Development of a measure for the assessment of peer-related positive emotional memories

Short title: Assessment of positive memories with peers

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1 **Development of a measure for the assessment of peer-related positive**

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3

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5

6 **Abstract**

7 **Objectives:** Previous research has demonstrated a link between early

8 experiences of warmth, safeness, and soothing, and positive feelings, health, and well-

9 being outcomes. Although the impact of positive parent-related early relationships

10 and its posterior recall is well documented, research on the recall of warmth and

11 safeness experiences within early peer relationships remains scarce. In fact, it is

12 considered that the protective role of early positive peer relationship deserves

13 intensive research, however a specific measure that assesses this construct is still to be

14 created. The present study describes the development and validation of a new measure

15 designed to assess the recall of early experiences of warmth, safeness, and affection in

16 relation to peers (EMWSS_peers).

17 **Design and Methods:** Distinct samples, comprising individuals of both

18 genders aged between 18 and 68 years old, were used to test the EMWSS_peers

19 factorial structure through Principal Axis Factoring (PAF) and Confirmatory Factor

20 Analysis (CFA), and to examine its psychometric properties.

21 **Results:** PAF's results indicated that the 12-item scale presents a one-factor

22 structure explaining a total of 71.50% of the variance. The CFA confirmed the

23 plausibility of this structure. The EMWSS_peers also presented excellent internal

24 consistency and construct, concurrent, and divergent validities.

25 **Conclusions:** The EMWSS_peers seems to be a new avenue for the study of

26 memories of early experiences with friends and colleagues, and may entail a relevant

contribution to clinical and research fields, particularly for upcoming investigations on the relationship of peer-related affiliative memories with well-being and mental health.

Practitioner points:

- The EMWSS_peers is a specific measure to assess the recall of warmth and safeness in early peer relationships.

- The EMWSS_peers is a brief, robust, and reliable self-report instrument.

- The EMWSS_peers presented excellent internal consistency and construct, concurrent, and divergent validities.

- The EMWSS_peers may open a new avenue for the study of memories of early peer-related experiences, with potential clinical and research implications.

1   INTRODUCTION

2   Humans are an inherently social species, whose survival and reproductive

3   opportunities depend on how they relate to others and on the way others relate to them

4   (Gilbert & Irons, 2009). Social relationships are considered to be crucial to human's

5   physical and mental well-being (e.g., Baumeister & Leary, 1995; Bowlby, 1969,

6   1973; Buss, 2003). Among all age groups, a sense of security and of being loved and

7   valued by others holds a significant positive impact on mental health and on perceived

8   quality of life (Cacioppo, Berston, Sheridanm, & McClintock., 2000; Gilbert & Irons,

9   2009).

10   Originally from Bowlby's works (e.g., Bowlby, 1969, 1973), and grounded in

11   an integration of ideas from different psychotherapeutic traditions, research shows

12   that early relationships have a significant impact on physiological, psychological, and

13   social aspects of human functioning   (e.g., Gerhardt, 2004; Gilbert, 2005, 2009;

14   Schore, 1994). In fact, several studies have documented that the quality, either

15   positive or negative, of the care received during childhood impacts on brain

16   maturation, emotional adjustment, and on the development of a wide variety of

17   cognitive and social competencies (Gerhardt, 2004; Panksepp, 2010; Shore, 1994).

18   Also, a broad range of early adverse rearing experiences (characterized by rejection,

19   abandonment, abuse, neglect, or low levels of care and affection) is associated with

20   worse quality of life and mental health (e.g., increased risk of several

21   psychopathological conditions; Bifulco & Moran, 1998; Gilbert & Perris, 2000; Irons,

22   Gilbert, Baldwin, Baccus, & Palmer, 2006; Rohner, 2004). In contrast, early

23   experiences regulated by warmth, safeness, soothing, and care seem to be associated

24   with positive feelings of self-esteem and happiness, and several health and well-being

25   indicators (Cacioppo et al., 2000; Cheng & Furnham, 2004; DeHart, Pelham, &

Tennen, 2006; Mikulincer & Shaver, 2004). Actually, early cooperative interactions that provide a sense of being loved, accepted, and appreciated stimulate feelings of safeness and connectedness to others, which might reduce distress and foster the ability to deal with challenging contexts and adversity (e.g., Cacioppo et al., 2000; Schore, 1994). Although most of the studies on the importance of early experiences were based on interactions with parents and family members, it is widely accepted that beyond family, peer-related positive experiences are key to for a sense of belonging (Allen & Land, 1999). As children move into early to mid-adolescence, they rate their friends and peers as equal to or greater in value than their parents along several domains, such as support seeking, reassurance, and validation (e.g., Allen & Land, 1999; Freeman & Bradford, 2001). The crucial role of early peer interactions on later life has been attested by several reviews on this topic (e.g., Deater-Deckard, 2001; Rubin, Bukowski, & Parker, 1998). In fact, there is evidence on the association between negative peer-related experiences (such as rejection, exclusion, bullying, social manipulation, or verbal and physical victimization) and subsequent maladjustment and psychopathological symptomatology (Gazelle & Ladd, 2003; Goodman, Stormshak, & Dishion, 2001; Hawker & Boulton, 2000; Hock & Lutz, 2001; Parker, 1983). On the other hand, being accepted by the peer group may have a protective role on psychological and cognitive development and provide emotional security, which, in turn, might influence later social adjustment (e.g., Criss, Pettit, Bates, Dodge, & Lapp, 2002).

Current research data on the recall of adverse early experiences seem to indicate that these can operate as conditioned emotional memories (Gilbert & Irons, 2009) and significantly influence on the construction of one's self-identity, the way one relates to others, and emotional regulation processes (Baldwin & Dandeneau, 2005; Matos &

Pinto-Gouveia, 2010; Mikulincer & Shaver, 2004; Pinto-Gouveia & Matos, 2011).

Indeed, recollections of experiences of threat, abuse, or neglect may generate negative emotional states and subsequent defensive responses, and are associated with the experience of shame (Cunha, Matos, Faria, & Zagalo, 2012; Dunlop, Burns, & Bermingham, 2001; Matos & Pinto-Gouveia, 2010). Nonetheless, the ability of accessing warm and supportive other-to-self and self-to-self memories may influence how individuals will emotionally and socially respond to such threatening experiences (Gilbert & Irons, 2009). In this sense, the recollection of emotional memories associated with feelings of safeness, care and reassurance seems to be associated with the development and engagement in emotional and social adaptive responses (Gilbert et al., 2006; Gilbert & Procter, 2006). In fact, childhood memories of warmth and safeness are associated with improved mental well-being and prosocial interactions, through the promotion of feelings of security, self-acceptance and self-nurture abilities (Cunha, Martinho, Xavier & Espírito-Santo, 2013; Gilbert et al., 2006; Gilbert & Irons, 2005; Richter, Gilbert, & McEwan, 2009).

The growing interest on the role played by early positive memories within close relationships in early life on later psychosocial adjustment motivated the development of the Early Memories of Warmth and Safeness Scale (Richther et al., 2009). This scale was the first measure allowing the assessment of recalling feelings of safeness, warmth, and connectedness in childhood, instead of focusing on the recall of parental behaviour towards the self. The EMWSS was found to be a robust measure, widely used in research focused on the protective effect of early memories of feeling safe and cared for on mental well-being in adulthood (Matos, Pinto-Gouveia, & Duarte, 2014) and adolescence (Cunha et al., 2013). Nonetheless, this measure does not allow the

1 specific examination of early memories of warmth and safeness within specific

2 contexts, namely peer relationships.

3   Furthermore, current knowledge on early friendships and peer-related

4 experiences mainly accounts for the pervasive effect of negative peer interactions,

5 rather than for the impact of positive emotional memories with peers (Hay, Payne, &

6 Chadwick, 2004). Research on the protective role of early positive peer relationships

7 deserves therefore more intensive research. Actually, although the impact of positive

8 parent-related early relationships and its posterior recall is now well documented

9 (e.g., Gilbert et al., 2006; Richter et al., 2009), research on the recall of one´s feelings

10 of warmth, safeness, and care within early peer relationships is scarce, and a specific

11 measure that assesses peer-related early positive memories is still to be created.

12

13 **Aims**

14   The current study aimed at developing a scale that specifically assesses the

15 recall of early positive emotional experiences within peer interactions (with friends

16 and colleagues), the Early Memories of Warmth and Safeness with Peers Scale

17 (EMWSS_peers), and examining its psychometric properties.

18

19 <div align="center">**Study 1**</div>

20 <div align="center">**Scale development and psychometric properties**</div>

21   The purposes of the first study were to develop a measure to assess the recall of

22 warmth, safeness, and care in early peer relationships (EMWSS-peers), and to

23 examine its factor structure and psychometric properties.

24

25 **METHOD**

1 *Participants*

2   The sample used to perform the EMWSS_ peers' Principal Axis Factoring

3   (PAF) comprised 449 participants (108 males and 341 females), with a mean age of

4   30.15 (*SD* = 11.32) years old and 13.98 (*SD* = 3.36) years of education.

5

6   *Measures*

7   Participants completed a set of self-report questionnaires described below, and

8   an initial page to collect demographic information.

9   *Early Memories of Warmth and Safeness Scale* (EMWSS; Richter et al., 2009;

10 Portuguese version by Matos et al., 2014); EMWSS is a 21-item self-report

11 instrument that assesses the recall of early positive emotional experiences (e.g., "I felt

12 secure and safe"; "I felt that I was a cherished member of my family"). Participants

13 are asked to rate the extent to which each statement reflects their childhood

14 experiences using a 5-point scale (0 = "No, never" to 4 = "Yes, most of the time").

15 Both the original version, by Richter and colleagues (2009), and the Portuguese

16 version, revealed a single factor solution and very good psychometric properties, with

17 excellent internal consistency in adult community samples (α = .97; Richter et al.,

18 2009; Matos et al., 2014). The EMWSS's Cronbach's alpha in this study was of .98.

19   *Self-Compassion Scale* (SCS; Neff, 2003; Portuguese version by Castilho &

20 Pinto-Gouveia, 2011). SCS is a self-report questionnaire designed to capture how

21 respondents perceive their actions towards themselves in difficult times. It has 26

22 items which comprise six subscales: three positive that include self-kindness,

23 common humanity, and mindfulness subscales; and three negative, comprising self-

24 judgment, isolation, and over-identification subscales. Participants are asked to rate

25 their agreement regarding each item using a Likert-type scale, ranging from 1

7

("almost never") to 5 ("almost always"). The SCS presents good internal consistency, in adult community samples, both in the original version (.92; Neff, 2003) and in the Portuguese version (.89; Castilho & Pinto-Gouveia, 2011). The present study used two composite measures gathering the three positive subscales to create a global measure of self-compassion (SCS_SC; α = .89), and the three negative subscales to create a global measure of self-judgment (SCS_SJ; α = .92; Costa, Marôco, Pinto-Gouveia, Ferreira, & Castilho, 2015).

Other as Shamer Scale (OAS; Goss, Gilbert & Alan, 1994; Portuguese version by Matos, Pinto-Gouveia, & Duarte, 2011). This scale measures external shame, i.e., individuals' perceptions that others look down on, and judge them negatively. It comprises 18 items (e.g., *"Other people see me as defective as a person"*), and respondents are requested to indicate the frequency of their shame feelings and experiences on a 5-point scale (0 = "Never" to 4 = "Almost always"). In the original study, as well as in the Portuguese version (both conducted in adult community samples) the scale showed good reliability, with Cronbach´s alpha values of .92 (Goss et al., 1994) and .91 (Matos et al., 2011), respectively. In the present study, the OAS showed a Cronbach's alpha value of .94.

Depression Anxiety and Stress Scales – 21 (DASS21; Lovibond & Lovibond, 1995; Portuguese version by Pais-Ribeiro, Honrado, & Leal, 2004). This questionnaire consists of 21 statements that evaluate levels of depression (DEP), anxiety (ANX), and stress (STR) symptoms. Respondents are asked to indicate the frequency with which they experienced each symptom over the previous week, using a 4-point scale (0 = "did not apply to me at all" to 4 = "applied to me very much, or most of the time"). The scale presents high internal consistency (DEP = .88, ANX = .82, and STR = .90, in the original version; and .85, .74, .81 in the Portuguese version,

8

1 respectively), which was examined in adult community samples. Cronbach's alpha

2 values in the present study were of .92, .84, and .92, for the DEP, ANX and STR

3 subscales, respectively.

4 All the measures included in this study (except for the EMWSS_peers) were

5 previously validated in Portuguese samples with similar characteristics to the ones

6 used in the present study.

7

8 *Procedure*

9 This study followed all ethical requirements. After the Ethics Committees and

10 Boards of the institutions enrolled (e.g., universities and higher education institutes,

11 private companies and retail services) approved the assessment protocol, researchers

12 presented the study and invited the participants to collaborate in the research,

13 clarifying the voluntary nature of their role and the confidentiality of the collected

14 data. Afterwards, individuals who accepted to participate provided their written

15 informed consent and completed the questionnaires at an authorized break, during

16 approximately 20 minutes, in the presence of one of the authors.

17 Self-report questionnaires were initially completed by a total of 1318

18 individuals. Internal cleaning procedures were sequentially conducted, following

19 strict criteria: (*i*) excluding participants who were younger than 18 years, (*ii*)

20 participants who did not provide details of gender or age, and (*iii*) cases in which

21 more than 15% of the responses were missing from a questionnaire. Data cleaning

22 procedures resulted in a final sample of 923 participants.

23

24 *Analytic Strategy*

1   In order to uncover the dimensional structure of the EMWSS_peers, a Principal

2   Axis Factoring (PAF) was performed.

3   Internal reliability analyses of the EMWSS_peers were conducted by examining

4   the Cronbach's alpha. Moreover, the relationships between EMWSS_peers and other

5   self-report measures were examined by computing Pearson product-moment

6   correlation coefficients. Additionally, partial correlation analyses (controlling for

7   EMWSS) were computed in order to examine whether the EMWSS_peers accounts

8   for significant variance in relevant variables, after controlling for the effects of a

9   closely related construct of positive emotional memories with family, as measured by

10   the EMWSS (Richter et al., 2009).

11   IBM SPSS Statistics 20 (Statistical Package for the Social Sciences, Chicago,

12   IL, USA) was the software used to perform PAF, and the descriptive and

13   psychometric analyses of EMWSS_peers.

14

15   **RESULTS**

16   ***Development of the EMWSS peers***

17   The EMWSS_peers was based on the original EMWSS (Richter et al., 2009)

18   and was developed to assess the extent to which individuals recall feeling warm, safe,

19   and cared for in their early peer relationships. After obtaining approval to develop this

20   specific measure from the authors of the original EMWSS (Richter et al., 2009), the

21   original content of the EMWSS' items was adapted with the aim of specifically

22   assessing the dimension of early peer-related experiences (e.g., "I felt secure and safe

23   with my group of friends", "I felt peaceful and calm when I was with my friends").

24   The EMWSS_peers' instructions also follow the structure of the original EMWSS

25   (Richter et al., 2009), asking participants to evaluate the extent to which each

1 statement translates their feelings and memories about early peer-related interactions,

2 using a 5-point scale (ranging from 0 = "No, never" to 4 = "Yes, most the time").

3   The preliminary version of the scale, comprising 21 items, was administered to

4 a group of adult students (N = 24, aged between 22 and 47 years old), who were asked

5 to complete the measure and to report whether the instructions and the items were

6 clear and easy to understand. After this process, the items were further revised and

7 minor changes of wording were made. The final version of the scale was then

8 submitted to a PAF with the aim of reaching a shorter and psychometrically robust

9 measure.

10

11 *Preliminary data analyses*

12   Preliminary data analyses were conducted to test for the normality assumption.

13 The obtained Skewness (Sk) and Kurtosis (Ku) values showed that the items did not

14 present a significant bias to normal distribution, with Sk values ranging from 0.66 to

15 1.10, and Ku values ranging from .02 to 1.19 (Kline, 2005).

16

17 *Factor structure of the EMWSS_peers*

18   In order to uncover the EMWSS - peers' factor structure, a Principal Axis

19 Factoring (PAF) was conducted. The adequacy of the data to conduct the analysis was

20 confirmed given the results of the Kaiser Meyer-Olkin test (.98) and the Bartlett's

21 sphericity test ($\chi^2_{(210)}$ = 12070.83; p < .001).

22   Results indicated a one-dimensional structure with 21 items that accounted for a

23 total of 75.23% of the variance (eigenvalue: 15.80). Moreover, all items presented

24 communalities above .63 and factor loading values higher than .79.

1   Thus, all items presented very good psychometric properties. Nonetheless, this

2 study aimed at developing a shorter but still a theoretically and psychometrically

3 sound measure. Therefore, all items were carefully analysed and discussed by a group

4 of experienced clinical psychologists, who agreed on a selection of items that

5 captured the construct of early positive emotional memories with peers. This selection

6 was further supported by the analysis of the correlations between items. When pairs

7 of items presented high correlations ($r = .80$ to $.90$), the experts agreed on excluding

8 one of the items to reduce overlapping items. This approach resulted in a 12-item

9 scale which was factor analysed (PAF) and revealed a one-dimensional structure that

10 explained a total of 71.50% of the variance (eigenvalue: 8.86). Moreover, all items

11 presented communalities above .64 and factor loading values ranging from .80 to .88

12 (Table 1). Additionally, the initial (21 items) and the final structure (12 items) of the

13 EMWSS-peers revealed a nearly perfect association *($r = .995; p < .001$)*, which

14 corroborated the adequacy of the items' selection. Table 1 presents the mean, standard

15 deviations, communalities and factorial loadings of each item of the 12-item structure.

16

_____

17   Insert Table 1 approximately here

_____

18

19 *Validity Analyses*

20 *Internal Reliability*

21   Results indicated that the obtained 12-items structure revealed a very good

22 internal reliability with a Cronbach's alpha value of .97. Furthermore, the removal of

23 any item would not increase the scale's internal reliability.

24

25 *EMWSS_ peers' relationship with other variables*

12

1   Product-moment correlation coefficients (Table 2) indicated that this specific

2   measure of the recall of early experiences of warmth, safeness, and affection in

3   relation to peers (EMWSS_peers) was positively and highly correlated with the global

4   measure of early positive memories with family (EMWSS).

5   Regarding the associations between EMWSS_peers and self-compassion

6   (SCS_SC), results showed that peer-related early positive memories are positively

7   associated with the current ability to have a kind and accepting relationship with

8   inadequacies or limitations of the self. On the contrary, a negative correlation was

9   found between EMWSS_peers and self-judgment (SCS_SJ). Also, results showed that

10   early affiliative memories in peer relationships were negatively and moderately

11   correlated with external shame (OAS). Finally, EMWSS_peers was negatively

12   associated with depression, anxiety, and stress symptoms (DASS21). No significant

13   correlation was found between EMWSS_peers and participants' age ($r = -.06$).

14   In addition, partial correlations were computed controlling for the related

15   construct of emotional memories as measured by the EMWSS (Richter et al., 2009).

16   Results revealed that correlations' magnitudes were small but significant. This

17   suggests that the EMWSS_peers specifically accounts for important variance for all

18   study variables of psychological functioning.

19

20   Insert Table 2 approximately here

21

22   **Study 2**

23   **Confirmatory Factor Analysis**

24   Our goal for the second study was to confirm the adequacy of the one-factor

25   solution of the EMWSS_peers, previously found in Study1.

1   **METHOD**

2   *Participants*

3   A sample composed of 474 participants (120 males and 354 females) was used

4   to perform a Confirmatory Factor Analysis (CFA). Participants presented a mean age

5   of 30.23 years old ($SD = 11.34$) and 13.70 ($SD = 3.29$) years of education.

6

7   *Procedure*

8   The data collection procedures were the same as for Study 1, although the

9   studies were conducted at different institutions.

10

11   *Analytic strategy*

12   The structure identified in Study 1 was confirmed through a CFA with

13   Maximum Likelihood as the estimation method. A series of goodness of fit indices

14   were selected to evaluate the suitability of the scale's structure. We selected the chi-

15   square (χ^2) statistic, but this is a problematic indicator since it is very sensitive to

16   sample size and may overestimate the lack of model fit. In order to overcome this

17   limitation, we selected additional goodness of fit indices. The first was the Normed

18   Chi-Square (CMIN/DF), in which values varying within the range from 2 to 5

19   indicate a good global adjustment of the model (Tabachnick & Fidell, 2007). The

20   other four fit indicators were: the Root-Mean Square Error of Approximation

21   (RMSEA) with 95% confidence interval in which a good fit is indicated by values

22   between 0.05 and 0.08 or smaller; the SMRS (Standardized Root Mean Square

23   Residual), which indicates a good fit when below 0.05 (Garson, 2011); the

24   Comparative Fit index (CFI) and the Tucker and Lewis Index (TLI), both of which

1   indicate that the model presents adequate fit to the data when its values range from

2   0.90 to 0.95, and very good fit when the values are above 0.95 (Brown, 2006).

3   The quality of the model was also assessed by local adjustment indices

4   including standardized regression weights (which are adequate when values are equal

5   or superior to .40) and squared multiple correlations (Tabachnick & Fidell, 2007).

6   The software AMOS (Analysis of Momentary Structure, software version 18,

7   SPSS Inc. Chicago, IL) was used to conduct the CFA of this new scale.

8   Furthermore, construct reliability, and convergent validity were additionally

9   established through the Composite Reliability (CR) and the Average Variance

10   Extracted (AVE; Fornell & Larcker, 1981).

11

12   **RESULTS**

13   *Preliminary data analyses*

14   Visual inspection of the distributions and analysis of skewness and kurtosis

15   suggested that the items did not differ substantially from normal distributions

16   (absolute values of skew and kurtosis were all less than 1.00; $Sk = |0.583\text{-}0.921|$; $Ku =$

17   $|0.006\text{-}0.689|$; Kline, 2005).

18

19   *Confirmatory Factor Analysis*

20   Results of the CFA indicated the following model fit indices: $\chi^2_{(54)} = 324.424$,

21   $p < .001$; $\chi^2/df = 6.01$; CFI = .95; TLI = 0.94; RMSEA = 0.10; SRMR = 0.03.

22   According to recommended standards (e.g., Brown, 2006), the measurement errors of

23   items with similar content (e.g., using the same key terms) were estimated. Thus, we

24   correlated the errors of the items 5 and 12 (Modification Index (MI) = 31.73), and 10

25   and 12 (MI = 56.83). This procedure resulted in an improvement of the model fit (χ

1 $^2_{(52)} = 225.96$, $p < .001$; $\chi^2/df = 4.35$; CFI = 0.97; TLI = 0.96; RMSEA = 0.08; SRMR

2 = 0.03). The elimination of item 12 did not result in an improvement of model fit: χ

3 $^2_{(44)} = 196.02$, $p < .001$; $\chi^2/df = 4.46$; CFI = .97; TLI = .96; RMSEA = .09; SRMR =

4 .02. Taking into account these results and a theoretical analysis of the content of the

5 items and their clinical potential, we decided to keep the 12-item version of the scale.

6   The quality of the model was also examined through the local adjustment

7 indices. Results of both the 12-item scale and the 11-item scale (in which the item 12

8 was removed) indicated that all items revealed adequate Standardized Regression

9 Weights (SRW), which varied from .78 to .89. Also, Squared Multiple Correlations'

10 (SMC) results confirmed the instrument reliability, with all items presenting values

11 ranging from .60 to .79 (Tabachnick & Fidell, 2007).

12   Furthermore, results indicated that the scale presented very good CR (.98) and

13 AVE (.80; Hair, Black, Babin, & Anderson, 2010).

14

15 DISCUSSION

16   Early relationships have a significant impact on the physiological,

17 psychological and social aspects of human functioning (e.g., Gerhardt, 2004; Gilbert

18 & McEwan, 2009; Shore, 1994). Specifically, early positive relationships

19 characterized by cooperative interactions and a sense of being loved, accepted, and

20 valued by caregivers and family are linked to several health and well-being outcomes

21 in adulthood (Cacciopo et al., 2000; Cheng & Furnham, 2004; Dehart et al., 2006;

22 Gilbert & McEwan,2009). Moreover, there is empirical evidence that the recall of

23 these early warm and safe emotional experiences are associated with feelings of

24 safeness, heighten self-acceptance, connectedness to others and the ability to cope

25 with adversity (e.g., Cunha et al., 2013; Irons & Gilbert, 2005; Matos et al., 2015;

1   Richter et al., 2009). In addition, there is growing evidence that beyond family, early

2   peer interactions can play an important role on later psychosocial adjustment (e.g.,

3   Criss et al., 2002; Deater-Deckard, 2001; Gazelle & Ladd, 2003; Goodman et al.,

4   2001; Hawker & Boulton, 2000; Hock & Lutz, 2001). However, the study of the

5   recall of feeling warm, safe, and cared for in early peer relationships is scarce, and a

6   specific measure that assesses peer-related early positive memories was still to be

7   created. The purpose of this study was, therefore, to present the development and

8   validation of a new measure designed to assess the recall of early emotional

9   experiences of warmth, safeness, and affection in relation to peers (EMWSS_peers).

10   The current research comprises two studies which were conducted using

11   different samples (of both genders). The preliminary version of EMWSS_peers

12   comprised 21 items, and a one-dimensional structure, with all items revealing very

13   good psychometric properties. However, with the intent of reaching a shorter

14   measure, a selection of items was conducted. This approach resulted on a 12-item

15   scale. Also, the EMWSS_peers revealed high values of item-total correlations,

16   confirming the preserved items' adequacy in relation to the constructs this measure

17   intends to assess. Moreover, this new scale revealed high internal consistency and

18   robustness. The one-dimensional structure of EMWSS_peers was additionally

19   corroborated through a CFA. The goodness-of-fitness indices, as well as the local

20   adjustment indicators, confirmed the suitability of the tested structure (Brown, 2006;

21   Tabachnick & Fidell, 2007). In addition, EMWSS_peer presented high internal

22   consistency and the items revealed adequate individual reliability (Hair et al., 2010).

23   The EMWSS_peers was associated with other measures in the expected

24   directions. This specific scale was positively correlated with the global measure of the

25   EMWSS (Richter et al., 2009). To note, the magnitude of the association was not very

1   high, which seems to support that the EMWSS_peers covers a specific construct,

2   related with but distinct from the emotional memories of warmth and safeness in early

3   interactions with caregivers/family (Cunha et al., 2013; Ritcher et al., 2009). Also,

4   this specific measure of early peer-related positive memories revealed a positive

5   association with the ability to have a kind and accepting relationship with

6   inadequacies or limitations of the self (measured by self-compassion dimension of

7   SCS; Neff, 2003). These results are in line with previous research, which suggested

8   that memories of warmth and safeness in childhood are associated with feelings of

9   safeness and self-acceptance later in life (Gilbert et al., 2006; Irons & Gilbert, 2005).

10 This result extends prior research by highlighting that, besides early family-related

11 memories being associated with self-compassion abilities, peer-focused positive

12 memories also present this important association with a compassionate attitude

13 towards oneself. On the other hand, EMWSS_peers was found to be negatively

14 associated with self-judgment. In fact, results indicated that the scarcity or absence of

15 early peer-related affiliative memories is linked to a high judgmental attitude towards

16 the self, increased perception of oneself as being isolated from others, and with the

17 tendency to over-identify with one's internal experiences. Additionally, a link

18 between early positive peer-related memories and lower levels of external shame was

19 found. This result is consistent with empirical (e.g., Matos, Pinto-Gouveia, & Duarte,

20 2013; Richter et al., 2009) and theoretical accounts since, according to Gilbert (2000),

21 shame is fundamentally a socially-focused emotion that arises in the interaction with

22 others and involves the threatening perception that one´s certain characteristics,

23 behaviours, or personal attributes can be seen by others as unattractive, undesirable,

24 worthless, or inferior. Also, this finding suggested that the recall of early warm and

25 safe interactions with friends is linked to more favourable perceptions of one's rank

1   position within the social world. It is also important to note that the recall of early

2   peer-related positive relationships was negatively correlated with depression, anxiety,

3   and stress symptomatology. Although expected, since memories of warmth and

4   safeness in childhood have been reported as being associated with an improvement on

5   well-being (Richter et al., 2009), these findings allowed to attest that the positive

6   memories, specifically focused on early peer interactions, may have a positive and

7   distinct impact on later mental health.

8   The development of the EMWSS-Peers appears to fill an important gap in the

9   literature as it focuses on memories related to interpersonal experiences with peers,

10 which are key social agents for the construction of self-others and self-self internal

11 models (Allen & Land, 1999; Oberle, Schonert-Reichl, & Thomson, 2010). Thus, the

12 EMWSS-Peers is an important contribution for advances in research about the impact

13 that affiliative memories focused on peer relationships may have on later

14 psychological functioning. For instance, the use of this measure may contribute for

15 future model testing on how these memories may impact adaptive (e.g., compassion)

16 and maladaptive (e.g., self-criticism) emotion regulation processes, which in turn,

17 may present an influence on a series of indicators of psychosocial difficulties (e.g.,

18 shame and depressive symptomatology). The expansion of the knowledge about these

19 complex associations may open new possibilities for the development of new

20 prevention and treatment approaches, in different contexts (e.g., educational and

21 clinical settings), that target such mediating processes (e.g., compassion-based

22 approaches).

23   These study's findings cannot be interpreted without taking into account some

24 limitations. Despite the fact that the obtained results sustain the validity of the

25 EMWSS_peers, this was the first study examining the structure of this new measure

1   in an adult population. Although the 12-item factorial structure of this scale was

2   already confirmed in the adolescent population (Cunha et al., 2016), future

3   investigation should be conducted in order to assure the adequacy of the current

4   structure of the EMWSS_peers in different samples (e.g., specific groups). The use of

5   clinical samples in future validation studies also seems particularly appropriate in

6   order to test the potential significance of this new instrument for research and practice

7   in clinical settings. Furthermore, this measure was developed and tested in the

8   Portuguese language, and future research should investigate its structure's invariance

9   in other languages (e.g., English). Another limitation of the present study is that

10 measures were not counterbalanced. Thus, future research intended to study

11 associations and effects between variables should consider the use of a

12 counterbalanced research design, in order to avoid potential priming effect. Finally,

13 although it seems that the associations between the EMWSS_peers and measures of

14 emotion regulation indicators and processes, and psychopathology symptoms, were

15 not tempered by this methodological constraint, future studies should proceed to

16 counterbalance the presentation of self-report measures as well as include different

17 dispositional trait measures, when analyzing the association between the

18 EMWSS_peers and other constructs.

19   Nevertheless, the EMWSS_peers is a short, robust, and reliable measure to

20 assess peer-related early positive memories, which has important implications for

21 research and clinical practice. This is the first study that explored the relationship

22 between the recall of peer-related early warm, supportive, and safe interactions and

23 adaptive and maladaptive indicators of mental health.

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Table 1. EMWSS-peers' factor items' means (*M*), standard deviations (*SD*), factor
loadings, communalities (h^2), Cronbach's alpha if item deleted in Study 1 (*n* = 449);
and Standardized Regression Weights (SRW), and Squared Multiple Correlations
(SMC) for the 12-item version of the EMWSS-peers (Study 2, *N* = 474).

Items	*M (SD)*	PAF-21 (*N* = 449)			CFA-12 (*N* = 474)	
		Factor loading	h^2	*α* if deleted	*SRW*	*SMC*
1. I felt secure and safe with my group of friends.	**2.97 (.96)**	.79	.63	.98	.78	.61
2. I felt my friends appreciated the way I was.	**2.92 (.98)**	.84	.70	.98	.83	.68
3. I felt understood by my group of friends.	2.81 (.98)	.83	.69	.98		
4. I felt a sense of warmth with my group of friends.	2.98 (.93)	.88	.78	.98		
5. I felt comfortable sharing my feelings and thoughts with my friends.	**2.69 (1.06)**	.82	.67	.98	.79	.62
6. I felt my friends enjoyed my company.	**3.07 (.88)**	.86	.74	.98	.85	.73
7. I knew that I could count on empathy and understanding from my friends when I was unhappy.	2.89 (1.01)	.90	.81	.98		
8. I felt peaceful and calm when I was with my friends.	**2.98 (.89)**	.84	.71	.98	.84	.70
9. I felt that I was a cherished member of my group of friends.	3.01 (.94)	.89	.79	.98		
10. I could easily be soothed by my friends when I was unhappy.	**2.83 (.99)**	.87	.75	.98	.84	.70
11. I felt loved by my friends.	2.89 (.98)	.89	.80	.98		
12. I felt comfortable turning to my friends for help and advice.	**2.80 (1.05)**	.84	.71	.98	.80	.64
13. I felt part of the group of friends that I valued.	**3.05 (.96)**	.85	.72	.98	.85	.73
14. I felt loved even when my friends were upset about something I had done.-	**2.59 (1.06)**	.85	.72	.98	.78	.60

Item	M (SD)					
15. I felt happy when I was with my friends.	**3.19 (.84)**	**.87**	**.76**	**.98**	**.86**	**.73**
16. I had feelings of connectedness with my friends.	3.11 (.93)	.84	.71	.98		
17. I knew I could rely on my friends to console me when I was upset.	2.94 (.99)	.90	.80	.98		
18. I felt my friends cared about me.	**2.97 (.96)**	**.89**	**.80**	**.98**	**.89**	**.79**
19. I had a sense of belonging.to my group of friends		.87 31	.75	.98		
20. I knew that I could count on help from my friends when I was unhappy.		.90	.82	.98		
21. I felt at ease when I was with my friends.		**.85**	**.72**	**.98**	**.88**	**.77**

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Table 2. *Zero-order correlations between the study variables and partial correlations between EMWSS-Peers and other variables*

Measures	1.	2.	3.	4.	5.	6.	7.
1. EMWSS-Peers	-						
2.EMWSS	.52***	-					
3.SCS-Self-compassion	.28*** (.19***)	.24***	-				
4. SCS-Self-judgment	-.28*** (-.19***)	-.25***	-.38***	-			
5. OAS	-.39*** (-.23***)	-.40***	-.31***	.61***	-		
6.DASS21_Depression	-.30*** (-.15**)	-.33***	-.35***	.55***	.56***	-	
7. DASS21_Anxiety	-.22*** (-.16***)	-.24***	-.25***	.44***	.47***	.72***	-
8. DASS21_ Stress	-.23*** (-.10*)	-.25***	-.26***	.51***	.51***	.73***	.76***

In parenthesis are the values of the partial correlations between EMWSS-Peers and the measures controlling for EMWSS.

*p < .05; **p < .01; ***p ≤ .001.

EMWSS= Early Memories of Warmth and Safeness Scale; OAS = Other as Shamer; SCS = Self-Compassion Scale; DASS-21 = Depression, Anxiety and Stress Scales.

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