Dimensionality and gender-based measurement invariance of the Compassion Scale in a community sample.

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Abstract

Compassion has been proposed as relevant to psychological functioning and mental health, involving being compassionate and caring towards others in times of difficulty. The Compassion Scale (CS) proposes to assess compassion for others considering its different dimensions (Kindness; Common humanity; Mindfulness; Indifference; Separation, and Disengagement) and also offers a total score. The current work investigated the psychometric properties of the Portuguese version of this instrument in adults (N=610). Results showed the acceptability of a two higher-order factor solution representing a negative and a positive valence of compassion (i.e., Compassion and Disconnectedness), with each higher-order factor comprising three different dimensions of compassion. Multi-group analyses established measurement invariance across gender; further mean comparison analyses showed that women presented higher levels of the positive dimensions of compassion, whereas men showed higher levels of the negative ones. The CS demonstrated good internal consistency, test-retest reliability, and limited validity in relation to external variables. Overall, these findings contribute to the validation of the CS in a non-clinical adult sample, supporting a new measurement model that partially concurs with the original one. It thus provides the user with a new way of assessing and interpreting compassion that may be useful both in research and clinical settings.

Keywords: Compassion; assessment; adults; psychometrics; dimensionality; gender

1. Introduction

Compassion has been receiving increased attention from the scientific and psychotherapeutic community (Castilho & Pinto-Gouveia, 2011; Germer & Neff, 2013; Gilbert, 2005; Pommier, 2011) and various models of compassion have been proposed based in different theories, traditions and research contributions (Gilbert, 2005; Neff, 2003b). The Buddhist perspective conceptualizes compassion as a form of empathy, in as much as we sense the suffering of others as if it was our own and so, naturally, wish them to be able to cope and get themselves free of it (Dalai Lama, 2001).

Taking these Buddhist principles into consideration, Neff (2003a, 2003b) defined compassion as the capacity of having an emotional sensibility to the suffering of others (instead of disconnecting from it), the ability of being moved by and the desire to alleviate other's distress. This ability can also be directed to oneself.

Several studies showed that compassion is associated with positive psychological dimensions (Mongrain, Chin & Shapira, 2011), such as improved social bonds (Crocker & Canevello, 2008) and an increased capacity to detect and respond to others' distress (Lutz, Brefczynski-Lewis, Johnstone, & Davidson, 2008). Also, compassion can be important to life satisfaction, psychological resilience (Neff, 2003a, 2003b) and psychological well-being (Neff, Rude, & Kirkpatrick, 2007). Compassion has also been associated with increased positive affect (Lutz, et al., 2004) and with better intra and interpersonal functioning (Allen & Knight, 2005). When individuals experience affection and security in early development, they tend to be more compassionate and empathic and to display more caring behaviors (Gilbert, 2005) without being overwhelmed by the distress of others or the distress of their own self (Gilbert, et al., 2011). Additionally, compassion has been founded to be associated with the reduction of loneliness, anxious and depressed feelings (Crocker & Canevello, 2008), shame, self-

criticism, and stress (Gilbert, McEwan, Matos, & Rivis, 2011). When abusive backgrounds and lack of affection and safeness memories were experienced, individuals may distance themselves from others in distress or react with contempt (Mikulincer, Shaver, Gillath, & Nitzberg, 2005).

Given that research is showing that treating others with compassion promotes individual well-being and improves mental-health, several researchers have developed interventions to enhance people's ability to give compassion to self and others. Accordingly, the compassionate mind training (CMT) has been found to promote higher levels of kindness and emotional warmth (Fehr, Sprecher, & Underwood, 2009), acting as a positive protective factor to various negative emotional responses (Crocker & Canevello, 2008; Gilbert, et al., 2011). CMT also holds a buffering effect in the development of psychopathology (Brown & Ryan, 2003; Castilho & Pinto-Gouveia, 2011; MacBeth & Gumle, 2012).

Given its impact in the psychological functioning of individuals, the development of a specific and valid measure of compassion became relevant. Though it has previously been assessed using a subscale of a larger instrument or by using items from a scale that does not specifically assesses compassion (Pommier, 2011; e.g. the compassion subscale of the Motivational Spiritual Gifts by Cooper & Blakeman, 1994 or the use of 14 items from the Pity Experience Inventories by Florian, Mikulincer, & Hirschberger, 2000), a specific measure designed to assess compassion within a clear theoretical framework was still missing.

Neff (2003b) has defined Self-Compassion as consisting of three main components: self-kindness, common humanity and mindfulness. Each one of these dimensions has an opposing construct, namely self-judgment, isolation and over-identification, respectively. Neff (2003a) developed the Self-compassion scale within

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this theoretical framework, finding evidence for the existence of these different dimensions. The negative valences of self-compassion were defined as separate theoretical constructs, not mutually exclusive to its positive counterparts (i.e., different individuals can have various combinations of the positive and negative dimensions; Neff, 2003a, 2003b).

Based on Neff´s (2003b) definition of Self-compassion, and in order to respond to the growing necessity of examining the mental health benefits of experiential practices (e.g., loving-kindness meditation and mindfulness), Pommier (2011) developed the Compassion Scale (CS), retaining the six-factor structure of Neff's (2003a) Self-Compassion Scale. The three positive dimensions received identical labels (Kindness, Common humanity, and Mindfulness) while the negative ones were renamed to better fit the individuals' tendencies for action regarding compassion for others (Indifference; Separation; Disengagement), remaining as opposing constructs of the positive ones. (Pommier, 2011). The author theorized that the inter-correlations between these factors would explain a single factor of "compassion", given that they would work together in a symbiotic process. The Kindness factor is defined as the capacity to be kind, warm and comprehensive to the suffering of others instead of being critical or portraying a cold and dismissive response to others' suffering (Indifference). Common Humanity refers to the understanding of the personal experiences and suffering as being a shared human experience, allowing for a sense of connection, by opposition to a distanced view of others' suffering as a separate event in relation to the self (Separation). The third component of compassion, Mindfulness, involves holding one's present-moment experience in a balanced emotional perspective, so that one neither ignores nor ruminates on disliked aspects of others or other's pain, in opposition to the dismissal of other's concerns and suffering (Disengagement) (Neff, 2003a, 2003b;

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Pommier, 2011). Moreover, in clinical psychology, mindfulness relevance and practice have been receiving growing attention and it is commonly defined as quality of consciousness, involving present-centered, accepting and non-judgmental attention and awareness (Bishop et al., 2004). It represents a stance of equanimity and a state of mental balance towards difficult and uncomfortable thoughts and experiences, rather than over-identification with suffering and pain (Neff, 2003b; Kabat-Zinn, 2005).

The CS was studied in a sample of 510 American adult students (238 men; 272 women) using a Confirmatory Factor Analysis procedure. The factorial structure of the Self-Compassion Scale was reproduced for the CS, confirming the existence of six subscales and a higher-order factor; also, good internal consistency values were reported, except for the Disengagement subscale (Pommier, 2011).

Different studies tested for gender differences in self-compassion and there is now considerable evidence showing that men tend to score higher in self-compassion than women (Neff, 2003b; Yarnell et al., 2015). When looking for gender differences in compassion towards others, to our knowledge, only Pommier's (2011) study showed that women endorsed higher levels of compassion to others than men. These findings point to different patterns of gender differences when looking to compassion and/or self-compassion. Still, such findings were put forward regardless of a substantiated test of measurement invariance, which is required to allow for reliable and credible gender comparisons (Chen, 2007).

Despite its relevance, little research has been made in the study of compassion for others as assessed by the CS. To our knowledge, there is no research addressing the measurement model of the CS in other languages and cultural backgrounds other than the scale's original students sample. Likewise, gender differences in relation to

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compassion for others have only been explored in the original study of the scale (Pommier, 2011), but no measurement invariance between gender was established.

The present study aims to investigate the psychometric properties of the Portuguese version of the CS in a large adult community sample, in order to fill this research gap. Specifically, the dimensionality of the CS will be explored by testing different nested models, based on previous conceptual and empirical findings. Based on those findings, we expect the six dimensions to be confirmed and additionally to find evidence for higher order negative and positive valences of compassion. Gender-based measurement invariance will also be tested. We expect to find the same measurement model to equally represent the compassionate experience of men and women. Given previous findings on gender differences in compassion, we expect women to score higher on compassion towards others than men.

2. Material and methods

2.1. Participants and sampling procedures

Participants were recruited in several institutions (e.g., educational facilities, health facilities, public security institutions, private business settings and independent workplaces) of the North and Center regions of Portugal using non-random methods. Written informed consent was obtained from all participants, after having read the aims of the study, as described in a page presented before the assessment instruments, which also contained several socio-demographic questions. It was emphasized that participants' cooperation was voluntary and that their answers would be treated confidentially by the authors. Participants took, on average, 30 minutes to fill out the self-report questionnaires.

The sample thus included 610 Portuguese adults, 258 men (42.3%) and 352 women (57.7%), aged between 18 and 60 years old (M = 39.22, SD = 11.42); men and women had similar mean ages [t (608) = .932; p = .352]. The complete sample had, on average, completed 11.87 years of education (SD = 4.08); women (M = 12.32; SD = 4.18) had completed significantly more years than men (M = 11.25; SD = 3.87) [t (608) = -3.210; p = .001]). Regarding marital status, 48.2% of the participants were married, 29.2% were single, 11.3% lived in union of fact, 10.3% were divorced and 1% were widows. There were no differences between gender concerning marital status [χ^2 (4) = 4.492; p = .344].

2.2. Measures

2.2.1 Compassion Scale (CS; Pommier, 2011; Portuguese version by Vieira & Castilho, 2012).

The CS is a 24-item self-report questionnaire that measures compassion for others, and its composed by six subscales: Kindness; Common Humanity; Mindfulness; Indifference; Separation and Disengagement. Participants rate each item according to how frequently they feel and act towards others, using a five-point Likert scale (1 = almost never to 5 = almost always). In the original study, confirmatory factor analyses results showed the appropriate fit of a hierarchical model, in which the six subscales converged in a higher-order factor. All measures presented acceptable internal consistency values, with an alpha of .90 for the scale total score and between .57 (Disengagement) and .77 (Kindness) for the six dimensions (Pommier, 2011). For developing the Portuguese version, a specialist in the area of study independently translated the original version of the CS to Portuguese. A different bilingual translator

conducted retroversion of the items, and the translated and back translated versions of the CS were compared and considered equivalent.

2.2.2. Early Memories of Warmth and Safeness Scale (EMWSS; Richter, Gilbert, & McEwan, 2009; Portuguese version by Matos & Pinto-Gouveia, 2014).

The EMWSS is a 21-items scale that measures positive emotional memories, particularly memories of warmth, security, acceptance, and care in childhood. Items are rated on a five-point Likert scale (ranging from 0 = no, never to 4 = yes, most of the time). The original version of the scale presented excellent internal consistency, with an alpha of .97 (Ritcher et al., 2009). Likewise, the internal consistency of the Portuguese version (Matos & Pinto-Gouveia, 2014) and of the current sample was .97.

2.2.3. Social Safeness and Pleasure Scale (SSPS; Cook, 1996; Portuguese version by Dinis, Castilho, Xavier, & Pinto-Gouveia, 2008).

This is a one-dimension scale that assesses how people experience positive feelings and emotions in different social contexts, and to which degree they experience the world as a safe and soothing place. Its 11 items are rated on a five-point Likert scale (ranging from 1 = almost never to 5 = almost always). The scale's internal consistency was .91 both in the original study (Cook, 1996) as in the present one.

2.2.4. Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988; Portuguese version by Galinha & Pais-Ribeiro, 2005).

The PANAS is a 20-item scale assessing two mood states. Each item describes feelings and emotions and participants use a five-point Likert scale (1 = nothing or very slightly and 5 = extremely) to rate their severity and frequency in the last few weeks. The measure is organized into two subscales (each with 10 items) that reflect Positive affect (PA) (e.g. excited, inspired, enthusiastic) and Negative affect (NA) (e.g. hostile, irritable, distressed). In the original version of the scale, the internal consistency was .88

for the PA and .87 for the NA. In the Portuguese version, Cronbach's alphas were .86 for the PA and .89 for the NA (Galinha & Pais-Ribeiro, 2005). In the present study, the internal consistency was .88 for both types of affect.

2.3. Data analysis procedures

Data analyses were conducted using Mplus v7.4 (Muthén & Muthén, 2015) and the IBM SPSS Statistic 22 software. Mplus was used for Confirmatory Factor Analyses (CFA), given that the measurement model for the CS had been previously defined. To decide about the most appropriated estimator, we tested the normality of the data and concluded that it was not normally distributed (K-S = .083, p < .000). Therefore, the Weighted Least Squares Mean and Variance adjusted (WLSMV) estimator was used. Taking into account both the sample size and the number of items in the scale, the fit of the CFA models was assessed based on a Comparative Fit Index (CFI) ≥ .92 combined with a Root Mean Square Error of Approximation (RMSEA) ≤ .07 (Hair, Black, Babin, & Anderson, 2009).

Subsequently, multi-group analyses were conducted to investigate for gender invariance. We tested for configural, then metric, and then scalar invariance. Configural invariance represents that the same measurement model fits for all groups. Metric invariance adds the constraint that the factor loadings must be similar across groups. Scalar invariance adds to the previous constraint the new constraint of similar intercepts across groups. At least partial scalar invariance should be achieved in order to proceed with group comparisons (Hair, et al., 2009). We followed Chen's (2007) guidelines to determine invariance: metric measurement invariance is determined when the ΔCFI ≤ -.01 combined with ΔRMSEA ≤.015 and scalar invariance is established when ΔCFI ≤ -.01 combined with ΔRMSEA ≤.015.

The IBM SPSS Statistic 22 software was used for internal consistency computation (Cronbach's alpha) and for descriptive and mean comparisons between genders; effect sizes were examined with Cohen's (1988) criteria, when analyzing gender differences. The temporal and construct validity of the measure were analyzed using the Spearman product-moment correlation coefficient.

3. Results

3.1. Evidence based on internal structure

The factorial structure of the CS had been previously established (via CFA) in adults (Pommier, 2011), resulting in a higher-order factor referring to the scales' total score, and six second-order factors representing the six theoretical dimensions of compassion. We started by testing this model (MODEL 1) and found that it did not fit the data (cf. Table 1). Next, a model with only the original six dimensions as first-order factors (MODEL 2) was tested and it achieved marginal fit (cf. Table 1). As theorized by Pommier (2011) and Neff (2003a, 2003b), the Kindness, Common humanity and Mindfulness factors work together in the representation of compassion, whereas the Indifference, Separation and Disengagement factors are its negative opposing constructs. Because the compassionate and negative constructs are not mutually exclusive and they are theoretically defined as separate constructs (Neff, 2003a, 2003b; Pommier, 2011), we decided to test a model where each group of three first-order factors converged in a higher-order factor (MODEL 3) (i.e., Kindness, Common humanity and Mindfulness converged in a higher-order factor named Compassion, whereas Indifference, Separation and Disengagement converged in the higher-order factor, labeled Disconnectedness). According to goodness of fit indicators, this model showed the best fit to the data (cf. Table 1). Also, the two higher-order factors (i.e., Compassion and Disconnectedness) were negatively correlated ($r = -.519$).

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Table 1.

Fit indicators for CFA and Gender Configural Invariance Analyses of the Compassion Scale

	χ^2	df	RMSEA	90% CI for RMSEA	CFI
Model 1	2974.45	246	.135	.131; .139	.855
Model 2	942.459	237	.070	.065; .075	.962
Model 3	927.14	245	.068	.063; .072	.964
Male participants	452.40	245	.057	.049; 0.65	.964
Female participants	454.08	245	.049	.042; .056	.972

Note. χ^2 values were always significant at $p < .01$, df: degrees of freedom for Chi-Square, RMSEA: root mean square error of approximation, CI for RMSEA: confidence interval for RMSEA, CFI: comparative fit index.

The loading values for the items under the best fitting measurement model are displayed in Table 2. All loading values were higher than 0.50, suggesting their statistical and practical relevance in reflecting the construct with which they are associated (Hair, et al., 2009). Additionally, scores for all measures achieved acceptable internal consistency values (cf. Table 2).

Table 2

Loading and Internal Consistency Values for the CS, for the complete sample and by gender

	Total	Male	Female
Compassion	$\alpha = .91$	$\alpha = .86$	$\alpha = .88$
Kindness	$\alpha = .79$	$\alpha = .78$	$\alpha = .77$
6 (…) I try to be caring toward that person	.79	.74	.81
8 (…) be there in times of difficulty	.60	.59	.60
16 (…) to people who are unhappy	.83	.79	.84
24 (…) I try to comfort them	.79	.82	.77
Common humanity	$\alpha = .79$	$\alpha = .74$	$\alpha = .81$
11 (…) it is part of being human	.66	.66	.69
15 (…) no one's perfect	.86	.80	.88
17 (…) part of the common human experience	.78	.73	.80
20 (…) everyone feels pain just like me	.73	.72	.77
Mindfulness	$\alpha = .78$	$\alpha = .73$	$\alpha = .74$
4 (…) attention when other people talk to me	.65	.64	.67

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9	(…) even if they don't say anything	.59	.61	.59
13	(…) patiently when people tell me their problems	.81	.75	.82
21	(…) a balanced perspective on the situation	.73	.74	.74
Disconnectedness		$\alpha = .92$	$\alpha = .92$	$\alpha = .92$
Indifference		$\alpha = .78$	$\alpha = .77$	$\alpha = .78$
2	(…) I feel like I don't care	.81	.81	.89
12	(…) cold to others when they are down and out	.72	.78	.67
14	I don't concern myself (…)	.77	.76	.76
18	(…) let someone else attend to them	.65	.62	.68
Separation		$\alpha = .74$	$\alpha = .79$	$\alpha = .78$
3	I can't really connect with other people (…)	.75	.76	.77
5	I feel detached from others (…)	.81	.82	.82
10	(…) I feel like I can't relate to them	.64	.65	.65
22	(…) emotionally connected to people in pain	.79	.76	.83
Disengagement		$\alpha = .78$	$\alpha = .76$	$\alpha = .77$
1	(…) I don't feel anything at all	.72	.82	.78
7	(…) when people tell me about their troubles	.81	.87	.84
19	(…) avoid people who are experiencing a lot of pain	.66	.64	.66
23	(…) don't think much about concerns of others	.71	.74	.77

Note. All loading values were significant at p< .001. Short paraphrases of the items are presented. For complete versions of the items in their original version please see Pommier (2011); for complete versions of the items in their Portuguese version please contact the corresponding author.

The CS also showed good four-week test-retest reliability, with all correlations being significant (p< .01) and equal or higher than .380 (Cf. Table 3).

Table 3.

Test-Retest correlations (CS) and correlation values between the Compassion Scale and the EMWSS, SSPS and PANAS.

	CS	EMWSS	SSPS	PANAS	
				Positive Affect	Negative Affect
Compassion	.572[**]	.133[**]	.209[**]	.136[**]	-.088[*]
Kindness	.593[**]	.100[*]	.203[**]	.109[*]	-.100[*]
Common humanity	.490[**]	.065[ns]	.068[ns]	.052[ns]	.041[ns]
Mindfulness	.487[**]	.176[**]	.232[**]	.186[**]	-.185[**]

Disconnectedness	.626**	-.127**	-.105**	-.242**	.166**
Indifference	.380**	-.105**	-.100*	-.241**	.182**
Separation	.707**	-.119**	-.086*	-.257**	.151**
Disengagement	.508**	-.134**	-.082*	-.203**	.131**

Note. CS: Compassion Scale (four-week interval for temporal validity), EMWSS: Early Memories of Warmth and Safeness Scale, SSPS: Social Safeness and Pleasure Scale, PANAS: Positive and Negative Affect Schedule.

**p< .01, *p< .05, ns non significant.

3.2. Measurement invariance

For the gender invariance analysis, the first and second response option were collapsed into one, because for item 21 the first response option was not selected by any of the female participants. Thus coded, the data taken both from the male and the female samples achieved a good fit for MODEL 3 (cf. Table 1), demonstrating configural invariance. We further found evidence for metric invariance (ΔCFI = .001; ΔRMSEA = -.002) and scalar invariance (ΔCFI = .001; ΔRMSEA = -.001). So, we proceeded with mean comparisons between the scores of male and female participants.

3.3. Gender differences in the Compassion Scale

Gender differences were found for all measures of the CS. Results were consistent when analyzing gender differences based on latent means or based on descriptive data (i.e., mean of the sum of observed variables and their corresponding standard deviation). So, considering ease of communication and practicality of the presented information, and taking into account that full invariance was found, only the later will be presented[1]. Women presented higher levels of compassion than males, with effect sizes of medium magnitude. There were also gender differences in the compassion subscales, namely in Common humanity and Mindfulness (with small effect sizes), and in Kindness (with medium effect size). For the negative dimensions of

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[1] Specific results on the latent mean comparison analyses may be requested from the corresponding author.

the CS, men showed higher levels of Disconnectedness, with a medium effect size.
There were also significant differences between women and men in the negative
subscales, with small effect sizes for Indifference and Separation and a medium effect
size for Disengagement (cf. Table 4).

Table 4.

Effect sizes by gender in the dimensions of the Compassion Scale

	Male		Female		Z	Cohen's d
	M	SD	M	SD		
Compassion	46.72	7.10	50.34	7.08	-6.75	-.51
Kindness	3.80	.72	4.20	.70	-7.17	-.56
Common Humanity	4.00	.73	4.22	.72	-4.16	-.30
Mindfulness	3.89	.69	4.16	.66	-5.18	-.40
Disconnectedness	29.84	9.51	24.98	9.33	-6.72	.52
Indifference	2.46	.84	2.06	.81	-6.13	.48
Separation	2.49	.85	2.09	.85	-6.05	.47
Disengagement	2.51	.84	2.09	.82	-6.43	.51

Note. All Z scores where significant at $p < .001$.

3.4. Construct validity in relation to external variables

Significant associations were found between the CS and external variables that
followed the expected directions (cf. Table 3). The higher-order factor, Compassion,
and the Kindness and Mindfulness subscales, were positively associated with early
memories of warmth and safeness, the sense of being accepted and cared for, and the
perception of safeness and soothing interactions in social contexts. A compassionate
attitude to others was positively correlated with positive affect and negatively associated
with negative affect. Also, the Disconnectedness factor and its negative subscales
correlated positively with the negative dimensions of humor and negatively with
positive affect. A distanced view, being critic and uncaring as well as being dismissive

of other's suffering were also negatively associated with the sense of social soothing/security and with early memories of acceptance and care.

4. Discussion

This study intended to investigate the dimensionality, internal consistency and construct validity of the Compassion Scale, designed to assess compassion for others (Pommier, 2011), given that this construct seems to play a relevant role in several mental health issues and outcomes (Germer & Neff, 2013; Gilbert, 2014). To our knowledge, this study is the first to address the measurement model of the CS in an adult community sample, exploring different competing measurement models. Moreover, measurement invariance between gender was tested and gender differences in relation to compassion for others were analyzed.

We first tested the original measurement model proposed by Pommier (2011) using a Portuguese adult population sample and results showed that it was not an acceptable representation of the collected data. Alternative measurement models where further tested: a six-factor model with no higher-order factor, and a hierarchical model including two higher-order factors, each one grouping three of the six first order factors. This last model achieved the best fit to the data, maintaining the original six subscales of the CS as first-order factors and adding two new higher-order factors. The three positive subscales (Kindness, Common humanity and Mindfulness) converged in a higher-order factor which was labeled Compassion, and the original three negative subscales (Indifference, Separation and Disengagement) converged in another higher-order factor, which was labeled Disconnectedness. These higher-order factors correlated negatively, concurring with the theoretical assumption that the positive and negative valences of compassion are opposing constructs. All measures within this model achieved good or very good reliability. Cronbach's alphas for the Portuguese sample

were higher than those found in the original study (Pommier, 2011), which may be explained by the greater diversity of the current sample when compared to the original (i.e., composed only of students).

Although there is a lack of research with the CS, similar difficulties in replicating the proposed dimensional structure of the measure have been found for the Self-compassion Scale. The original model of the Self-compassion Scale (one higher-order factor, Self-compassion, and six first-order factors) failed to be replicated, both in clinical and non-clinical populations (Garcia-Campayo et al., 2014; Petrocchi, Ottaviani, & Cououmdjian, 2013; Williams, Dalglseih, Karl, & Kuyken, 2014). Alternatively, some authors suggested that a structure with two higher-order factors (one with the three positive dimensions of self-compassion and another with the three negative ones), would be relevant for the conceptualization of (self)-compassion in its associations with psychopathology (Costa, Marôco, Pinto-Gouveia, Ferreira, & Castilho, 2015; Ferreira, Pinto-Gouveia, & Duarte, 2013; Galhardo, Cunha, Pinto-Gouveia, & Matos, 2013).

The selected measurement model seems to be conceptually acceptable for the CS , given that, according to Neff (2003a, 2003b) and Pommier (2011), the positive and negative dimensions of compassion would be opposing but not mutually exclusive. So, higher scores in any given positive dimension would not exclude high scores in its opposing negative dimension. Compassion, as defined by Neff (2003a, 2003b) and Pommier (2011), encompasses a kind attitude towards the suffering of others, with a balanced emotional attention and a sense of shared human experience. Therefore, we decided to maintain Compassion as the designation of the higher-order factor encompassing the three positive dimensions. The higher-order factor grouping the three negative dimensions was labeled Disconnectedness, because this designation accurately

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represents a critical or indifferent (Indifference), dismissive and aversive (Disengagement) and distanced (Separation) view of other's suffering. This measurement model seems to be more informative and descriptive as it maintains the six original subscales but adds two total scores for both the positive and negative dimensions of compassion towards others. This seems especially relevant for research and clinical purposes, given that it could help to investigate specific associations of these dimensions with various types of mental health problems and/or related variables.

The CS seems an appropriate measure to explore gender differences, given that strong measurement invariance was found across gender. Similarly to the original study (Pommier, 2011), our findings concur with women presenting higher levels of compassion for the suffering of others, whereas in the negative dimensions of compassion, men endorse higher levels of dismissive, indifferent and distanced attitudes towards others' suffering. Intra and interpersonal characteristics usually associated with the different gender roles might help to clarify these findings (i.e., women are socially and culturally reinforced to play a more compassionate role towards the suffering of others, whereas men are expected to be, at least in some degree, more resistant and unwavering to this same suffering). It may also be the case that compassion has different expressions in men and women (which may also depend on the gender of the one towards whom compassion is being expressed). Future studies should address gender differences in compassion and explore the course and implications of this construct across the life span as well as the cultural aspects of compassion regarding gender.

The CS achieved limited construct validity in relation to measures of negative and positive emotional states, social safeness and early memories of warmth and safeness. Our findings are in line with existing research suggesting that compassion is

associated with positive affect and psychological well-being indicators (Lutz, et al., 2004; Mongrain, et al., 2011) as well as with soothing feelings and a perception of security in social interactions (Crocker & Canevello, 2008). Although the magnitude of the associations between the CS and memories of affection and care in early development stages were small, they followed the expected directions, reinforcing the association between compassion and memories of affection/care (Gilbert, et al., 2010).

It is noteworthy that the proposed measurement model of the CS is an alternative model never studied before. Future research should examine this model in other clinical and non-clinical samples, in order to provide further evidence on the dimensions of compassion for others. Due to the complexity of the construct, future studies should include other type of measures, namely interviews or observational procedures, in the study of the CS. If compassion should be reflected in diverse interpersonal postures towards others, these should be observable in interpersonal behaviors. It would also be interesting that future investigations would combine findings on self-report measures and, for example, neurophysiological markers of compassion (e.g., Heart Rate Variability).

The CS has been used for assessing compassion for others and there has been an increased interest regarding its theoretical structure and clinical correlates. The current research supports the use of this instrument in adult samples and provides researchers and clinicians with a new way of interpreting the dimensions of compassion for others that may better serve research and intervention efforts.

5. Acknowledgments

6. References

Allen, N.B., & Knight, W.E.J. (2005). Mindfulness, compassion for self, and compassion for others: Implications for understanding the psychopathology and treatment of depression. In P. Gilbert (Ed.), *Compassion: Conceptulisations, research and use in psychotherapy* (pp. 239-262). New York: Routledge.

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z. V., Abbey, S., Speca, M., Velting, D., & Devins, G. (2004), Mindfulness: A Proposed Operational Definition. *Clinical Psychology: Science and Practice*, *11*, 230–241. doi:10.1093/clipsy.bph077

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84,* 822-848. doi: 10.1037/0022-3514.84.4.822

Castilho, P., & Pinto-Gouveia, J. (2011). Autocompaixão: Estudo da validação da versão portuguesa da Escala da Autocompaixão e da sua relação com as experiências adversas na infância, a comparação social e a psicopatologia [self-compassion: Validation study of the Portuguese version of Self-compassion and their relation with adverse experiences in Childhood, social comparison, and psychopathology]. *Psychologica, 54*, 203-231.

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling, 14,* 464-504. http://dx.doi.org/10.1080/10705510701301834

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Cooper, S.E., & Blakeman, S.D. (1994). Spiritual gifts: A psychometric extension. *Journal of Psychology and Theology*, *22*(1), 39-44.

Cook, D. R. (1996). Empirical studies of shame and guilt: The internalized shame scale. In D. L. Nathanson (Ed.), *Knowing feeling: Affect, script and psychotherapy* (pp. 132-165). New York: W. W. Norton & Company.

Costa, J., Marôco, J., Pinto-Gouveia, J., Ferreira, C., & Castilho, P. (2015). Validation of the Psychometric Properties of the Self-Compassion Scale. Testing the Factorial Validity and Factorial Invariance of the Measure among Borderline Personality Disorder, Anxiety Disorder, Eating Disorder and General Populations. *Clinical Psychology & Psychotherapy*, *23* (5), 460-468. doi: 10.1002/cpp.1974

Crocker, J., & Canevello, A. (2008). Creating and undermining social support in communal relationships: The role of compassionate and self-image goals. *Journal of Personality and Social Psychology*, *95* (3), 555–575. http://dx.doi.org/10.1037/0022-3514.95.3.555

Dalai Lama (2001). *An open heart: Practicing compassion in everyday life.* New York: Little, Brown, & Company.

Dinis, A., Castilho, P., Xavier, A., & Pinto-Gouveia, J. (2008). Escala de Proximidade e Ligação aos Outros. Unpublished material. Coimbra: University of Coimbra.

Fehr, C., Sprecher, S., & Underwood, L. G. (2009). *The science of compassionate love: Theory research and application.* Chichester: Wiley.

Ferreira, C., Pinto-Gouveia, J., & Duarte, C. (2013). Self-compassion in face of shame and body image dissatisfaction: Implications for eating disorders. *Eating Behaviors*, *14*(2), 207–210. doi:10.1016/j.eatbeh.2013.01.005

Florian, V., Mikulincer, M., & Hirschberger, G. (2000). The anatomy of a problematic emotion: Conceptualizing and measuring the experience of pity. *Imagination, Cognition, and Personality, 19,* 3-25. doi: 10.2190/4JG9-M79P-HJYK-AQNE

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 Personality and Social*

> *Psychology, 95*(5), 1045-1062. doi: 10.1037/a0013262

Galhardo, A., Cunha, M., Pinto-Gouveia, J., & Matos, M. (2013). The mediator role of

> emotion regulation processes on infertility-related stress. J*ournal of Clinical*

> *Psychology in Medical Settings*, *20*(4), 497–507. doi:10.1007/s10880-013-9370-3

Galinha, I. C., & Pais-Ribeiro, J. L. (2005). Contribuição para o estudo da versão

> portuguesa da *Positive and Negativ*e *Affect Schedule* (PANAS): II – Estudo

> psicométrico. *Análise Psicológica, 23*(2), 219-227. doi: 10.14417/ap.84

Garcia-Campayo, J., Navarro-Gil, M., Andrés, E., Montero- Marin, J., López-Artal, L.,

> & Demarzo, M. (2014). Validation of the Spanish versions of the long (26 items)

> and short (12 items) forms of the Self-compassion Scale (SCS). *Health and*

> *Quality of Life Outcomes*, *110*, 12–14. doi:10.1186/1477-7525-12-4

Germer, C. K. & Neff, K.D. (2013). Self-Compassion in Clinical Practice. *Journal of*

> *Clinical Psychology*, *69*(8), 856-867. doi: 10.1002/jclp.22021

Gilbert, P. (2005). *Compassion: Conceptualization, research and use in psychotherapy.*

> London: Brunner-Routledge.

Gilbert, P. (2014). The origins and nature of compassion focused therapy. *British*

> *Journal of Clinical Psychology* , *53,* 6–41. doi: 10.1111/bjc.12043

Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fears of compassion:

> Development of three self-report measures. *Psychology and Psychotherapy:*

> *Theory, Research and Practice*, *84*(3)*,* 239–255. doi:

> 10.1348/147608310X526511

Hair, F., Black, C., Babin, J., & Anderson, E. (2009). *Multivariate data analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall

Kabat-Zinn, J. (2005). *Coming to our senses: Healing Ourselves and the World Through Mindfullness*. London: Little, Brown Book Group.

Lutz, A., Brefczynski-Lewis, J., Johnstone, T., & Davidson, R. J. (2008). Regulation of the neural circuitry of emotion by compassion meditation: Effects of meditative expertise. *Public Library of Science*, *3*, 1–5. doi:10.1371/journal.pone.0001897

Lutz, A., Greischar, L. L., Rawlings, N. B., Ricard, M., & Davidson, R. J. (2004). Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. *Proceedings of the National Academy of Sciences*, *101*, 16369–16373. doi:10.1073/pnas.0407401101

Matos, M., & Pinto-Gouveia, J. (2014). Shamed by a parent or by others: The role of attachment in shame memories relation to depression. *International Journal of Psychology and Psychological Therapy*, *14*, 217–244.

MacBeth, A. & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review*, *32*, 545–552. doi: 10.1016/j.cpr.2012.06.003

Mikulincer, M., Shaver, P. R., Gillath, O., & Nitzberg, R. (2005). Attachment, caregiving and altruism: Boosting attachment security increases compassion and helping. *Journal of Personality and Social Psychology*, *89*, 817–839. doi:10.1037/0022-3514.89.5.817

Mongrain, M., Chin, J. & Shapira, L. (2011). Practicing Compassion Increases Hapiness and Self-Esteem. *Journal of Hapiness Studies*, *12*(6), 963-981. doi: 10.1007/s10902-010-9239-1

Neff, K. D. (2003a). The development and validation of a scale to measure self-compassion. *Self and Identity*, *2*, 223–250. doi:10.1080/15298860390209035

Neff, K. D. (2003b). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, *2*, 85–101. doi:10.1080/15298860309032

Neff, K. D., Rude, S. S., & Kirkpatrick, K. (2007). An examination of self-compassion in relation to positive psychological functioning and personality traits. Journal of Research in Personality, *41*(4), 908-916. doi: 10.1016/j.jrp.2006.08.002

Petrocchi, N., Ottaviani, C., & Couyoumdjian, A. (2013). Dimensionality of self-compassion: Translation and construct validation of the Self-compassion Scale in an Italian sample. *Journal of Mental Health*, *23*, 72–77. doi:10.3109/09638237.2013.841869

Pommier, E. A. (2011). The compassion scale. *Dissertation Abstracts International Section A: Humanities and Social Sciences, 72*, 1174.

Richter, A., Gilbert, P. & McEwan, K. (2009). Development of 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

Steffen, P. R., & Masters, K. S. (2005). Does compassion mediate the intrinsic religion-health relationship? *Annals of Behavioral Medicine, 30*(3), 217-224. doi: 10.1207/s15324796abm3003 6

Vieira, C. & Castilho, P. (2012). Escala de Compaixão. Unpublished material. Coimbra: University of Coimbra.

Williams, M., Dalglseih, T., Karl, A., & Kuyken, W. (2014). Examining the factor structures of the five facet mindfulness questionnaire and the Self-compassion Scale. *Psychological Assessment*, *30*, 669–689. doi:10.1037/a0035566

Watson, D., Clark, L., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 54*(6), 1063-1070. doi: 10.1037/0022-3514.54.6.1063.

Yarnell, L. M., Stafford, R. E., Neff, K. D., Reilly, E. D., Knox, M. C., & Mullarkey, M. (2015). Meta-analysis of gender differences in self-compassion. *Self and Identity, 14*(5), 499-520. doi: 10.1080/15298868.2015.1029966