary and concerted intervention can change the developmental pathway of young offenders and reduce the risk of these youth to (re)offend and to face detention/prison sentences in the future.

4. Conclusion

This thesis aimed to answer a major reseach question, which is embodied in its title "Mask of sanity or mask of invulnerability? From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention". This major research question first arose when we published a first paper about psychopathic traits in children and youth (Ribeiro da Silva et al., 2012) and can be divided into three specific questions: (1) What is the best way to conceptualize psychopathic traits in children and youth?; (2) Can psychopathic traits be seen as an adaptive strategy towards certain life circumstances?; and (3) Can specific and tailored intervention efforts change psychopathic traits?

Taking into account that the DSM-5 included CU traits as a specifier for CD, narrowing the concept of psychopathic traits in children and youth to CU traits only, the first specific research question - What is the best way to conceptualize psychopathic traits in children and youth?, naturally arose. In trying to answer this research question, the **Study I** (Psychopathic severity profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder) aimed to contribute to the conceptualization of psychopathic traits in children and youth by exploring the benefits of including GM, CU, and II traits as CD specifiers. Findings of this study suggested that psychopathic traits seem to hang together and to be continuously distributed throughout the population, differing from normality in degree rather than kind (Edens et al., 2006; Murrie et al., 2007). Coupling the findings of this study with previous research, it seems that including the multifaceted model of psychopathy to delimitate a specifier for CD may, more accurately, help to reduce the heterogeneity of this diagnosis, identifying a more severe antisocial subgroup of CD youth (Colins et al., 2018; Colins & Andershed, 2015; Salekin, 2016, 2017; Salekin et al., 2018).

In turn, **Study II** (The evolutionary roots of psychopathy), **Study III** (Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls) and **Study IV** (An evolutionary model to conceptualize psychopathic traits across community and forensic male youth) aimed to answer the second specific research question - Can psychopathic traits be seen as an adaptive strategy towards certain life circumstances? Results of these studies suggested that psychopathic traits can be

conceptualized as evolutionary rooted responses to deal with harsh rearing scenarios; i.e., rearing environments marked by the presence of traumatic/shameful experiences and by the lack of warmth and safeness experiences (Cowan et al., 2016; Del Giudice, 2016; Del Giudice & Ellis, 2015). If the human brain is evolutionarily designed to survive and thrive in adverse environments, when individuals are raised in harsh rearing scenarios, their brains also become calibrated for such environments (Sheskin et al., 2014). Therefore, these children and youth tend to be focused on short-term goals, presenting an overdeveloped and hypervigilant threat system and an under responsive soothing system as well as central emotional dysfunctions, which comprise, among others, high levels of shame and emotion regulation problems; i.e., these youth tend to bar the experience of shame and other unpleasant emotions and/or attack others in potential shameful/threatening situations (Garofalo et al., 2018; Kosson et al., 2016; Sheskin et al., 2014). In the dark side, these coping strategies may give rise to psychopathic traits and to an antisocial pattern, both adaptive in harsh rearing environments, at least in a short-run. In sum, findings of these studies, combined with former research, pointed out that evolutionary influences along with other etiological factors (e.g., genetic, temperamental, neural, environmental) probably play a role in the origin and maintenance of psychopathic traits.

Finally, the development of the PSYCHOPATHY.COMP program (an individual CFT-based intervention) and the studies testing its efficacy (**Study V** - The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee and **Study VI** - Clinical change in psychopathic traits after an individual compassion focused therapy-based intervention: Preliminary findings of a controlled trial with male detained youth) helped to answer the last specific research question - Can specific and tailored intervention efforts change psychopathic traits? The preliminary findings about the efficacy the PSYCHOPATHY.COMP program, the first psychotherapeutic intervention that was developed and tested for the treatment of antisocial/disruptive behavior and psychopathic traits, suggested that this program can reduce psychopathic traits and disruptive behavior and promote therapeutic engagement among male detained youth. In contrast, these studies also showed that the TAU tends to maintain or increase psychopathic traits in detained youth, which may increase the odds of these youth to reoffend and to face prison sentences in adulthood. Although further research on the efficacy of the PSYCHOPATHY.COMP program is still required, the promising results of these studies suggested that this program may fit the intervention needs of detained youth with psychopathic traits.

Overall, the findings from these different studies helped to answer the major research question of this thesis - “Mask of sanity or mask of invulnerability? From an evolutionary perspective of psychopathy in adolescence to the changeability of psychopathic traits in young offenders after a compassion based psychotherapeutic intervention”. In concluding, although early conceptualizations emphasized the appearance of sanity and the lack of emotional experience as core features of psychopathy (Cleckley, 1941/1988), our findings

suggested that psychopathic traits can be seen as an adaptive strategy that disguises central emotional dysfunctions, acting therefore as a mask of invulnerability that hides deep suffering and a shameful nucleus. Overcoming this mask of invulnerability by building a compassionate motivation in young offenders with psychopathic traits seems both an accurate therapeutic strategy and a fundamental therapeutic goal in the rehabilitation of these youth. The promising treatment outcomes of the PSYCHOPATHY.COMP support the use of this program as part of the rehabilitation policies of the juvenile justice system, potencially reducing the costs that CD and psychopathic traits have on young offenders, on the juvenile justice system, and on the society as a whole.

REFERENCES

Abram, K. M., Zwecker, N. A., Welty, L. J., Hershfield, J. A., Dulcan, M. K., & Teplin, L. A. (2015). Comorbidity and continuity of psychiatric disorders in youth after detention: A prospective longitudinal study. *JAMA Psychiatry, 72,* 84-93.

Abreu, M. V. (2002). *Cinco ensaios sobre motivação*. Coimbra: Almedina.

Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 profile*. Burlington: University of Vermont, Department of Psychiatry.

Ainsworth, M. D. S. (1985). Patterns of infant-mother attachments: Antecedents and effects on development. *Bulletin of the New York Academy of Medicine, 61,* 771–791.

Akaike, H. (1987). Factor analysis and AIC. *Psychometrika, 52,* 317–332. https://doi.org/10.1007/BF02294359.

Alexander, R. D. (1989). Evolution of the human psyche. In P. Mellars, & C. Stringer (Eds.), *The human revolution: Behavioural and biological perspectives on the origins of modern humans* (pp. 455–513). Princeton, NJ: Princeton University Press.

American Psychiatric Association (1980). *Diagnostic and statistical manual of mental disorders* (3th Ed.). Washington, DC: Author.

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th Ed.). Washington, DC: Author.

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed. Text rev.). Washington, DC: American Psychiatric Association.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Andershed, H. (2010). Stability and change of psychopathic traits: What do we know? In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 233–250). New York: Guilford Press.

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-reffered youth: Initial test of a new assessment tool. In E. Blaauw & I. Sheridan, (Eds.), *Psychopaths: Current international perspectives* (pp. 131-158). Hague, The Netherlands: Elsevier.

Andershed, H., Köhler, D., Louden, J. E., & Hinrichs, G. (2008). Does the three-factor model of psychopathy identify a problematic subgroup of young offenders? *International Journal of Law and Psychiatry, 31,* 189–198.

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53,* 27–51.

Andrews, D. A., & Bonta, J. (2010). Rehabilitating criminal justice policy and practice. *Psychology, Public Policy and Law, 16,* 39–55.

Andrews, D. A., Zinger, I., Hoge, R. D., Bonta, J., Gendreau, P., & Cullen, F. T. (1990). Does correctional treatment work? A clinically relevant and informed meta-analysis. *Criminology, 28,* 369-404.

Antonio, M. E. & Crosset, A. (2017). Evaluating the effectiveness of the national curriculum and training institute's "Cognitive Life Skills" Program among parolees supervised by Pennsylvania's board of probation & parole. *American Journal of Criminal Justice, 42,* 514-532.

Ashworth, F., Gracey, F., & Gilbert, P. (2011). Compassion focused therapy after traumatic brain injury: Theoretical foundations and a case illustration. *Brain Impairment, 12,* 128-139.

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling: A Multidisciplinary Journal, 21,* 329–341. https://doi.org/10.1080/10705511.2014.915181.

Asscher, J. J., van Vugt, E. S., Stams, G. J. J. M., Dekovi'c, M., Eichelsheim, V. I., & Yousfi, S. (2011). The relationship between juvenile psychopathic traits, delinquency and (violent) recidivism: A meta-analysis. *Journal of Child Psychology and Psychiatry, 52,* 1134–1143. https://doi.org/10.1111/j.1469-7610.2011.02412.x.

Atkins, C. D., Bedics, J. D., McGlinchey, J. B., & Bauchaine, T. (2005). Assessing clinical significance: Does it matter which method we use? *Journal of Consulting and Clinical Psychology, 73,* 982–989.

Auty, K. M., Farrington, D. P., & Coid, J. W. (2015). Intergenerational transmission of psychopathy and mediation via psychosocial risk factors. *The British Journal of Psychiatry, 206,* 26-31.

Baião, R., & Rijo, D. (2011, June). *Personality disorders and self-concept in Portuguese prison inmates.* In S. Aslan (Chair). Cognitive Theory of Antisocial Personality Disorder. Symposium conducted at the meeting of 7th International Congress of Cognitive Psychotherapy, Istanbul.

Baker, L. A., Tuvblad, C., Reynolds, C., Zheng, M., Lozano, D. I., & Raine, A. (2009). Resting heart rate and the development of antisocial behavior from age 9 to 14: Genetic and environmental influences. *Development and Psychopathology, 21,* 939–960.

Bakk, Z., & Vermunt, J. K. (2016). Robustness of stepwise latent class modeling with continuous distal outcomes. Structural *Equation Modeling: A Multidisciplinary Journal, 2,* 20–31. https://doi.org/10.1080/10705511.2014.955104.

Barry, C. T., Frick, P. J., DeShazo, T. M., McCoy, M., Ellis, M., & Loney, B. R. (2000). The importance of callous-unemotional traits for extending the concept of psychopathy to children. *Journal of Abnormal Psychology, 109,* 335–340.

Barry, T. D., Thompson, A., Barry, C. T., Lochman, J. E., Adler, K., & Hill, K. (2007). The importance of narcissism in predicting proactive and reactive aggression in moderately to highly aggressive children. *Aggressive Behavior, 33,* 185–197.

Baskin-Sommers, A. R., Waller, R., Fish, A. M., & Hyde, L. W. (2015). Callous-unemotional traits trajectories interact with earlier conduct problems and executive control to predict violence and substance use among high risk male adolescents. *Journal of Abnormal Child Psychology, 43,* 1529–1541.

Bauer, D. J., & Curran, P. J. (2003). Over extraction of latent trajectory classes: Much ado about nothing? Reply to Rindskopf (2003), Muthén (2003), and Cudeck and Henly (2003). *Psychological Methods, 8,* 384–393. https://doi.org/10.1037/1082-989X.8.3.

Baumeister, R. E., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review, 103,* 5-33

Baumgartner, T., Heinrichs, M., Vonlanthen, A., Fischbacher, U., & Fehr, E. (2008). Oxytocin shapes the neural circuitry of trust and trust adaptation in humans. *Neuron, 58,* 639–650.

Bayliss, C., Miller, A., & Henderson, C. (2010). Psychopathy development and implications for early interventions. *Journal of Cognitive Psychotherapy: An International Quarterly, 24,* 71-80.

Beaver, K. M., Rowland, M. W., Schwartz, J. A., & Nedelec, J. L. (2011). The genetic origins of psychopathic personality traits in adult males and females: Results form an adoption-based study. *Journal of Criminal Justice, 39,* 426–432.

Beck, A. T. (1999). *Prisoners of hate: The cognitive basis of anger, hostility, and violence*. New York: Harper Collins Publishers.

Beitchman, J. H., Zai, C. C., Muir, K., Berall, L., Nowrouzi, B., Choi, E., Kennedy, J. L. (2012). Childhood aggression, callous-unemotional traits and oxytocin genes. *European Child & Adolescent Psychiatry, 21,* 125-132.

Bennett, D., Sullivan, M., & Lewis, M. (2005). Young children's adjustment as a function of maltreatment, shame, and anger. *Child Maltreatment, 10*, 311-323.

Berntsen, D., & Rubin, D. C. (2006). Centrality of Event Scale: A measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. *Behaviour Research and Therapy*, *44*, 219–231.

Berridge, K. C., & Kringelbach, M. L. (2008). Affective neuroscience of pleasure: Reward in humans and animals. *Psychopharmacology, 199,* 457–480.

Bezdjian, S., Raine, A., Baker, L. A., & Lyman, D. R. (2011). Psychopathic personality in children: Genetic and environmental contributions. *Psychological Medicine, 41,* 589–600.

Bird, A. (2007). Perceptions of epigenetics. *Nature, 447,* 396–398.

Bishop, S. J. (2008). Neural mechanisms underlying selective attention to threat. *Annals of the New York Academy of Sciences, 1129,* 141–152.

Blackburn, R. (1971). Personality types among abnormal homicides. *British Journal of Criminology, 37,* 166–178.

Blackburn, R. (1993). *The psychology of criminal conduct: Theory, research and practice*. New York: Wiley & Sons.

Blair, R. J. R. (2006). Subcortical brain system in psychopathy. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 296–312). New York: Guildford Press.

Blair, R. J. R. (2007). The amygdala and the ventromedial prefrontal cortex in morality and psychopathic tendencies. *Trends in Cognitive Sciences, 11,* 387–392.

Blair, R. J. R., & Mitchell, D. G. V. (2009). Psychopathy, attentions and emotion. *Psychological Medicine, 39,* 543–555.

Blair, R. J. R., Colledge, E., Murray, L., & Mitchell, D. G. V. (2001). A selective impairment in the processing of sad and fearful expressions in children with psychopathic tendencies. *Journal of Abnormal Child Psychology, 29,* 491–498.

Blair, R. J. R., Meffert, H., Hwang, S., White, S. F. (2018). Psychopathy and Brain Function: Insights from Neuroimaging Research. In C. Patrick (Ed.), *Handbook of Psychopathy* (401-421). New York: The Guilford Press

Blair, R. J. R., Mitchell, D. G. V., & Blair, K. S. (2005). *The psychopath: Emotion and brain*. Oxford, UK: Blackwell.

Blair, R. J. R., Peschardt, K. S., Budhani, S., Mitchell, D. G. V., & Pine, D. S. (2006). The development of psychopathy. *Journal of Child Psychology and Psychiatry, 47,* 262–276.

Block, J., & Block, J. H. (1980). *The California Child Q-Set*. Palo-Alto, CA: Consulting Psychologists Press.

Blum, K., Chen, A. L. C., Chen, T. J. H., Braverman, E. R., Reinking, J., Blum, S. H., et al. (2008). Activation instead of blocking mesolimbic dopaminergic reward circuitry is a preferred modality in the long term treatment of reward deficiency syndrome (RDS): A commentary. *Theoretical Biology and Medical Modeling, 5,* 1–16.

Blum, K., Oscar-Berman, M., Giordano, J., Downs, B. W., Simpatico, T, Han, D, et al. (2012). Neurogenetic impairments of brain reward circuitry links to reward deficiency syndrome (RDS): Potential nutrigenomic induced dopaminergic activation. *Journal of Genetic Syndromes and Gene Therapy, 3,* 115–121.

Bolck, A., Croon, M., & Hagenaars, J. (2004). Estimating latent structure models with categorical variables: One-step versus three-step estimators. *Political Analysis, 12,* 3-27. https://doi.org/10.1093/pan/mph001.

Bons, D. M. A., Scheepers, F. E., Rommelse, N. N. J., & Buitelaar, J. K. (2010). Motor, emotional and cognitive empathic abilities in children with autism and conduct disorder. *Proceeding of Measures Behaviors, 24,* 109–113.

Bonta, J., & Andrews, D. A. (2016). *The psychology of criminal conduct* (6th ed.). London: Routledge.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.

Braehler, C., Gumley, A., Harper, J., Wallace, S., Norrie, J., & Gilbert, P. (2013). Exploring change processes in compassion focused therapy in psychosis: Results of a feasibility randomized controlled trial. *British Journal of Clinical Psychology, 52,* 199-214.

Brazão, N., da Motta, C. & Rijo, D. (2013). From multimodal programs to a new cognitive-interpersonal approach in the rehabilitation of offenders. *Aggression and Violent Behavior, 18,* 636-643.

Brazão, N., Rijo, D., Ribeiro da Silva, D., Salvador, M. C., & Pinto-Gouveia, J. (2019). Personality pathology profiles as moderators of the Growing Pro-Social Program outcomes on cognitive, emotion and behavior regulation in male prison inmates. *Journal of Personality Disorders*. Advance online publication. doi: 0.1521/pedi_2019_33_424

Brazão, N., Rijo, D., Salvador, M. C., & Pinto-Gouveia, J. (2017). The effects of the Growing Pro-Social Program on cognitive distortions and early maladaptive schemas over time in male prison inmates: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 85*, 1064-1079.

Brazão, N., Rijo, D., Salvador, M. C., & Pinto-Gouveia, J. (2018a). Promoting emotion and behavior regulation in male prison inmates: A secondary data analysis from a randomized controlled trial testing the efficacy of the Growing Pro-Social Program. *Law and Human Behavior, 42,* 57-70.

Brazão, N., Rijo, D., Salvador, M. C., & Pinto-Gouveia, J. (2018b). The efficacy of the Growing Pro-Social Program in reducing anger, shame and paranoia over time in male prison inmates: A randomized controlled trial. *Journal of Research in Crime and Delinquency, 55,* 649-686.

Buckholtz, J. W., & Meyer-Lindenberg, A. (2008). MAOA and the neurogenetic architecture of human aggression. *Trends in Neurosciences, 31,* 120–129.

Burnette, J. L., Taylor, K. W., Worthington, E. L., & Forsyth, D. R. (2007). Attachment and trait forgivingness: The mediating role of angry rumination. *Personality and Individual Differences, 42,* 1585–1596.

Burt, S. A. (2012). How do we optimally conceptualize the heterogeneity within anti-social behavior? An argument for aggressive versus non-aggressive behavioral dimensions. *Clinical Psychology Review, 32*, 263–279.

Buss, A., & Perry, M. (1992). The Aggression Questionnaire. *Journal of Personality and Social Psychology, 63,* 452–459.

Butler, S., Baruch, G., Hickey, N., & Fonagy, P. (2011). A randomized controlled trial of multisystemic therapy and a statutory therapeutic intervention for young offenders. *Journal of the American Academy of Child and Adolescent Psychiatry, 50,* 1220–1235.

Caldwell, B. M., Anderson, N. E., Harenski, K. A., Sitney, M. H., Caldwell, M. F., Van Rybroek, G. J., & Kiehl, K. A. (2019). The structural brain correlates of callous-unemotional traits in incarcerated male adolescents. *NeuroImage: Clinical, 22,* 101703.

Caldwell, M. F. (2011). Treatment-related changes in behavioral outcomes of psychopathy facets in adolescent offenders. *Law and Human Behavior, 35,* 275–287.

Caldwell, M. F., McCormick, D., Wolfe, J., & Umstead, D. (2012). Treatment-related changes in psychopathy features and behavior in adolescent offenders. *Criminal Justice and Behavior, 39,* 144-155.

Caldwell, M., Skeem, J., Salekin, R., & Van Rybroek, G. (2006). Treatment response of adolescent offenders with psychopathy features: A 2-year follow-up. *Criminal Justice and Behavior, 33,* 571-596.

Caldwell, M.F., McCormick, D.J., Umstead, D., & Van Rybroek, G.J. (2007). Evidence of treatment progress and therapeutic outcomes among adolescents with psychopathic features. *Criminal Justice and Behavior, 34,* 573–587.

Cale, E. M., & Lilienfeld, S. O. (2006). Psychopathic factors and risk for aggressive behavior: A test of the "threatened egotism" hypothesis. *Law and Human Behavior, 30,* 51–74.

Campbell, J. S., & Elison, J. (2005). Shame Coping Styles and Psychopathic Personality Traits. *Journal of Personality Assessment, 84,* 96-104.

Cannon, W. B. (1915). *Bodily changes in pain, hunger, fear and rage: An account of recent researches into the function of emotional excitement*. New York: Appleton.

Carona, C., Rijo, D., Salvador, C., Castilho, P., & Gilbert, P. (2017). Compassion-focused therapy with children and adolescents. *BJPsych Advances, 23*, 240-252.

Carter, S. C., Bartel, I. B. A & Porges, E. C. (2017). The roots of compassion: An evolutionary and neurobiological perspective. In, E. Seppala, E. Simon-Thomas, S. Brown, M. Worline, C.D. Cameron, & J. Doty (Eds). *Oxford Handbook of Compassion Science* (pp.173-188). New York: Oxford University Press

Casey, P. (2000). The epidemiology of personality disorders. In P. Tyrer (Ed.), *Personality disorders: Diagnosis, management and course* (pp. 71–79). London: Arnold.

Cashdan, E., & Downes, S. M. (2012). Evolutionary perspectives on human aggression: Introduction to the special issue. *Human Nature, 23,* 1–4.

Caspi, A., & Moffitt, T. E. (2006). Gene-environment interactions in psychiatry: joining forces with neuroscience. *Nature Reviews Neuroscience, 7,* 583–590.

Caspi, A., Roberts, B. W., & Shiner, R. L. (2005). Personality Development: Stability and Change. *Annual Review of Psychology, 56*, 453–484.

Chakhssi, F., Kersten, T., de Ruiter, C., & Bernstein, D. P. (2014). Treating the untreatable: A single case study of a psychopathic inpatient treated with Schema Therapy. *Psychotherapy, 51,* 447.

Chanen, A. M., & McCutchenon, L. K. (2008). Personality disorder in adolescence: The diagnosis that dare not speak its name. *Personality and Mental Health, 2,* 35–41.

Cicchetti, D., & Rogosch, F. A. (2001). The impact of child maltreatment and psychopathology in neuroendocrine functioning. *Development and Psychopathology, 13,* 783–804.

Clark, L., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7,* 309–319. https://doi.org/10.1037/1040-3590.7.3.309.

Cleckley, H. (1988). *The mask of sanity: An attempt to clarify some issues about the so-called psychopathic personality* (6th ed.). St. MO: Mosby (original work published in 1941).

Colins, O. F., & Andershed, H. (2015). The DSM-5 with limited prosocial emotions specifier for conduct disorder among detained girls. *Law and Human Behavior, 39,* 198–207.

Colins, O. F., & Andershed, H. (2018). Childhood and adolescente psychopathy. In M. Delisi (Ed.), Routledge International Handbook of Psychopathy and Crime (pp. 166-184). New York: Routledge.

Colins, O. F., Andershed, H., Fanti, K. A., & Larsson, H. (2017). Psychopathic traits in early childhood: Further validation of the Child Problematic Traits Inventory. *Assessment, 24,* 602–614.

Colins, O. F., Andershed, H., Frogner, L., Lopez-Romero, L., Veen, V., & Andershed, A.-K. (2014). A new measure to assess psychopathic personality in children: The Child Problematic Traits Inventory. *Journal of Psychopathology and Behavioral Assessment, 36,* 4–21.

Colins, O. F., Andershed, H., Salekin, R. T., & Fanti, K. A. (2018). Comparing different approaches for subtyping children with conduct problems: Callous-unemotional traits only versus the multidimensional psychopathy construct. *Journal of Psychopathology and Behavioral Assessment, 40,* 6–15.

Colins, O. F., Fanti, K. A., Salekin, R. T., & Andershed, H. (2017). Psychopathic personality in the general population: Differences and similarities across gender. *Journal of Personality Disorders, 31,* 49–74. https://doi.org/10.1521/pedi_2016_30_237.

Colins, O. F., Veen, V., Veenstra, M., Frogner, L., & Andershed, H. (2016). The Child Problematic Traits Inventory in a Dutch general population sample of 3- to 7-year-old children. *European Journal of Psychological Assessment. 34,* 336-343.

Conboy, J. (2003). Algumas medidas típicas univariadas da magnitude do efeito [Some typical univariate measures of the effect size]. *Análise Psicológica, 2,* 145–158.

Cooke, D. J., & Logan, C. (2018). Capturing Psychopathic Personality Penetrating the Mask of Sanity through Clinical Interview. In C. Patrick (Ed.), *Handbook of Psychopathy* (189-210). New York: The Guilford Press

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Towards a hierarchical model. *Psychological Assessment*, *13*, 171-188.

Cooke, D. J., Hart, S. D., Logan, C., & Michie, C. (2012). Explicating the construct of psychopathy: Development and validation of a conceptual model, the comprehensive assessment of psychopathic personality (CAPP). *International Journal of Forensic Mental Health, 11,* 242–252.

Cooke, D. J., Michie, C., & Hart, S. D. (2006). Facets of clinical psychopathy. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 91–106). New York: Guildford Press.

Cooke, D. J., Michie, C., & Skeem, J. (2007). Understanding the structure of Psychopathy Checklist-Revised. *The British Journal of Psychiatry, 190,* 39–50.

Cornell, A. H., & Frick, P. J. (2007). The moderating effects of parenting styles in the association between behavioral inhibition and parent-reported guilt and empathy in preschool children. *Journal of Clinical Child and Adolescent Psychology, 36,* 305–318.

Corrado, R. R., & McCuish, E. (2018). Key findings and operational lessons in the measurement of psychopathy within the incarcerated serious and violent young offender study. In M. Delisi (Ed.), *Routledge International Handbook of Psychopathy and Crime* (pp. 203-215). New York: Routledge.

Cowan, C. S. M., Callaghan, B. L., Kan, J. M., & Richardson, R. (2016). The lasting impact of early-life adversity on individuals and their descendants: Potential mechanisms and hope for intervention. *Genes, Brain and Behavior, 15,* 155-168.

Cracraft, J., & Donoghue, M. J. (2004). *Assembling the tree of life*. Oxford: Oxford University Press.

Craig, M. C., Catani, M., Deeley, Q., Latham, R., Daly, E., Kanaan, R.,…, & Murphy, D. G. (2009). Altered connections on the road of psychopathy. *Molecular Psychiatry, 14,* 946–953.

Crick, N. R., Ostrov, J. M., & Werner, M. -E. (2006). A longitudinal study of relational aggression, physical aggression, and children's social–psychological adjustment. *Journal of Abnormal Child Psychology, 34,* 127–138.

Dadds, M. R., Cauchi, A. J., Wimalaweera, S., Hawes, D. J., & Brennan, J. (2012). Outcomes, moderators, and mediators of empathic-emotion recognition training for complex conduct problems in childhood. *Psychiatry Research, 199,* 201–207

Dadds, M. R., El Masry, Y., Wimalaweera, S., & Guastella, A. J. (2008). Reduced eye gaze explains "fear blindness" in childhood psychopathic traits. *Journal of the American Academy of Child and Adolescent Psychiatry, 47,* 455–463.

Dadds, M. R., Moul, C., Cauchi, A., Hawes, D.J., Brennan, J. (2013). Replication of a ROBO2 polymorphism associated with conduct problems but not psychopathic tendencies in children. *Psychiatric Genetics 23,* 251-254.

Damasio, A. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. London: Heinemann.

Damasio, A. (2006). *Descartes' error: Emotion, reason and the human brain*. London: Vintage (Original work published in 1994).

Dargis, M., Wolf, R. C., & Koenigs, M. (2018). Psychopathic traits are associated with reduced fixations to the eye region of fearful faces. *Journal of Abnormal Psychology, 127,* 43-50.

Darwin, C. (1874). *The descent of man and selection in relation to sex*. New York: Rand, McNally & Company.

Darwin, C. (1965). *The expression of emotions in man and animals*. Chicago: University of Chicago Press (Original work published 1872).

Darwin, C. (2009). *Origin of species by means of natural selection*. London: John Murray (Original work published 1859).

Datyner, A., Kimonis, E. R., Hunt, E., & Armstrong, K. (2016). Using a Novel Emotional Skills Module to Enhance Empathic Responding for a Child With Conduct Disorder With Limited Prosocial Emotions. *Clinical Case Studies, 15,* 35–52.

David, D., & Montgomery, G. H. (2011). The scientific status of psychotherapies: A new evaluative framework for evidence-based psychosocial interventions. *Clinical Psychology: Science and Practice, 18,* 89-99.

Dawkins, R. (2006). *The selfish gene*. Oxford: Oxford University Press (Original work published in 1976).

de Duve, C. (2002). *Life evolving: Molecules, mind and meaning*. New York: Oxford University Press.

De Fruit, F., Bartels, M., Van Leuwen, K. G., De Clercq, B., Decuyper, M., & Mervielde, I. (2006). Five types of personality continuity in childhood and adolescence. *Journal of Personality and Social Psychology, 91,* 538–552.

Decety, J., Chen, C., Harenski, C., & Kiehl, K. A. (2013). An fMRI study of affective perspective taking in individuals with psychopathy: imagining another in pain does not evoke empathy. *Frontiers in Human Neuroscience, 7,* 489-499

Del Giudice, M. (2014). An evolutionary life history framework for psychopathology. *Psychological Inquiry, 25,* 261–300.

Del Giudice, M. (2016). The evolutionary future of psychopathology. *Current Opinion in Psychology, 7,* 44-50.

Del Giudice, M., & Ellis, B. J. (2015). Evolutionary foundations of developmental psychopathology. In D. Cicchetti (Ed.), *Developmental Psychopathology, Vol. 2: Developmental neuroscience* (3th ed., pp. 1-58). New York: Wiley.

Del Giudice, M., Ellis, B. J., & Shirtcliff, E. A. (2011). The adaptive calibration model of stress responsivity. *Neuroscience & Biobehavioral Reviews, 35,* 1562–1592.

Del Giudice, M., Ellis, B. J., & Shirtcliff, E. A. (2013). Making sense of stress: An evolutionary: developmental framework. In G. Laviola, & S. Macrì (Eds.), *Adaptive and maladaptive aspects of developmental stress*. New York: Springer.

Delgado, M. R. (2008). Fool me once, shame on you; fool me twice, shame on oxytocin. *Neuron, 58,* 470–471.

DeLisi, M. (2009). Psychopathy is the unified theory of crime. *Youth Violence and Juvenile Justice, 7,* 256–273.

DeLisi, M., & Piquero, A. R. (2011). New frontiers in criminal careers research, 2000–2011: A state-of-the-art review. *Journal of Criminal Justice, 39,* 289–301.

DeLisi, M., Vaughn, M., Beaver, K. M., Wexler, J., Barth, A. E., & Fletcher, J. M. (2011). Fledging psychopathy in classroom: ADHD subtypes, psychopathy, and Reading comprehension in a community sample of adolescents. *Youth Violence and Juvenile Justice, 9,* 43–58.

Depue, R. A., & Morrone-Strupinsky, J. V. (2005). A neurobehavioral model of affiliative bonding: Implications for conceptualizing a human trait of affiliation. *Behavioral and Brain Sciences, 28,* 313–350.

Des Jarlais, D. C., Lyles, C., Crepaz, N., & the Trend Group (2004). Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: The TREND statement. *American Journal of Public Health, 94,* 361-366.

Dillard, C. L., Salekin, R. T., Barker, E. D., & Grimes, R. D. (in press). Psychopathy in adolescente offenders: An item response investigation of the Antisocial Process Screening Device Self Report and the Psychopathy Checklist: Youth Version. *Personality Disorders: Theory Research and Treatment*.

Dodge, K. A., & Pettit, G. S. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Development Psychology, 39*, 349–371.

D'Silva, K., Duggan, C., & McCarthy, L. (2004). Does treatment really make psychopaths worse? A review of the evidence. *Journal of Personality Disorders, 18,* 163-177.

Edens J. F., Marcus D. K., Lilienfeld S. O., Poythress N. G., Jr. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology, 115,* 131–144. doi: 10.1037/0021-843X.115.1.131

Edens, J. F., & Vincent, G. M. (2008). Juvenile psychopathy: A clinical construct in need of restraint? *Journal of Forensic Psychology Practice, 8,* 186–197.

Edens, J. F., Campbell, J. S., & Weir, J. M. (2007). Youth psychopathy and criminal recidivism: A meta-analysis of the psychopathy checklist measures. *Law and Human Behavior, 31,* 53-75.

Edens, J. F., Marcus, D. K., Lilienfeld, S. O., & Poythress, N. G. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology, 115,* 131–144.

Ekman, P. (1999). Basic emotions. In T. Dalgleish, & M. Power (Eds.), *Handbook of cognition and emotion* (pp. 45–60). Sussex, U.K.: John Wiley & Sons.

Elison, J., Lennon, R., & Pulos, S. (2006). Investigating the compass of shame: The development of the compass of shame scale. *Social Behavior and Personality, 34,* 221–238.

Ellis, B. J., Del Giudice, M., & Shirtcliff, E. A. (2013). Beyond allostatic load: The stress response system as a mechanism of conditional adaptation. In T.P. Beauchaine, & S.P. Hinshaw (Eds.), *Child and adolescent psychopathology* (pp. 251–284) (2nd ed.). New York: Wiley.

Else-Quest, N. M., Higgins, A., Allison, C., & Morton, L. C. (2012). Gender differences in self-conscious emotional experience: A meta-analysis. *Psychological Bulletin, 138*, 947-81

Esch, T., & Stefano, G. B. (2004). The neurobiology of pleasure, reward processes, addiction and their health implications. *Neuroendocrinology Letters, 25,* 235–251.

Falkenbach, D., Poythress, N., & Heide, K. (2003). Psychopathic features in a juvenile diversion population: Reliability and predictive validity of two self-report measures. *Behavioral Sciences and the Law, 21,* 787–805.

Fanti, K. A., Demetriou, C. A., & Kimonis, E. R. (2013). Variants of callous-unemotional conduct problems in a community sample of adolescents. *Journal of Youth and Adolescence, 42,* 964–979. https://doi.org/10.1007/s10964-013-9958-9.

Farrington, D. P. (2005). The importance of child and adolescent psychopathy. *Journal of Abnormal Child Psychology, 33,* 489–497.

Farrington, D. P. (2006). Family background and psychopathy. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 229–250). New York: Guildford Press.

Farrington, D. P., Ullrich, S., & Salekin, R. T. (2010). Environmental influences on child and adolescent psychopathy. In R.T. Salekin, & D.R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 202–230). New York: Guilford Press.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41,* 1149-1160.

Fazel, S., Doll, H., & Långström, N. (2008). Mental disorders among adolescents in juvenile detention and correctional facilities: a systematic review and metaregression analysis of 25 surveys. *Journal of the American Academy of Child & Adolescent Psychiatry, 47,* 1010-1019.

Feliu-Soler, A., Cebolla, A., McCracken, L. M., D'Amico, F., Knapp, M., López-Montoyo, A., ... & Andrés-Rodriguez, L. (2018). Economic impact of third-wave cognitive behavioral therapies: a systematic review and quality assessment of economic evaluations in randomized controlled trials. *Behavior Therapy, 49,* 124-147.

Ferguson, C. J. (2010). Genetic contributions to antisocial personality and behavior: A meta-analytic review from an evolutionary perspective. *The Journal of Social Psychology, 150,* 160-180.

Fink, B. C., Tant, A. S., Tremba, K., & Kiehl, K. A. (2012). Assessment of psychopathic traits in an incarcerated adolescent sample: A methodological comparison. *Journal of Abnormal Child Psychology, 40,* 971-986.

Fleming, G. E., Kimonis, E. R., Datyner, A., & Comer, J. S. (2017). Adapting internet-delivered parent-child interaction therapy to treat co-occurring disruptive behavior and callous-unemotional traits: A case study. *Clinical Case Studies, 16,* 370-387.

Flinn, M. V., Ponzi, D., & Muehlenbein, M. P. (2012). Hormonal mechanisms for regulation of aggression in human coalitions. *Human Nature, 23,* 68–88.

Fonagy, P. (2018). *Affect regulation, mentalization and the development of the self*. New York: Routledge.

Fonagy, P., & Bateman, A. W. (2007). Mentalizing and borderline personality disorder. *Journal of Mental Health, 16,* 83–101.

Fonagy, P., & Bateman, A. W. (2008). The development of borderline personality disorder: A mentalizing model. *Journal of Personality Disorders, 22,* 4–21.

Fontaine, N. M. G., McCrory, E. J. P., Boivin, M., & Moffitt, T. E. (2011). Predictors and outcomes of joint trajectories of callous-unemotional traits and conduct problems in childhood. *Journal of Abnormal Psychology, 120*, 730–742.

Fontaine, N., Barker, E. D., Salekin, R. T., & Viding, E. (2008). Dimensions of psychopathy and their relationships to cognitive functioning in children. *Journal of Clinical Child and Adolescent Psychology, 37,* 690–696.

Forth, A. E., & Book, A. S. (2010). Psychopathic traits in children and adolescents: The relationship with antisocial behavior and aggression. In R. T. Salekin, & D. R. Lynam (Eds.). *Handbook of child and adolescent psychopathy* (pp. 251–283). New York: Guilford Press.

Forth, A. E., & Bruke, H. C. (1998). Psychopathy in adolescence: Assessment, violence, and developmental precursors. In D. J. Cooke, A. E. Forth & R. D. Hare (Eds.), *Psychopathy: Theory, research and implications for society* (pp. 205–299). Boston, MA: Kluwer Academic Publishers.

Forth, A. E., Hart, S. D., & Hare, R. D. (1990). Assessment of psychopathy in male offenders. *Psychological Assessment, 2*, 342–344.

Forth, A. E., Kosson, D. S., & Hare, R. D. (2003). *The Psychopathy Checklist: Youth Version*. Toronto: Multi-Health Systems.

Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., Finkel, S. M. (2008). Open hearts build lives: positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personal and Social Psychology, 95,* 1045–62.

Frick, P. J. (2001). Effective interventions for children and adolescents with conduct disorder. *The Canadian Journal of Psychiatry, 46,* 597–608.

Frick, P. J. (2002). Juvenile psychopathy from a developmental perspective: Implications for construct development and use in forensic assessments. *Law and Human Behavior, 26,* 247–253.

Frick, P. J. (2003). *The Inventory of Callous-Unemotional Traits*. Unpublished rating scale, The University of New Orleans.

Frick, P. J., & Dickens, C. (2006). Current perspectives on conduct disorder. *Current Psychiatry Reports, 8,* 59–72.

Frick, P. J., & Hare, R. D. (2001). *The antisocial process screening device* (APSD). Toronto: Multi-Health Systems.

Frick, P. J., & Moffitt, T. E. (2010). *A Proposal to the DSM-V Childhood Disorders and the ADHD and Disruptive Behavior Disorders Work Groups to Include a Specifier to the Diagnosis of Conduct Disorder based on the Presence of Callous-Unemotional Traits*. Retrieved from http://www.dsm5.org

Frick, P. J., & Morris, A. S. (2004). Temperament and developmental pathways to conduct problems. *Journal of Clinical Child and Adolescent Psychology, 33,* 54–68.

Frick, P. J., & Nigg, J. T. (2012). Current issues in the diagnosis of attention deficit hyperactivity disorder, oppositional defiant disorder, and conduct disorder. *Annual Review of Clinical Psychology, 8,* 77–107.

Frick, P. J., & Wall Myers, T. D. (2018). Conduct Disorder and Callous-Unemotional Traits. In J. E. Lochman, & W. Matthys (Eds.). *The Wiley handbook of disruptive and impulse-control disorders* (pp. 37–54). Oxford, UK: Wiley Blackwell.

Frick, P. J., & White, S. F. (2008). The importance of callous-unemotional traits for developmental models of aggression and antisocial behavior. *Journal of Child Psychology and Psychiatry, 49,* 359–375.

Frick, P. J., Bodin, S. D., & Barry, C. T. (2000). Psychopathic traits and conduct problems in community and clinic-referred samples of children: Further development of the psychopathy screening device. *Psychological Assessment, 12,* 382–393.

Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous-unemotional traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31*, 457–470.

Frick, P. J., Kimonis, E. R., Dandreaux, D. M., & Farrel, J. M. (2003). The four-year stability of psychopathic traits in non-referred youth. *Behavioral Sciences & the Law, 21*, 713–766.

Frick, P. J., Ray, J. V., Thornton, L. C., & Kahn, R. E. (2014). Can callous-unemotional traits enhance the understanding, diagnosis, and treatment of serious conduct problems in children and adolescents? A comprehensive review. *Psychological Bulletin*, *140,* 1-57.

Frick, P. J., Stickle, T. R., Dandreaux, D. M., Farrell, J. M., & Kimonis, E. R. (2005). Callous-unemotional traits in predicting the severity and stability of conduct problems and delinquency. *Journal of Abnormal Psychology, 33,* 471–487.

Frogner, L., Andershed, A. K., & Andershed, H. (2018). Psychopathic personality works better than CU traits for predicting fearlessness and ADHD symptoms among children with conduct problems. *Journal of Psychopathology and Behavioral Assessment, 40,* 26-39.

Fuentes, A. (2004). It's not all sex and violence: Integrated anthropology and the role of cooperation and social complexity in human evolution. *American Anthropologist, 106,* 710–718.

Gangestad, S.W., & Simpson, J. A. (2007). *The evolution of mind: Fundamental questions and controversies.* New York: Guilford Press.

Gao, Y., Raine, A., Chan, F., Venables, P. H., & Mednick, S. A. (2010). Early maternal and paternal bonding, childhood physical abuse and adult psychopathic personality. *Psychological Medicine*, *40,* 1007-1016.

Garofalo, C., & Neumann, C. S. (2018). Psychopathy and emotion regulation: Taking stock and moving forward. In M. DeLisi (Ed.), *Routledge international handbook of psychopathy and crime* (pp. 58-79). London, England: Routledge.

Garofalo, C., Neumann, C. S., & Velotti, P. (2018). Difficulties in emotion regulation and psychopathic traits in violent offenders. *Journal of Criminal Justice, 57,* 116-125.

Garrett, C.G. (1985). Effects of residential treatment on adjudicated delinquents: A metaanalysis. *Journal of Research in Crime and Delinquency, 22,* 287-308.

Gauer, G., Souza, J. A., Silveira, A. M., & Sediyama, C. Y. N. (2013). Stressful events in autobiographical memory processing: Brazilian version of the Centrality of Event Scale. *Psicologia, Reflexão e Critica, 26,* 98-105.

Geen, R. G. (2001). *Human aggression* (2nd ed.). Buckingham: Open University Press (Original work published 1990).

Gilbert, P. (1995). Biopsychosocial approaches and evolutionary theory as aids to integration in clinical psychology and psychotherapy. *Clinical Psychology and Psychotherapy, 2,* 135–156.

Gilbert, P. (2005). Compassion and cruelty. In P. Gilbert (Ed.), *Compassion: Conceptualizations, research and use in psychotherapy* (pp. 9–74). New York: Routledge.

Gilbert, P. (2009). Introduction to compassion focused therapy. *Advances in Psychiatric Treatment, 5, 199–208.*

Gilbert, P. (2010) *Compassion focused therapy: The CBT distinctive features series*. London: Routledge.

Gilbert, P. (2010). *The compassionate mind: A new approach to life's challenges*. Oakland: New Harbinger Publications.

Gilbert, P. (2014). The origins and nature of compassion focused therapy. *British Journal of Clinical Psychology, 53,* 6–41

Gilbert, P. (2015). An evolutionary approach to emotion in mental health with a focus on affiliative emotions. *Emotion Review, 7,* 230-237.

Gilbert, P. (2016). A biopsychosocial and evolutionary approach to formulation In, N. Tarrier. (Ed). *Case Formulation in Cognitive Behaviour Therapy: The Treatment of Challenging Cases* (pp. 50-89). Chichester: Wiley.

Gilbert, P. (2017). Compassion as a social mentality: An evolutionary approach. In: P. Gilbert (ed). *Compassion: Concepts, Research and Applications.* (p. 31-68). London: Routledge.

Gilbert, P. (2019). Explorations into the nature and function of compassion. *Current Opinion in Psychology, 28,* 108-114.

Gilbert, P., & Gerlsma, C. (1999). Recall of shame and favouritism in relation to psychopathology. *The British Journal of Clinical Sychology, 38,* 357–373.

Gilbert, P., McEwan, K., Mitra, R., Franks, L., Richter, A., & Rockliff, H. (2008). Feeling safe and content: A specific affect regulation system? Relationship to depression, anxiety, stress, and self-criticism. *The Journal of Positive Psychology, 3,* 182–191.

Glenn, A. L. (2019). Early life predictors of callous-unemotional and psychopathic traits. *Infant Mental Health Journal, 40,* 39-53.

Glenn, A. L., Kuzban, R., & Raine, A. (2011). Evolutionary theory and psychopathy. *Aggression and Violent Behavior, 16,* 371-380.

Glenn, A. L., Raine, A., Venables, P. H., & Mendnick, S. A. (2007). Early temperamental and psychophysiological precursors of adult psychopathic personality. *Journal of Abnormal Psychology, 116,* 508–518.

Gold, J., Sullivan, M. W., & Lewis, M. (2011). The relation between abuse and violent delinquency: The conversion of shame to blame in juvenile offenders. *Child Abuse & Neglect, 35,* 459–467.

Goss, K., Gilbert, P., & Allan, S. (1994). An exploration of shame measures-I: The "Other as Shamer Scale". *Personality and Individual Differences, 17,* 713–717.

Gould, S. J. (1991). Exaptation: A crucial tool for evolutionary psychology. *Journal of Social Issues, 47*, 43–65.

Gretton, H. M., Hare, R. D., & Catchpole, R. E. H. (2004). Psychopathy and offending from adolescence to adulthood: A 10-year follow-up. *Journal of Consulting and Clinical Psychology*, *72*, 636–645.

Gretton, H. M., McBride, M., Hare, R. D., O'Shaughnessy, R., & Kumka, G. (2001a). Psychopathy and recidivism in adolescent sex offenders. *Criminal Justice and Behavior, 28*, 427–449.

Gross, C. A., & Hansen, N. E. (2000). Clarifying the experience of shame: the role of attachment style, gender, and investment in relatedness. *Personality and Individual Differences*, *28*, 897-907.

Gross, J. J. (2014). Emotion regulation: Conceptual and empirical foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3-20). New York, NY, US: Guilford Press.

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review, 108,* 814–834.

Hare, R. D. (1980). A research scale for the assessment of psychopathy in criminal populations. *Personality and Individual Differences, 1,* 111–119.

Hare, R. D. (1985). A comparison of procedures for the assessment of psychopathy. *Journal of Consulting and Clinical Psychology, 53,* 7–16.

Hare, R. D. (1991). *The Hare Psychopathy Checklist-Revised.* Toronto: Multi-Health Systems.

Hare, R. D. (1993). *Without conscience: The disturbing world of the psychopaths among us.* New York: Simon & Schuster/Pocket.

Hare, R. D. (2003). *The Hare Psychopathy Checklist-Revised* (2nd ed.). Toronto: Multi-Health Systems.

Hare, R. D., & Hervé, H. (1999). *The Hare P-scan: Research version*. Toronto: Multi-Health Systems.

Hare, R. D., & Neumann, C. S. (2006). The PCL-R assessment of psychopathy: Development, structural proprieties, and new directions. In C. Patrick (Ed.), Handbook of psychopathy (pp. 58-90). New York: Guildford Press.

Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a clinical and empirical construct. *Annual Review of Clinical Psychology, 4,* 217–246.

Harper, F., & Arias, I. (2004). The role of shame in predicting adult anger and depressive symptoms among victims of child psychological maltreatment. *Journal of Family Violence*, *19*, 367-375.

Harper, J. M. (2011). Regulating and coping with shame. In R. Trnka, K. Balcar, & M. Kuska (Eds.), *Reconstructing emotional spaces: from experience to regulation* (pp. 189-206). Prague: Prague of College of Psychological Studies Press

Harris, G. T., & Rice, M. E. (2006). Treatment of psychopathy: A review of empirical findings. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 555-572). New York: Guildford Press.

Hart, S., Cox, D., & Hare, R. D. (1995). *Manual for the psychopathy checklist:* Screening.

Hass, S., Waschbusch, D., Pelham, W., King, S., Andrade, B., & Carrey, N. (2011). Treatment response in CP/ADHD children with callous/unemotional traits. *Journal of Abnormal Child Psychology, 39,* 541–552.

Hawes, D. J., & Dadds, M. R. (2005). The treatment of conduct problems in children with callous-unemotional traits. *Journal of Consulting and Clinical Psychology, 73,* 737–741.

Hawes, D. J., Dadds, M. R., Frost, A. D., Hasking, P. A. (2011). Do childhood callous-unemotional traits drive change in parenting practices? *Journal of Clinical Child & Adolescent Psychology 40,* 507-518.

Hawes, S. W., Byrd, A. L., Gonzalez, R., Cavanagh, C., Bechtold, J., Lynam, D. R., & Pardini, D. A. (2018). The developmental course of psychopathic features: Investigating stability, change, and long-term outcomes. *Journal of Research in Personality, 77,* 83-89.

Hayes, S. C. (2004). Acceptance and Commitment Therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behavior Therapy, 35*, 639–665.

Hecht, L. K., Latzman, R. D., & Lilienfeld, S. O. (2018). The Psychological Treatment of Psychopathy. In D. David, S. J. Lynn, & G. H. Monegomery (Eds.), *Evidence-Based Psychotherapy: The State of the Science and Practice* (pp. 271-298). Hoboken, NJ, USA

Heinrichs, M., & Domes, G. (2008). Neuropeptides and social behavior: Effects of oxytocin and vasopressin in humans. *Progress in Brain Research, 170,* 337–350.

Heinze, P. (2017). Psychopathy, unconscious shame and attachment: Considering the psychodynamics of psychopathy. *Psychodynamic Practice, 23,* 7-32.

Heinzen, H., Koehler, D., Smeets, T., Hoffer, T., & Huchzermeier, C. (2011). Emotion regulation in incarcerated young offenders with psychopathic traits. *Journal of Forensic Psychiatry & Psychology, 22,* 809–833.

Heirigs, M. H., DeLisi, M., Fox, B., Dhingra, K., & Vaughn, M. G. (2018). Psychopathy and suicidal thoughts and behaviors revisited: results from a statewide population of institutionalized youth. *International Journal of Offender Therapy and Comparative Criminology,* 0306624X18812533.

Hejdenberg, J., & Andrews, B. (2011). The relationship between shame and different types of anger: A theory-based investigation. *Personality and Individual Differences, 50,* 1278-1282.

Heleniak, C., Jenness, J. L., Vander Stoep, A., McCauley, E., & McLaughlin, K. A. (2016). Childhood maltreatment exposure and disruptions in emotion regulation: A transdiagnostic pathway to adolescent internalizing and externalizing psychopathology. *Cognitive Therapy and Research, 40,* 394-415.

Hemphill, J. F. (2007). The Hare Psychopathy Checklist and recidivism: Methodological issues and critical evaluating empirical evidence. In H. Herve, & J. C. Yuille (Eds.), *The psychopath: Theory, research, and practice* (pp. 141–172). Mahwah, NJ: Erlbaum.

Henry, J., Dionne, G., Viding, E., Vitaro, F., Brendgen, M., Tremblay, R. E., & Boivin, M. (2018). Early warm-rewarding parenting moderates the genetic contributions to callous–unemotional traits in childhood. *Journal of Child Psychology and Psychiatry, 59,* 1282-1288

Herpers, P. C., Rommelse, N. N., Bons, D. M., Buitelaar, J. K., Scheepers, F. E. (2012). Callous–unemotional traits as a cross-disorders construct. *Social Psychiatry and Psychiatric Epidemiology, 47,* 2045-64.

Hofmann, S. G., Korte, K. J., & Suvak, M. K. (2009). The upside of being socially anxious: Psychopathic attributes and social anxiety are negatively associated. *Journal of Social and Clinical Psychology, 28,* 714–727.

Hoge, R. D., Andrews, D. A., & Leschied, A. (2002). *The Youth Level of Service/Case Management Inventory.* Toronto: Multi Health Systems.

Hollin, C. R. (2008). Evaluating offending behaviour programmes: Does only randomization glister?. *Criminology & Criminal Justice, 8,* 89-106.

Holmqvist, R. (2008). Psychopathy and affect consciousness in young criminal offenders. *Journal of Interpersonal Violence,* 23, 209-224.

Horstmann, G., & Bauland, A. (2006). Search asymmetries with real faces: Testing the anger-superiority effect. *Emotion, 6,* 193–207.

Hoyersten, J. C. (2001). The Icelandic Sagas and the idea of personality and deviant personalities in the Middle Ages. *History of Psychiatry,* 199–212.

Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 61,* 1–55.

Huang, J. Y., & Bargh, J. A. (2014). The Selfish Goal: Autonomously operating motivational structures as the proximate cause of human judgment and behavior. *Behavioral and Brain Sciences, 37,* 121-135.

Hyde, L. W., Waller, R., Trentacosta, C. J., Shaw, D. S., Neiderhiser, J. M., Ganiban, J. M., ... & Leve, L. D. (2016). Heritable and nonheritable pathways to early callous-unemotional behaviors. *American Journal of Psychiatry, 173,* 903-910.

Irons, C., Gilbert, P., Baldwin, M. W., Baccus, J., & Palmer, M. (2006). Parental recall, attachment relating and self-attacking/self-reassurance: Their relationship with depression. *British Journal of Clinical Psychology, 45,* 1–15.

Izard, C. E. (2007). Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on Psychological Science, 2*, 260–280.

Jablonka, E., & Lamb, M. N. (2005). *Evolution in four dimensions: Genetic, epigenetic, behavioral and symbolic variation in the history of life*. Massachusetts: MIT Press.

Jacobson, N. S., & Truax, P. (1991). Clinical significance: a statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology, 39,* 12–19.

Jambroes, T., Jansen, L. M., Vermeiren, R. R., Doreleijers, T. A., Colins, O. F., & Popma, A. (2016). The clinical usefulness of the new LPE specifier for subtyping adolescents with conduct disorder in the DSM 5. *European Child & Adolescent Psychiatry, 25*, 891–902. https://doi.org/10.1007/s00787-015-0812-3.

Johansson, P., Kerr, M., & Andershed, H. (2005). Linking adult psychopathy with childhood hyperactivity–impulsivity–attention problems and conduct problems through retrospective self-reports. *Journal of Personality Disorders, 19*, 94–101.

Johnstone, L., & Cooke, D. J. (2004). Psychopathic-like traits in childhood: Conceptual and measurement concerns. *Behavioral Sciences & the Law, 22,* 103–125.

Jonason, P. K., Icho, A., & Ireland, K. (2016). Resources, harshness, and unpredictability: The socioeconomic conditions associated with the dark triad traits. *Evolutionary Psychology, 14,* 1-11

Jones, A. P., Happé, F. G., Gilbert, F., Burnett, S., & Viding, E. (2010). Feeling, caring, knowing: Different types of empathy deficit in boys with psychopathy tendencies and autism spectrum disorder. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 51,* 1188–1197.

Jones, S. E., Miller, J. D., & Lynam, D. R. (2011). Personality, antisocial behavior, and aggression: A meta-analytic review. *Journal of Criminal Justice, 39,* 329–337.

Josephs, R. A., Telch, M. J., Hixon, J. G., Evans, J. J., Lee, H., Knopik, V. S., et al. (2011). Genetic and hormonal sensitivity to threat: Testing a serotonin transporter genotype X testosterone interaction. *Psychoneuroendocrinology, 37,* 752–761.

Kahl, K. G., Winter, L., & Schweiger, U. (2012). The third wave of cognitive behavioural therapies: What is new and what is effective? *Current Opinion in Psychiatry, 25,* 522-528.

Karpman, B. (1949). The psychopathic delinquent child. *The American Journal of Orthopsychiatry, 20,* 223–265.

Karpman, B. (1950). Psychopathic behavior in infants and children: A critical survey of existing concepts. *The American Journal of Orthopsychiatry, 21,* 223–272.

Kazdin, A. E. (2009). *The Kasdin method for parenting the defiant child.* New York: Houghton Mifflin.

Kazdin, A., & Wassell, G. (2000). Therapeutic changes in children, parents, and families resulting from treatment of children with conduct problems. *Journal of the American Academy of Child and Adolescent Psychiatry, 39,* 414–420.

Kemp, R. A. T., Overbeek, G., Wied, M., Engels, R. C. M. E., & Scholte, R. H. J. (2007). Early adolescent empathy, parental support, and antisocial behavior. *The Journal of Genetic Psychology, 168,* 5–18.

Keverne, E. B., & Curley, J. P. (2008). Epigenetics, brain evolution and behavior. *Frontiers in Neuroendocrinology, 29,* 398–412.

Kim, J., Talbot, N., & Cicchetti, D. (2009). Childhood abuse and current interpersonal conflict: the role of shame. *Child Abuse & Neglect*, *33*, 362-371.

Kimonis, E. R., & Armstrong, K. (2012). Adapting parent–child interaction therapy to treat severe conduct problems with callous-unemotional traits: A case study. *Clinical Case Studies, 11*, 234-252.

Kimonis, E. R., Frick, P. J., Boris, N. W., Smyke, A. T., Cornell, A. H., Jamie, J. M.,…Zeanah, C. H. (2006). Callous-unemotional features, behavioral inhibition, and parenting: Independent predictors of aggression in a high-risk preschool sample. *Journal of Child and Family Studies, 15,* 745–756.

Kimonis, E. R., Goulter, N., Hawes, D. J., Wilbur, R. R., & Groer, M. W. (2017). Neuroendocrine factors distinguish juvenile psychopathy variants. *Developmental Psychobiology, 59,* 161–173. https://doi.org/10.1002/dev.21473.

Kimonis, E. R., Tatar, I. I., Joseph, R., & Cauffman, E. (2012). Substance-related disorders among juvenile offenders: What role do psychopathic traits play?. *Psychology of Addictive Behaviors, 26,* 212-221

Kirby, J. N., Tellegen, C. L., & Steindl, S. R. (2017). A meta-analysis of compassion-based interventions: Current state of knowledge and future directions. *Behavior Therapy, 48,* 778–792.

Kirsch, P., Esslinger, C., Chen, Q., Mier, D., Lis, S., Siddhanti, S., et al. (2005). Oxytocin modulates neural circuitry for social cognition and fear in Humans. *Journal of Neuroscience, 25,* 11489–11493.

Kivisto, J., Kivisto, L., Moore, T., & Rhatigan, D. (2011). Antisociality and intimate partner violence: The facilitating role of shame. *Violence and Victims*, *26*, 758-773.

Klahr, A. M., & Burt, S. A. (2014). Practitioner review: Evaluation of the known behavioral heterogeneity in conduct disorder to improve its assessment and treatment. *Journal of Child Psychology and Psychiatry, 55,* 1300–1310.

Klimecki, O. M., Leiberg, S., Ricard, M., & Singer, T. (2014). Differential pattern of functional brain plasticity after compassion and empathy training. *Social Cognitive and Affective Neuroscience, 9,* 873-879.

Kochanska, G., & Murray, K. (2000). Mother-child mutually responsive orientation and conscience development: From toddler to early school age. *Child Development, 71*, 417–431.

Koehler, J. A., Lösel, F., Akoensi, T. D., & Humphreys, D. K. (2013). A systematic review and meta-analysis on the effects of young offender treatment programs in Europe. *Journal of Experimental Criminology, 9,* 19-43.

Kolko, D. J., Dorn, L. D., Bukstein, O. G., Pardini, D., Holden, E. A., & Hart, J. (2009). Community vs. clinical treatment of children with early-onset ODD or CD: A clinical trial with 3 years follow-up. *Journal of Abnormal Child Psychology, 37*, 591–609.

Kosson, D. S., Neumann, C. S., Forth, A. E., Salekin, R. T., Hare, R. D., Krischer, M. K., & Sevecke, K. (2013). Factor structure of the Hare Psychopathy Checklist: Youth Version (PCL:YV) in adolescent females. *Psychological Assessment, 25,* 71–83.

Kosson, D. S., Vitacco, M. J., Swogger, M. T., & Steuerwald, B. L. (2016). Emotional experiences of the psychopath. In C. B. Gacono (Ed.), Personality and clinical psychology series. *The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 73-95). New York, NY, US: Routledge/Taylor & Francis Group.

Kotler, J. S., & McMahon, R. J. (2005). Child Psychopathy: Theories, measurement, and relations with the development and persistence of conduct problems. *Clinical Child and Family Psychology Review, 8,* 291–325.

Kotler, J. S., & McMahon, R. J. (2010). Assessment of child and adolescent psychopathy. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 79–112). New York: Guilford Press.

Kraeplin, É. (1904). *Psychiatrie: Ein lehbuch* (7th & 8th Eds.). Leipzig: Barth.

Kraeplin, É. (1915). *Psychiatrie: Ein lehbuch* (7th & 8th eds.). Leipzig: Barth.

Krebs, D. (2007). Understanding evolutionary approaches to human behavior: Essay review of the evolution of mind: Fundamental questions and controversies by Steven W. Gangestad and Jeffry A. Simpson. *Human Development, 50,* 286–291.

Krstic, S., Neumann, C. S., Roy, S., Robertson, C. A., Knight, R. A., & Hare, R. D. (2018). Using latent variable-and person-centered approaches to examine the role of psychopathic traits in sex offenders. *Personality Disorders: Theory, Research, and Treatment, 9,* 207–216. https://doi.org/10.1037/per0000249.

Kruh, I. P., Frick, P. J., & Clements, C. B. (2005). Historical and personality correlates to the violence patterns of juveniles tried as adults. *Criminal Justice and Behavior, 92*, 69–96.

Kubak, A. F., & Salekin, R. T. (2009). Psychopathy and anxiety in children and adolescents: Newinsights on developmental pathways to offending. *Journal of Psychopathology and Behavioral Assessment, 31*, 271–284.

Kumsta, R., Sonuga-Barke, E., & Rutter, M. (2012). Adolescent callous–unemotional traits and conduct disorder in adoptees exposed to severe early deprivation. *The British Journal of Psychiatry, 200,* 197–201. https://doi.org/10.1192/bjp.bp.110.089441.

Lahey, B. B. (2014). What we need to know about callous-unemotional traits: Comment on Frick, Ray, Thornton, and Kahn (2014). *Psychological Bulletin, 140,* 58–63. https://doi.org/10.1037/a0033387.

Lahey, B. B., Loeber, R., Burke, J., Rathouz, P. J., & McBurnette, K. (2002). Waxing and waning in concert: Dynamic comorbidity of conduct disorder with other disruptive and emotional problems over 17 years among clinic-referred boys. *Journal of Abnormal Psychology, 111,* 556, 567.

Lansing, A. E., Plante, W. Y., Beck, A. N., & Ellenberg, M. (2018). Loss and grief among persistently delinquent youth: The contribution of adversity indicators and psychopathy- spectrum traits to broadband internalizing and externalizing psychopathology. *Journal of Child & Adolescent Trauma, 11,* 375–389.

Lanza, S. T., Tan, X., & Bray, B. C. (2013). Latent class analysis with distal outcomes: A flexible model-based approach. *Structural Equation Modeling: A Multidisciplinary Journal, 20,* 1–26. https://doi.org/10.1080/10705511.2013.742377.

Larsson, H., Andershed, H., & Lichtenstein, P. (2006). A genetic factor explains most of the variation in the psychopathic personality. *Journal of Abnormal Psychology, 115,* 221–230.

Larsson, H., Tuvblad, C., Rijsdik, V. F., Andershed, H., Grann, M., & Lichtenstein, P. (2007). A common genetic factor explains the association between psychopathic personality and antisocial behavior. *Psychological Medicine, 37,* 1–12.

Latzman, R. D., Palumbo, I. M., Sauvigné, K. C., Hecht, L. K., Lilienfeld, S. O., & Patrick, C. J. (2018). Psychopathy and internalizing psychopathology: A triarchic model perspective. *Journal of Personality Disorders, 32*, 1–26. https://doi.org/10.1521/pedi_2018_32_347.

Leaviss, J., & Uttley, L. (2015). Psychotherapeutic benefits of compassion-focused therapy: An early systematic review. *Psychological Medicine, 45,* 927-945.

LeDoux, J. (1998). *The emotional brain*. London: Weidenfeld & Nicolson.

LeDoux, J. (2003). The emotional brain, fear and the amygdala. *Cellular and Molecular Neurobiology, 23,* 727–738.

Lee, Z., & Salekin, R. T. (2010) Psychopathy in a noninstitutional sample: Differences in primary and secondary subtypes. *Personality Disorders, Theory, Research and Treatment*, *1*, 153-169.

Lee, Z., Salekin, R. T., & Iselin, A. M. R. (2010). Psychopathic traits in youth: Is there evidence for primary and secondary subtypes? *Journal of Abnormal Child Psychology*, *38*, 381-393.

Leistico, A. M., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis relating the hare measures of psychopathy to antisocial conduct. *Law and Human Behavior, 32,* 28–45.

Lester, W. S., Salekin, R. T., & Sellbom, M. (in press). The SRP-II as a rich source of data on psychopathy. *Psychological Assessment*.

Levenson, M. R., Kiehl, K. A., & Fitzpatrick, C. M. (1995). Assessing psychopathic attributes in a noninstitutionalized population. *Journal of Personality and Social Psychology, 68*, 151–158.

Lewis, H. B. (1971). *Shame and guilt in neurosis.* New York: International University Press.

Lewis, M. (1992). *Shame: The exposed self*. New York: Free Press.

Lewis, M. (2001). Origins of the self-conscious child. In W. Ray Crozier, & A.A. Adden (Eds.), *International handbook of social anxiety: Concepts, research, and interventions related to the self and shyness* (pp. 101–105). Sussex, England: John Wiley & Sons.

Lilienfeld, S. O., & Widows, M. R. (2005). *Psychopathic Personality Inventory — Revised: Professional manual*. Lutz, Florida: Psychological Assessment Resources, Inc.

Linden, D. J. (2007). *The accidental mind: How brain evolution has given us love, memory, dreams, and God.* Cambridge, MA: The Belknap Press of Harvard University Press.

Lindner, R. M. (2003). *Rebel without a cause: The story of a criminal psychopath*. New York: Grune & Stratton (Original work published 1944).

Lipsey, M. W. & Wilson, D. B. (1998). Effective intervention for serious juvenile offenders: A synthesis of research. In R. Loeber & D. P. Farrington (Eds.), *Serious and violent juvenile offenders: Risk factors and successful interventions* (pp. 313-345). Thousand Oaks, C. A: Sape.

Lipsey, M. W. (1995). What do we learn from 400 research studies on the effectiveness of treatment with juvenile delinquents? In J. McGuire (Ed.), *What works: Reducing reoffending? Guidelines from research and practice* (pp.63-78). London: Wiley Blackwell.

Lipsey, M. W. (2009). The primary factors that characterize effective interventions with juvenile offenders: A meta-analytic overview. *Victims and Offenders, 4,* 124–147.

Lipsey, M. W., Howell, J. C., Kelly, M. R., Chapman, G., & Carver, D. (2010). *Improving the effectiveness of juvenile justice programs: A new perspective on evidence-based practice*. Washington: Center for Juvenile Justice Reform.

Littell, J. H. (2005). Lessons from a systematic review of effects of multisystemic therapy. *Children and Youth Services Review, 27,* 445-463.

Lo, Y., Mendell, N., & Rubin, D. (2001). Testing the number of components in a normal mixture. *Biometrika, 88,* 767–778. https://doi.org/10.1093/biomet/88.3.767.

Loeber, R., Pardini, D. A., Hipwell, A., Stouthamer-Loeber, M., Keenan, K., & Sembower, M. A. (2009). Are there stable factor in preadolescents girls' externalizing behaviors? *Journal of Abnormal Child Psychology, 37,* 777–791.

Lombroso, C. (1895/2004). Criminal anthropology: Its origin and application. In D.M. Horton, & K.E. Rich (Eds.), *The Criminal Anthropological Writings of Cesare Lombroso Published in the English Language Periodical Literature During the Late 19th and Early 20th Centuries* (pp. 63–82). Lewiston, NY: Edwin Mellen Press.

Lopez-Duran, N. L., Olson, S. L., Hajal, N. J., Felt, B. T., & Vazquez, D. M. (2009). Hypothalamic pituitary adrenal axis functioning in reactive and proactive aggression in children. *Journal of Abnormal Child Psychology, 37, 169–182.*

Lorber, M. F. (2004). Psychophysiology of aggression, psychopathy, and conduct problems: A meta-analysis. *Psychological Bulletin, 130,* 531–552. https://doi.org/10.1037/0033-2909.130.4.531.

Lösel, F. (1995). The efficacy of correctional treatment: A review and synthesis of metaevaluations. In J. McGuire (Ed.), *What works: reducing reoffending? Guidelines from research and practice* (pp. 79-111). London: Wiley Blackwell.

Lotze, G. M., Ravindran, N., & Myers, B. J. (2010). Moral emotions, emotion self-regulation, callous-unemotional traits, and problem behavior in children of incarcerated mothers. *Journal of Child and Family Studies, 19,* 702–713.

Lubke, G., & Muthén, B. O. (2007). Performance of factor mixture models as a function of model size, covariate effects, and class-specific parameters. *Structural Equation Modeling, 14,* 26–47.

Lykken, D. T. (1957). A study of anxiety in the sociopathic personality. *Journal of Abnormal and Clinical Psychology, 55,* 6–10.

Lykken, D. T. (1995). *The antisocial personalities*. Mahwah, NJ: Erlbaum.

Lykken, D. T. (2006). Psychopathic personality: The scope of the problem. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 3-13). New York: Guildford Press.

Lynam, D. R. (1996). Early identification of chronic offenders: Who is the fledgling psychopath? *Psychological Bulletin, 120,* 209–234.

Lynam, D. R. (1997). Pursuing the psychopath: Capturing the fledgling, psychopath in a nomological net. *Journal of Abnormal Psychology, 106,* 425–438.

Lynam, D. R. (2010). Child and adolescent psychopathy and personality. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 179–201). New York: Guilford Press.

Lynam, D. R., & Derefinko, K. J. (2006). Psychopathy and personality. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 133–155). New York: Guildford Press.

Lynam, D. R., & Gudonis, L. (2005). The development of psychopathy. *Annual Review of Clinical Psychology, 1,* 381–407.

Lynam, D. R., & Widiger, T. A. (2007). Using a general model of personality to identify the basic elements of psychopathy. *Journal of Personality Disorders, 21,* 160–178.

Lynam, D. R., Caspi, A., Moffitt, T. E., Loeber, R., & Stouthamer-Loeber, M. (2007). Longitudinal evidence that psychopathy scores in early adolescence predict adult psychopathy. *Journal of Abnormal Psychology, 116,* 155–165.

Lynam, D. R., Caspi, A., Moffitt, T. E., Raine, A., Loeber, R., & Stouhamer-Loeber, M. (2005). Adolescent psychopathy and the Big Five: Results from two samples. *Journal of Abnormal Child Psychology, 33,* 431–443.

Lynam, D. R., Charnigo, R., Moffitt, T. E., Raine, A., Loeber, R., & Stouthamer-Loeber, M. (2009). The stability of psychopathy across adolescence. *Development and Psychopathology, 21,* 1133–1153.

Lynam, D. R., Loeber, R., & Stouthamer-Loeber, M. (2008). The stability of psychopathy from adolescence into adulthood: The search for moderators. *Criminal Justice and Behavior, 35,* 228–243.

Lynam, D. R., Miller, J. D., & Derefinko, K. J. (2018). Psychopathy and Personality: An Articulation of the Benefits of a Trait-Based Approach. In C. Patrick (Ed.), *Handbook of Psychopathy* (257-280). New York: The Guilford Press

Maaseen, G. (2001). The unreliable change of reliable change indices. *Behaviour Research and Therapy, 39,* 495–498.

MacDonald, K., & MacDonald, T. M. (2010). The peptide that binds: A systematic review of oxytocin and its prosocial effects in humans. *Harvard Review of Psychiatry, 18,* 1–21.

MacKenzie, D. L., & Farrington, D. P. (2015). Preventing future offending of delinquents and offenders: What we have learned from experiments and meta-analyses? *Journal of Experimental Criminology, 11,* 565-595.

MacLean, P. D. (1985). Evolutionary psychiatry and the triune brain. *Psychological Medicine, 15,* 219-221.

MacLean, P. D. (1990). *The triune brain in evolution: Role in paleocerebral functions.* New York: Plenum Press.

MacPherson, L., Reynolds, E. K., Daughters, S. B., Wang, F., Cassidy, J., Mayes, L. C., & Lejuez, C. W. (2010). Positive and negative reinforcement underlying risk behavior in early adolescents. *Prevention Science, 11,* 331–342.

Malik, A. I., Zai, C. C., Abu, Z., Nowrouzi, B., Beitchman, J.H. (2012). The role of oxytocin and oxytocin receptor gene variants in childhood-onset aggression. *Genes, Brain and Behavior, 11,* 545-551.

Manders, W. A., Deković, M., Asscher, J. J., van der Laan, P. H., & Prins, P. J. (2013). Psychopathy as predictor and moderator of multisystemic therapy outcomes among adolescents treated for antisocial behavior. *Journal of Abnormal Child Psychology, 41,* 1121–1132.

March, A. A., Finger, E. C., Mitchell, D. G. V., Reid, M. E., Sims, C., Kosson, D. S.,…& Blair, R.J.R. (2008). Reduced amygdala response to fearful expressions in children *and adolescents with callous-unemotional traits and disruptive behavior disorders. The American Journal of Psychiatry, 165,* 712–720.

Marczyk, G. R., Heilbrun, K., Lander, T., & DaMatteo, D. (2003). Predicting juvenile recidivism with PCL: YV, MAYSI, and YLS/CMI. *International Journal of Forensic Mental Health, 2,* 7–18.

Marsee, M. A., & Frick, P. J. (2007). Exploring the cognitive and emotional correlates to proactive and reactive aggression in a sample of detained girls. *Journal of Abnormal Child Psychology, 35,* 969–981.

Martinson, R. (1974). What works? – Questions and answers about prison reform. *The Public Interest, 10,* 22-54.

Matos, M., Pinto-Gouveia, J., Gilbert, P., Duarte, C., & Figueiredo, C. (2015). The Other as Shamer Scale — 2: Development and validation of a short version of a measure of external shame. *Personality and Individual Differences, 74,* 6–11.

McCord, W., & McCord, J. (1964). *The psychopath: An essay on the criminal mind.* Princeton, NJ: Van Nostrand.

McCrae, R. R., Costa, P. T., Ostendorf, F., Angleitner, A., Hřebíčková, M., Avia, M. D... & Smith, P. B. (2000). Nature over nurture: Temperament, personality, and life span development. *Journal of Personality and Social Psychology, 78,* 173–186.

McCrory, E., De Brito, S. A., & Viding, E. (2012). The link between child abuse and psychopathology: A review of neurobiological and genetic research. *Journal of the Royal Society of Medicine, 105*, 151-156.

McCuish, E. C., Corrado, R. R., Hart, S. D., & DeLisi, M. (2015). The role of symptoms of psychopathy in persistent violence over the criminal career into full adulthood. *Journal of Criminal Justice, 43,* 345-356.

McDonald, R., Dodson, M., Rosenfield, D., & Jouriles, E. (2011). Effects of a parenting interventions on features of psychopathy in children. *Journal of Abnormal Child Psychology, 39,* 1013–1023.

McGuire, J. (2013). 'What works' to reduce re-offending: 18 years on. In L. A. Craig, L. Dixon, & T. A. Gannon (Eds.), *What works in offender rehabilitation: An evidence-based approach to assessment and treatment* (pp. 20–49). Chichester: Wiley-Blackwell.

McLachlan, G., & Peel, D. (2004). *Finite mixture models*. New York, NY: Wiley.

McWilliams, N. (2011). *Psychoanalytic diagnosis. Understanding personality structure in the clinical process*. New York, NY: Guilford Press. (Original work published 1994)

Mealey, L. (1995). The sociobiology of sociopathy: An integrated evolutionary model. *The Behavioral and Brain Sciences, 18,* 523–599.

Meloy, J. R. (1988). *The psychopathic mind: Origins, dynamics, and treatment*. Northvale, NJ: Aronson.

Mikulincer, M., Shaver, P. R., Gillath, O., & Nitzberg, R. A. (2005). Attachment, caregiving, and altruism: Boosting attachment security increases compassion and helping. *Journal of Personality and Social Psychology, 89,* 817–839.

Millon, T. (1993). *Millon adolescent clinical inventory.* Minneapolis, MN: National Computer Systems.

Millon, T., & Davis, R. D. (1998). Ten subtypes of psychopathy. In T. Millon, M. Simonsen, M. Birket-Smith, & R. Davis (Eds.), *Psychopathy: Antisocial, criminal and violent behaviour* (pp. 161–170). New York: Guildford Press.

Mills, R. S. L., Arbeau, K. A., Lall, D. I. K., & De Jaeger, A. E. (2010). Parenting and child characteristics in the prediction of shame in early and middle childhood. *Merrill-Palmer Quarterly, 56,* 500–528.

Mills, S. L., Babinski, D. E., & Waschbusch, D. A. (2018). Maternal PTSD and behavioral parent training treatment for a girl with Conduct Disorder and callous–unemotional traits. *Clinical Case Studies, 17,* 482-498.

Minzenberg, M. J., & Siever, L. J. (2006). Neurochemestry and pharmacology of psychopathy and related disorders. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 251–277). New York: Guildford Press.

Mishonsky, J. D., & Sharp, C. (2010). Revisiting Lynam's notion of the "fledgling psychopath": Are HIA-CP children truly psychopathic-like? *Child and Adolescent Psychiatry and Mental Health, 4,* 1–9.

Modecki, K. L., Zimmer-Gembeck, M. J., & Guerra, N. (2017). Emotion regulation, coping, and decision making: Three linked skills for preventing externalizing problems in adolescence. *Child Development*, *88*, 417-426.

Moffitt, T. E. (1993). Adolescence-limited and life course persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674–701.

Moffitt, T. E., & Caspi, A. (2001). Childhood predictors differentiate life-course persistente and adolescent-limited antisocial pathways among males and females. *Development and Psychopathology, 13,* 355–375.

Moher, D., Hopewell, S., Schulz, K.F., Montori, V., Gotzsche, P.C., Devereaux, P.J. … Altman, D.G., (2010). CONSORT 2010 Explanation and Elaboration: Updated guidelines for reporting parallel group randomised trials. *BMJ, 340,* 698-702.

Mokros, A., Hare, R. D., Neumann, C. S., Santtila, P., Habermeyer, E., & Nitschke, J. (2015). Variants of psychopathy in adult male offenders: A latent profile analysis. *Journal of Abnormal Psychology, 124,* 372–386. https://doi.org/10.1037/abn0000042.

Morin, A. J. S. (2016). Person-centered research strategies in commitment research. In J. P. Meyer (Ed.). *The Handbook of employee commitment* (pp. 490–508). Cheltenham, UK: Edward Elgar.

Morrison, D. & Gilbert, P. (2001). Social rank, shame and anger in primary and secondary psychopaths. *Journal of Forensic Psychiatry & Psychology, 12*, 330-356.

Moul, C., Dobson-Stone, C., Brennan, J., Hawes, D., Dadds, M. (2013). An exploration of the serotonin system in antisocial boys with high levels of callous-unemotional traits. *PloS ONE 8,* e56619.

Mullins-Nelson, J. L., Salekin, R. T., & Leistico, A. M. R. (2006). Psychopathy, empathy, and perspective-taking ability in a community sample: Implications for the successful psychopathy concept. *International Journal of Forensic Mental Health, 5,* 133-149.

Munoz, L. C., & Frick, P. J. (2012). Callous-unemotional traits and their implication for understanding and treating aggressive and violent youths. *Criminal Justice and Behavior, 39,* 794–813.

Murphy, J. M. (1976). Psychiatric labeling in cross-cultural perspective: Similar kinds of disturbed behavior appear to be labeled abnormal in diverse cultures. *Science, 191,* 1019–1028.

Murray, L., Dotterer, H. L., Waller, R., & Hyde, L. W. (2018). Neurogenetics approaches to understanding psychopathy. In M. Delisi (Ed.), *Routledge International Handbook of Psychopathy and Crime* (pp. 113-138). New York: Routledge.

Murrie, D. C., & Cornell, D. G. (2000). The Millon Adolescent Clinical Inventory and psychopathy. *Journal of Personality Assessment, 75,* 110–125.

Murrie, D. C., Boccaccini, M. T., McCoy, W., & Cornell, D. G. (2007). Diagnostic labeling in juvenile court: How do descriptions of psychopathy and conduct disorder influence judges? *Journal of Clinical Child and Adolescent Psychology, 36*, 228–241.

Murrie, D. C., Marcus, D. K., Douglas, K. S., Lee, Z., Salekin, R. T., & Vincent, G. (2007). Youth with psychopathy features are not a discrete class: A taxometric analysis. *Journal of Child Psychology and Psychiatry, 48,* 714–723.

Murrough, J. W., Huang, Y., Hu, J., Henry, S., Williams, W., Gallezot, J. D., et al. (2011). Reduced amygdala serotonin transporter binding in posttraumatic stress disorder. *Biological Psychiatry, 70,* 1033–1038.

Muthén, B. (2001). Latent variable mixture modeling. In G. A. Marcoulides, & R. E. Schumacker (Eds.). *New developments and techniques in structural equation modeling* (pp. 1–33). Mahwah, NJ: Lawrence Erlbaum Associates.

Nairne, J. S., & Pandeirada, J. N. S. (2010). Adaptive memory: Ancestral priorities and the mnemonic value of survival processing. *Cognitive Psychology, 61,* 1–22.

Nathanson, D.L. (1992). *Shame and pride: Affect, sex, and the bird of the self*. New York: Norton.

Neumann, C. S., & Hare, R. D. (2008). Psychopathic traits in a large community sample: Links to violence, alcohol use, and intelligence. *Journal of Consulting and Clinical Psychology, 76,* 893–899.

Neumann, C. S., Hare, R. D., & Newman, J. P. (2007). The super-ordinate nature of the psychopathy checklist-revised. *Journal of Personality Disorders, 21,* 102–117.

Neumann, C. S., Schmitt, D. S., Carter, R., Embley, I., & Hare, R. D. (2012). Psychopathic traits in females and males across the globe. *Behavioral Sciences & the Law, 30, 557-*574.

Neumann, C. S., Vitacco, M. J., & Mokros, A. S. (2016). Using both variable-centered and person-centered approaches to understanding psychopathic personality. In C. B. Gacono (Ed.). *Personality and clinical psychology series. The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 14–31). New York, NY, US: Routledge/Taylor & Francis Group.

Nijhof, K. S., Vermulst, A., Scholte, R. H., Van Dam, C., Veerman, J. W., & Engels, R. C. (2011). Psychopathic traits of Dutch adolescents in residential care: Identifying subgroups. *Journal of Abnormal Child Psychology, 39,* 59–70.

Nissen, T., & Wynn, R. (2014). The clinical case report: a review of its merits and limitations. *BMC Research Notes, 7,* 264-270.

Nordstrom, B. R., Gao, Y., Glenn, A. L., Peskin, M., Rudo-Hutt, A. S., Schug, R. A., et al. (2011). Neurocriminology. *Advances in Genetics, 75,* 255–283.

Nylund, K. L., Asparouhov, T., & Muthén, B. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling. A Monte Carlo simulation study. *Structural Equation Modeling, 14,* 535–569.

Nyström, M. B. T., & Mikkelsen, F. (2012). Psychopathy-related personality traits and shame management. *Journal of Interpersonal Violence, 28,* 519-537.

O'Neill, M. L., Lidz, V., & Heilbrun, K. (2003). Adolescents with psychopathic characteristics in a substance abusing cohort. *Law and Human Behavior, 27,* 299–313.

Odgers, C. L., & Moretti, M. M. (2002). Aggressive and antisocial girls: Research update and challenges. *International Journal of Forensic Mental Health, 1,* 103–119.

Olver, M. E., Lewis, K., & Wong, S. C. (2013). Risk reduction treatment of high-risk psychopathic offenders: The relationship of psychopathy and treatment change to violent recidivism. *Personality Disorders: Theory, Research, and Treatment*, *4*, 160-167.

Panksepp, J. (1998). *Affective neuroscience*. New York: Oxford University Press.

Pardini, D. (2006). The callousness pathway to severe violent delinquency. *Aggressive Behavior, 32*, 1–9.

Pardini, D. A., Lochman, J. E., & Powel, N. (2007). The development of callous-unemotional traits and antisocial behavior in children: Are there shared and/or unique predictors? *Journal of Child and Adolescent Psychology, 36,* 319–333.

Partridge, G. E. (1930). Current conceptions of psychopathic personality. *The American Journal of Psychiatry, 10*, 53–99.

Patch, E. A., & Figueredo, A. J. (2016). Childhood stress, life history, psychopathy, and sociosexuality. *Personality and Individual Differences*, *115*, 108-113.

Patrick, C. (2006). Back to the future: Cleckley as a guide to the next generation of psychopathy research. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 605–617). New York: Guilford Press.

Patrick, C. (2010). Conceptualizing the psychopathic personality: Disinhibited, bold, … or just plain mean? In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 15–48). New York: Guilford Press.

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology, 21,* 913–928.

Paulo, M., da Motta, C., Ribeiro da Silva, D., & Rijo, D. (2013n). *Early shame experiences, coping with shame and psychopathic traits in youth.* Manuscript under review.

Pechorro, P., Andershed, H., Ray, J. V., Maroco, J., & Gonçalves, R. A. (2015). Validation of the Youth Psychopathic Traits Inventory and Youth Psychopathic Traits Inventory – Short Version Among Incarcerated Juvenile Delinquents. *Journal of Psychopathology and Behavioral Assessment, 37,* 576-586

Pechorro, P., Ribeiro da Silva, D., Andershed, H., Rijo, D., & Abrunhosa Gonçalves, R. (2016). The youth psychopathic traits Inventory: Measurement invariance and psychometric properties among Portuguese youths. *International Journal of Environmental Research and Public Health, 13,* 852-868.

Pechorro, P., Ribeiro Da Silva, D., Andershed, H., Rijo, D., & Gonçalves, R. A. (2017). Psychometric properties and measurement invariance of the youth psychopathic traits inventory - short version among Portuguese youth. *Journal of Psychopathology and Behavioral Assessment, 37,* 576-586.

Perepletchikova, F. (2011). On the topic of treatment integrity. *Clinical Psychology: Science and Practice, 18*, 148-153.

Perry, B. D., Pollard, R. A., Blakley, T. L., Baker, W. L., & Vigilante, D. (1995). Childhood trauma, the neurobiology of adaptation, and "use dependent" development of the brain: How "states" become "traits". *Infant Mental Health Journal, 16*, 271–291.

Petrosino, A. J., Boruch, R. F., Farrington, D. P., Sherman, L. W., & Weisburd, D. (2003). Toward evidence-based criminology and criminal justice: Systematic reviews, the Campbell Collaboration, and the Crime and Justice Group. *International Journal of Comparative Criminology, 3,* 42–61.

Pimentel, A., Quintas, J., Fonseca, E., & Serra, A. (2015). Estudo normativo da versão Portuguesa do YLS/CMI: Inventário de avaliação do risco de reincidência e de gestão de caso para jovens. [Psychometric proprieties of the Portuguese version of the YLS/ CMI]. *Análise Psicológica, 33,* 55–71. https://doi.org/10.14417/ap.883.

Pinel, P. (1962). *A treatise on insanity* (D. Davis, Trans.). New York: Hafner (Original work published 1806).

Pinkham, A. E., Griffin, M., Baron, R., Sasson, N. J., & Gur, R. C. (2010). The face in the crowd effect: Anger superiority when using real faces and multiple identities. *Emotion, 10,* 141–146.

Pinto-Gouveia, J., & Matos, M. (2011). Can shame memories become a key to identity? The centrality of shame memories predicts psychopathology. *Applied Cognitive Psychology, 25*, 281–290.

Plutchik, R. (1980). *Emotion: A psychoevolutionary synthesis*. New York: Harper & Row.

Polaschek, D. L. L. (2011). High-intensity rehabilitation for violent offenders in New Zealand: Reconviction outcomes for high- and medium-risk prisoners. *Journal of Interpersonal Violence, 26,* 664–682.

Polaschek, D. L. L., & Skeem, J. L. (2018). Treatment of adults and juveniles with psychopathy. In C. Patrick (Ed.), *Handbook of Psychopathy* (pp. 710-731). New York: The Guilford Press

Porges, S. W. (2007). The polyvagal perspective. *Biological Psychology, 74,* 116–143.

Price, S. D., Salekin, R. T., Klinger, M. R., & Barker, E. D. (2013). Psychopathy and depression as predictors of psychosocial difficulties in a sample of court evaluated adolescents. *Personality Disorders: Theory, Research, and Treatment, 4,* 261-270.

Prichard, J. C. (1835). *A treatise on insanity and other disorders affecting the mind.* London: Sherwood, Gilbert & Piper.

Pujol, J., Harrison, B. J., Contreras-Rodriguez, O., & Cardoner, N. (2019). The contribution of brain imaging to the understanding of psychopathy. *Psychological Medicine, 49,* 20-31.

Quay, H. C. (1964). Dimensions of personality in delinquent boys as inferred from the factor analysis of case history data. *Child Development, 35,* 479–484.

Quay, H. C. (1965). Psychopathic personality as pathological stimulation seeking. *The American Journal of Psychiatry, 122,* 180–183.

Quay, H. C. (1999). Classification of disruptive behavior disorders. In H. C. Quay & A. E. Hogan (Eds.), *Handbook of disruptive behavior disorders* (pp. 3–21). New York: Kluwer.

Raine, A., & Yang, Y. (2006). Neural foundations to moral reasoning and anti-social behavior. *Social Cognitive and Affective Neuroscience, 1*, 203–213.

Ram, N., & Grimm, K. J. (2009). Growth mixture modeling: A method for identifying difference in longitudinal change among unobserved groups. *International Journal of Behavioral Development, 33,* 565–576.

Redondo, S., Garrido, V., & Sanchéz-Meca, J. (1997). What works in correctiona rehabilitation in Europe: A meta-analytic review. In S. Redondo, V. Garrido, J. Pérez, & R., Barberet (Eds.), *Advances in psychology and law: International contributions* (pp. 449-523). Berlin: de Gruyter

Redondo, S., Sanchéz-Meca, J., & Garrido, V. (1999). The influence of treatment programmes on the recidivism of juveniles and adult offenders: An European meta-analytic review. *Psychology, Crime and Law, 5,* 251-278.

Reidy, D. E., Kearns, M. C., & DeGue, S. (2013). Reducing psychopathic violence: A review of the treatment literature. *Aggression and Violent Behavior, 18,* 527-538.

Reysen, M. B., Talbert, N. G., Dominko, M., Jones, A. N., & Kelley, M. R. (2011). The effects of collaboration on recall of social information. *British Journal of Psychology, 102,* 646–661.

Ribeiro da Silva, D., Castilho, P., Miguel, R., Paulo, M., Gilbert, P., & Rijo, D., (2017). The *PSYCHOPATHY.COMP program: An individual Compassion-based psychotherapeutic intervention for young offenders with psychopathic traits*. Unpublished intervention manual.

Ribeiro da Silva, D., Motta, C., Rijo, D., Pechorro, P., & Gonçalves, R. A. (2017). Inventário de Traços Psicopáticos em Jovens [Youth Psychopathic Traits Inventory]. In Simões, M. R., Almeida, L. S., & Gonçalves, M. M. (Eds.), *Psicologia Forense: Instrumentos de avaliação* (pp. 55-68). Lisboa: Pactor Edições.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2012). Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories. *Journal of Criminal Justice, 40,* 269-277.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2013). Child and adolescent psychopathy: Assessment issues and treatment needs. *Aggression and Violent Behavior, 18,* 71-78.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2015). The evolutionary roots of psychopathy. *Aggression and Violent Behavior, 21,* 85-96.

Ribeiro da Silva, D., Rijo, D., Castilho, P., & Gilbert, P. (2019). The efficacy of a compassion-focused therapy–based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee. *Clinical Case Studies*. Advance online publication. doi: 10.1177/1534650119849491.

Ribeiro da Silva, D., Salekin, R. T., & Rijo, D. (2019). Psychopathic severity profiles: A Latent Profile Analysis in youth samples with implications for the diagnosis of Conduct Disorder. *Journal of Criminal Justice, 60, 74-83.*

Ribeiro da Silva, D., Vagos, P., & Rijo, D. (2019). An evolutionary model to conceptualize psychopathic traits across community and forensic male youth. *International Journal of Offender Therapy and Comparative Criminology, 63,* 574-596.

Ribeiro da Silva, D., Vagos, P., & Rijo, D. (2019). Conceptualizing psychopathic traits from an evolutionary-based perspective: An empirical study in a community sample of boys and girls. *Current Psychology*.Advance online publication. doi: 10.1007/s12144-019-00353-3

Richter, A., Gilbert, P., & McEwan, K. (2009). Development of an early memories of warmth and safeness scale and its relationship to psychopathology. *Psychology and Psychotherapy: Theory. Research and Practice, 82*, 171-184.

Rijo, D., Brazão, N., Barroso, R., Ribeiro da Silva, D., Vagos, P., Vieira, A., Lavado, A., & Macedo, A. M (2016). Mental health problems in male young offenders in custodial versus community based-programs: Implications for juvenile justice interventions. *Child and Adolescence Psychiatry and Mental Health, 10,* 40, 52.

Rijo, D., Sousa, M. N., Lopes, J., Pereira, J., Vasconcelos, J., Mendonça, M. C., … Massa, S. (2007). *Gerar Percursos Sociais: Programa de prevenção e reabilitação para jovens com comportamento social desviante* [Growing Pro-Social: Prevention and rehabilitation program for youths with deviant social behavior]. Ponta Delgada: EQUAL.

Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin, 126,* 3–25.

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin, 132,* 1–25.

Robins, L. N. (1966). *Deviant children grown up*. Baltimore, MD: Williams & Wilkins.

Robins, L. N. (1978). Sturdy predictors of adult antisocial behaviour: Replications from longitudinal studies. *Psychological Medicine, 8*, 611–622.

Rogers, C. R. (1961). *On becoming a person: A therapist's view of psychotherapy*. Boston: Houghton Mifflin Harcourt.

Rogers, J. C., De Brito, S. A., (2016). Cortical and subcortical gray matter volume in youths with conduct problems: a meta-analysis. *JAMA Psychiatry, 73* , 64–72.

Rogers, R., Jackson, R. L., Sewell, K. W., & Johansen, J. (2004). Predictors of treatment outcome in dually diagnosed antisocial youth: An initial study of forensic inpatients. *Behavioral Sciences and the Law, 22,* 215–222.

Roose, A., Bijttebier, P., Claes, L., Lilienfeld, S. O., De Fruit, F., & Decuyper, M. (2011). Psychopathic traits in adolescence and the five factor model of personality. *Journal of Psychopathology and Behavioral Assessment, 34,* 1–10.

Rost, J. (2006). Latent-Class-Analyse [Latent class analysis]. In F. Petermann, & M. Eid (Eds.). *Handbuch der psychologischen Diagnostik* [Handbook of psychological assessment] (pp. 275–287). Göttingen, Germany: Hogrefe.

Rush, B. (1812). *Medical inquiries and observations upon the diseases of the mind*. Philadelphia: Kimber & Richardson.

Rutter, M. (2005). Commentary: What is the meaning and utility of the psychopathy concept. *Journal of Abnormal Child Psychology, 33,* 499–503.

Sadeh, N., Javdani, S., Jackson, J. J., Reynolds, E. K., Potenza, M. N., Gelernter, J., Lejuez, C. W. Verona, E. (2010). Serotonin transporter gene associations with psychopathic traits in youth vary as a function of socioeconomic resources. *Journal of Abnormal Psychology 119,* 604-609.

Salekin, R. T. (2002). Psychopathy and therapeutic pessimism: Clinical lore or clinical reality? *Clinical Psychology Review, 22,* 79-112.

Salekin, R. T. (2006). Psychopathy in children and adolescents: Key issues in conceptualization and assessment. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 389–414). New York: Guildford Press.

Salekin, R. T. (2010). Treatment of child and adolescent psychopathy: Focusing on change. In R. T. Salekin, & D. R. Lynam (Eds.). *Handbook of child and adolescent psychopathy* (pp. 343–373). New York: Guilford Press.

Salekin, R. T. (2016). Psychopathy in childhood: Toward better informing the DSM–5 and ICD-11 conduct disorder specifiers. *Personality disorders: Theory, research, and treatment, 7,* 180–191). https://doi.org/10.1037/per0000150.

Salekin, R. T. (2017). Research review: What do we know about psychopathic traits in children. *Journal of Child Psychology and Psychiatry, 58,* 1180–1200. https://doi.org/10.1111/jcpp.12738.

Salekin, R. T., & Frick, P. J. (2005). Psychopathy in children and adolescents: The need for a developmental perspective. *Journal of Abnormal Child Psychology, 33,* 403–409.

Salekin, R. T., & Hare, R. (2016). *Proposed specifiers for Conduct Disorder* (PSCD). (Unpublished test).

Salekin, R. T., & Lochman, J. E. (2008). Child and adolescent psychopathy: The search for protective factors. *Criminal Justice and Behavior, 35,* 159–172.

Salekin, R. T., & Lynam, D. R. (2010). Child and adolescence psychopathy: The road ahead. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 401–420). New York: Guilford Press.

Salekin, R. T., & Lynam, D. R. (2010). Child and adolescent psychopathy: An introduction. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 1–12). New York: Guilford Press.

Salekin, R. T., Andershed, H., & Clark, A. P. (2018). Psychopathy in children and adolescents: Assessment and critical questions regarding conceptualization. In C. J. Patrick (Ed.). *Handbook of psychopathy* (pp. 479–508). (2 nd Ed). New York: Guilford Press.

Salekin, R. T., Andershed, H., Batky, B. D., & Bontemps, A. P. (2018). Are callous unemotional (CU) traits enough? J*ournal of Psychopathology and Behavioral Assessment, 40,* 1–5.

Salekin, R. T., Brannen, D. N., Zalot, A. A., Leistico, A. R., & Neumann, C. S. (2006). Factor structure of psychopathy in youth: Testing the applicability of the new four factor model. *Criminal Justice and Behavior, 33,* 135–157.

Salekin, R. T., Chen, D. R., Sellbom, M., Lester, W. S., & MacDougall, E. (2014). Examining the factor structure and convergent and discriminant validity of the Levenson Self-Report Psychopathy Scale: Is the two-factor model the best fitting model? *Personality Disorders: Theory, Research, and Treatment*, *5*, 289-304.

Salekin, R. T., Leistico, A. M. R., Neumann, C. S., DiCicco, T. M., & Duros, R. L. (2004). Psychopathy and comorbidity in a young offender sample: Taking a closer look at psychopathy's potential importance over disruptive behavior disorders. *Journal of Abnormal Psychology, 113,* 416–427.

Salekin, R. T., Leistico, A. R., Trobs, K. K., Schrum, C. L., & Lochman, J. E. (2005). Adolescent psychopathy and personality theory-the interpersonal circumplex: Expanding evidence of a nomological net. *Journal of Abnormal Child Psychology, 33,* 445–460.

Salekin, R. T., Lester, W. S., & Sellers, M. K. (2012). Psychopathy in youth and mental sets: Incremental and entity theories of intelligence. *Law and Human Behavior, 36,* 283–292.

Salekin, R. T., Tippey, J. G., & Allen, A. D. (2012). Treatment of conduct problem youth with interpersonal callous traits using mental models: Measurement of risk and change. *Behavioral Sciences & the Law, 30,* 470–486.

Salekin, R. T., Worley, B., & Grimes, R. D. (2010). Treatment of psychopathy: A review and brief introduction to the mental model approach for psychopathy. *Behavioral Sciences and the Law, 28,* 235-266.

Salekin, R. T., Ziegler, T. A., Larrea, M. A., Anthony, V. L., & Bennett, A. D. (2003). Predicting dangerousness with two Millon Adolescent Clinical Inventory psychopathy scales: The importance of egocentric and callous traits. *Journal of Personality Assessment, 80,* 154–163.

Saltaris, C. (2002). Psychopathy in juvenile offenders: Can temperament and attachment be considered as robust developmental precursors? *Clinical Psychology Review, 22,* 729–752.

Schauer, M., & Elbert, T. (2010). Dissociation following traumatic stress etiology and treatment. *Journal of Psychology, 218,* 109–127.

Schneider, K. (1950). *Psychopathic personalities*. London: Cassell.

Schore, A. N. (2001). Effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal, 22,* 7–66.

Schore, A. N. (2009). Relational trauma and the developing right brain: The neurobiology of broken attachment bonds. In T. Baradon (Ed.), *Relational trauma in infancy* (pp. 19–47). London: Routledge.

Schriber, R. A., Chung, J. M., Sorensen, K. S., & Robins, R. W. (2017). Dispositional contempt: A first look at the contemptuous person. *Journal of Personality and Social Psychology, 113,* 280-309.

Schultz, D., Izard, C. E., & Bear, G. G. (2004). Children's emotion processing: Relations to emotionality and aggression. *Development and Psychopathology, 16,* 371–387.

Schwalb, C. S. (2007). Risk assessment for juvenile justice: A meta-analysis. *Law and Human Behavior, 31,* 449–462.

Schwartz, G. (1978). Estimating the dimension of a model. *The Annals of Statistics, 6,* 461–464. https://doi.org/10.1214/aos/1176344136.

Sclove, L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika, 52,* 333–343. https://doi.org/10.1007/BF02294360.

Seagrave, D., & Grisso, T. (2002). Adolescent development and the measurement of juvenile psychopathy. *Law and Human Behavior, 26,* 219–239.

Sebastian, C.L., De Brito, S.A., McCrory, E.J., Hyde, Z.H., Lockwood, P.L., Cecil, C.A., Viding, E., 2016. Grey matter volumes in children with conduct problems and varying levels of callous-unemotional traits. *Journal of Abnormal Child Psychology, 44,* 639–649.

Sell, A., Hone, L., & Pound, N. (2012). The importance of physical strength to human males. *Human Nature, 23*, 30–44.

Sellbom, M., Lilienfeld, S. O., Fowler, K. A., & McCrary, K. L. (2018). The Self-Report Assessment of Psychopathy: Challenges, Pitfalls, and Promises. In C. Patrick (Ed.), *Handbook of Psychopathy* (pp. 211-257). New York: The Guilford Press

Sevecke, K., & Kosson, D. S. (2010). Relationships of child and adolescent psychopathy to other forms of psychopathology. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 284–317). New York: Guilford Press.

Sevecke, K., Franke, S., Kosson, D., & Krischer, M. (2016). Emotional dysregulation and trauma predicting psychopathy dimensions in female and male juvenile offenders. *Child and Adolescent Psychiatry and Mental Health, 10,* 43.

Sevecke, K., Lehmkuhl, G., & Krisher, M. (2009). Examining relations between psychopathology and psychopathy dimensions among female and male offenders. *European Journal of Child and Adolescent Psychiatry, 18,* 85–95.

Sheehan, D. V., Sheehan, K. H., Shytle, R. D., Janavsm J., Bannon, Y., Rogersm J. E.,… Wilkinsonm B. (2010). Reliability and validity of the Mini International Neuropsychiatric Interview for Children and Adolescents. *Journal of Clinical Psychiatry, 71,* 313–326.

Sheskin, M., Chevallier, C., Lambert, S., & Baumard, N. (2014). Life-history theory explains childhood moral development. *Trends in Cognitive Sciences*, 18, 613-615.

Shiner, R. (2009). The development of personality disorders: perspectives from normal personality development in childhood and adolescence. *Development and Psychopathology*, *21*, 715-734.

Shirtcliff, E. A., Vitacco, M. J., Graf, A. R., Gostisha, A. J., Merz, J. L., & Zahn-Waxler, C. (2009). Neurobiology of empathy and callousness: Implications for the development of antisocial behavior. *Behavioral Sciences & the Law, 27,* 137-171.

Silk, K. R. (2008). Commentary: Personality disorder in adolescence: The diagnosis that dare not speak its name. *Personality and Mental Health, 2*, 46–48.

Singer, T., & Klimecki, O. M. (2014). Empathy and compassion. *Current Biology, 24,* R875-R878.

Skeem, J. L., & Cooke, D. J. (2010). Is criminal behavior a central component of psychopathy? Conceptual directions for resolving the debate. *Psychological Assessment, 22,* 433–445.

Skeem, J. L., Monahan, J., & Mulvey, E. P. (2002). Psychopathy, treatment involvement, and subsequent violence among civil psychiatric patients. *Law and Human Behavior, 26,* 577-603.

Skeem, J. L., Polaschek, D. L. L., & Manchak, S. (2009). Appropriate treatment works, but how? Rehabilitating general, psychopathic, and high risk offenders. In J. L. Skeem, K. S. Douglas, & S. O. Lilienfeld (Eds.), *Psychological science in the courtroom: Consensus and controversy* (pp. 358–384). New York: Guildford Press.

Skeem, J. L., Polaschek, D. L. L., Patrick, C. J., & Lilienfeld, S. O. (2011). Psychopathic personality: Bridging the gap between scientific evidence and public policy. *Psychological Science in the Public Interest, 12,* 95–162.

Smith, A. (2006). Cognitive empathy and emotional empathy in human behavior and evolution. *The Psychological Record, 56,* 3–19.

Somma, A., Andershed, H., Borroni, S., & Fossati, A. (2016). The validity of the Child Problematic Trait Inventory in 6–12 year old Italian children: Further support and issues of consistency across different sources of information and different samples. *Journal of Psychopathology and Behavioral Assessment, 38,* 350–372.

Somma, A., Andershed, H., Borroni, S., Salekin, R. T., & Fossati, A. (2018). Psychopathic personality traits in relation to self-report delinquency in adolescence: Should we mind about interaction effects? *Journal of Psychopathology and Behavioral Assessment, 40,* 69–78. https://doi.org/10.1007/s10862-018-9658-6.

Sommers-Spijkerman, M. P. J., Trompetter, H. R., Schreurs, K. M. G., & Bohlmeijer, E. T. (2018). Compassion-focused therapy as guided self-help for enhancing public mental

health: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 86,* 101-115.

Spain, S. E., Douglas, K. S., Poythress, N. G., & Epstein, M. K. (2004). The relationship between psychopathy, violence, and treatment outcome: A comparison of three youth psychopathy measures. *Behavioral Sciences and the Law, 22*, 85–102.

Spice, A., Viljoen, J. L., Douglas, K. S., & Hart, S. D. (2015). Remorse, psychopathology, and psychopathy among adolescent offenders. *Law and Human Behavior, 39,* 451-462

Spitz, R. A. (2004). *O primeiro ano de vida.* São Paulo: Martins Fontes (Original work published 1979).

Spitzer, C., Barnow, S., Freyberger, H. J., & Grabe, H. J. (2006). Recent developments in the theory of dissociation. *World Psychiatry, 5,* 82–86.

Steindl, S. R., Kirby, J. N., & Tellegan, C. (2018). Motivational interviewing in compassion-based interventions: Theory and practical applications. *Clinical Psychologist, 22,* 265-279.

Stickle, T. R., Kirkpatrick, N. M., & Bursh, L. N. (2009). Callous-unemotional traits and social information processing: Multiple risk-factor models for understanding aggressive behavioral in antisocial youth. *Law and Human Behavior, 33*, 515–529.

Striedter, G. F. (2005). *Principles of brain evolution.* Sunderland: Sinauer Association.

Suedfeld, P., & Landon, P. B. (1978). Approaches to treatment. In R. D. Hare, & D. Schalling (Eds.), *Psychopathic behavior: Approaches to research* (pp. 347–378). New York:Wiley.

Sussman, R. W., Garber, P. A., & Cheverud, J. M. (2005). The importance of cooperation and affiliation in the evolution of primate sociality. *American Journal of Physical Anthropology, 128,* 84–97.

Sylvers, P. D., Brennan, P. A., & Lilienfeld, S. O. (2011). Psychopathic traits and pre-attentive threat processing in children: A novel test of the fearlessness hypothesis. *Psychological Science, 22,* 1280–1287.

Tabachnick, B. & Fidell, L. (2013). *Using multivariate statistics*. Boston: Pearson.

Tangney, J. P., & Dearing, R. L. (2003). *Shame and guilt*. New York: The Guilford Press.

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behavior. *Annual Review of Psychology, 58,* 345–372.

Tangney, J. P., Stuewig, J., Mashek, D., & Hastings, M. (2011). Assessing jail inmates' proneness to shame and guilt: Feeling bad about the behavior or the self?. *Criminal Justice and Behavior, 38,* 710-734.

Tangney, J. T., & Tracy, J. L. (2012). Self-conscious emotions. In M.R. Leary, & J.P. Tangney (Eds.), *Handbook of self and identity* (pp. 446–480). New York: The Guilford press.

Taylor, J., Elkins, I. J., Legrand, L., Peuschold, D., & Iacono, W. G. (2007). Construct validity of adolescent antisocial personality disorder. *Journal of Youth and Adolescence, 36,* 1048–1057.

Taylor, J., Loney, B. R., Bobadilla, L., Iacono, W. G., & McGue, M. (2003). Genetic and environmental influences on psychopathy trait dimensions in a community sample of male twins. *Journal of Abnormal Child Psychology, 31,* 633–645.

Tew, J., Bennett, A. L., & Dixon, L. (2016). The Chromis experience: an interpretative phenomenological analysis of participants' experiences of the Chromis Programme. *International Journal of Offender Therapy and Comparative Criminology, 60,* 1669-1689.

Thomson, N. D., Vassileva, J., Kiehl, K. A., Reidy, D., Aboutanos, M., McDougle, R., & DeLisi, M. (2019). Which features of psychopathy and impulsivity matter most for prison violence? New evidence among female prisoners. *International Journal of Law and Psychiatry, 64,* 26-33.

Thorton, D., & Blud, L. (2007). The influence of psychopathic traits on response to treatment. In H. Herve, & J. C. Yullie (Eds.), *The psychopath: Theory, research, and practice* (pp. 505–539). Mahwah, NJ: Erlbaum.

Tollefsbol, T. (2010). Epigenetics: The new science in genetics. In T. Tollefsbol (Ed.), *Handbook of epigenetics: The new molecular and medical genetics* (pp. 1–6). London: Elsevier.

Tomkins, S. S. (1991). *Affect, imagery, consciousness: Vol 2. The negative affects.* New York: Springer (Original work published 1962).

Tooby, J., & Cosmides, L. (1990). The past explains the present: Emotional adaptations and the structure of ancestral environments. *Ethology and Sociobiology, 11,* 375–424.

Trivers, R. L. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology, 46,* 35–57.

Trzaskowski, M., Dale, P. S., Plomin, R. (2013). No genetic influence for childhood behavior problems from DNA analysis. *Journal of American Academy of Child and Adolescent Psychiatry 52,* 1048-1056.

Tyer, P. (2005). Temporal change: The third dimension of personality. *Journal of Personality Disorders, 19,* 573–580.

Vachon, D. D., Lynam, D. R., Schell, S. E., Dryburgh, N. S., & Costa, P. T. (2018). Teenagers as temporary psychopaths? Stability in normal adolescent personality suggests otherwise. *Personality and Individual Differences, 131,* 117-120.

Vagos, P., Ribeiro da Silva, D., Brazão, N., & Rijo, D. (2018). The Centrality of Events Scale in Portuguese adolescents: Validity evidence based on internal structure and on relations to other variables. *Assessment*, *25*, 527-538.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Elison, J. (2019). Psychometric properties of the Compass of Shame Scale: Testing for measurement invariance across community and forensic adolescent samples. *Child Youth Care Forum, 48*, 93-110.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2016). Dimensionality and measurement invariance of the Other as Shamer Scale across diverse adolescent samples. *Personality and Individual Differences*, *98*, 289-296.

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2017). The Early Memories of Warmth and Safeness Scale for adolescents: Cross-Sample Validation of the Complete and Brief Versions. *Clinical Psychology & Psychotherapy*, *24*, 793-804.

Van Baardewijk, Y., Andershed, H., Stegge, H., Nilsson, K., Scholte, E., & Vermeiren, R. (2010). Development and tests of short versions of the Youth Psychopathic Traits Inventory and the Youth Psychopathic Traits Inventory-Child Version. *European Journal of Psychological Assessment, 26,* 122–128.

Van Baardewijk, Y., Stegge, H., Andershed, H., Thomaes, S., Scholte, E., & Vermeiren, R. (2008). Measuring psychopathic traits in children through self-report. The development of the Youth Psychopathic Traits Inventory — Child Version. *International Journal of Law and Psychiatry, 31,* 199–209.

Vaughn, M. G., & DeLisi, M. (2008). Were Wolfgang's chronic offenders psychopaths? On the convergent validity between psychopathy and career criminality. *Journal of Criminal Justice, 36,* 33–42.

Vaughn, M. G., Howard, M. O., & DeLisi, M. (2008). Psychopathic personality traits and delinquent careers: An empirical examination. *International Journal of Law and Psychiatry, 31,* 407–416.

Vaughn, M. G., Newhill, C. E., DeLisi, M., Beaver, K. M., & Howard, M. O. (2008). An investigation of psychopathic features among delinquent girls: Violence, theft, and drug abuse. *Youth Violence and Juvenile Justice, 6,* 240–255.

Velotti, P., D'aguanno, M., Garofalo, C., & Rogier, G. (2016). Dealing with shame–the 'Psychopathic Way': Preliminary investigation for a new developmental framework of psychopathic traits. *European Psychiatry, 33,* S465.

Vermeiren, R. (2003). Psychopathology and delinquency in adolescents: A descriptive and developmental perspective. *Clinical Psychological Review, 23,* 277–318.

Vermunt, J. K., & Magidson, J. (2002). Latent class cluster analysis. In J. A. Hagenaars, & A. McCutcheon (Eds.). *Applied latent class analysis* (pp. 89–106). Cambridge, UK: Cambridge University Press.

Verona, E., & Vitale, J. (2006). Psychopathy in woman: Assessment, manifestations and etiology. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 415–436). New York: Guildford Press.

Verona, E., & Vitale, J. (2018). Psychopathy in Women: Assessment, Manifestations, and Etiology. In C. Patrick (Ed.), *Handbook of Psychopathy* (pp. 509-528). New York: The Guilford Press

Verona, E., Sadeh, N., & Javdani, S. (2010). The influences of gender and culture on child and adolescent psychopathy. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 317-342). New York: Guilford Press.

Verschuere, B., Candel, I., Van Reenen, L., & Korebrits, A. (2012). Validity of the Modified Child Psychopathy Scale for juvenile justice center residents. *Journal of Psychopathology and Behavioral Assessment, 34,* 244-252.

Viding, E., & Jones, A. P. (2008). Cognition to genes via the brain in the study of conduct disorder. *The Quarterly Journal of Experimental Psychology, 61,* 171–181.

Viding, E., & Larson, H. (2010). Genetics of child and adolescent psychopathy. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 113-134). New York: Guilford Press.

Viding, E., & McCrory, E. J. (2012). Why should we care about measuring callous–unemotional traits in children? *The British Journal of Psychiatry, 200,* 177–178. https://doi.org/10.1192/bjp.bp.111.099770.

Viding, E., & McCrory, E. J. (2018). Understanding the development of psychopathy: progress and challenges. *Psychological Medicine, 48,* 566-577.

Viding, E., Frick, P. J., & Plomin, R. (2007). Aetiology of the relationship between callous-unemotional traits and conduct problems in childhood. *The British Journal of Psychiatry, 49,* S33–S38.

Viding, E., Jones, A. P., Paul, J. F., Moffitt, T. E., & Plomin, R. (2008). Heritability of antisocial behaviour at 9: Do callous-unemotional traits matter?. *Developmental Science, 11,* 17-22.

Vieira, A., & Soeiro, C. (2002). Agressividade e psicopatia [Aggression and psychopathy]. *Temas Penitenciários, Série II, 8 e, 9,* 25–35.

Vitacco, M. J., & Neumann, C. S. (2008). The clinical assessment of psychopathy. In R. Jacksom (Ed.), *Learning forensic assessment* (pp. 129–152). New York: Routledge/Taylor & Francis.

Vitacco, M. J., Rogers, R., Neumann, C. S., Harrison, K. S., & Vincent, G. (2005). A comparison of factor models on the PCL-R with mentally disordered offenders: The development of a four-factor model. *Criminal Justice and Behavior, 32,* 526-545.

Vitacco, M. J., Salekin, R. T., & Rogers, R. (2010). Forensic issues for child and adolescent psychopathy. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 374–397). New York: Guilford Press.

Vitacco, M., & Salekin, R. (2013). Adolescent psychopathy and the law. In K. Kiehl & W. Sinnott-Armstrong (Eds.), *Handbook of psychopathy and law* (pp. 78-91). New York: Wiley.

Vitale, J. E., Newman, J. P., Bates, J. E., Goodnight, J., Dodge, K. A., & Pettit, G. S. (2005). Deficient behavioral inhibition and anomalous selective attention in a community sample of adolescents with psychopathic traits and low-anxiety traits. *Journal of Abnormal Child Psychology, 33,* 461–470.

Waldman, I. D., & Rhee, S. H. (2006). Genetic and Environmental influences on psychopathy and antisocial behavior. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 205–228). New York: Guildford Press.

Waldman, I. D., Rhee, S. H., LoParo, D., & Park, Y (2018). Genetic and Environmental Influences on Psychopathy and Antisocial Behavior. In C. Patrick (Ed.), *Handbook of Psychopathy* (pp. 335-353). New York: The Guilford Press

Wallace, G. L., White, S. F., Robustelli, B., Sinclair, S., Hwang, S., Martin, A., Blair, R. J. R., (2014). Cortical and subcortical abnormalities in youths with conduct disorder and elevated callous-unemotional traits. *Journal of American Academy of Child and Adolesct Psychiatry, 53,* 456–465

Waller, R., & Hicks, B. M. (2019). Trajectories of alcohol and marijuana use among primary versus secondary psychopathy variants within an adjudicated adolescent male sample. *Personality Disorders: Theory, Research, and Treatment, 10,* 87-98

Waller, R., Dishion, T. J., Shaw, D. S., Gardner, F., Wilson, M. N., Hyde, L. W. (2016). Does early childhood callous-unemotional behavior uniquely predict behavior problems or callous-unemotional behavior in late childhood?. *Developmental Psychology 52,* 1805-1819.

Waller, R., Dotterer, H. L., Murray, L., Maxwell, A. M., and Hyde, L. W. (2017) 'White-matter tract abnormalities and antisocial behavior: A systematic review of diffusion tensor imaging studies across development, *NeuroImage: Clinical, 14*, 201–215

Waller, R., Gardner, F., Viding, E., Shaw, D. S., Dishion, T. J., Wilson, M. N., & Hyde, L. W. (2014). Bidirectional associations between parental warmth, callous unemotional behavior, and behavior problems in high-risk preschoolers. *Journal of Abnormal Child Psychology, 42,* 1275-1285.

Waller, R., Trentacosta, C. J., Shaw, D. S., Neiderhiser, J. M., Ganiban, J. M., Reiss, D., . . . Hyde, L. W. (2016). Heritable temperament pathways to early callous–unemotional behaviour. *The British Journal of Psychiatry, 209*, 475-482.

Wang, S. (2005). A conceptual framework for integrating research related to the physiology of compassion and the wisdom of Buddhist teachings. In P. Gilbert (Ed.), *Compassion: Conceptualization, research and use in psychotherapy* (pp. 75–120). New York: Routledge.

Weems, C. F., & Stickle, T. R. (2012, December). Mediation, incremental validity, and novel intervention development: Introduction to a special issue on youth anxiety and related problems. *Child & Youth Care Forum, 41,* 509-515.

Weidacker, K., O'Farrell, K. R., Gray, N. S., Johnston, S. J., & Snowden, R. J. (2017). Psychopathy and impulsivity: The relationship of the triarchic model of psychopathy to different forms of impulsivity in offenders and community participants. *Personality an Individual Differences*, *114*, 134-139.

Weiss, B., Lynam, D. R., & Miller, J. D. (2018). The Elemental Psychopathy Assessment. In M. Delisi (Ed.), *Routledge International Handbook of Psychopathy and Crime* (pp. 187-202). New York: Routledge.

White, S. F., & Frick, P. J. (2010). Callous-unemotional traits and their importance to causal models of severe antisocial behavior in youth. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent* psychopathy (pp. 135–155). New York: Guilford Press.

White, S. F., Frick, P. J., Lawing, K., & Bauer, D. (2013). Callous–unemotional traits and response to functional family therapy in adolescent offenders. *Behavioral sciences & the law, 31,* 271-285.

Widiger, T. A., & Crego, C. (2018). Psychopathy and DSM-5 Psychopathology. In C. Patrick (Ed.), *Handbook of Psychopathy* (281-296). New York: The Guilford Press

Widiger, T. A., De Clercq, B., & De Fruyt, F. (2009). Childhood antecedents of personality disorder: An alternative perspective. *Development and Psychopathology, 21,* 771–791.

Wilkinson, S., Waller, R, & Viding, E. (2015). Practitioner Review: Involving young people with callous unemotional traits in treatment – does it work? A systematic review. *Journal of Child Psychology and Psychiatry, 5,* 552-565

Wilson, D. S., Hayes, S. C., Biglan, A., & Embry, D. D. (2014). Evolving the future: Toward a science of intentional change. *The Behavioral and Brain Sciences*, *37,* 395-416.

Wilson, K., Juodis, M., & Porter, S. (2011). Fear and loathing in psychopaths: A meta-analytic investigation of the affect recognition deficit. *Criminal Justice and Behavior, 38,* 659–668.

Winnicott, D. W. (1983). *O ambiente e os processos de maturação: Estudos sobre a teoria do desenvolvimento emocional*. Porto Alegre: Artmed.

Wise, E. A. (2004). Methods for analyzing psychotherapy outcomes: A review of clinical significance, reliable change, and recommendations for future directions. *Journal of Personality Assessment, 82,* 50–59.

Wong, S. C. P., Gordon, A., Gu, D., Lewis, K., & Olver, M. E. (2012). The effectiveness of violence reduction treatment for psychopathic offenders: Empirical evidence and a treatment model. *International Journal of Forensic Mental Health, 11,* 336–349.

Wong, S. C., & Olver, M. E. (2015). Risk reduction treatment of psychopathy and applications to mentally disordered offenders. *CNS spectrums, 20,* 303-310.

World Health Organization. (2016). *Classifications: Revision of the International Classification of Disease* (ICD). Retrieved from http://www.who.int/classifications/icd/ICDRevisied

Wrangham, R. W., & Glowacki, L. (2012). Intergroup aggression in chimpanzees and war in nomadic huntergatherers: Evaluating the chimpanzee model. *Human Nature, 23,* 5–29.

Yang, Y., & Raine, A. (2018). The Neuroanatomical Bases of Psychopathy: A Review of Brain Imaging Findings. In C. Patrick (Ed.), *Handbook of Psychopathy* (pp. 380-400). New York: The Guilford Press

Yang, Y., Narr, K. L., Baker, L. A., Joshi, S. H., Jahanshad, N., Raine, A., Thompson, P. M. (2015). Frontal and striatal alterations associated with psychopathic traits in adolescents. *Psychiatry Research: Neuroimaging, 231,* 333–340.

Yoon, I. A., Slade, K., & Fazel, S. (2017). Outcomes of psychological therapies for prisoners with mental health problems: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology, 85,* 738-802.

Young, S., Greer, B., & Church, R. (2017). Juvenile delinquency, welfare, justice and therapeutic interventions: a global perspective. *BJPsych Bulletin, 41*, 21-29.

Young, S., Moss, D., Sedgwick, O., Fridman, M., & Hodgkins, P. (2015). A meta-analysis of the prevalence of attention deficit hyperactivity disorder in incarcerated populations. *Psychological Medicine, 45*, 247-258.

Zhang, T. Y., & Meaney, M. J. (2010). Epigenetics and the environmental regulation of the genome and its function. *Annual Review of Psychology, 61,* 439–466.

Zimmermann, P., & Iwanski, A. (2014). Emotion regulation from early adolescence to emerging adulthood and middle adulthood: Age differences, gender differences, and emotion specific developmental variations. *International Journal of Behavioral Development*, *38*, 182-194

APPENDIXES

APPENDIX A |

Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories

Journal of Criminal Justice, *40,* 269-277
2012, doi: 10.1016/j.jcrimjus.2012.05.005

Child and adolescent psychopathy: A state-of-the-art reflection on the construct and etiological theories

Diana Ribeiro da Silva[a], Daniel Rijo[a], and Randall T. Salekin[b]

[a] Research Center for Neuropsychology and Cognitive-Behavioral Intervention
Faculty of Psychology and Educational Sciences, University of Coimbra
[b] University of Alabama

Abstract

Purpose: There is a growing interest in the identification of psychopathic traits in infancy and adolescence. This effort will enable the development of predictive models of aggressive and violent behavior, in order to intervene effectively both in preventive and therapeutic levels. Several authors have suggested that the presence or absence of psychopathic traits, together with the factors that sustain, maximize or minimize them, can help in the identification of the etiology and developmental trajectories of anti-social individuals.

Materials: and Methods: Meta-narrative review of the child and adolescent psychopathy construct.

Results: This state-of-the-art review discusses the concept of child and adolescent psychopathy, taking into account historical and conceptual issues.

Conclusion: Evolutionary Theories can add a major contribution to the understanding of the origins of psychopathic traits.

Keywords: psychopathy, child and adolescent psychopathy, construct, etiological theories

Introduction

Psychopathy can be defined as a personality disorder characterized by a set of traits that include interpersonal and affective characteristics (Factor 1 – e.g., manipulation, lack of empathy) and antisocial/social deviance characteristics (Factor 2 – e.g., impulsivity and aggression) (Hare, 2003). Other authors prefer to describe psychopathy as a developmental disorder (Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007), marked by an emotional hypo-responsiveness, an increased risk of antisocial behavior (Blair & Mitchell, 2009) and an attentional impairment (Vitale et al., 2005). The concept of psychopathy is not new and is recognized in different cultures and historical periods. Psalmists have identified some key characteristics of the disorder, as wickedness, perversity, immoral behavior, pride, vanity, the sense of invulnerability, seduction, manipulation and extreme violence (Cooke, Michie, & Hart, 2006). The same pattern has been identified in the Icelandic Sagas (Hoyersten, 2001), in the Greek Mythology and in several pre-industrial societies (Murphy, 1976).

The first clinical descriptions of psychopathy are ascribed to Pinel (1806/1962) and Prichard (1835), which have respectively used words like "*manie sans delire*" and "moral insanity". Brutality, emotional coldness, recklessness and insensitive exploitation of others were some of the attributes mentioned. Other authors (Kraeplin, 1904/1915; Partridge, 1930; Rush, 1812; Schneider, 1950) have also contributed to the development of psychopathy construct. Rush has even postulated that a deeply rooted "moral depravity" was central in the disorder. Schneider defended that these tendencies emerged early in life, being related with a central deficit in emotional sensitiveness.

Notwithstanding, the modern conceptualizations of psychopathy derives essentially from Hervey Cleckley's work revealed in his emblematic book "The Mask of Sanity" (1941/1988). The author tried to narrow psychopathy concept (too inclusive at that time) reserving it to exceptional cases. While studying inpatients at a large psychiatric hospital, he set forth 16 specific criteria, mainly focused on interpersonal and affective features, which he considered to be the main characteristics of psychopathic personality. Central to his Conception (and origin of the title of his book) is the idea that psychopathy is a severe disorder masked by an external appearance of robust mental health. The work of Cleckley has become an important mark in the study of psychopathy. Cleckley's 16 criteria (1941/1988) have later been grouped by Patrick (2006) in three distinct conceptual categories: positive adjustment; chronic behavioral deviance; and emotional-interpersonal deficits. The psychopathic characteristics can also be grouped into interpersonal, affect, lifestyle and behavioral characteristics (see Table 1) similar to the Hare model (2003). The interpersonal items would most closely align to Patrick's positive adjustment scale. Lifestyle and antisocial transgressions are somewhat combined but could be further parsed by separating failure to have a life plan and fantastic and uninviting behavior sometimes with drink and sometimes without (sensation seeking).

Table 1. *Categorization of Cleckey's Diagnostic Criteria into the Hare 4 Factor Model for Psychopathy*

Interpersonal	Affect	Lyfestyle	Behavioral Deviance
- Superficial charm and good "intelligence"* - Untruthfulness and insincerity - Pathologic egocentricity and incapacity for love - Absence of delusions and other signs of irrational thinking*	- Lack of remorse or shame - General poverty in major affective reactions - Unresponsiveness in general interpersonal relations - Absence of "nervousness" or psychoneurotic manifestations* - Sex life impersonal, trivial, and poorly integrated	- Poor judgment and failure to learn by experience - Unreliability - Specific loss of insight - Fantastic and uninviting behavior with drink and sometimes without - Failure to follow any life plan - Suicide rarely carried out*	- Inadequately motivated antisocial behavior

Note. Asterisked items are the one's that Patrick (2006) denoted as positive adjustment.

Cleckley (1941/1988) defended that antagonistic, aggressive, predatory, revengeful and cruel behaviors were not essential in the conceptualization of psychopathy. Emphasizing this, he presented cases of "successful psychopaths" that have followed careers as doctors, scholars and businessmen; nonetheless most of his case examples described individuals who engaged in some form of moral transgression. Contemporaries of Cleckley who studied prison inmates shared his opinion concerning a probable deficiency in emotional reactivity. However, had different views about the behavior of these persons, describing the criminal psychopaths as cold, violent, antagonist, truculent and predatory individuals (Lindner, 1944/2003; McCord & McCord, 1964).

As a consequence of these conceptual divergences, Patrick, Fowles, and Krueger (2009) have recently come forth with a triadic conceptualization of psychopathy constituted by the components of disinhibition (externalizing component), boldness and meanness. In this model, these prominent and recurrent phenotypic components can be present in different degrees and may be important to understanding psychopathy in its different manifestations: criminal or non-criminal, primary or secondary, stable or aggressive, successful or unsuccessful. According to Patrick (2010), the conceptual differences in psychopathy change according to the emphasis put on boldness (e.g., spirit of adventure, emotional stability), that occurs mainly in inpatient and community samples (Cleckley, 1941/1988; Lykken, 1995), or on meanness (e.g., predatory exploitativeness, cruelty), that occurs mainly in forensic samples (Hare, 1985).

Not all individuals with a pattern of criminal and anti-social behavior and diagnosed with Antisocial Personality Disorder (APD; American Psychiatric Association, 2000) show psychopathic traits (see Skeem, Polaschek, Patrick, & Lilienfeld, 2011 for a review). Hare (1985) underlines that about 90% of psychopathic aggressors meet criteria for APD, but only 25% of the individuals diagnosed with APD are psychopaths. The same proportion

(Forth & Bruke, 1998) occurs in younger populations with Conduct Disorder (CD). These discrepancies seem to be associated with the fact that APD and CD overvalue the externalizing/behavior factor of psychopathy, and not that much the affective/ interpersonal one (Forth & Bruke, 1998, Hare, 1985). This way, some authors are still debating the question of the inclusion of antisocial/deviant life style factor as an inherent trait in psychopathy or its product (Cooke & Michie, 2001; Cooke, Michie, & Skeem, 2007; Salekin, Brannen, Zalot, Leistico, & Neumann, 2006; Skeem & Cooke, 2010).

In short, the psychopathy construct is of utmost importance in clinical and forensic contexts, as it seems to be associated with the most early, severe and stable forms of appearance of antisocial behavior, with a greater risk for criminal recidivism and with a low responsiveness to treatment (DeLisi & Piquero, 2011; Hemphill, 2007; Leistico, Salekin, DeCoster, & Rogers, 2008). Some authors (DeLisi, 2009; Vaughn & DeLisi, 2008; Vaughn, Howard, & DeLisi, 2008) even defend that psychopathic traits are similar to career criminality and that psychopathy is the unified theory of crime—a single construct capable of linking the dots of antisocial behavior over the life span. Due to the impact of psychopathy upon society, many authors defend the need to deepen research in this field (e.g., DeLisi & Piquero, 2011; Kotler & McMahon, 2005, 2010; Skeem et al., 2011). It seems the best way is to prevent and intervene very early in life, but to achieve that it is necessary to study, among others, what may be the early signs, the risk factors, the protective factors and the developmental trajectories of psychopathy. In other words, it is crucial to study the construct in infancy (Lynam, 1996; Lynam et al., 2007; Salekin & Frick, 2005; Salekin & Lynam, 2010a, 2010b).

Here, we will deal with conceptual and historical questions around child and adolescent psychopathy construct. While analyzing the "state of the art" of the construct, we will present the main etiological theories and indicate, from a critical and reflexive point of view, potential investigation paths at the light of Evolutionary Theories.

Child and adolescent psychopathy

The roots of the child psychopathy concept are based on the study of adult psychopathy (Kotler & McMahon, 2005, 2010), and can be found in the works of Cleckley (1941/1988), Karpman (1949, 1950), McCord and McCord (1964), Quay (1964, 1965) and Robins (1966, 1978). In the previously quoted book by Cleckley (1941/1988), the author assumed that psychopathy was a disorder with its roots in childhood or adolescence. About a decade later, McCord and McCord (1964), in the book "The psychopathic: An Essay on the Criminal Mind", stressed the importance of identifying and treating psychopathy in younger populations.

During this era, Quay (1964, 1965) attempted to define subtypes for juvenile delinquency, which were even included as diagnostic specifiers for CD in the "Diagnostic and Statistical Manual of Mental Disorders" (DSM-III; APA, 1980). In DSM-III, CD was characterized by a repetitive and persistent pattern of aggressive behavior with two

distinctive subtypes: under-socialized aggressive and socialized aggressive. The first subtype referred to a psychopathic category, with failures concerning empathy, attachment and affectivity, being also associated with a greater number of psychopathological dysfunctional indicators and with a worst prognosis (Quay, 1999). However, these designations, avoiding the use of the derogatory term "psychopathy", ended up by raising some problems including concerns with respect to the etiology and were, thus, withdrawn from posterior editions of DSM (APA, 1994, 2000).

Until relatively recently, there were few published works about child psychopathy, and very little attention was given to the possibility of observing psychopathic traits in minors (Salekin & Lynam, 2010a, 2010b). Forth, Hart, and Hare (1990) became pioneers in studying child psychopathy in young aggressors, adapting Psychopathy Checklist (PCL; Hare, 1991), showing that some adolescents scored in the assessed dimensions. After this study, different authors developed new measurement tools to assess child/adolescent psychopathy (Salekin & Lynam, 2010a, 2010b). The extension of psychopathy construct to childhood and adolescence is not exempt of controversy. Questions concerning the overrepresentation in these age ranges of some characteristics of the disorder, the etiologic basis, the malleability of personality during development, the heterogeneity of minors with anti-social behavior, the validity and temporal stability of psychopathy, the derogatory character of the word and its implications in legal context, the potential stigmatization of minors, the triggering of iatrogenic factors, among others, have been raised (e.g., Chanen & McCutchenon, 2008; Edens & Vincent, 2008; Murrie, Boccaccini, McCoy, & Cornell, 2007; Seagrave & Grisso, 2002; Silk, 2008).

Some authors (Salekin & Lynam, 2010a, 2010b; Taylor, Elkins, Legrand, Peuschold, & Iacono, 2007) defend that although child psychopathy is emerging as an important clinical construct, it is of utmost importance to keep in mind all the criticism that may emerge. This will help that the construct is theoretically more and better supported, the assessment tools are more and more improved, and the words child/adolescent psychopathy are never used in a harmful way but always constructively, aiming an early prevention and identification, together with the establishment of adequate treatment and rehabilitation programs (Vitacco & Salekin, in press; Vitacco, Salekin, & Rogers, 2010).

Etiological theories

Understanding the development basis of psychopathy has been getting a growing interest by researchers, because it's importance in violence prediction, risk assessment and risk management (e.g., DeLisi, 2009; DeLisi & Piquero, 2011). Although some authors (e.g., Moffitt, 1993) caution that the existence of a certain type of delinquent behavior during childhood and adolescence is perfectly normal, studies have shown that psychopathy seems to be the sole psychiatric condition that significantly increases the risk of reactive and above all proactive aggression, thus clearly exceeding any parameters (Barry et al., 2000; DeLisi, 2009; Farrington, 2005). The importance of studying children

and adolescents with psychopathic traits is mainly based on two motives: first, to approach elementary etiological issues before the appearance of more severe consequences, and second, because there is a minor possibility that those deviant life styles (e.g., substance abuse) would modify/vitiate the same etiological panorama (Viding & Larson, 2010).

There are several etiological theories of psychopathy. The perspectives most referred to in literature are: genetics (e.g., Bezdjian, Raine, Baker, & Lyman, 2011; Viding, Frick, & Plomin, 2007); neurosciences (e.g., Blair, 2006; Viding & Jones, 2008); Callous-Unemotional (CU) traits (e.g., Frick, Kimonis, Dandreaux, & Farrel, 2003; Kruh, Frick, & Clements, 2005; Munoz & Frick, 2012); personality (e.g., APA, 2000; Lynam, 2010; Lynam & Widiger, 2007) and environmental influences (e.g., Frick, Cornell, Barry, Bodin, & Dane, 2003; Gao, Raine, Chan, Venables, & Mednick, 2010). Nevertheless, it is important to underline that many authors think that there is no single gene, no sole neurobiological or neurocognitive dysfunction, no single developmental risk that would act in an isolated way in the etiology and developmental route of psychopathy (Viding & Larson, 2010).

Genetics perspective

Lykken (1957, 2006) presented the Low Fear Hypothesis, defending that the etiology of primary psychopathy was largely biological and that, in these cases, environment (namely parental styles), would have little influence on the disorder's development. According to this author, only exceptional parental practices would make possible to reverse the biologically determined psychopathic path of a fearless and "hard-to-socialize" child. At present, this conception detains some empirical support, namely in adoption, twin and preliminar molecular genetics studies (Baker et al., 2009; Beaver, Rowland, Schwartz, & Nedelec, 2011; Nordstrom et al., 2011; Viding & Larson, 2010; Waldman & Rhee, 2006).

Thus, it seems psychopathic traits reflect heritable and non-shared environmental influences (e.g., differences in education, and in the relationship with family, peers and teachers) during childhood and adolescence (e.g., Bezdjian et al., 2011; Taylor, Loney, Bobadilla, Iacono, & McGue, 2003; Viding et al., 2007). Up to this moment, no influences in what concerns shared environment (e.g., socio-economic status) were detected in the development of psychopathic traits. Research suggests that the same genetic influences are important to explain the covariance between different aspects of psychopathic personality (CU traits and impulsivity-conduct problems) in both males and females (Larsson, Andershed, & Lichtenstein, 2006).

Longitudinal studies of twins have shown that the stability of psychopathic traits in childhood and adolescence is substantially influenced by genetic factors (e.g., Ferguson, 2010). All the studies (e.g., Bezdjian et al., 2011; Viding et al., 2007), conducted until now, document furthermore that a common genetic ascendance contributes to the

covariance between psychopathic traits and anti-social behavior. Studies suggest that the early-onset is more heritable for those children with CU traits that, simultaneously, present anti-social behavior. However, there is evidence that the genetic risk probably acts in conjunction with the environmental factors (Nordstrom et al., 2011; Waldman & Rhee, 2006). That is, although some authors believe that environmental risk factors do not seem to play a central role in the onset psychopathic traits in children, they acknowledge that they can play a determinant part in the development of anti-social behavior in youths with that same predisposition (Blair, Peschardt, Budhani, Mitchell, & Pine, 2006; Lynam, Loeber, & Stouthamer-Loeber, 2008).

Neuroscience perspective

The advance of brain imaging technique has allowed us to identify certain brain areas that are responsible for behavioral control and emotional information processing, namely the amygdala (Blair, 2006; Blair, 2007; Craig et al., 2009; Raine & Yang, 2006). Likewise, in neurochemical terms, there are studies that suggest the existence of impaired production of serotonin in individuals with high scores in the externalizing facet of psychopathy (see Minzenberg & Siever, 2006). It seems this type of neurochemical vulnerability brings about an excess of serotonin in body, which will influence the brain circuit, enhancing the effects of environmental risks as, for example, child abuse (Buckholtz & Meyer-Lindenberg, 2008).

The role of Hypothalamic-Pituitary-Adrenal axis (HPA) reactivity in aggression phenomena has also been extensively explored during the last two decades, regardless of some methodological and theoretical difficulties (Cicchetti & Rogosch, 2001). A recent study (Lopez-Duran, Olson, Hajal, Felt, & Vazquez, 2009), analyzing levels of cortisol in a sample of children that scored in measures of proactive, reactive and combined aggressiveness, showed that while an increase in cortisol levels was evident in children with a tendency to reactive violence, the same did not happen to children with a tendency to proactive violence (mostly evident in children with psychopathic traits), as these youths showed a response to stress similar to nonaggressive children. From another perspective, the same impairments in neurocognitive terms (e.g., facial expressions recognition, extinction, aversive conditioning, emotional lexical decision task) are observed in adolescents and adults scoring higher in psychopathy measures (Forth, Kosson, & Hare, 2003; Sylvers, Brennan, & Lilienfeld, 2011).

A biased social information processing was equally associated not only with the vulnerability towards the development of aggressive and anti-social behavior, but also with the maintenance of this same behavior (Dodge & Pettit, 2003; Stickle, Kirkpatrick, & Bursh, 2009). That is, an individual with deficits in information processing, will have less opportunity to reflect upon his behavior (at the environmental/contextual feedback), thus having less ability to alter his behavior and learn from experience. These questions,

together with other variables (e.g., personal and environmental), will probably increase children's risk to develop psychopathy (Vitale et al., 2005).

In short, results from this approach, although needing to be better corroborated and supported, are undoubtedly promising, as they provide data that indicate a possible neurological basis for some affective and cognitive variances of psychopathy, and offer some assistance in the discovery of neurocognitive mechanisms that may contribute to the development of anti-social traits (Blair, 2006; March et al., 2008; Sylvers et al., 2011; Viding & Jones, 2008).

Callous-unemotional traits

Many studies address the issue that callous traits (that, among others, generate manipulation and failures of empathy) and unemotional traits (that conducts to absence of guilt and emotional void, among others) seem to play a fundamental role in causal models of severe juvenile anti-social behavior (Munoz & Frick, 2012; White & Frick, 2010). CU traits in children are similar to Factor 1 (interpersonal/affective) characteristics of adulthood psychopathy (Hare, 2003), regardless the type of study samples (community, clinical, forensic), and are core indicators of bad prognosis (Fontaine, McCrory, Boivin, & Moffitt, 2011; Frick, Cornell et al., 2003; Frick, Kimonis et al., 2003). These traits can still forecast delinquency, even in children that have not yet presented behavioral problems (Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005). These data corroborate the importance of an early identification of these youths, for further intervention.

In this sense, Frick and Moffitt (2010) presented to the working Group of the DSM-V, a proposal to include a specifier in the diagnosis of CD, based on presence of CU traits. The authors suggested that this specifier should only be used if the child fulfill CD criteria and if, simultaneously, he/she meets, at least, two of the following criteria: lack of remorse or guilt; callous/lack empathy; unconcern about performance (academic, labor or in any other important activity); shallow or deficient affect. The importance of using several informers, and several diagnostic measures, together with the need to ensure these characteristics persist for more than 12 months and in more than one situational/relational context is also noted.

Some have argued that CU traits are the keystone of psychopathic personality, although other dimensions, such as impulsivity/irresponsibility and grandiosity are also included in construct conceptualization (Cleckley, 1941/1988; Cooke et al., 2006). Although not all children with CU traits present an aggressive or violent behavior, the truth is that a great fraction of youths with those characteristics manifest early in life this type of conduct, often in a crescendo in terms of severity, recidivism and chronicity (Fontaine et al., 2011; Forth & Book, 2010; Moffitt, 1993; Pardini, 2006). This group is associated with a worse prognosis in academic performance and anti-social behavior, and usually presents a family history of APD (e.g., Taylor et al., 2007). Therefore, it seems

important to increase research in the association between psychopathy and delinquency (Forth & Book, 2010; Vaughn et al., 2008).

Relating the presence or absence of CU traits with anti-social behavior, several studies showed significant differences in various dimensions (e.g., Fontaine, Barker, Salekin, & Viding, 2008; Munoz & Frick, 2012). Children with low scores in CU traits and exhibiting behavior problems, also present other associated dispositional and contextual problems, such as: cognitive and neuropsychological deficits, difficulty in emotional regulation, high anxiety and reactivity to negative emotional stimulus, a bitter tendency towards reactive aggression and dysfunctional families (Frick & Morris, 2004). We must also stress that these youths do not tend to show significant empathy and/or guilt deficits, feeling distress and remorse for the effect of their behavior on others (Pardini, Lochman, & Powel, 2007), so, apparently, there are no conscience development problems.

On the other hand, children with CU traits alone, present: lower intelligence impairment, lower anxiety, lower levels of behavioral inhibition, greater attraction to new and risky activities, low levels of fear and empathy, low levels of guilt and emotion, deficits in emotional processing, deficits in recognition of certain emotional expressions (mainly, fear and sadness), deficits in moral reasoning and conscience development, low emotional reactivity towards threat or punishment, reward oriented response, and also high levels of reactive and proactive aggression (Frick & Morris, 2004; MacPherson et al., 2010). In children presenting CU traits, it seems that other deficits (behavioral, emotional, cognitive, family and neurological) interfere with the normal development of conscience (Blair, Colledge, Murray, & Mitchell, 2001).

A recent study (Dadds, El Masry, Wimalaweera, & Guastella, 2008) showed that children with CU traits presented difficulties in emotional recognition, probably due to a lack of attention to eyes. The authors demonstrated that these same youths stopped presenting these difficulties when instructed to look directly in the eyes. Another study (Kimonis et al., 2006), with pre-school children, showed that a low behavioral inhibition (fearless style), presence of CU traits and corporal punishment were all predictors of proactive aggression. Other authors also defend that more severe parenting styles can likewise play an important role in the development of CU traits (Frick, Cornell et al., 2003; Frick, Kimonis et al., 2003; Pardini et al., 2007). Thus, it seems that children with low anxiety levels, that experience a low parental affectivity, numerous and indiscriminate severe punishments are particularly vulnerable to the development of these traits (Bayliss, Miller, & Henderson, 2010).

In the scope of CU traits research, different researchers suggest different etiologies besides those mentioned here. Some authors (e.g., Frick et al., 2005; Sylvers et al., 2011) reinforce the need to consider temperament, in special a fearless temperament, in the prediction of aggression, such as it was defended in Lykken´s Low Fear Hypothesis (1957, 2006). Other researchers (e.g., Pardini, 2006) propose that more uninhibited and fearless children present a lower activation in anxiety response, what may play a central role in

the origins of development of conscience impairments through socialization (that is, these children need a greater excitatory deviance to internalize parental rules). Another group (e.g., Blair et al., 2001) suggests a theoretical model based on Violence Inhibition Mechanism deficit. This theory postulates that human beings are biologically prepared to respond to others' stress hints, increasing their autonomic activity (through conditioning) in the inhibition of certain behaviors that cause a negative activation. Uninhibited and fearless children can, according to these authors, fail to experience that activation, what hampers the development of more appropriate levels of guilt, empathy and other dimensions of conscience (Blair et al., 2001).

However, as highlighted previously, not all uninhibited and fearless children present problems in conscience development (and, eventually, anti-social behavior), what should be kept in mind when analyzing protective factors for the development of psychopathy. Some researchers (Kochanska & Murray, 2000), stated that positive qualities in the relationship between children and parents (as opposite to punishment), especially secure bonds, seem to be important in conscience development, especially in children with a bold temperament. Another recent study (Cornell & Frick, 2007), with pre-school children, showed that children with inhibited temperament had a predisposition to present normal levels of guilt (even when parenting is less positive). On the other hand, uninhibited children required a stronger and more consistent parenting to develop those same appropriate levels of guilt.

According to Patrick et al. (2009), children with the same predominantly fearless character can follow different developmental paths and become either "bold" or "mean", depending upon the presence of other temperamental traits and socialization environments. Recent studies (Cornell & Frick, 2007; Fontaine et al., 2011; Frick, Cornell et al., 2003; Frick, Kimonis et al., 2003; Lyman et al., 2007) showed that there is a strong constancy of CU traits along development. The above referred studies demonstrated that it is especially rare that youths with low CU traits would present an increase in those traits as they grow up. Nevertheless, a significant number of youths presented a reduction in those traits together with reduced behavior problems. This later group was associated with higher socio-economic standards and with more assertive parenting attitudes, suggesting that these factors may be predictors of a reduction in CU traits. In short, although there are studies showing some stability in the development of psychopathy, mainly in its early stages during infancy, when associated with CU traits (Frick &Morris, 2004), there is evidence that these factors are malleable and modifiable, above all, by factors related with the psychosocial environment (Frick, Cornell et al., 2003; Frick, Kimonis et al., 2003; Lynam et al., 2007; Salekin, Worley, & Grimes, 2010).

Personality

In this section, we approach two different types of interface between psychopathy and personality. A first topic refers to studies approaching psychopathy on a dimensional

perspective, based on the five-factor model of personality (FFM; McCrae et al., 2000; Lynam & Derefinko, 2006; Lynam & Widiger, 2007). A second topic illustrates the nosologic/psychiatric perspective, associating psychopathy with personality disorders, more precisely with APD (APA, 2000). Some authors (e.g., Jones, Miller, & Lynam, 2011; Lynam, 2010; Lynam et al., 2005; Roose, Bijttebier, Claes, Lilienfeld, De Fruit, Decuyper, 2011) defend that child, adolescent and adult psychopathy is better understood as a constellation of predispositions, distinctive endogenous and lasting manners of thinking, acting and feeling. Assuming that psychopathy is a dimensional and not a categorical construct (as supported by psychopathy scales, e.g., Hare, 2003), some authors conceptualize the disorder as an extreme version of a normal personality profile, or a maladaptive variation of the FFM domains (e.g., Edens, Marcus, Lilienfeld, & Poythress, 2006; Jones et al., 2011; Roose et al., 2011; Salekin, Leistico, Trobs, Schrum, & Lochman, 2005; Widiger, De Clercq, & De Fruyt, 2009). According to some of these authors, many questions and controversies related to psychopathy could be easily solved with a dimensional assessment. For instance, Lynam (2010) points out that, if we analyze each domain in an elementar way, we will be able to discover the central, peripheral and dispensable facets of psychopathic disorder, discriminating which are the elements responsible for the less positive outcomes (proactive aggression, recidivism, and resistance to treatment), and which are the effects of certain facet combinations. In this context, studies with adults and younger populations suggest that psychopathic personality profile can be sketched using a specific traits set of FFM (Roberts & DelVecchio, 2000).

However, there is at least one point of divergence between adults and adolescents profile. In detail, adults scoring in psychopathy measures show negative scores in multiple facets of factor N (neuroticism), that is, a relative immunity to concerns, shame and stress, what is less accurate among youths with psychopathy traits, who, at least in a moderate way, react to stress (Kubak & Salekin, 2009; Lee, Salekin, & Iselin, 2010; Lynam, 2010). This, probably, gives to younger populations a greater permeability to therapeutic changes.

From a nosological perspective, we know that the onset of a personality disorder (APA, 2000) can be traced back at least to the adolescence or early adulthood. In the DSM there are no references to antecedents of personality disorders, with exception of APD, where there is, inclusively, a disorder (CD) that must precede it (and be present before the age of 15). Regardless of this exception, there is a great reluctance to accept that personality disorders occur in adolescents and mainly in children (Rutter, 2005), because of its implicit message of inevitability and immutability. Although, in the past, people thought personality disorders were immutable, there is data showing these can have a changing pattern along time (Tyer, 2005), even if transition into adulthood constitutes a critical point where individuals with maladaptive personality traits start to be more notoriously deviant (Tyer, 2005; Widiger et al., 2009). Several studies support the idea

that stability of personality traits is, at least, moderate during childhood and adolescence, and high in adulthood (e.g., De Fruit et al., 2006; Roberts & DelVecchio, 2000; Shiner, 2009). However, we must keep in mind that plasticity continues after this period and that personality stability does not absolutely mean its immutability (De Fruit et al., 2006; Jones et al., 2011; Roberts, Walton, & Viechtbauer, 2006; Roose et al., 2011; Shiner, 2009).

The subject of stability versus instability of psychopathic traits in infancy, adolescence and adulthood, is really a controversial issue, with studies supporting both perspectives (e.g., Lynam et al., 2009; McCrae et al., 2000). This has important implications, mainly in what concerns the potential predictive value of the psychopathy construct (Lynam et al., 2009; Skeem et al., 2011). On the one hand, if there is no stability at all, there is no predictive value of the psychopathy construct. On the other hand, if there is a high stability, there is a great utility and predictive value of the construct, but a depletion of any type of therapeutic intervention (Andershed, 2010). The author considers a more realistic option: the stability of psychopathic traits is somewhere between these two limits. Thus being the course of the disorder very stable for some individuals and not for others. But will the group which keeps the psychopathic traits stable belong to a majority or to a minority? To which degree is psychopathy stable from childhood to adolescence and from adolescence to adulthood?

We must highlight that there are few prospective longitudinal studies exploring the stability of psychopathic traits over time, and no studies at all analyzing the ipsative stability of the construct (Andershed, 2010). Nevertheless, there is evidence that personality traits, including the psychopathic ones, are present in childhood and show a stability ranging from moderate to high between childhood and adolescence, what reinforces the importance of this construct (Lynam et al., 2009).

Some authors focused on the variables that would potentially alter the psychopathy stability, or in other words, on protective factors. Therefore, some emphasized the importance of child social competence, and the influence of healthy peers (Dodge & Pettit, 2003). As already pointed out, we also know that CU traits can be altered under certain circumstances of the psychosocial environment (e.g., secure attachment, parental warmth) (Pardini et al., 2007). In short, it is presently accepted that personality disorders are associated with developmental pathways with origins in childhood, having as antecedents temperamental factors and certain personality traits (Caspi, Roberts, & Shiner, 2005; Widiger et al., 2009). Research, although scarce in the area of stability, also suggests that psychopathic traits are very stable over time in some individuals, probably in the majority, but not in all. It is necessary to increase research in this field (namely, with prospective longitudinal studies, that avoid retrospective bias), in order to make us understand the degree of stability, the factors that potentiate, maintain or alter that same stability, and also the factors capable (or not) of transforming psychopathic traits in violent behaviors in certain children and not in others (Andershed, 2010; Forth & Book,

2010; Skeem et al., 2011). As Farrington (2006) points out, individuals with psychopathy appear in a population initially without psychopathy.

Environmental influences

Several authors, such as Bowlby (1969), Harlow (see Abreu, 2002 for a review), Spitz (1979/2004), Winnicott (1983), Ainsworth (1985), Fonagy and Bateman (2007), demonstrated the importance of a secure attachment, especially with the maternal figure in the first years of life. Several studies and theories showed that a secure attachment allows the learning of balanced emotional regulation, the reciprocity experience of positive affections, and the construction of favorable expectations about the self, the others and the world in general (Fonagy & Bateman, 2007). On the other hand, total or partial deprivation of positive affective relationships (and other environmental risk factors) damages the mentalization capacity (Fonagy & Bateman, 2007), and compromises personality development, that may be irreversibly affected (Fonagy & Bateman, 2008). Winnicott (1983) even defended that these needs, although not understood as psychopathology, often constituted the basis of developmental processes that would lead to psychopathology.

McCord and McCord (1964) referred that parental rejection and/or neglect would be the most important factors in the development of the disorder, not only as primary determinants (in cases of severe abuse and/or neglect) but also as enhancer factors of other pathogenic influences (fearless and uninhibited temperamental style). According to the authors, these factors will potentially facilitate the construction of a callous, unemotional and social detached personality. More recent studies, conducted in forensic samples, clearly identify a link between psychopathy and problems of family bonding (e.g., neglect, poor supervision, parental rejection, coldness, inconsistent discipline), in particular with parental figures (e.g., Saltaris, 2002). Salekin and Lochman (2008) also demonstrated that poor parenting was associated with an earlier onset of phenotypic expression of psychopathic traits. A recent survey also suggests that, most possibly, there is a connection between a set of different parenting variables and psychopathic traits in children (Frick, Cornell et al., 2003; Frick, Kimonis et al., 2003). Gao, Raine, Chan, Venables, and Mednick (2010) concluded that dysfunctional parental bonding was associated with an increase in both factors of psychopathy in adulthood (being abuse only related to the behavioral anti-social component). A lack of maternal care was the feature most clearly associated with psychopathy (regardless the existence, or not, of an abuse history) although a deficient paternal protection was also associated with the disorder (mainly with emotional detachment). These results indicate that maternal and paternal influences, and other psychosocial variables (such as abuse or separation from one parent), must not be ignored in the study of psychopathy etiology (Gao et al., 2010).

Other authors (Bayliss et al., 2010) also show that a low supervision and monitoring would be related with CU traits development, harming the bonding process. Some studies

(e.g., Pardini et al., 2007), showed that the presence of a protective and affectionate parent can reinforce the emotional connection with the child, offering some protection in the development of psychopathic features. Other studies show that parental support could protect children and adolescents from developing antisocial behavior (Frick & Morris, 2004; Kemp, Overbeek, Wied, Engels, & Scholte, 2007).

We point out that there are numerous studies focusing on certain conditions (individual, familiar, parental, socio-economic) considered potential risk factors for the development of anti-social behavior (see Farrington, Ullrich, & Salekin, 2010 for a review) but not for the specific development of psychopathy (e.g., Gao et al., 2010). Some authors highlight the impact of personal factors, and their relation with contextual issues, in the development of psychopathic disorder. Studies show that children and adolescents with a difficult temperament make parental supervision especially difficult (Cornell & Frick, 2007; Bayliss et al, 2010), and that hyperactivity (DeLisi, Vaughn, Beaver, Wexler, Barth, & Fletcher, 2011; Lynam, 1996), low pro-sociability and empathy (Lynam & Gudonis, 2005), low anxiety, low fear, behavioral disinhibition (Glenn, Raine, Venables, & Mendnick, 2007; Sylvers et al., 2011), and narcissism (Barry et al., 2007) in children are risk factors for the development of psychopathy. Regardless of the amount of existing research, it is very difficult to determine with accuracy which are the causal mechanisms linking family factors and psychopathy, because these factors are tangled in complex nets, where they compete with other personal, social and cultural factors. "With child psychopathy emerging as relevant, and its manifestation occurring early in life, it is important to investigate the ontogeny of the disorder, and the sequential effects of risk factors on psychopathy" (Farrington et al., 2010, p. 220). In short, some suggest that psychopathy provokes an irresponsible and anti-social life style, especially when child is exposed to certain environmental risk factors, above all parental and social ones. "Looking at this issue from a protective factor framework, competent parenting early on, good peer influence, and social competence can all protect against the development of psychopathy" (Farrington et al., 2010, p. 221).

Discussion

The study of psychopathy in general, and child and adolescent psychopathy in particular, has gained a growing interest by researchers. In criminology arena, some authors suggest that psychopathic traits are predictive of several dimensions of the delinquent career (Vaughn & DeLisi, 2008; Vaughn et al., 2008), defending that psychopathy is a unified theory of crime (DeLisi, 2009; DeLisi & Piquero, 2011). DeLisi (2009) emphasizing the importance of the concept has stated "Psychopathy is also critically important in practice and should be included in every handbook of every practitioner position in the juvenile and criminal justice systems" (p. 267).

In this paper we have presented a broad perspective of the construct and described the etiological theories that have received more attention from the scientific community.

Nevertheless, there are some questions that must be debated and discussed. First, it is worth remembering that one of the big aims of Checkley's work (1941/1988) was the delimitation of the psychopathy concept, considered too inclusive at that time. The author has successfully achieved that objective, when he defended that affective and interpersonal characteristic were the imprint of psychopathic personality. The works of authors contemporary and posterior to Cleckley, although very pertinent while attempting to contribute for the explanation of psychopathy, ended up by, according to our opinion, compromising its clarity. Theoretically, it continues to occur with relevant discrepancies in the conceptual definition of psychopathy, from the clinical, nosological, dimensional and typological perspectives. Also, the various assessment instruments show frailties, namely because they are not consistent on the dimensions assessed (see Ribeiro da Silva, Rijo & Salekin, submitted for publication).

Furthermore, it is still under debate whether the anti-social/deviant life-style component is a psychopathy trait (e.g., Hare, 2003; Lindner, 1944/2003) or a psychopathy product (Cleckley, 1941/1988; Cooke et al., 2007; Hare, 2003, Salekin et al., 2006; Skeem & Cooke, 2010). The triadic conceptualization of psychopathy (Patrick et al., 2009) may answer, partially, these divergences, by defending that a fearless temperament (genotype) can be differentiated in a phenotype of boldness or meanness, according to the psychosocial environment to which the child is exposed to (Pardini et al., 2007). This point is also reflective of Hervey Cleckley's case examples which reflected a wide variety of individuals ranging in their SES and career success. Genetic studies (e.g., Bezdjian et al., 2011; Nordstrom et al., 2011), in children with CU traits (e.g., Frick, Kimonis et al., 2003; Munoz & Frick, 2012), and family influences upon the developmental pathways of psychopathy (e.g., Gao et al., 2010) also substantiate this same perspective.

Recent developments in psychological disorders (theory and research) point out the relevance of an evolutionary approach to explain cognitive, emotional and behavioral dysfunctional styles (Gilbert, 2005, 2010). In this line, some authors defend that psychopathy can be seen as an evolutionary and adaptive strategy in certain psychosocial contexts (Ferguson, 2010; Gilbert, 2005; Glenn, Kuzban, & Raine, 2011; Harris & Rice, 2006; Salekin & Lynam, 2010a, 2010b). Glenn, Kurzban, and Raine (2011) also believe that psychopathy can be contextualized, in evolutionary terms, as an adaptation and not a disorder, and underline the need for more research to help clarify this issue.

The answer to better understanding the cause and correlates of psychopathy is well underway. Researchers have amassed a great deal of knowledge on the topic. Still left to be researched include issues such as - how do "psychopaths" see us and see themselves? Is psychopathy a developmental disorder marked by an emotional hypo-responsiveness (Lynam et al., 2007), low fear (Lykken, 2006), an absence of shame and remorse, and a mask of sanity that hides this "insanity" (Cleckley, 1941/1988)? Or is psychopathy better conceptualized as an adaptive strategy toward certain life circumstances (e.g., Gilbert, 2005; Glenn et al., 2011)? A primary question for research is whether psychopathy can be

prevented, altered or ameliorated (Salekin et al., 2010). Although there is some research emerging on this topic (Salekin, Lester, & Sellers, in press), there is still much work to do in terms of better understanding the condition and how to prevent or treat it.. These and other questions about psychopathy require further study and we encourage researchers to further examine these complex questions.

References

Abreu, M. V. (2002). *Cinco ensaios sobre motivação*. Coimbra: Almedina.

Ainsworth, M. D. S. (1985). Patterns of infant-mother attachments: Antecedents and effects on development. *Bulletin of the New York Academy of Medicine, 61,* 771–791.

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3th Ed.). Washington, DC: Author.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th Ed.). Washington, DC: Author.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th Ed. Text rev.). Washington, DC: Author.

Andershed, H. (2010). Stability and change of psychopathic traits: What do we know? In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 233–250). New York: Guilford Press.

Baker, L. A., Tuvblad, C., Reynolds, C., Zheng, M., Lozano, D. I., & Raine, A. (2009). Resting heart rate and the development of antisocial behavior from age 9 to 14: Genetic and environmental influences. *Development and Psychopathology, 21,* 939–960.

Barry, C. T., Frick, P. J., DeShazo, T. M., McCoy, M., Ellis, M., & Loney, B. R. (2000). The importance of callous-unemotional traits for extending the concept of psychopathy to children. *Journal of Abnormal Psychology, 109,* 335–340.

Barry, T. D., Thompson, A., Barry, C. T., Lochman, J. E., Adler, K., & Hill, K. (2007). The importance of narcissism in predicting proactive and reactive aggression in moderately to highly aggressive children. *Aggressive Behavior, 33,* 185–197.

Bayliss, C., Miller, A., & Henderson, C. (2010). Psychopathy development and implications for early interventions. *Journal of Cognitive Psychotherapy: An International Quarterly, 24,* 71–80.

Beaver, K. M., Rowland, M. W., Schwartz, J. A., & Nedelec, J. L. (2011). The genetic origins of psychopathic personality traits in adult males and females: Results form an adoption-based study. *Journal of Criminal Justice, 39,* 426–432.

Bezdjian, S., Raine, A., Baker, L. A., & Lyman, D. R. (2011). Psychopathic personality in children: Genetic and environmental contributions. *Psychological Medicine, 41,* 589–600.

Blair, R. J. R. (2006). Subcortical brain system in psychopathy. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 296–312). New York: Guildford Press.

Blair, R. J. R. (2007). The amygdala and the ventromedial prefrontal cortex in morality and psychopathic tendencies. *Trends in Cognitive Sciences, 11,* 387–392.

Blair, R. J. R., & Mitchell, D. G. V. (2009). Psychopathy, attentions and emotion. *Psychological Medicine, 39,* 543–555.

Blair, R. J. R., Colledge, E., Murray, L., & Mitchell, D. G. V. (2001). A selective impairment in the processing of sad and fearful expressions in children with psychopathic tendencies. *Journal of Abnormal Child Psychology, 29,* 491–498.

Blair, R. J. R., Peschardt, K. S., Budhani, S., Mitchell, D. G. V., & Pine, D. S. (2006). The development of psychopathy. *Journal of Child Psychology and Psychiatry, 47,* 262–275.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.

Buckholtz, J. W., & Meyer-Lindenberg, A. (2008). MAOA and the neurogenetic architecture of human aggression. *Trends in Neurosciences, 31,* 120–129.

Caspi, A., Roberts, B. W., & Shiner, R. L. (2005). Personality Development: Stability and Change. *Annual Review of Psychology, 56,* 453–484.

Chanen, A. M., & McCutchenon, L. K. (2008). Personality disorder in adolescence: The diagnosis that dare not speak its name. *Personality and Mental Health, 2,* 35–41.

Cicchetti, D., & Rogosch, F. A. (2001). The impact of child maltreatment and psychopathology in neuroendocrine functioning. *Development and Psychopathology, 13,* 783–804.

Cleckley, H. (1988). *The mask of sanity* (6th Ed.). St. Louis, MO: Mosby (Original work published 1941).

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Toward a hierarchical model. *Psychological Assessment, 13,* 171–188.

Cooke, D. J., Michie, C., & Hart, S. D. (2006). Facets of clinical psychopathy. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 91–106). New York: Guildford Press.

Cooke, D. J., Michie, C., & Skeem, J. (2007). Understanding the structure of Psychopathy Checklist-Revised. *The British Journal of Psychiatry, 190,* 39–50.

Cornell, A. H., & Frick, P. J. (2007). The moderating effects of parenting styles in the association between behavioral inhibition and parent-reported guilt and empathy in preschool children. *Journal of Clinical Child and Adolescent Psychology, 36,* 305–318.

Craig, M. C., Catani, M., Deeley, Q., Latham, R., Daly, E., Kanaan, R.,…, & Murphy, D. G. (2009). Altered connections on the road of psychopathy. *Molecular Psychiatry, 14,* 946–953.

Dadds, M. R., El Masry, Y., Wimalaweera, S., & Guastella, A. J. (2008). Reduced eye gaze explains "fear blindness" in childhood psychopathic traits. *Journal of the American Academy of Child and Adolescent Psychiatry, 47,* 455–463.

De Fruit, F., Bartels, M., Van Leuwen, K. G., De Clercq, B., Decuyper, M., & Mervielde, I. (2006). Five types of personality continuity in childhood and adolescence. *Journal of Personality and Social Psychology, 91,* 538–552.

DeLisi, M. (2009). Psychopathy is the unified theory of crime. *Youth Violence and Juvenile Justice, 7,* 256–273.

DeLisi, M., & Piquero, A. R. (2011). New frontiers in criminal careers research, 2000–2011: A state-of-the-art review. *Journal of Criminal Justice, 39,* 289–301.

DeLisi, M., Vaughn, M., Beaver, K. M., Wexler, J., Barth, A. E., & Fletcher, J. M. (2011). Fledging psychopathy in classroom: ADHD subtypes, psychopathy, and Reading comprehension in a community sample of adolescents. *Youth Violence and Juvenile Justice, 9,* 43–58.

Dodge, K. A., & Pettit, G. S. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Development Psychology, 39*, 349–371.

Edens, J. F., Marcus, D. K., Lilienfeld, S. O., & Poythress, N. G. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology, 115,* 131–144.

Edens, J. F., & Vincent, G. M. (2008). Juvenile psychopathy: A clinical construct in need of restraint? *Journal of Forensic Psychology Practice, 8,* 186–197.

Farrington, D. P. (2005). The importance of child and adolescent psychopathy. *Journal of Abnormal Child Psychology, 33,* 489–497.

Farrington, D. P. (2006). Family background and psychopathy. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 229–250). New York: Guildford Press.

Farrington, D. P., Ullrich, S., & Salekin, R. T. (2010). Environmental Influences on Child and adolescent Psychopathy. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 202–230). New York: Guilford Press.

Ferguson, C. J. (2010). Genetic contributions to antisocial personality and behavior: A meta-analytic review from an evolutionary perspective. *The Journal of Social Psychology, 150,* 160–180.

Fonagy, P., & Bateman, A. W. (2007). Mentalizing and borderline personality disorder. *Journal of Mental Health, 16,* 83–101.

Fonagy, P., & Bateman, A. W. (2008). The development of borderline personality disorder: A mentalizing model. *Journal of Personality Disorders, 22,* 4–21.

Fontaine, N., Barker, E. D., Salekin, R. T., & Viding, E. (2008). Dimensions of psychopathy and their relationships to cognitive functioning in children. *Journal of Clinical Child and Adolescent Psychology, 37,* 690–696.

Fontaine, N. M. G., McCrory, E. J. P., Boivin, M., & Moffitt, T. E. (2011). Predictors and outcomes of joint trajectories of callous-unemotional traits and conduct problems in childhood. *Journal of Abnormal Psychology, 120*, 730–742.

Forth, A. E., & Book, A. S. (2010). Psychopathic traits in children and adolescents: The relationship with antisocial behavior and aggression. In R. T. Salekin, & D. R. Lynam (Eds.). *Handbook of child and adolescent psychopathy* (pp. 251–283). New York: Guilford Press.

Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 251–283). New York: Guilford Press.

Forth, A. E., & Bruke, H. C. (1998). Psychopathy in adolescence: Assessment, violence, and developmental precursors. In D. J. Cooke, A. E. Forth & R. D. Hare (Eds.), *Psychopathy: Theory, research and implications for society* (pp. 205–299). Boston, MA: Kluwer Academic Publishers.

Forth, A. E., Hart, S. D., & Hare, R. D. (1990). Assessment of psychopathy in male offenders. *Psychological Assessment, 2*, 342–344.

Forth, A. E., Kosson, D. S., & Hare, R. D. (2003). *The Psychopathy Checklist: Youth Version*. Toronto: Multi-Health Systems.

Frick, P. J., & Moffitt, T. E. (2010). *A Proposal to the DSM-V Childhood Disorders and the ADHD and Disruptive Behavior Disorders Work Groups to Include a Specifier to the Diagnosis of Conduct Disorder based on the Presence of Callous-Unemotional Traits*. Retrieved from http://www.dsm5.org

Frick, P. J., & Morris, A. S. (2004). Temperament and developmental pathways to conduct problems. *Journal of Clinical Child and Adolescent Psychology, 33,* 54–68.

Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous-unemotional traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31*, 457–470.

Frick, P. J., Kimonis, E. R., Dandreaux, D. M., & Farrel, J. M. (2003). The four-year stability of psychopathic traits in non-referred youth. *Behavioral Sciences & the Law, 21*, 713–766.

Frick, P. J., Stickle, T. R., Dandreaux, D. M., Farrell, J. M., & Kimonis, E. R. (2005). Callous-unemotional traits in predicting the severity and stability of conduct problems and delinquency. *Journal of Abnormal Psychology, 33,* 471–487.

Gao, Y., Raine, A., Chan, F., Venables, P. H., & Mednick, S. A. (2010). Early maternal and parental bonding, childhood physical abuse and adult psychopathic personality. *Psychological Medicine, 40,* 1007–1016.

Gilbert, P. (2005). Compassion and cruelty. In P. Gilbert (Ed.), *Compassion: Conceptualizations, research and use in psychotherapy* (pp. 9–74). New York: Routledge.

Gilbert, P. (2010). *The compassionate mind: A new approach to life's challenges*. Oakland: New Harbinger Publications.

Glenn, A. L., Kuzban, R., & Raine, A. (2011). Evolutionary theory and psychopathy. *Aggression and Violent Behavior, 16*, 371–380.

Glenn, A. L., Raine, A., Venables, P. H., & Mendnick, S. A. (2007). Early temperamental and psychophysiological precursors of adult psychopathic personality. *Journal of Abnormal Psychology, 116*, 508–518.

Hare, R. D. (1985). A comparison of procedures for the assessment of psychopathy. *Journal of Consulting and Clinical Psychology, 53,* 7–16.

Hare, R. D. (1991). *The Hare Psychopathy Checklist-Revised.* Toronto: Multi-Health Systems.

Hare, R. D. (2003). *The Hare Psychopathy Checklist-Revised* (2nd Ed.). Toronto: Multi- Health Systems.

Harris, G. T., & Rice, M. E. (2006). Treatment of psychopathy: A review of empirical findings. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 555–572). New York: Guildford Press.

Hemphill, J. F. (2007). The Hare Psychopathy Checklist and recidivism: Methodological issues and critical evaluating empirical evidence. In H. Herve & J. C. Yuille (Eds.), *The psychopath: Theory, research, and practice* (pp. 141–172). Mahwah, NJ: Erlbaum.

Hoyersten, J. C. (2001). The Icelandic Sagas and the idea of personality and deviant personalities in the Middle Ages. *History of Psychiatry,* 199–212.

Jones, S. E., Miller, J. D., & Lynam, D. R. (2011). Personality, antisocial behavior, and aggression: A meta-analytic review. *Journal of Criminal Justice, 39,* 329–337.

Karpman, B. (1949). The psychopathic delinquent child. *The American Journal of Orthopsychiatry, 20,* 223–265.

Karpman, B. (1950). Psychopathic behavior in infants and children: A critical survey of existing concepts. *The American Journal of Orthopsychiatry, 21*, 223-22.

Kemp, R. A. T., Overbeek, G., Wied, M., Engels, R. C. M. E., & Scholte, R. H. J. (2007). Early adolescent empathy, parental support, and antisocial behavior. *The Journal of Genetic Psychology, 168,* 5–18.

Kimonis, E. R., Frick, P. J., Boris, N. W., Smyke, A. T., Cornell, A. H., Jamie, J. M.,…Zeanah, C. H. (2006). Callous-unemotional features, behavioral inhibition, and parenting: Independent predictors of aggression in a high-risk preschool sample. *Journal of Child and Family Studies, 15,* 745–756.

Kochanska, G., & Murray, K. (2000). Mother-child mutually responsive orientation and conscience development: From toddler to early school age. *Child Development, 71*, 417–431.

Kotler, J. S., & McMahon, R. J. (2005). Child Psychopathy: Theories, measurement, and relations with the development and persistence of conduct problems. *Clinical Child and Family Psychology Review, 8,* 291–325.

Kotler, J. S., & McMahon, R. J. (2010). Assessment of child and adolescent psychopathy. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 79–112). New York: Guilford Press.

Kraeplin, É. (1904). *Psychiatrie: Ein lehbuch* (7th & 8th Eds.). Leipzig: Barth.

Kruh, I. P., Frick, P. J., & Clements, C. B. (2005). Historical and personality correlates to the violence patterns of juveniles tried as adults. *Criminal Justice and Behavior, 92*, 69–96.

Kubak, A. F., & Salekin, R. T. (2009). Psychopathy and anxiety in children and adolescents: Newinsights on developmental pathways to offending. *Journal of Psychopathology and Behavioral Assessment, 31*, 271–284.

Larsson, H., Andershed, H., & Lichtenstein, P. (2006). A genetic factor explains most of the variation in the psychopathic personality. *Journal of Abnormal Psychology, 115,* 221–230.

Lee, Z., Salekin, R. T., & Iselin, A. R. (2010). Psychopathic traits in youth: Is there evidence of primary and secondary subtypes? *Journal of Abnormal Child Psychology, 38,* 381–393.

Leistico, A. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis related the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior, 32*, 28–45.

Lindner, R. M. (2003). *Rebel without a cause: The story of a criminal psychopath*. New York: Grune & Stratton (Original work published 1944).

Lopez-Duran, N. L., Olson, S. L., Hajal, N. J., Felt, B. T., & Vazquez, D. M. (2009). Hypothalamic pituitary adrenal axis functioning in reactive and proactive aggression in children. *Journal of Abnormal Child Psychology, 37, 169–182.*

Lykken, D. T. (1957). *A study* of anxiety in the sociopathic personality. *Journal of Abnormal and Clinical Psychology, 55,* 6–10.

Lykken, D. T. (1995). *The antisocial personalities*. Mahwah, NJ: Erlbaum.

Lykken, D. T. (2006). Psychopathic personality: The scope of the problem. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 3–13). New York: Guildford Press.

Lynam, D. R. (1996). Early identification of chronic offenders: Who is the fledgling psychopath? *Psychological Bulletin, 120,* 209–234.

Lynam, D. R. (2010). Child and adolescent psychopathy and personality. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 179–201). New York: Guilford Press.

Lynam, D. R., & Derefinko, K. J. (2006). Psychopathy and personality. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 133–155). New York: Guildford Press.

Lynam, D. R., & Gudonis, L. (2005). The development of psychopathy. *Annual Review of Clinical Psychology, 1,* 381–407.

Lynam, D. R., & Widiger, T. A. (2007). Using a general model of personality to identify the basic elements of psychopathy. *Journal of Personality Disorders, 21,* 160–178.

Lynam, D. R., Caspi, A., Moffitt, T. E., Loeber, R., & Stouthamer-Loeber, M. (2007). Longitudinal evidence that psychopathy scores in early adolescence predict adult psychopathy. *Journal of Abnormal Psychology, 116*, 155–165.

Lynam, D. R., Caspi, A., Moffitt, T. E., Raine, A., Loeber, R., & Stouhamer-Loeber, M. (2005). Adolescent psychopathy and the Big Five: Results from two samples. *Journal of Abnormal Child Psychology, 33,* 431–443.

Lynam, D. R., Charnigo, R.,Moffitt, T. E., Raine, A., Loeber, R., & Stouthamer-Loeber,M. (2009). The stability of psychopathy across adolescence. *Development and Psychopathology, 21*, 1133–1153.

Lynam, D. R., Loeber, R., & Stouthamer-Loeber, M. (2008). The stability of psychopathy from adolescence into adulthood: The search for moderators. *Criminal Justice and Behavior, 35,* 228–243.

MacPherson, L., Reynolds, E. K., Daughters, S. B., Wang, F., Cassidy, J., Mayes, L. C., & Lejuez, C. W. (2010). Positive and negative reinforcement underlying risk behavior in early adolescents. *Prevention Science, 11,* 331–342.

March, A. A., Finger, E. C., Mitchell, D. G. V., Reid, M. E., Sims, C., Kosson, D. S.,…& Blair, R.J.R. (2008). Reduced amygdala response to fearful expressions in children *and adolescents with callous-unemotional traits and disruptive behavior disorders. The American Journal of Psychiatry, 165,* 712–720.

McCord, W., & McCord, J. (1964). *The psychopath: An essay on the criminal mind.* Princeton, NJ: Van Nostrand.

McCrae, R. R., Costa, P. T., Ostendorf, F., Angleitner, A., Hřebíčková, M., Avia, M. D... & Smith, P. B. (2000). Nature over nurture: Temperament, personality, and life span development. *Journal of Personality and Social Psychology, 78,* 173–186.

Minzenberg, M. J., & Siever, L. J. (2006). Neurochemestry and pharmacology of psychopathy and related disorders. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 251–277). New York: Guildford Press.

Moffitt, T. E. (1993). Adolescence-limited and life course persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674–701.

Munoz, L. C., & Frick, P. J. (2012). Callous-unemotional traits and their implication for understanding and treating aggressive and violent youths. *Criminal Justice and Behavior, 39,* 794–813.

Murphy, J. M. (1976). Psychiatric labeling in cross-cultural perspective: Similar kinds of disturbed behavior appear to be labeled abnormal in diverse cultures. *Science, 191,* 1019–1028.

Murrie, D. C., Boccaccini, M. T., McCoy, W., & Cornell, D. G. (2007). Diagnostic labeling in juvenile court: How do descriptions of psychopathy and conduct disorder influence judges? *Journal of Clinical Child and Adolescent Psychology, 36*, 228–241.

Nordstrom, B. R., Gao, Y., Glenn, A. L., Peskin, M., Rudo-Hutt, A. S., Schug, R. A., et al. (2011). Neurocriminology. *Advances in Genetics, 75,* 255–283.

Pardini, D. (2006). The callousness pathway to severe violent delinquency. *Aggressive Behavior, 32*, 1–9.

Pardini, D. A., Lochman, J. E., & Powel, N. (2007). The development of callous-unemotional traits and antisocial behavior in children: Are there shared and/or unique predictors? *Journal of Child and Adolescent Psychology, 36,* 319–333.

Partridge, G. E. (1930). Current conceptions of psychopathic personality. *The American Journal of Psychiatry, 10,* 53–99.

Patrick, C. (2006). Back to the future: Cleckley as a guide to the next generation of psychopathy research. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 605–617). New York: Guilford Press.

Patrick, C. (2010). Conceptualizing the psychopathic personality: Disinhibited, bold, … or just plain mean? In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 15–48). New York: Guilford Press.

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology, 21*, 913–928.

Pinel, P. (1962). *A treatise on insanity* (D. Davis, Trans.). New York: Hafner (Original work published 1806).

Polaschek, D. L., & Skeem, J. L. (2018). Treatment of adults and juveniles with psychopathy. In C. Patrick (Ed.) Handbook of psychopathy (pp. 710-731). New York: Guildford Press.

Prichard, J. C. (1835). *A treatise on insanity and other disorders affecting the mind.* London: Sherwood, Gilbert & Piper.

Quay, H. C. (1964). Dimensions of personality in delinquent boys as inferred from the factor analysis of case history data. *Child Development, 35,* 479–484.

Quay, H. C. (1965). Psychopathic personality as pathological stimulation seeking. *The American Journal of Psychiatry, 122,* 180–183.

Quay, H. C. (1999). Classification of disruptive behavior disorders. In H. C. Quay & A. E. Hogan (Eds.), *Handbook of disruptive behavior disorders* (pp. 3–21). New York: Kluwer.

Raine, A., & Yang, Y. (2006). Neural foundations to moral reasoning and anti-social behavior. *Social Cognitive and Affective Neuroscience, 1*, 203–213.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (submitted for publication). *Child and adolescent psychopathy: Assessment issues and treatment needs.* Manuscript submitted for publication.

Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin, 126,* 3–25.

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin, 132,* 1–25.

Robins, L. N. (1966). *Deviant children grown up*. Baltimore, MD: Williams & Wilkins.

Robins, L. N. (1978). Sturdy predictors of adult antisocial behaviour: Replications from longitudinal studies. *Psychological Medicine, 8*, 611–622.

Roose, A., Bijttebier, P., Claes, L., Lilienfeld, S. O., De Fruit, F., & Decuyper, M. (2011). Psychopathic traits in adolescence and the five factor model of personality. *Journal of Psychopathology and Behavioral Assessment, 34,* 1–10.

Rush, B. (1812). *Medical inquiries and observations upon the diseases of the mind.* Philadelphia: Kimber & Richardson.

Rutter, M. (2005). Commentary: What is the meaning and utility of the psychopathy concept. *Journal of Abnormal Child Psychology, 33,* 499–503.

Salekin, R. T., Brannen, D. N., Zalot, A. A., Leistico, A. R., & Neumann, C. S. (2006). Factor structure of psychopathy in youth: Testing the applicability of the new four factor model. *Criminal Justice and Behavior, 33,* 135–157.

Salekin, R. T., & Frick, P. J. (2005). Psychopathy in children and adolescents: The need for a developmental perspective. *Journal of Abnormal Child Psychology, 33,* 403–409.

Salekin, R. T., Lester, W. S., & Sellers, M-K. (in press). Psychopathy in youth and mental sets: Incremental and entity theories of intelligence. *Law and Human Behavior*.

Salekin, R. T., & Lochman, J. E. (2008). Child and adolescent psychopathy: The search for protective factors. *Criminal Justice and Behavior, 35,* 159–172.

Salekin, R. T., & Lynam, D. R. (2010a). Child and adolescence psychopathy: The road ahead. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 401–420). New York: Guilford Press.

Salekin, R. T., & Lynam, D. R. (2010b). Child and adolescent psychopathy: An introduction. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 1–12). New York: Guilford Press.

Salekin, R. T., Leistico, A. R., Trobs, K. K., Schrum, C. L., & Lochman, J. E. (2005). Adolescent psychopathy and personality theory-the interpersonal circumplex: Expanding evidence of a nomological net. *Journal of Abnormal Child Psychology, 33,* 445–460.

Salekin, R. T., Worley, B., & Grimes, R. D. (2010). Treatment of psychopathy: A review and brief introduction to the mental model approach for psychopathy. *Behavioral Sciences & the Law, 28,* 235–266.

Saltaris, C. (2002). Psychopathy in juvenile offenders: Can temperament and attachment be considered as robust developmental precursors? *Clinical Psychology Review, 22*, 729–752.

Schneider, K. (1950). *Psychopathic personalities*. London: Cassell.

Seagrave, D., & Grisso, T. (2002). Adolescent development and the measurement of juvenile psychopathy. *Law and Human Behavior, 26,* 219–239.

Shiner, R. L. (2009). The development of personality disorders: Perspectives from normal personality development in childhood and adolescence. *Development and Psychopathology, 21*, 715–734.

Silk, K. R. (2008). Commentary: Personality disorder in adolescence: The diagnosis that dare not speak its name. *Personality and Mental Health, 2,* 46–48.

Skeem, J. L., & Cooke, D. J. (2010). Is criminal behavior a central component of psychopathy? Conceptual directions for resolving the debate. *Psychological Assessment, 22,* 433–445.

Skeem, J. L., Polaschek, D. L. L., Patrick, C. J., & Lilienfeld, S. O. (2011). Psychopathic personality: Bridging the gap between scientific evidence and public policy. *Psychological Science in the Public Interest, 12,* 95–162.

Spitz, R. A. (2004). *O primeiro ano de vida.* São Paulo: Martins Fontes (Original work published 1979).

Stickle, T. R., Kirkpatrick, N. M., & Bursh, L. N. (2009). Callous-unemotional traits and social information processing: Multiple risk-factor models for understanding aggressive behavioral in antisocial youth. *Law and Human Behavior, 33*, 515–529.

Sylvers, P. D., Brennan, P. A., & Lilienfeld, S. O. (2011). Psychopathic traits and pre-attentive threat processing in children: A novel test of the fearlessness hypothesis. *Psychological Science, 22,* 1280–1287.

Taylor, J., Elkins, I. J., Legrand, L., Peuschold, D., & Iacono, W. G. (2007). Construct validity of adolescent antisocial personality disorder. *Journal of Youth and Adolescence, 36,* 1048–1057.

Taylor, J., Loney, B. R., Bobadilla, L., Iacono, W. G., & McGue, M. (2003). Genetic and environmental influences on psychopathy trait dimensions in a community sample of male twins. *Journal of Abnormal Child Psychology, 31,* 633–645.

Tyer, P. (2005). Temporal change: The third dimension of personality. *Journal of Personality Disorders, 19,* 573–580.

Vaughn, M. G., & DeLisi, M. (2008). Were Wolfgang's chronic offenders psychopaths? On the convergent validity between psychopathy and career criminality. *Journal of Criminal Justice, 36,* 33–42.

Vaughn, M. G., Howard, M. O., & DeLisi, M. (2008). Psychopathic personality traits and delinquent careers: An empirical examination. *International Journal of Law and Psychiatry, 31,* 407–416.

Verschuere, B., Candel, I., Van Reenen, L., & Korebrits, A. (2012). Validity of the Modified Child Psychopathy Scale for juvenile justice center residents. *Journal of Psychopathology and Behavioral Assessment, 34,* 244-252.

Viding, E., & Jones, A. P. (2008). Cognition to genes via the brain in the study of conduct disorder. *The Quarterly Journal of Experimental Psychology, 61,* 171–181.

Viding, E., & Larson, H. (2010). Genetics of child and adolescent psychopathy. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 113–134). New York: Guilford Press.

Viding, E., Frick, P. J., & Plomin, R. (2007). Aetiology of the relationship between callous-unemotional traits and conduct problems in childhood. *The British Journal of Psychiatry, 49,* S33–S38.

Vitacco, M. J., & Salekin, R. T. (in press). Adolescent psychopathy and the law. In K. Kiehl & W. Sinnott-Armstrong (Eds.). *Psychopathy and the law*. New York: Wiley.

Vitacco, M. J., Salekin, R. T., & Rogers, R. (2010). Forensic issues for child and adolescent psychopathy. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 374–397). New York: Guilford Press.

Vitale, J. E., Newman, J. P., Bates, J. E., Goodnight, J., Dodge, K. A., & Pettit, G. S. (2005). Deficient behavioral inhibition and anomalous selective attention in a community sample of adolescents with psychopathic traits and low-anxiety traits. *Journal of Abnormal Child Psychology, 33,* 461–470.

Waldman, I. D., & Rhee, S. H. (2006). Genetic and Environmental influences on psychopathy and antisocial behavior. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 205–228). New York: Guildford Press.

White, S. F., & Frick, P. J. (2010). Callous-unemotional traits and their importance to causal models of severe antisocial behavior in youth. In R. T. Salekin & D. R. Lynam (Eds.), *Handbook of child and adolescent* psychopathy (pp. 135–155). New York: Guilford Press.

Widiger, T. A., De Clercq, B., & De Fruyt, F. (2009). Childhood antecedents of personality disorder: An alternative perspective. *Development and Psychopathology, 21,* 771–791.

Winnicott, D. W. (1983). *O ambiente e os processos de maturação: Estudos sobre a teoria do desenvolvimento emocional*. Porto Alegre: Artmed.

APPENDIX B |

Child and adolescent psychopathy: Assessment issues and treatment needs

Aggression and Violent Behavior, *18,* 71-78
2013, doi: 10.1016/j.avb.2012.10.003

Child and adolescent psychopathy: Assessment issues and treatment needs

Diana Ribeiro da Silva[a], Daniel Rijo[a], and Randall T. Salekin[b]

[a] Research Center for Neuropsychology and Cognitive-Behavioral Intervention
Faculty of Psychology and Educational Sciences, University of Coimbra

[b] University of Alabama

Abstract

The identification of psychopathic traits in childhood and adolescence is a topic of growing interest for scientific research. The development of models to predict violent behavior, together with efficient preventive and therapeutic programs, is a major goal when assessing youths with psychopathic traits. This paper focuses on the construct of child and adolescent psychopathy, while approaching historical and conceptual issues. By discussing the "state of the art" of the construct, we will analyze different instruments to assess psychopathy in children and adolescents, as well as the available treatment modalities. Finally, we will present possible lines for research and clinical intervention according to an evolutionary approach to anger and antisocial behavior.

Keywords: psychopathy, child and adolescent psychopathy traits, assessment, treatment

Introduction

The first clinical descriptions of psychopathy are attributed to Pinel (1806/1962) and Prichard (1835) who used the terms "manie sans delire" and "moral insanity", respectively. They described individuals who, without apparent psychopathology, rejected basic social rules and recurrently assumed an antisocial behavior. Brutality, emotional coldness, and callous exploitation of others constitute a set of attributes emphasized in these historical references. Rush (1812) postulated that a deeply rooted "moral depravity" was central in the psychopathic disorder. Schneider (1950) and Kraeplin (1904, 1915) considered these individuals pathologically deceitful and with a tendency to fraudulent behaviors. Kraeplin (1904, 1915) named them "swindlers" and described them as glib, charming, and fascinating, but presenting basic failures in morality or loyalty to others. Schneider (1950) considered these individuals a "self-seeking type" and characterized them as pleasant and affable but egocentric, and superficial in their emotional reactions and in their relationships.

However, it was Hervey Cleckley (1941/1988) who, while studying inpatients at a psychiatric hospital, established a set of specific criteria as the core features of psychopathic personality. Central to his conception, and origin of the title of his book – The Mask of Sanity – is the idea that psychopathy is a severe disorder masked by an outward appearance of robust mental health.

According to Cleckley (1941/1988), antagonistic, aggressive, predatory, vindictive or cruel behaviors were not crucial in the conceptualization of psychopathy. He considered that the deeply rooted impairment of emotional processing among psychopaths (like afasia or color-blindness), weakened enraged or cruel reactions. Thus, all the harm inflicted to others (as well as to themselves) was a result of their superficiality, boldness, and capricious nature.

In spite of the efforts by Cleckley (1941/1988) to focus the construct of psychopathy upon affective and interpersonal features, the inclusiveness of the anti-social/deviant life-style factor, as a trait inherent to psychopathy or its product, is still questionable (Cooke & Michie, 2001; Cooke, Michie, & Skeem, 2007; Hare, 2003; Lester, Salekin, & Sellbom, in press; Salekin, Brannen, Zalot, Leistico, & Neumann, 2006; Skeem & Cooke, 2010).

Regardless of these divergences, because of the impact of psychopathy on society, many authors state that the best time to prevent and intervene is early in life. To make prevention a possibility, it is mandatory to study the construct in early childhood (Lynam, 1996; Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007; Salekin & Frick, 2005).

Child and adolescent psychopathy

In the 40s, Cleckley (1941/1988) already recognized that psychopathy was a disorder with roots in childhood and adolescence. In the same decade, Karpman (1949, 1950) organized and chaired two consecutive round table discussions about the applicability of the construct to childhood. About 10 years later, McCord and McCord (1964), in the book — The psychopathic: An essay on the criminal mind, stressed the importance of identifying and treating psychopathy in younger populations. These authors emphasized the importance of

early intervention, noting that youths who presented signs of psychopathic personality disorder showed their behavior problems in a different way, compared to the ones who had not that same disorder. By the same time, Quay (1964, 1965) tried to define subtypes for juvenile delinquency, considering a psychopathic category that he called "under socialized aggressive".

Extension of the construct of psychopathy to childhood and adolescence is a controversial issue. The overrepresentation in childhood and adolescence of some characteristics of the disorder; the malleability of personality during development; the heterogeneity of minors with anti-social behavior; the validity and stability of psychopathy; the derogatory connotation of the term, and its implications in legal contexts; the potential stigmatization of youths; and the triggering of iatrogenic effects are some of the problems under intensive debate. (e.g., Chanen & McCutchenon, 2008; Edens & Vincent, 2008; Murrie, Boccaccini, McCoy, & Cornell, 2007; Seagrave & Grisso, 2002; Silk, 2008).

Salekin and Lynam (2010) underline that the term psychopathy "should not be used in a damaging way, but rather that the concept be used in a constructive manner to understand better the various types of youth as well as to chart ways to help youth lead more prosocial, productive, and meaningful lives" (p. 8).

This paper addresses child and adolescent psychopathy assessment and treatment, reviewing: (a) the assessment of psychopathy in an historical perspective, (b) the most frequently used instruments in the assessment of child and adolescent psychopathy, and (c) available treatment approaches to youths with psychopathic traits. The need for new and adequate treatment programs will be outlined.

Assessment of psychopathy

From the works of Lykken (1957), until the early 80s, Cleckley's diagnostic criteria were frequently used in sample selection for the study of psychopathy. Research was conducted mainly on adult male offenders. In the 80s, there was a turning point in the study of the disorder, when Robert Hare (1980) developed a systematic method to assess psychopathy, based on Cleckley's criteria, but presenting some significant differences — the Psychopathy Checklist (PCL; Hare, 1980) and its revised edition (PCL-R; Hare, 1991, 2003). After 30 years of research, the debate about PCL factorial structure still persists. Table 1 shows different results from studies on the dimensionality of PCL.

Besides PCL-R, and other instruments to assess psychopathy in forensic populations (e.g., P-SCAN, Hare & Hervé, 1999), there are different self-report measures designed to assess psychopathy in noncriminal samples, thus increasing research in this area. Instruments of this type include: the Screening Version of PCL-R (PCL: SV; Hart, Cox, & Hare, 1995); the Psychopathic Personality Inventory (PPI; Lilienfeld & Widows, 2005); the Levenson Primary and Secondary Psychopathy Scale (LPSP; Levenson, Kiehl, & Fitzpatrick, 1995), the Self-Report Psychopathy Scale (SRP; Hare, 1985; Lester et al., in press), and the Triarchic Psychopathy Measure (TriPM; Patrick, 2010; Patrick, Fowles, & Krueger, 2009).

Table 1. *Factor structure of PCL- R (Hare, 2003). Adapted from Neumann, Hare, & Newman, 2007)*

No. of factors	Authors	Factors
Two factors	Hare, 1991	Factor 1 – Interpersonal/Affective (e.g., glibness/superficial charm, callous/lack of empathy) Factor 2 - Social Deviance (e.g., criminal versatility, impulsivity)
Three factors	Cooke & Michie, 2001	Factor 1 – Arrogant and Deceitful Interpersonal Style (glibness/superficial charm, grandiose sense of worth, pathological lying, conning/manipulative); Factor 2 – Deficient Affective Experience (lack of remorse or guilt, shallow affect, callous/lack of empathy, failure to accept responsibility for own actions) Factor 3 – Impulsive and Irresponsible Behavioral Style (need for stimulation,/proneness to boredom, irresponsibility, impulsivity, parasitic lifestyle, lack of realistic long-term goals
Four factors	Neumann, Hare, & Newman 2007	Factor 1 - Interpersonal (glib/superficial, grandiose self-worth, pathological lying, conning/manipulative); Factor 2 - Affective (lack of remorse or guilt, shallow affect, callous/lack of empathy, failure to accept responsibility) Factor 3 - Lifestyle (stimulation seeking, irresponsibility, impulsivity, parasitic orientation, lack of realistic goals) Factor 4 – Antisocial (poor behavioral controls, early behavioral problems, criminal versatility, juvenile delinquency)

As stated previously, psychopathy in adulthood is a valued construct, relevant for violence prediction, risk assessment, and risk management (DeLisi & Piquero, 2011; Hemphill, 2007; Leistico, Salekin, DeCoster, & Rogers, 2008; Vitacco & Neumann, 2008). Understanding the development of aggression in childhood in general and of psychopathic traits in particular has received a growing interest by the scientific community, mainly in violence risk prediction research (e.g., Kotler & McMahon, 2005; Marczyk, Heilbrun, Lander, & DaMatteo, 2003; Salekin & Frick, 2005; Schwalb, 2007).

Until 1990, few works about child psychopathy were published, and little attention was given to psychopathic traits in children and adolescents (Salekin, 2006; Salekin & Lynam, 2010). Forth, Hart, and Hare (1990) became pioneers, by adapting the Psychopathy Checklist (PLC; Hare, 1991) in a study with adolescent offenders, showing that psychopathy could be assessed in youth. Later, other authors developed instruments to assess psychopathy in children and adolescents, either by adapting instruments used in adults, or by creating new measures adjusted from a developmental point a view (Forth et al., 1990; Kotler & McMahon, 2010; Lynam, 1997; Salekin, 2006; Skeem, Polaschek, Patrick, & Lilienfeld, 2011). As a result of these efforts, the last decade has witnessed an exponential increase in the number of publications about child and adolescent psychopathy (Salekin & Lynam, 2010).

Assessment of child and adolescent psychopathy

The instruments used in the assessment of child and adolescent psychopathy capture a construct that, apparently, is similar to the conceptualization of psychopathy in adulthood (see Table 2). The most frequently employed is the Psychopathy Checklist: Youth Version (PCL: YV; Forth, Kosson, & Hare, 2003). Nevertheless, other screening Measures of psychopathy in youths are available, most of them draw from PCL: YV, although not being a direct adaptation of it.

The PCL: YV (Forth et al., 2003) is an adaptation for adolescents of the PCL-R (Hare, 1991, 2003), requiring trained raters, and emphasizing the need for multi-domain and multi-source information. This instrument is a full-scale assessment tool, includes a thorough record review and a structured interview. The clinician rates the PCL: YV 20 items on a 3-point scale (0=definitely does not apply; 1=item may or may not apply; 2=definitely apply). The version of PCL assesses adolescents aged 13 or more. Concerning its factorial structure, there are divergent research outcomes: two factors (interpersonal-affective and socially deviant lifestyle — Forth et al., 2003), three factors (interpersonal, affective and behavioral — Cooke & Michie, 2001; Salekin et al., 2006), or four factors (interpersonal, affective, lifestyle and antisocial — Hare & Neumann, 2006; Salekin et al., 2006), as it happens in the adult version.

The Antisocial Process Screening Device (APSD; Frick & Hare, 2001) is the most widely used and tested youth psychopathy screening measure. APSD is a 20-item questionnaire, available in three formats: parents/educators, teachers, and self-report. Scoring for each item ranges from 0 (not at all true) to 2 (definitely true). It can be used with youths between 4 and 18 years old. Research on its dimensionality indicates a two factor (impulsivity-conduct problems and callous-unemotional — Frick et al., 2003) or a three factor (impulsivity, narcissism and callous-unemotional — Frick, Bodin, & Barry, 2000) structure. Impulsivity and behavioral problems dimensions are mainly associated with factor 2 of the PCL-R for adults, assessing externalizing tendencies. The callous-unemotional (CU) factor is consistent with factor 1 of the PCL-R and it is associated with low anxiety, deficient emotional reactivity, thrill seeking, and proactive aggression. APSD predictive validity for anti-social behavior problems was studied by Frick and Hare (2001) thus showing a parallelism with adult psychopathy. Although it should be noted that there do appear to be differences between the APSD and PCL-YV (see Dillard, Salekin, Barker, & Grimes, in press; Kotler & McMahon, 2010).

The Child Psychopathy Scale (CPS; Lynam, 1997) is an instrument composed by 12 brief scales (with a minimum of 3 and a maximum of 7 items each one), being the items adapted from the Child Behavioral Checklist (CBCL; Achenbach, 1991) and/or the California Child Q-Set (CCQ; Block & Block, 1980). This instrument is to be answered by parents of children aged 12 or more.

The Youth Psychopathic Traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002) includes 10 different scales (each one with 5 items to be answered according to a 4-point Likert-like scale). This instrument was designed to assess 10 core personality traits associated with psychopathy (grandiosity, lying, manipulation, callousness, unemotionally,

impulsivity, irresponsibility, dishonest charm, remorselessness, and thrill seeking), grouped in three facets: callous-unemotional, grandiose-manipulative, and impulsive-irresponsible (classification similar to the proposal of Cooke & Michie, 2001). YPI is a self-report instrument that can be answered by children aged 12 or more. One of its advantages is the carefully formulated items, in a way that minimizes the possibility of deceitful answers by individual with psychopathic traits (e.g., "I can make people believe almost anything"). A version of the YPI is available for children aged between 9 and 12 years old: the Youth Psychopathic Traits Inventory — Child Version (YPI-CV; Van Baardewijk et al., 2008).

Other available measures include the Psychopathy Content Scale and the Inventory of Callous-Unemotional Traits. The Psychopathy Content Scale and the P-16 are two psychopathy scales that can be used when administering the MACI (PCS; Murrie & Cornell, 2000; P-16; Salekin, Ziegler, Larrea, Anthony, & Bennett, 2003). They are composed of 20 and 16 items respectively (true/false answer). The measures can be applied to adolescents aged between 12 and 18. The Inventory of Callous-Unemotional Traits (ICU; Frick, 2003) assesses the CU factor (consistent with factor 1 of PCL-R) of psychopathy. The ICU is a 24-item questionnaire available in parent/caregiver, teacher, and youth self-report form. Scoring is based on a 4-point scale (0=nor all true; 1=somewhat true; 2=very true; and 3=definitely true). Items are grouped in three distinct factors: callousness, uncaring and unemotional. The ICU can be used to assess children and adolescents, aged between 4 and 18 years old.

Regardless of the growing number of measures developed in the last decades to assess psychopathy in children and adolescents, as Johnstone and Cooke (2004) point out, there is still a need for more precise instruments. As stated before, some of these instruments are frequently used by researchers and clinicians, while others are much less known. The lack of agreement on the dimensionality of the psychopathy construct is a major issue that should be addressed in order to better compare results from different studies. The diversity of psychopathy assessment instruments (namely when assessing youths) may also be the cause for misunderstandings and mistakes, when using the construct in forensic or clinical evaluations.

Table 2. *Child and Adolescent Psychopathy Measures (adapted from Kotler & McMahon, 2005, 2010)*

Measure	Informants	Age range	No of items/scale	Factors
PCL:YV Psychopathy Checklist: Youth Version (Forth, Kosson, & Hare, 2003)	Skilled rater	13 + years	20 items (0-2)	Two factors (interpersonal-affective; - socially deviant lifestyle) Three factors (interpersonal, affective, behavioral) Four factors (interpersonal, affective, lifestyle, antisocial
APSD Antisocial Process Screening Device (Frick & Hare, 2001)	Parent Teacher Youth	4-18 years	20 items (0-2)	Two factors (impulsivity/conduct problems, callous-unemotional) Three factors (impulsivity, narcissism, callous-unemotional)
CPS Child Psychopathy Scale (Lyman, 1997)	Parent	12+ years	12 items (multiple questions for each item)	Total score only
YPI Youth Psychopathic Traits Inventory (Andershed, Kerr, Stattin, & Levander, 2002)	Youth	12+ anos*	50 items, 5 for each of 10 trait scales (1-4)	Grandiose/manipulative, Callou-unemotional impulsivity/irresponsibility
PCS Psychopathy Content Scale (Murrie & Cornell, 2000)	Youth	12-18 years	True-false	Informal for 16 item version: interpersonal, affective, lifestyle

*Version for children (9-12 years): Youth Psychopathic Traits Inventory-Child Version (YPI-CV; Van Baardewijk, Y., Stegge, H., Andershed, H., Thomaes, S., Scholte, E., & Vermeiren, R., 2008).

Comorbidity

Some studies examined the relationship between psychopathic traits and other psychiatric disorders, although there are just a few comprehensive and wide-raging reviews (Sevecke & Kosson, 2010; Sevecke, Lehmkuhl, & Krisher, 2009). Recent studies have documented that early behavioral problems usually precede the development of severe anti-social behavior (e.g., Fontaine, McCrory, Boivin, & Moffitt, 2011; Frick, Cornell, Barry, Bodin, & Dane, 2003; Glenn, Raine, Venables, & Mendnick, 2007). Although behavioral disinhibition is considered a dimension of psychopathy (impulsivity/conduct problems), this factor tends to overlap with symptoms of Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD) of DSM-IV-TR (American Psychiatric Association, 2000). Thus, it seems that the impulsivity/conduct problems factor identifies above all a group of anti-social youth whereas the presence of CU traits is typical of a group of children whose anti-social behavior comes from low fear levels and shallow affect (Frick,

Stickle, Dandreaux, Farrell, & Kimonis, 2005; Lykken, 1995, 2006; Sylvers, Brennan, & Lilienfeld, 2011; Vitale et al., 2005), and from a type of immediate reward based response (Forth et al., 2003; White & Frick, 2010). Available data also suggest that children with CD, also presenting CU traits, display features similar to adults with psychopathy, in terms of antisocial behavior and emotional processing (Barry et al., 2000; Blair, Colledge, Murray, & Mitchell, 2001; Wilson, Juodis, & Porter, 2011).

CD can be diagnosed in youth, with greater prevalence in boys (1.8% to 16% vs. 0.8% to 9.2% in girls). Some researchers defend that an early onset of CD is a strong predictor of future involvement in criminal activities (DeLisi, 2009; DeLisi & Piquero, 2011; Frick et al., 2003; Glenn et al., 2007). In DSM-IV (1994) and DSM-IV-TR (APA, 2000), it is included a specifier for CD, according to the onset of the first symptoms (Childhood onset — before 10 years old; Adolescent onset — after 10 years old) and to symptomatic severity (mild, moderate, and severe). Also worth noticing, the prevalence of CD in the universe of delinquent adolescents ranges between 31% and 100% (e.g., Vermeiren, 2003).

ADHD is one of the most widely diagnosed problems in childhood and adolescence, often persisting in adulthood. The prevalence of ADHD is also high in anti-social adolescent/adult prison inmate samples (e.g., Johansson, Kerr, & Andershed, 2005).

Some authors (e.g., DeLisi et al., 2011; Johansson et al., 2005; Lynam, 1996, 1997) offer that the connection between children with disruptive behavior and psychopathy in adulthood is especially high in minors diagnosed with both ADHD and CD. They suggest that this association confers a specific vulnerability towards the development of psychopathy (e.g., Barry et al., 2000; DeLisi et al., 2011; Lynam, 1996) — the so called "comorbid subtype hypothesis" (Lynam, 1996). Other studies do not confirm this connection, defending that the CD component is primary in relation to ADHD (Lahey, Loeber, Burke, Rathouz, & McBurnette, 2002; Mishonsky & Sharp, 2010).

Some data also suggest that genetic factors contributing to alcohol and other substances abuse or dependence, Anti-Social Personality Disorder (APD), CD, and other types of externalizing psychopathology, are the same. Thus, some authors defend the existence of a common genetic factor that contributes to externalizing problems and to psychopathy (Larsson et al., 2007; Sevecke & Kosson, 2010).

With regard to comorbidity with internalizing problems, there are studies that stress a direct relationship between anxiety and psychopathy in children and adolescents (Kubak & Salekin, 2009; Lee, Salekin, & Iselin, 2010), but not in adults (Hofmann, Korte, & Suvak, 2009). Contrary to what Cleckley (1941/1988), the internalizing problems seem to represent an important area of discontinuity in youth psychopathy (more internalizing disorders), *versus* adult psychopathy (less internalizing disorders). There may also be some links to negative affect (Price, Salekin, Klinger, & Barker, in press). Further, research is required because this may be a central point in the explanation of developmental pathways. These differences among adults and adolescents with psychopathic traits also suggest that positive treatment outcomes are possible in the early stages of the disorder.

A considerable amount of research suggests that personality disorders have a high prevalence in forensic contexts (40% a 60%) (e.g., Casey, 2000). In Portugal, an ongoing research study suggests higher prevalence rates, with 82% of male prison inmates fulfilling the criteria for at least one DSM-IV personality disorder (Baião & Rijo, 2011). However, we must be careful when evaluating the relationship between personality disorders and psychopathy. On the one hand, it is difficult to isolate the role personality disorders play in the causes or pathways of psychopathy. On the other, both phenomena may be the result of a common causal process (e.g., parental neglect, social context, genetic predisposition) (Sevecke & Kosson, 2010).

Recent studies have pointed out the need to make a differential diagnosis between psychopathy/behavior problems and autism spectrum disorders (Blair, Mitchell, & Blair, 2005; Bons, Scheepers, Rommelse, & Buitelaar, 2010; Jones, Happé, Gilbert, Burnett, & Viding, 2010), by studying the dimensions of empathy (emotional, cognitive, and motor).

In summary, understanding the relationship between psychopathy and other disorders is simultaneously complex but of major interest, mainly for two reasons: (a) the correlation between psychopathic features and symptoms of other disorders is high, which may indicate a common or overlapping etiology, and, (b) psychopathy apparently comprises heterogeneous group of individuals with distinctive but related symptoms and different patterns concerning comorbidity, which can help in the identification of subtypes (Sevecke & Kosson, 2010; Sevecke et al., 2009).

Psychopathy and gender

Research on gender differences in adults has been biased since the majority of the studies are conducted in forensic samples, mostly composed by men (Odgers & Moretti, 2002), even if we know that in criminal settings this phenomenon is more prevalent in males (Cale & Lilienfeld, 2006). In community samples, however, studies indicate that although psychopathy rates are similar in both genders, the factorial structure of psychopathy seems different in males and females (Vaughn, Newhill, DeLisi, Beaver, & Howard, 2008). Behavior tends to be less violent in women, but they show, among others, a greater sexual promiscuity (Loeber et al., 2009; Odgers & Moretti, 2002; Sevecke et al., 2009).

In youth, data suggest that the beginning of the disorder in childhood is rare in girls (Moffitt & Caspi, 2001). However, some authors contend that girls tend to present a "delayed-onset" pattern; that is, they start presenting symptoms of the disorder generally during adolescence (Frick & Dickens, 2006). According to this perspective, the onset of symptomatology is postponed to adolescence, when other biological (e.g., hormonal) and psychosocial (e.g., less parental supervision and greater contact with deviant peers) factors occur together with certain dispositional vulnerability factors (e.g., CU traits). Other theories suggest that girls tend to present more relational aggressiveness, a less notorious type of aggression, giving the disorder a façade of late-onset (Crick, Ostrov, &Werner, 2006).

There are highly consistent data about the prevalence of psychopathic traits in boys and girls, although this may be the result of a shortage of studies, different methodologies adopted (Skeem et al., 2011; Vaughn et al., 2008; Verona, Sadeh, & Javdani, 2010; Verona & Vitale, 2006), and the lack of instrumentation specifically adapted to assess psychopathy in females (Kotler & McMahon, 2005, 2010). The same problems and inherent conceptual difficulties are evident with regard to ethnicity (Skeem et al., 2011; Verona et al., 2010).

Treatment

Cleckley (1941/1988) contended that psychopathy is essentially a non-treatable condition. Other authors also support this position, including Suedfeld and Landon (1978) who stated that "no demonstrably effective treatment has been found" (p. 347). Harris and Rice (2006) even argued that "no clinical interventions will ever be helpful" (p. 563). Others have more favorable opinions, pointing out that significant improvements can happen (e.g., psychopathy traits and risk of recidivism), after certain types of therapies, and mainly with youth, stressing the importance of early intervention efforts (Hawes & Dadds, 2005; Kubak & Salekin, 2009; Salekin, 2002, 2010; Salekin, Lester, & Sellers, 2012; Salekin, Tippey, & Allen, 2012; Salekin, Worley, & Grimes, 2010; Skeem et al., 2011; Thorton & Blud, 2007).

Although further research is needed, there is some evidence that children and adolescents are more likely to benefit from therapeutic interventions because of: (a) their inherent developmental idiosyncrasies, (b) the moderate stability of child and adolescent psychopathy (e.g., Frick, 2002; Lynam et al., 2009), and (c) greater comorbidity mainly with internalizing problems (e.g., Kubak & Salekin, 2009; Lee et al., 2010; Lynam, 2010; Price et al., in press).

Some studies show that an early family intervention (McDonald, Dodson, Rosenfield, & Jouriles, 2011; Salekin, 2002; Thorton & Blud, 2007) may have some positive outcomes in psychopathy features. Cognitive-Behavioral Therapy (CBT) with motivational based strategies (Hass et al., 2011) have also shown encouraging results. These and other works (e.g., Bayliss, Miller, & Henderson, 2010) demonstrate that psychopathic traits seem to be flexible mainly if early identified and treated.

Results concerning treatment efficacy are quite inconsistent in samples of delinquent adolescents scoring in psychopathy measures. Some authors believe that the attempt to treat psychopathy does not alter the characteristics of the disorder, and may even worsen the symptomatology (Harris & Rice, 2006). These researchers indicate that the complexity of psychopathy (namely, the interpersonal and affective features) makes individuals with psychopathic traits inadequate subjects for psychotherapy. They argue that these traits may hinder the success of therapy. In the worst scenario, they feel that the training of certain social and emotional skills in individuals with psychopathy may improve their criminal strategies in a way that they become more capable of avoiding legal detention. It should be pointed out that this thesis can only be sustained in theory, as there has been no specific investigation of this issue.

On the other hand, Salekin (2002) states that intensive individual psychotherapy can have positive effects not only on the behavioral component, but also on the affective component of psychopathy, mainly when it is associated with group psychotherapy, and when family members are integrated in the therapeutic program. That is, this author sustains that in complex problems, as is the case of psychopathic disorder, intensive and multimodal programs, which involve different therapeutic interventions (individual, group, and family), must be developed. In this regard, the authors have tested new models for intervening with youth with psychopathic features (Salekin, Tippey, et al., 2012).

Different opinions are, at least partially, due to the adoption of different measures and methodologies in these meta-analytic studies (Harris & Rice, 2006; Salekin, 2002). In Salekin (2002) review, the author included different types of studies (case studies, quasi-experimental designs, and fewer experimental studies), samples obtained through different psychopathy assessment instruments (other than PCL-R/PCL:YV), and a diversity of therapeutic outcomes (e.g., recidivism, increasing the capacity of feeling remorse and empathy, and maintaining a job). On the other hand, in their review, Harris and Rice (2006) only included studies using the PCL: YV/PCL-R, and that included recidivism as a treatment outcome. They criticize the methodology used by Salekin (2002), and point out that many of the studies demonstrating positive therapeutic effects are case studies.

In short, and regardless of these discrepancies, there is a considerable gap in treatment programs specifically tailored to psychopathy and specifically geared toward deficits found in the affective and interpersonal features of the disorder (Salekin, 2010; Salekin et al., 2010; Salekin, Lester, et al., 2012, Salekin, Tippey, et al., 2012). Up to the present, few well designed studies were conducted in order to evaluate the therapeutic outcomes in individuals with psychopathic disorder (Caldwell, Skeem, Salekin, & Van Rybroek, 2006; Cadlwell, McCormick, Wolfe, & Umstead, 2012; Salekin, Tippey, et al., 2012). Some of these studies also present important methodological weaknesses, in terms of inclusion criteria (Harris & Rice, 2006; Salekin, 2002; Thorton & Blud, 2007), and also in outcome assessment. In many cases, treatment efficacy is evaluated based on treatment compliance and recidivism. That is, other positive therapeutic effects, mainly those associated with affective and interpersonal facets of psychopathy (e.g., improving interpersonal relationships), are not included neither correctly controlled (Salekin, 2010; Salekin, Lester, et al., 2012; Salekin, Tippey, et al., 2012).

Discussion

In the last two decades, there has been a great development in the study of psychopathy in adults and, particularly, in the study of children and adolescents. However, it is important to understand that more research is needed, namely: (a) in the improvement of instruments to assess the disorder (e.g., Johnstone & Cooke, 2004), and (b) to establish and evaluate therapeutic programs (Salekin & Lynam, 2010; Vitacco & Salekin, in press; Vitacco, Salekin, & Rogers, 2010).

In the assessment of child and adolescent psychopathy, it is essential for researchers to create more precise assessment instruments, which may help to answer several questions: Why do different factorial structures of psychopathy in children and adults emerge? Why is there instability of the factorial structure using the same instrument or among disparate measures? Are the available instruments adequate for female populations and different racial and ethnical groups? (see review by Kotler & McMahon, 2010).

With regard to treatment, little research has emerged, especially compared to the considerable amount literature on the description, etiology, and assessment of the disorder.

Several authors contend that the construct of psychopathy, besides being very valued and used in risk management (DeLisi & Piquero, 2011; Hemphill, 2007; Leistico et al., 2008; Vitacco & Neumann, 2008), can be crucial if directed to the early identification of children at risk of developing the disorder (e.g., Lynam et al., 2007; Salekin & Frick, 2005). This suggestion is of unquestionable relevance, but several questions can be formulated.

Concerning the early identification of psychopathic traits, how would children be screened? Which groups of children would be targeted for assessment (fearless, aggressive, with CU traits, with grandiosity, narcissism or manipulation traits)? This first question is, by itself, very complex to put into practice and leads to other issues, namely: Who shall be informed of alarm signs and how should this be done? Which is the most adequate assessment method in these cases (measures, raters, and informants)?

If children score high on psychopathy measures, questions concerning early intervention still remain. How can we take into account the issue of psychopathic trait stability from childhood to adulthood? How can we take into account protective and/or risk factors capable of reducing, maintaining, or increasing the stability of psychopathy over the course of development? After having answered these two questions, it is crucial to decide which type of treatment is the most adequate for each case.

Regardless of these questions, a more fundamental one persists — How to treat children and adolescents scoring high in psychopathy, namely in the affective and interpersonal components, with or without anti-social and/or criminal behavior?

Studies of therapeutic outcomes show that children with behavioral problems can significantly improve with a cognitive–behavioral approach (e.g., Kazdin, 2009; Kazdin & Wassell, 2000; Kolko et al., 2009). Nevertheless, in children and adolescents with psychopathy, results are less encouraging (Harris & Rice, 2006; Hass et al., 2011; Salekin, 2002). Therefore, how shall we intervene effectively in the affective and interpersonal features of psychopathy (CU traits, grandiosity, manipulation, and narcissism)?

As stated earlier, there is some evidence showing that early intervention: family (e.g., McDonald et al., 2011), or cognitive–behavioral, together with motivational work (Hass et al., 2011), can produce promising results. These and other studies (e.g., Bayliss et al., 2010; Salekin, Tippey, et al., 2012) show that psychopathic traits can be changeable if identified and treated up to pre-adolescence, which underscores the importance of establishing criteria for early identification of psychopathic traits.

With regard to delinquent adolescents who score high on psychopathic measures (see review by Salekin, 2010), results about treatment effectiveness are more inconsistent. Some authors point out that the attempt to treat psychopathy does not change features of the disorder, and can even worsen the symptoms (Harris & Rice, 2006). Data from other researchers show that intensive therapy (Cadlwell et al., 2012; Caldwell et al., 2006; Salekin, 2002; Salekin, Tippey, et al., 2012) can have positive effects upon the behavioral and affective components of the psychopathic disorder. It is worth remembering that, up to the present, very few studies (frequently associated with important methodological limitations) were conducted to specifically assess the therapeutic efficiency in psychopathic individuals. Of greater concern is the lack of treatment programs specifically designed for psychopathic subjects, and focused on the affective and interpersonal features of the disorder (Salekin, 2010; Salekin, Lester, et al., 2012, Salekin, Tippey, et al., 2012).

There are promising studies showing that youths with psychopathic traits present greater comorbidity with internalizing problems (e.g., Lee et al., 2010; Kubak & Salekin, 2009; Lynam, 2010), and greater response to treatment (Cadlwell et al., 2012; Caldwell et al., 2006; Hass et al., 2011; Salekin, 2010; Salekin, Tippey, et al., 2012), when compared to adults. These outcomes give children and adolescents a higher probability of therapeutic change and encourage the development of future intervention programs for youth.

From our point of view, and as Skeem, Plaschek, and Manchak (2009), and Thorton and Blud (2007) point out, it must be stressed that some features of the disorder (e.g., low motivation to change, deception and manipulation, and lack of deep or lasting emotion), cannot serve to justify the exclusion of individuals (children, adolescents, or adults) from treatment. By the contrary, these characteristics should be taken into account when drawing specific therapeutic programs (Salekin, 2010).

Because much attention has been paid to the construct dimensions and assessment issues, few comprehensive models explaining the onset and development of psychopathic traits exist. There are a number of avenues that researchers may want to consider and explore in the treatment evaluation of youth with psychopathic features. For instance, several authors argue that insecure bonds with parental figures and other factors of the psychosocial environment (e.g., child abuse, neglect, and toxic experience), can play a major role in the origins and/or exacerbation of psychopathic traits (see review by Ribeiro da Silva, Rijo, & Salekin, 2012), making these individuals use, in their social interactions, exploitative strategies rather than affiliative ones (Gilbert, 2005; Glenn, Kuzban, & Raine, 2011). This may be an important target of prevention or intervention programs that target the bond between parents and children. These interventions might need to be adapted to consider other caregivers and community warmth factors.

Also, there is the so called 3rd generation of cognitive behavioral therapies, in particular Compassion-Focused Therapy (CFT; Gilbert, 2005, 2010a, 2010b), may be of interest for treating psychopathy. This model for psychotherapy is greatly based in an evolutionary perspective of emotional and relational functioning. If one hypothesizes that

psychopathy develops from shame then this model might be quite viable as method for treating the disorder as CFT was mainly developed for individuals that "feel deep internal shame and for whom the inner and outer worlds have become cold" (Gilbert & Gerlsma, 1999, p. 288). CFT helps in the activation (for the individual himself and for others) of "potentially dormant affiliative strategies" (Gilbert & Gerlsma, 1999, p. 282). Alternately, if it is thought that the use of positive psychology interventions to reduce negative affect generally may help with the reduction of psychopathic traits, then such interventions as the mental models intervention for positive emotion may be used (MMPE; Salekin, Tippey, et al., 2012). Both of these latter therapies focus on the elicitation of positive human traits and this is why they may be adequate therapeutic approaches to bring about advantages for individuals scoring high on psychopathic traits.

In short, and from our point of view, there is no point in identifying psychopathic traits in children and adolescents, if the aim is not to prevent and/or treat the disorder. Since the 40s, when Hervey Cleckley (1941/1988) stated that psychopathy was a non-treatable personality disorder, there have been extraordinary advances in the domain of psychotherapies. New approaches to treatment, such as CFT, and/or MMPE, seem to bring promising intervention strategies for individuals with psychopathy. Moreover, response to specifically designed treatments may also inform the theoretical assumptions that persist when trying to explain the roots and course of the psychopathic disorder.

References

Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 profile*. Burlington: University of Vermont, Department of Psychiatry.

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed. Text rev.). Washington, DC: American Psychiatric Association.

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-referred youths: Initial test of a new assessment tool. In E. Blaauw, & I. Sheridan (Eds.), *Psychopaths: Current international perspectives* (pp. 131–158). Hague, The Netherlands: Elsevier.

Baião, R., & Rijo, D. (2011, June). *Personality disorders and self-concept in Portuguese prison inmates*. In S. Aslan (Chair). Cognitive Theory of Antisocial Personality Disorder. Symposium conducted at the meeting of 7th International Congress of Cognitive Psychotherapy, Istanbul.

Barry, C. T., Frick, P. J., DeShazo, T. M., McCoy, M., Ellis, M., & Loney, B. R. (2000). The importance of callous-unemotional traits for extending the concept of psychopathy to children. *Journal of Abnormal Psychology, 109,* 335–340.

Bayliss, C., Miller, A., & Henderson, C. (2010). Psychopathy development and implications for early interventions. *Journal of Cognitive Psychotherapy: An International Quarterly, 24,* 71–80.

Blair, R. J. R., Colledge, E., Murray, L., & Mitchell, D. G. V. (2001). A selective impairment in the processing of sad and fearful expressions in children with psychopathic tendencies. *Journal of Abnormal Child Psychology, 29,* 491–498.

Blair, R. J. R., Mitchell, D. G. V., & Blair, K. S. (2005). *The psychopath: Emotion and brain*. Oxford, UK: Blackwell.

Block, J., & Block, J. H. (1980). *The California Child Q-Set*. Palo-Alto, CA: Consulting Psychologists Press.

Bons, D. M. A., Scheepers, F. E., Rommelse, N. N. J., & Buitelaar, J. K. (2010). Motor, emotional and cognitive empathic abilities in children with autism and conduct disorder. *Proceeding of Measures Behaviors, 24,* 109–113.

Cadlwell, M. F., McCormick, D., Wolfe, J., & Umstead, D. (2012). Treatment-related changes in psychopathy features and behavior in adolescent offenders. *Criminal Justice and Behavior, 39,* 144–155.

Caldwell, M., Skeem, J. L., Salekin, R. T., & Van Rybroek, G. (2006). Treatment response of adolescent offenders with psychopathy features: A 2-year follow-up. *Criminal Justice and Behavior, 33,* 571–596.

Cale, E. M., & Lilienfeld, S. O. (2006). Psychophathic factors and risk for aggressive behavior: A test of the "Threatened Egotism" hypothesis. *Law and Human Behavior, 30,* 51–74.

Casey, P. (2000). The epidemiology of personality disorders. In P. Tyrer (Ed.), *Personality disorders: Diagnosis, management and course* (pp. 71–79). London: Arnold.

Chanen, A. M., & McCutchenon, L. K. (2008). Personality disorder in adolescence: The diagnosis that dare not speak its name. *Personality and Mental Health, 2,* 35–41.

Cleckley, H. (1988). *The mask of sanity* (6th ed.). St. Louis, MO: Mosby (Original work published 1941).

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Toward a hierarchical model. *Psychological Assessment, 13,* 171–188.

Cooke, D. J., Michie, C., & Skeem, J. (2007). Understanding the structure of psychopathy checklist — Revised. *The British Journal of Psychiatry, 190*, 39–50.

Crick, N. R., Ostrov, J. M., & Werner, M. -E. (2006). A longitudinal study of relational aggression, physical aggression, and children's social–psychological adjustment. *Journal of Abnormal Child Psychology, 34,* 127–138.

DeLisi, M. (2009). Psychopathy is the unified theory of crime. *Youth Violence and Juvenile Justice, 7,* 256–273.

DeLisi, M., & Piquero, A. R. (2011). New frontiers in criminal careers research, 2000–2011: A state-of-the-art review. *Journal of Criminal Justice, 39,* 289–301.

DeLisi, M., Vaughn, M., Beaver, K. M., Wexler, J., Barth, A. E., & Fletcher, J. M. (2011). Fledging psychopathy in classroom: ADHD subtypes, psychopathy, and Reading comprehension in a community sample of adolescents. *Youth Violence and Juvenile Justice, 9*, 43–58.

Dillard, C. L., Salekin, R. T., Barker, E. D., & Grimes, R. D. (in press). Psychopathy in adolescente offenders: An item response investigation of the Antisocial Process Screening Device Self Report and the Psychopathy Checklist: Youth Version. *Personality Disorders: Theory Research and Treatment*.

DSM-IV (APA, 1994). *American Psychiatric Association*. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.

DSM-IV-TR (APA, 2000) *American Psychiatric Association*. (2000). Diagnostic and statistical manual of mental disorders (4th ed. Text rev.). Washington, DC: Author.

Edens, J. F., & Vincent, G. M. (2008). Juvenile psychopathy: A clinical construct in need of restraint? *Journal of Forensic Psychology Practice, 8,* 186–197.

Fontaine, N. M. G., McCrory, E. J. P., Boivin, M., & Moffitt, T. E. (2011). Predictors and outcomes of joint trajectories of callous-unemotional traits and conduct problems in childhood. *Journal of Abnormal Psychology, 120,* 730–742.

Forth, A. E., Hart, S. D., & Hare, R. D. (1990). Assessment of psychopathy in male offenders. *Psychological Assessment, 2,* 342–344.

Forth, A. E., Kosson, D. S., & Hare, R. D. (2003). *The Psychopathy Checklist: Youth Version*. Toronto: Multi-Health Systems.

Frick, P. J. (2002). Juvenile psychopathy from a developmental perspective: Implications for construct development and use in forensic assessments. *Law and Human Behavior, 26,* 247–253.

Frick, P. J. (2003). *The Inventory of Callous-Unemotional Traits*. Unpublished rating scale, The University of New Orleans.

Frick, P. J., Bodin, S. D., & Barry, C. T. (2000). Psychopathic traits and conduct problems in community and clinic-referred samples of children: Further development of the Psychopathy Screening Device. *Psychological Assessment, 12,* 382–393.

Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous-unemotional traits and conduct problems in the prediction of conduct problema severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31*, 457–470.

Frick, P. J., & Dickens, C. (2006). Current perspectives on conduct disorder. *Current Psychiatry Reports, 8,* 59–72.

Frick, P. J., & Hare, R. D. (2001). *The antisocial process screening device* (APSD). Toronto: Multi-Health Systems.

Frick, P. J., Stickle, T. R., Dandreaux, D. M., Farrell, J. M., & Kimonis, E. R. (2005). Callous-unemotional traits in predicting the severity and stability of conduct problems and delinquency. *Journal of Abnormal Psychology, 33,* 471–487.

Gilbert, P. (2005). Compassion and cruelty. In P. Gilbert (Ed.), *Compassion: Conceptualizations, research and use in psychotherapy* (pp. 9–74). New York: Routledge.

Gilbert, P. (2010a). *The compassionate mind: A new approach to life's challenges*. Oakland: New Harbinger Publications.

Gilbert, P. (2010b). *Compassion focused therapy*. New York: Routledge.

Gilbert, P., & Gerlsma, C. (1999). Recall of shame and favouritism in relation to psychopathology. *The British Journal of Clinical Sychology, 38,* 357–373.

Glenn, A. L., Kuzban, R., & Raine, A. (2011). Evolutionary theory and psychopathy. *Agression and Violent Behavior, 16,* 371–380.

Glenn, A. L., Raine, A., Venables, P. H., & Mendnick, S. A. (2007). Early temperamental and psychophysiological precursors of adult psychopathic personality. *Journal of Abnormal Psychology, 116,* 508–518.

Hare, R. D. (1980). A research scale for the assessment of psychopathy in criminal populations. *Personality and Individual Differences, 1,* 111–119.

Hare, R. D. (1985). A comparison of procedures for the assessment of psychopathy. *Journal of Cousulting and Clinical Psychology, 53*, 7–16.

Hare, R. D. (1991). *The Hare psychopathy checklist — Revised*. Toronto: Multi-Health Systems.

Hare, R. D. (2003). *The Hare psychopathy checklist — Revised* (2nd ed.). Toronto: Multi-Health Systems.

Hare, R. D., & Hervé, H. (1999). *The Hare P-scan: Research version*. Toronto: Multi-Health Systems.

Hare, R. D., & Neumann, C. S. (2006). The PCL-R assessment of psychopathy: Development, structural proprieties, and new directions. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 58–90). New York: Guildford Press.

Harris, G. T., & Rice, M. E. (2006). Treatment of psychopathy: A review of empirical findings. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 555–572). New York: Guildford Press.

Hart, S., Cox, D., & Hare, R. D. (1995). *Manual for the psychopathy checklist:* Screening.

Hass, S., Waschbusch, D., Pelham, W., King, S., Andrade, B., & Carrey, N. (2011). Treatment response in CP/ADHD children with callous/unemotional traits. *Journal of Abnormal Child Psychology, 39,* 541–552.

Hawes, D. J., & Dadds, M. R. (2005). The treatment of conduct problems in children with callous-unemotional traits. *Journal of Consulting and Clinical Psychology, 73,* 737–741.

Hemphill, J. F. (2007). The Hare Psychopathy Checklist and recidivism: Methodological issues and critical evaluating empirical evidence. In H. Herve, & J. C. Yuille (Eds.), *The psychopath: Theory, research, and practice* (pp. 141–172). Mahwah, NJ: Erlbaum.

Hofmann, S. G., Korte, K. J., & Suvak, M. K. (2009). The upside of being socially anxious: Psychopathic attributes and social anxiety are negatively associated. *Journal of Social and Clinical Psychology, 28,* 714–727.

Johansson, P., Kerr, M., & Andershed, H. (2005). Linking adult psychopathy with childhood hyperactivity–impulsivity–attention problems and conduct problems through retrospective self-reports. *Journal of Personality Disorders, 19*, 94–101.

Johnstone, L., & Cooke, D. J. (2004). Psychopathic-like traits in childhood: Conceptual and measurement concerns. *Behavioral Sciences & the Law, 22,* 103–125.

Jones, A. P., Happé, F. G., Gilbert, F., Burnett, S., & Viding, E. (2010). Feeling, caring, knowing: Different types of empathy deficit in boys with psychopathy tendencies and autism spectrum disorder. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 51,* 1188–1197.

Karpman, B. (1949). The psychopathic delinquent child. *The American Journal of Orthopsychiatry, 20,* 223–265.

Karpman, B. (1950). Psychopathic behavior in infants and children: A critical survey of existing concepts. *The American Journal of Orthopsychiatry, 21,* 223–272.

Kazdin, A. E. (2009). *The Kasdin method for parenting the defiant child*. New York: Houghton Mifflin.

Kazdin, A., & Wassell, G. (2000). Therapeutic changes in children, parents, and families resulting from treatment of children with conduct problems. *Journal of the American Academy of Child and Adolescent Psychiatry, 39,* 414–420.

Kolko, D. J., Dorn, L. D., Bukstein, O. G., Pardini, D., Holden, E. A., & Hart, J. (2009). Community vs. clinical treatment of children with early-onset ODD or CD: A clinical trial with 3 years follow-up. *Journal of Abnormal Child Psychology, 37*, 591–609.

Kotler, J. S., & McMahon, R. J. (2005). Child psychopathy: Theories, measurement, and relations with the development and persistence of conduct problems. *Clinical Child and Family Psychology Review, 8*, 291–325.

Kotler, J. S., & McMahon, R. J. (2010). Assessment of child and adolescent psychopathy. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 79–112). New York: Guilford Press.

Kraeplin, É. (1915). *Psychiatrie: Ein lehbuch* (7th & 8th eds.). Leipzig: Barth.

Kubak, F. A., & Salekin, R. T. (2009). Psychopathy and anxiety in children and adolescents: Newinsights on developmental pathways to offending. *Journal of Psychopathology Behavior and Assessment, 31,* 271–284.

Lahey, B. B., Loeber, R., Burke, J., Rathouz, P. J., & McBurnette, K. (2002). Waxing and waning in concert: Dynamic comorbidity of conduct disorder with other disruptive and emotional problems over 17 years among clinic-referred boys. *Journal of Abnormal Psychology, 111,* 556, 567.

Larsson, H., Tuvblad, C., Rijsdik, V. F., Andershed, H., Grann, M., & Lichtenstein, P. (2007). A common genetic factor explains the association between psychopathic personality and antisocial behavior. *Psychological Medicine, 37,* 1–12.

Lee, Z., Salekin, R. T., & Iselin, A. R. (2010). Psychopathic traits in youth: Is there evidence of primary and secondary subtypes? *Journal of Abnormal Child Psychology, 38,* 381–393.

Leistico, A. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis related the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior, 32,* 28–45.

Lester, W. S., Salekin, R. T., & Sellbom, M. (in press). The SRP-II as a rich source of data on psychopathy. *Psychological Assessment*.

Levenson, M. R., Kiehl, K. A., & Fitzpatrick, C. M. (1995). Assessing psychopathic attributes in a noninstitutionalized population. *Journal of Personality and Social Psychology, 68,* 151–158.

Lilienfeld, S. O., & Widows, M. R. (2005). *Psychopathic Personality Inventory — Revised: Professional manual*. Lutz, Florida: Psychological Assessment Resources, Inc.

Loeber, R., Pardini, D. A., Hipwell, A., Stouthamer-Loeber, M., Keenan, K., & Sembower, M. A. (2009). Are there stable factor in preadolescents girls' externalizing behaviors? *Journal of Abnormal Child Psychology, 37,* 777–791.

Lykken, D. T. (1957). A study of anxiety in the sociopathic personality. *Journal of Abnormal and Clinical Psychology, 55*, 6–10.

Lykken, D. T. (1995). *The antisocial personalities*. Mahwah, NJ: Erlbaum.

Lykken, D. T. (2006). Psychopathic personality: The scope of the problem. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 3–13). New York: Guildford Press.

Lynam, D. R. (1996). Early identification of chronic offenders: Who is the fledgling psychopath? *Psychological Bulletin, 120,* 209–234.

Lynam, D. R. (1997). Pursuing the psychopath: Capturing the fledgling, psychopath in a nomological net. *Journal of Abnormal Psychology, 106,* 425–438.

Lynam, D. R. (2010). Child and adolescent psychopathy and personality. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 179–201). New York: Guilford Press.

Lynam, D. R., Caspi, A., Moffitt, T. E., Loeber, R., & Stouthamer-Loeber, M. (2007). Longitudinal evidence that psychopathy scores in early adolescence predict adult psychopathy. *Journal of Abnormal Psychology, 116,* 155–165.

Lynam, D. R., Charnigo, R., Moffitt, T. E., Raine, A., Loeber, R., & Stouthamer-Loeber, M. (2009). The stability of psychopathy across adolescence. *Development and Psychopathology, 21,* 1133–1153.

Marczyk, G. R., Heilbrun, K., Lander, T., & DaMatteo, D. (2003). Predicting juvenile recidivism with PCL: YV, MAYSI, and YLS/CMI. *International Journal of Forensic Mental Health, 2*, 7–18.

McCord, W., & McCord, J. (1964). *The psychopath: An essay on the criminal mind.* Princeton, NJ: Van Nostrand.

McDonald, R., Dodson, M., Rosenfield, D., & Jouriles, E. (2011). Effects of a parenting interventions on features of psychopathy in children. *Journal of Abnormal Child Psychology, 39,* 1013–1023.

Mishonsky, J. D., & Sharp, C. (2010). Revisiting Lynam's notion of the "fledgling psychopath": Are HIA-CP children truly psychopathic-like? *Child and Adolescent Psychiatry and Mental Health, 4,* 1–9.

Moffitt, T. E., & Caspi, A. (2001). Childhood predictors differentiate life-course persistente and adolescent-limited antisocial pathways among males and females. *Development and Psychopathology, 13,* 355–375.

Murrie, D. C., Boccaccini, M. T., McCoy, W., & Cornell, D. G. (2007). Diagnostic labeling in juvenile court: How do descriptions of psychopathy and conduct disorder influence judges? *Journal of Clinical Child and Adolescent Psychology, 36,* 228–241.

Murrie, D. C., & Cornell, D. G. (2000). The Millon Adolescent Clinical Inventory and psychopathy. *Journal of Personality Assessment, 75,* 110–125.

Neumann, C. S., Hare, R. D., & Newman, J. P. (2007). The super-ordinate nature of the psychopathy checklist-revised. *Journal of Personality Disorders, 21,* 102–117.

Odgers, C. L., & Moretti, M. M. (2002). Aggressive and antisocial girls: Research update and challenges. *International Journal of Forensic Mental Health, 1,* 103–119.

Patrick, C. (2010). Conceptualizing the psychopathic personality: Disinhibited, bold, … or just plain mean? In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescente psychopathy* (pp. 15–48). New York: Guilford Press.

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology, 21*, 913–928.

Pinel, P. (1962*). A treatise on insanity* (D. Davis, Trans.). New York: Hafner (Original work published 1806).

Price, S., Salekin, R. T., Klinger, M., & Barker, E. D. (in press). Psychopathy and depression in adolescent offenders. *Personality Disorders: Theory Research and Treatment*.

Prichard, J. C. (1835). *A treatise on insanity and other disorders affecting the mind.* London: Sherwood, Gilbert & Piper.

Quay, H. C. (1964). Dimensions of personality in delinquent boys as inferred from the factor analysis of case history data. *Child Development, 35,* 479–484.

Quay, H. C. (1965). Psychopathic personality as pathological stimulation seeking. *The American Journal of Psychiatry, 122,* 180–183.

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2012). Child and adolescent psychopathy: A state-of-the art reflection on the construct and etiological theories. *Journal of Criminal Justice, 40,* 269–277.

Rush, B. (1812). *Medical inquiries and observations upon the diseases of the mind.* Philadelphia: Kimber & Richardson.

Salekin, R. T. (2002). Psychopathy and therapeutic pessimism: Clinical lore or clinical reality? *Clinical Psychology Review, 22*, 79–112.

Salekin, R. T. (2006). Psychopathy in children and adolescents: Key issues in conceptualization and assessment. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 389–414). New York: Guildford Press.

Salekin, R. T. (2010). Treatment of child and adolescent psychopathy: Focusing on change. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 343–373). New York: Guilford Press.

Salekin, R. T., Brannen, D. N., Zalot, A. A., Leistico, A. R., & Neumann, C. S. (2006). Factor structure of psychopathy in youth: Testing the applicability of the new four factor model. *Criminal Justice and Behavior, 33,* 135–157.

Salekin, R. T., & Frick, P. J. (2005). Psychopathy in children and adolescents: The need for a developmental perspective. *Journal of Abnormal Child Psychology, 33,* 403–409.

Salekin, R. T., Lester,W. S., & Sellers, M. K. (2012). Psychopathy in youth and mental sets: Incremental and entity theories of intelligence. *Law and Human Behavior, 36,* 283–292.

Salekin, R. T., & Lynam, D. R. (2010). Child and adolescence psychopathy: The road ahead. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 401–420). New York: Guilford Press.

Salekin, R. T., & Lynam, D. R. (2010). Child and adolescent psychopathy: An introduction. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 1–12). New York: Guilford Press.

Salekin, R. T., Tippey, J. G., & Allen, A. D. (2012). Treatment of conduct problem youth with interpersonal callous traits using mental models: Measurement of risk and change. *Behavioral Sciences & the Law, 30,* 470–486.

Salekin, R. T., Worley, B., & Grimes, R. D. (2010). Treatment of psychopathy: A review and brief introduction to the mental model approach for psychopathy. *Behavioral Sciences and the Law, 28*, 235–266.

Salekin, R. T., Ziegler, T. A., Larrea, M. A., Anthony, V. L., & Bennett, A. D. (2003). Predicting dangerousness with two Millon Adolescent Clinical Inventory psychopathy scales: The importance of egocentric and callous traits. *Journal of Personality Assessment, 80,* 154–163.

Schneider, K. (1950). *Psychopathic personalities*. London: Cassell.

Schwalb, C. S. (2007). Risk assessment for juvenile justice: A meta-analysis. *Law and Human Behavior, 31,* 449–462.

Seagrave, D., & Grisso, T. (2002). Adolescent development and the measurement of juvenile psychopathy. *Law and Human Behavior, 26,* 219–239.

Sevecke, K., & Kosson, D. S. (2010). Relationships of child and adolescent psychopathy to other forms of psychopathology. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 284–317). New York: Guilford Press.

Sevecke, K., Lehmkuhl, G., & Krisher, M. (2009). Examining relations between psychopathology and psychopathy dimensions among female and male offenders. *European Journal of Child and Adolescent Psychiatry, 18,* 85–95.

Silk, K. R. (2008). Commentary: Personality disorder in adolescence: The diagnosis that dare not speak its name. *Personality and Mental Health, 2*, 46–48.

Skeem, J. L., & Cooke, D. J. (2010). Is criminal behavior a central component of psychopathy? Conceptual directions for resolving the debate. *Psychological Assessment, 22*, 433–445.

Skeem, J. L., Plaschek, D. L. L., & Manchak, S. (2009). Appropriate treatment works, but how? Rehabilitating general, psychopathic, and high risk offenders. In J. L. Skeem, K. S. Douglas, & S. O. Lilienfeld (Eds.), *Psychological science in the courtroom: Consensus and controversy* (pp. 358–384). New York: Guildford Press.

Skeem, J. L., Polaschek, D. L. L., Patrick, C. J., & Lilienfeld, S. O. (2011). Psychopathic personality: Bridging the gap between scientific evidence and public policy. *Psychological Science in the Public Interest, 12,* 95–162.

Suedfeld, P., & Landon, P. B. (1978). Approaches to treatment. In R. D. Hare, & D. Schalling (Eds.), *Psychopathic behavior: Approaches to research* (pp. 347–378). New York:Wiley.

Sylvers, P. D., Brennan, P. A., & Lilienfeld, S. O. (2011). Psychopathic traits and preattentive threat processing in children: A novel test of the fearlessness hypothesis. *Psychological Science, 22*, 1280–1287.

Thorton, D., & Blud, L. (2007). The influence of psychopathic traits on response to treatment. In H. Herve, & J. C. Yullie (Eds.), *The psychopath: Theory, research, and practice* (pp. 505–539). Mahwah, NJ: Erlbaum.

Van Baardewijk, Y., Stegge, H., Andershed, H., Thomaes, S., Scholte, E., & Vermeiren, R. (2008). Measuring psychopathic traits in children through self-report. The development

of the Youth Psychopathic Traits Inventory — Child Version. International *Journal of Law and Psychiatry, 31,* 199–209.

Vaughn, M. G., Newhill, C. E., DeLisi, M., Beaver, K. M., & Howard, M. O. (2008). An investigation of psychopathic features among delinquent girls: Violence, theft, and drug abuse. *Youth Violence and Juvenile Justice, 6,* 240–255.

Vermeiren, R. (2003). Psychopathology and delinquency in adolescents: A descriptive and developmental perspective. *Clinical Psychological Review, 23,* 277–318.

Verona, E., Sadeh, N., & Javdani, S. (2010). The influences of gender and culture on child and adolescent psychopathy. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 317–342). New York: Guilford Press.

Verona, E., & Vitale, J. (2006). Psychopathy in woman: Assessment, manifestations and etiology. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 415–436). New York: Guildford Press.

Vitacco, M. J., & Neumann, C. S. (2008). The clinical assessment of psychopathy. In R. Jacksom (Ed.), *Learning forensic assessment* (pp. 129–152). New York: Routledge/Taylor & Francis.

Vitacco, M. J., & Salekin, R. T. (in press). Adolescent psychopathy and the law. In K. Kiehl & W. Sinnott-Armstrong (Eds.). *Psychopathy and the law*. New York: Wiley.

Vitacco, M. J., Salekin, R. T., & Rogers, R. (2010). Forensic issues for child and adolescente psychopathy. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescente psychopathy* (pp. 374–397). New York: Guilford Press.

Vitale, J. E., Newman, J. P., Bates, J. E., Goodnight, J., Dodge, K. A., & Pettit, G. S. (2005). Deficient behavioral inhibition and anomalous selective attention in a community sample of adolescents with psychopathic traits and low-anxiety traits. *Journal of Abnormal Child Psychology, 33,* 461–470.

White, S. F., & Frick, P. J. (2010). Callous-unemotional traits and their importance to causal models of severe antisocial behavior in youth. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 135–155). New York: Guilford Press.

Wilson, K., Juodis, M., & Porter, S. (2011). Fear and loathing in psychopaths: A meta-analytic investigation of the affect recognition deficit. Criminal Justice and Behavior, 38, 659–668.

APPENDIX C |

The PSYCHOPATHY.COMP program: An overview

PSYCHOPATHY.COMP

An individual Compassion-based psychotherapeutic intervention program for young offenders with psychopathic traits

Authors: Diana Ribeiro da Silva, Paula Castilho, Rita Miguel, Marlene Paulo, Paul Gilbert, and Daniel Rijo

Psicopathy.comp
Changeability of psychopathic traits in young offenders: Outcomes from a compassion-based psychotherapeutic intervention
(PTDC/MHC-PCL/2189/2014)

Modules and sessions

Table 1. *Overview of the PSYCHOPATHY.COMP program: Modules, sessions, theme, exercises, and magic cards*

Module	Session	Theme	Exercises (Mindfulness/CMT)	Magic cards
1. The basics of our mind	1	Presentations	One minute of mindfulness	Courage
	2	Our basic ingredients	Soothing Rhythm Breathing	
2. Our mind according to CFT	3	Old brain/New brain = tricky brain	3 minutes of Mindfulness	ConflictMind
	4	Multiple versions	Mindfulness with fingers	Multiple versions
	5	Responsibility and freedom	Mindfulness checking-in	"Freedom is what you do with what's been done to you"
	6	Emotion regulation systems	STOP	Three cicle model
	7	Emotion regulation systems (cont.)	Mindfulness checking-in	Balance
	8	Outputs of the threat system	Brief Compassion check-in	Shame
	9	Coping strategies	Compassionate Touch	The best move
	10	Motivations and recovery	Compassionate Smile	Motivation
3. Compassionate Mind Training	11	Compassion: What is and what is not	Compassionate Check-in	Compassion
	12	Multiple selves	Compassionate-Self	Multiple-Selves
	13	Fears of compassion	Compassionate-Color	Face the Fear
	14	Flows of compassion	Compassion flowing	Compassion flowing
	15	Self-compassion	Compassion flowing into the self	Self-Compassion
	16	Flows of compassion revised	Compassionate walking	Surfboards of Compassion
	17	Safe place	Safe place/Compassionate friend	Word chosen by the youth
	18	Compassionate letter	Compassionate letter	Compassionate letter
4. Recovery, relapse prevention, finalization	19	Revisiting motivation/recovery	Exercise chosen by the youth	I Can Chose
	20	What has changed? An overview	Compassionate eating	Personalized Magic card

Session 1

Specific goals:

- Presentations.
- Present session's structure, general contents, aims of the program, and ethical issues.
- Induce insights about the functioning of our mind.
- Elicit shared rules of sessions.
- Introduction to mindfulness training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper
- Pen
- Colored pencils (or colored ribbons…)
- Magic card of "Courage"

Summary table - session 1

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 - Check in - 20'	
a) Presentations	Dynamic - Common colors.
b) Psychopathy.comp	Number of sessions; General contents; Main goals; Ethics.
Part 2 - Session theme - 25'	
c) Youth involvement in the therapeutic process	Compassionate motivational interview Colors we choose and colors we did not chose
d) Shared rules	Elicit shared rules
Part 3 - check out - 15'	
e) Summary	Synthesis of the session
f) Mindfulness training	One minute of mindfulness
g) Magic card	The card of Courage
Assessment	

Session 2

Specific goals:

- Perceive youth's intentions and worries about coming into the therapy.
- Discuss preconceived ideas about therapy.
- Introduce the basic function of our mind
- Mindfulness training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper.
- Pen.
- Magic card of "Goals and Obstacles"

Summary table - session 2

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 20'	
a) Summary of the previous session	Summarize
b) Insights from the week	Explore
Part 2 – Session theme – 20'	
c) Getting commitment from the youth	Compromised action exercise (intentions and worries)
d) Our basic ingredients	Our basic ingredients - Stories to explore
Part 3 – check out – 20'	
e) Summary	Synthesis of the session
f) SRB	Soothing Rhythm Breathing
g) Magic card	The card of Goals and Obstacles
Assessment	

Session 3

Specific goals:

- Introduce the notion of old brain/new brain and how that can be tricky
- Mindfulness training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper.
- Pen.
- 4 chairs
- 3 papers – (each one to be placed in each chair with the name of the animal chosen by the youth
- Magic card of "ConflictingMind"

Summary table – session 3

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 25'	
d) Old brain/New brain	Dynamic - Chair work with animals
Part 3 – check out – 20'	
e) Summary	Synthesis of the session
f) Mindfulness training	3 minutes of Mindfulness
g) Magic card	The card of ConflictingMind
Assessment	

Session 4

Specific goals:

- Bring awareness about the fact that we are just one version of ourselves
- Mindfulness training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper.
- Pen.
- Magic card of "Multiple Versions"

Summary table – session 4

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme´- 25'	
d) Multiple Versions	What shaped us?
Part 3 – check out – 20'	
e) Summary	Synthesis of the session
f) Mindfulness training	Mindfulness with fingers
g) Magic card	The card of Multiple Versions
Assessment	

Session 5

Specific goals:

- Bring awareness about the fact that we still have the ability and the responsibility to get free no matter what was chosen for us
- Mindfulness training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper.
- Pen.
- Deck of cards
- Magic card of "Freedom is what you do with what's been done to you"

Summary table – session 5

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 25'	
d) Freedom	The card game of life
Part 3 – check out – 20'	
e) Summary	Synthesis of the session
f) Mindfulness training	Mindfulness checking-in
g) Magic card	The card of "Freedom is what you do with what's been done to you"
Assessment	

Session 6

Specific goals:

- Introduce and explore the functioning of the three emotion regulation systems
- Mindfulness training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.
-

Material:

- Paper.
- Pen.
- Color pencils
- Magic card of "Three Cycles"

Summary table – session 6

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 35'	
d) Emotion regulation systems with mindfulness training	Checking in with the three cycle model - Who? What? Why? How? When? Where?
Part 3 – check out – 10'	
e) Summary	Synthesis of the session
f) Mindfulness training	STOP
g) Magic card	The card of Three Cycles
Assessment	

Session 7

Specific goals:

- Deeper the awareness about the functioning and the balance of the three emotion regulation systems
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper.
- Pen.
- Color pencils
- 4 chairs
- 3 papers – each one with the following words: RED, BLUE, GREEN
- Magic card of "Balance"

Summary table – session 7

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 30'	
d) Emotion regulation systems (cont.)	Who am I?
Part 3 – check out – 15'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Self-Compassion Break
g) Magic card	The card of Balance
Assessment	

Session 8

Specific goals:

- Understand shame as an output of the threat system
- Understand how can we deactivate our threat system
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper.
- Pen.
- Chronometer
- Color pencils
- Empty bottle of “Compal essencial” (or equivalent)
- Magic card of “Shamefully”

Summary table – session 8

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15’	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 30’	
d) Outputs of the threat system	Shame on you. Shame on me. The overflowing bottle
Part 3 – check out – 15’	
e) Summary	Synthesis of the session
f) Compassionate mind training	Brief Compassionate check-in
g) Magic card	The card of Shame
Assessment	

Session 9

Specific goals:

- Understand different coping strategies, their utility and their flaws
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper.
- Pen.
- The bottle filled in during the dynamic of session 8 - Shame on me. Shame on us. The overflowing bottle
- Magic card of "Best Move"

Summary table – session 9

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 30'	
d) Coping Strategies	The different moves and the best move
Part 3 – check out – 15'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Compassionate Touch
g) Magic card	The card of Best Move
Assessment	

Session 10

Specific goals:

- Understand that recovery is a process associated with motivations and goals, which may involve doing difficult things
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper.
- Pen
- Printed archery target
- Motivation cards (printed/painted in blue)
- Magic card of "Motivations"

Summary table – session 10

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15´	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 30'	
d) Motivations and recovery	I wish
Part 3 – check out – 15'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Compassionate Smile
g) Magic card	The card of Motivations
Assessment	

Session 11

Specific goals:

- Understand what compassion is and is not, highlighting its qualities
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper.
- Pen
- Chair
- Magic card of "Compassion"

Summary table – session 11

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 25'	
d) Compassion: What is and what is not	Com-passion
Part 3 – check out – 20'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Compassionate Check-in
g) Magic card	The card of Compassion
Assessment	

Session 12

Specific goals:

- Understand our multiplicity and how can we differentiate and integrate that same multiplicity
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.
-

Material:

- Paper.
- Pen.
- 5 chairs (4 of them identified as – angry self, anxious/fearful self, sad self, compassionate self)
- Magic card of "Multiple Selves"

Summary table – session 12

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 25'	
d) Multiple Selves	Multiple me(s)
Part 3 – check out – 20'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Compassionate-Self
g) Magic card	The card of Multiple Selves
Assessment	

Session 13

Specific goals:

- Become aware of fears, blocks, and resistances of compassion and their role as safety strategies
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.
-

Material:

- Paper.
- Pen.
- Paper of session 11 to recall what compassion is and is not
- Magic card of "Face the Fear"

Summary table – session 13

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in- 15'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 25'	
d) Fears, blocks, and resistances of compassion	Fearing my best?
Part 3 – check out – 20'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Compassionate-Color
g) Magic card	The card of Face the Fear
Assessment	

Session 14

Specific goals:

- Develop the flows of compassion and become aware about fears, blocks, and resistances of those same flows compassion, discussing their role as safety strategies.
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.
-

Material:

- Paper
- Pen.
- One more chair than usual
- Magic card of "Flows of Compassion"

Summary table – session 14

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 25'	
d) Flows of Compassion	Working our flows of compassion
Part 3 – check out – 20'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Compassion flowing
g) Magic card	The card of Flows of Compassion
Assessment	

Session 15

Specific goals:

- Develop self-compassion and become aware of fears, blocks, and resistances of self-compassion and their role as safety strategies
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.
-

Material:

- Paper.
- Pen.
- Magic card of "Self-Compassion"

Summary table – session 15

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15'	
a) Grounding exercise	Not included in this session
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 25'	
d) Self-Compassion	Mirroring myself
Part 3 – check out – 20'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Compassion flowing into the self
g) Magic card	The card of Self-Compassion
Assessment	

Session 16

Specific goals:

- Strengthen the flows of compassion and become aware about fears, blocks, and resistances of those same flows compassion
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.
-

Material:

- Paper
- Pen.
- 3 ice-cream sticks
- Magic card of "Unlimited Ocean of Compassion"

Summary table – session 16

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 30'	
d) Flows of Compassion Revised	The compassionate waves
Part 3 – check out – 15'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Compassionate walking
g) Magic card	The card of Unlimited Ocean of Compassion
Assessment	

Session 17

Specific goals:

- Bring awareness to the youth about the importance of creating a safe place in our mind; i.e., we can go into our safe place, with or without with our compassionate figure, whenever we need compassion.
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.
-

Material:

- Paper
- Pen.
- Magic card of "Safe Place"

Summary table – session 17

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in- 10'	
a) Grounding exercise	Not included in this session
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 25'	
d) Safe place	Safe place
Part 3 – check out – 25'	
e) Compassionate mind training	Compassionate friend
f) Summary	Synthesis of the session
g) Magic card	The card of (word chosen by the youth)
Assessment	

Session 18

Specific goals:

- Synthetize the meaning, the power, and the power that compassion can have in our lives.
- Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.

Material:

- Paper
- Pen.
- Magic card of "Compassionate letter"

Summary table – session 18

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 10'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 25'	
d) Compassionate letter	Compassionate letters: from my compassionate friend to me; from me to my compassionate friend, from me to the part of me that suffers.
Part 3 – check out – 25'	
e) Summary	Synthesis of the session
f) Magic card	The card of Compassionate Letter
Assessment	

Session 19

Specific goals:

- Revisit motives and recovery through the lens of compassion
- Mindfulness/Compassionate mind training.
- Develop a therapeutic relationship, with the therapist functioning as a safe place and a safe haven.
-

Material:

- Paper
- Pen
- Computer or any other device to watch a video
- Magic card of "I Can Chose"

Summary table – session 19

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 15'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 30'	
d) Revisiting motives and recovery: The role of compassion	Video and discussion
Part 3 – check out – 15'	
e) Summary	Synthesis of the session
f) Compassionate mind training	Exercise chosen by the youth
g) Magic card	The card of "I Can Chose"
Assessment	

Session 20

Specific goals:

- Revisit what have changed
- Accept that life is bittersweet
- Mindfulness/Compassionate mind training.
- Finalization.

Material:

- Paper
- Pen.
- Ginger chocolate
- Personalized Magic card

Summary table – session 20

MAIN POINTS	**PRACTICES**
Session backstage	Therapist grounding exercise
Part 1 – Check in – 10'	
a) Grounding exercise	Soothing Rhythm Breathing
b) Summary of the previous session	Summarize
c) Insights from the week	Explore
Part 2 – Session theme – 40'	
d) "Bittersweet meal. Bittersweet life"	Eat the ginger chocolate with the youth - Mindfulness eating - Like this chocolate, life is full of bittersweet experiences - Discussion: What have changed?
Part 3 – check out – 10'	
e) Magic card	Personalized Magic card
Assessment	

APPENDIX D |

The PSYCHOPATHY.COMP program: Sessions' assessment

WHAT I FEEL ABOUT THIS SESSION?

This is a very important part of the session, so we can improve sessions if needed. Please be honest and sincere.

Session number: _____ Date: _____ Your code number: _____

Please circle the number that best fits the way you felt before, during and in the end of this session. The scale ranges from 1 (very bad) to 10 (very good).

Before the session

1 2 3 4 5 6 7 8 9 10

During the session

1 2 3 4 5 6 7 8 9 10

After the session

1 2 3 4 5 6 7 8 9 10

How much did you find this session useful? (1 = nothing useful; 10 = extremely useful)

1 2 3 4 5 6 7 8 9 10

How would you score your relationship with the therapist? (1 = very bad; 10 = very good)

1 2 3 4 5 6 7 8 9 10

ASSESSMENT OF THE SESSION - THERAPIST

Session number: _____ Youth code number: _____ Date: _____

Please circle the number that best fits the way you feel about this session in terms of the accomplishment of goals for each part of the session (1= not accomplished; 10 = fully accomplished).

Session backstage

1 2 3 4 5 6 7 8 9 10

Comments:_____

_____

Part 1

1 2 3 4 5 6 7 8 9 10

Comments:_____

_____

Part 2

1 2 3 4 5 6 7 8 9 10

Comments:_____

_____

Part 3

1 2 3 4 5 6 7 8 9 10

Comments:_____

_____

How much did you find this session useful for the youth? (1 = nothing useful; 10 = extremely useful)

1 2 3 4 5 6 7 8 9 10

Comments:_____

_____

How would you score your therapeutic relationship? (1 = very bad; 10 = very good)

1 2 3 4 5 6 7 8 9 10

Comments:_____

_____

How this session went, comparing to how was planned? (1 = completely different; 10 = very similar)

1 2 3 4 5 6 7 8 9 10

Comments:_____

_____

How would you globally rate this session? (1 = very bad; 10 = very good)

1 2 3 4 5 6 7 8 9 10

Comments:_____

_____