The Early Memories of Warmth and Safeness Scale for adolescents: Cross-sample validation of the complete and brief versions

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Abstract

This work presents psychometric analyses on the Early Memories of Warmth and Safeness Scale, which intends to evaluate the subjective perception of ones' early rearing experiences. Factor structure, measurement invariance, latent mean comparisons, and validity in relation to external variables (i.e., forms of self-criticism/self-assurance, experiential avoidance, and depressive, anxious and stress symptoms) were investigated. A sample of 1464 adolescents (52.3% male, mean age = 16.16, SD = 1.51) was used, including 1064 participants recruited from schools, 192 participants recruited from foster care facilities, and 208 boys recruited from juvenile justice facilities. A shortened version of the scale was also developed and subjected to the same psychometric analyses. A one-factor measurement model was a good fit for the data taken from both the original and brief versions of the instrument. Such measures showed to be internally consistent with alpha values higher than .89. Evidence for their construct validity in relation to external variables was also found, with correlation values ranging from .19 to .45 for the original version and from .18 to .44 for the brief version of the instrument. The brief versionwas the only one proving to be gender and sample invariant. Boys and girls scored similarly in their account of early memories, whereas community boys presented significantly higher scores when compared to referred and detained boys. Thus, the brief version of the instrument may be an appropriate alternative for use with diverse adolescent samples, and may serve to advance knowledge on how early experiences impact on psychopathological outcomes.

Key Practitioner Message

- The EMWSS, assessing early memories of warmth and safeness, was studied across community, referred for behavioral problems, and detained Portuguese adolescent samples. A brief version of this instrument was also developed and studied in these same samples.

- Both versions of the EMWSS revealed a one-factor structure, good internal consistency, and construct validity in relation to external variables; the brief version was also found to be invariant across gender and groups.

- Boys and girls were found to report similar levels of experienced warmth and safeness, whereas community boys reported significantly more of those experiences, followed by detained boys, and, lastly, referred boys.

- The brief version of the EMWSS represents a quick and valid measure to assess early memories of warmth and safeness in youth, providing for insights into the subjective experience of adolescents included with diverse rearing experiences.

- Early memories of warmth and safeness, as assessed by the brief version of the EMWSS, may serve to advance knowledge on how early experiences impact on psychopathological outcomes in diverse youth samples.

Keywords: Early Memories of Warmth and Safeness Scale; psychometrics; measurement invariance; adolescents; disruptive behavior.

There is considerable evidence that early life stories of being cared for, loved, protected, and valued have a major impact on subsequent development (Mikulincer & Shaver, 2007, 2012), affecting even ones' genetic expression (Cole, 2014). Research has also shown that positive emotional memories (e.g., of being cared for, nurtured, valued, and accepted) are associated with lower mental health symptoms and positive social relationships (Gilbert, 2009, 2010; Gilbert, Baldwin, Irons, Baccus, & Palmer, 2006; Irons, Gilbert, Baldwin, Baccus, & Palmer, 2006; Richter, Gilbert, & McEwan, 2009). In contrast, memories of being devalued, neglected, and/or abused during childhood, with a lack of care and warmth, are associated with poorer mental and physical health, shame, self-criticism (Castilho, Pinto-Gouveia, Amaral, & Duarte, 2014; Cicchetti & Toth, 1995; Gilbert, 2009, 2010; Gilbert et al., 2006; Irons et al., 2006; Richter et al., 2009; Gilbert, Cheung, Grandfield, Campey, & Irons, 2003; McCrory, De Brito, & Viding, 2012), and with both internalizing and externalizing disorders (see Mikulincer & Shaver, 2012 for a review).

While it is established that a secure attachment is central for healthy child development (e.g., Bowlby, 1969; Mikulincer & Shaver 2007; Schore, 2001), the majority of attachment self-report measures (e.g., EMBU - Egna Minnen Betraffande Uppfostrab; Perris, Jacobsson, Lindstrom, von Knorring, & Perris, 1980) focus on recalling parental behavior rather than recalling 'felt emotion memory' (Gilbert et al., 2003; Richter et al. 2009; Roisman et al., 2007). However, there are several reasons for exploring early emotional memories relating to parenting, rather than the parental behavior in itself, such as: (1) it is possible that people can recall parental behavior in a certain way that is not consistent with their inner feelings about it (Gilbert et al., 2003; Richter et al, 2009); (2) individuals respond and cope differently with the behavior of others, even in the case of childhood maltreatment (Cicchetti & Rogosch, 2009); (3)

memories of events, specially traumatic ones, tend to be affected by several factors, including mood states, stress, trauma features, dissociation, and even amnesia (Chu, Frey, Ganzel, & Matthews, 1999; Perry, Pollard, Blakley, Baker, & Vigilante, 1995); and (4) previous research has shown that the recall of personal feelings towards early rearing scenarios, more than the recall of parental behavior in itself, is predictive of mental health outcomes (Castilho et al., 2014; Gilbert et al., 2003; Gilbert et al., 2006; Irons et al., 2006; Richter et al., 2009). Thus, it seems that the subjective perception of childhood experiences, rather than the social events per se, may assume relevance for personal adjustment and/or maladjustment.

Only a few measures evaluate the subjective perception of ones' early rearing experiences. One is the Early Life Experiences Scale (ELES; Gilbert et al., 2003) that focuses on the recall of feeling threatened/fearful, subordinate, and (un)valued during childhood. Another measure is the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), which assesses parental styles as perceived, retrospectively, by adolescents. However, currently, only one measure assesses the recall of personal inner positive feelings, emotions, and experiences of safeness and warmth with others (not specifically with parental figures) in infancy: the Early Memories of Warmth and Safeness Scale (EMWSS; Richter el al., 2009).

The EMWSS was designed to assess adult early memories of feelings of warmth and safeness in childhood and has demonstrated to be a psychometrically valid one-factor measure (Richter et al., 2009). Experiences of warmth and safeness during childhood impact not only on adult behavior and psychological wellbeing (Gilbert et al., 2006; Irons et al., 2006; Richter et al., 2009), but also on life experiences during adolescence (Irons & Gilbert, 2005). Accordingly, Cunha, Xavier, Martinho, and Matos (2014) adapted the EMWSS to the adolescent Portuguese population (the Early

Memories of Warmth and Safeness Scale for Adolescents; EMWSS-A), and found it to adequately fit a one-factor solution.

Scores on the EMWSS, for both for adults and adolescents, were shown to be negatively associated with depressive, anxious, and stress symptoms, negative early life experiences, and self-criticism (Castilho et al., 2014; Cunha et al., 2014; Matos, Pinto-Gouveia, & Duarte, 2013; Richter et al., 2009); in turn, they were positively associated with self-reassurance, and the recall of positive parental behavior (Castilho et al., 2014; Cunha et al., 2014; Richter et al., 2009). Scores from this instrument were better predictors of psychopathology, styles of self-criticism/self-reassurance, and disposition to positive influence, when compared to the recall of actual parental behavior (Richter et al., 2009), giving further evidence to the importance of assessing the subjective 'felt emotion memory', rather than the social events per se, and using the EMWSS to do so.

The adolescent version of the EMWSS has only been tested in community samples (Cunha et al., 2014). It is crucial to cross-validate the EMWSS-A within diverse samples, before it can be widely used to further study the construct it intends to measure. In other words, it is essential to test the measurement invariance of the EMWSS-A across gender and/or different samples. Measurement invariance will avoid inference problems when comparing different groups, namely boys and girls, which may arise from, for example, members of different groups interpreting items differently. Additionally, measurement invariance assures that the measure is assessing the same constructs across those groups and so group comparisons may provide more credible conclusions (Dimitrov, 2010). Gender differences were not explored in the original study of the EMWSS (Richter et al., 2009), and in the work done by Cunha et al. (2014) no significant differences between genders were found.

Moreover, the EMWSS-A is yet to be applied or studied among samples of adolescents with disruptive behavior. If adolescents in general are less open to share their early life experiences and even more so to acknowledge how they may be currently impacting their lives (McLean, Breen, & Fournier, 2010), this may be even more pronounced in adolescents with disruptive behaviors. Even though higher rates of traumatic experiences have been thoroughly addressed in adolescents with externalizing psychopathology (Abram et al., 2004; Briggs et al, 2013; Dierkhising et al., 2013; Waller et al., 2015; Willis, Best, & Aalsma, 2013), and were positively associated with experiential avoidance (i.e., a general response style of unwillingness to remain in contact with negative private events; Orcutt, Pickett, & Pope, 2005), little is known about their warmth and safeness rearing experiences, namely if these adolescents would be reticent to share these positive experiences. The validation of EMWSS-A among these samples may help to overcome some common difficulties found by researchers and clinicians in trying to grasp the experiences of warmth and safeness of youth with disruptive behavior.

This paper evaluates the psychometric proprieties (i.e., factor structure, measurement invariance, internal consistency, and construct validity in relation to external variables) of the EMWSS-A across samples of Portuguese youth presenting diverse degrees of behavioral problems. These include: male and female adolescents recruited from the community, male and female adolescents who have been refereed for behavioral problems, and male young offenders currently detained in juvenile justice facilities. Specifically, we sought out to explore the adequacy of the 21-item one-factor measurement model across these samples. Additionally, and based on theoretical and statistical criteria, a brief version of the EMWSS-A was developed and studied. There were three reasons for developing a shorter version of the instrument: 1) brief

evaluation instruments are easier and quicker to administer, causing less burden on respondents; 2) informant inaccuracy is still a disquieting problem, especially when using larger self-report instruments for collecting data with special subgroups of adolescents, who more easily tire and disengage from such instruments (Fan et al., 2006), and, 3) given that the construct could be over-identified using 21 items, some items may be excluded without endangering the quality of the instrument for assessing its intended construct (DeVellis, 2012).

We further explored measurement invariance across gender and groups (*i.e.*, community, referred, and detained boys) of both versions of the EMWSS-A in order to be able to advance with between-group comparisons from which credible conclusions could be drawn. If these between-group results are in line with previous research on these constructs, they may add evidence to the construct validity of the EMWSS-A. We hypothesized that male and female participants would recall similar levels of warmth and safeness experiences, in line with previous findings for Portuguese adolescents (Cunha et al., 2014); in turn, participants who have been referred for behavioral problems or detained due to criminal behavior would report significantly less early memories of warmth and safeness in comparison with community participants, given the harsh environments in which they usually developed (Abram et al., 2004). As for construct validity in relation to external variables and following from previous findings, early memories of warmth and safeness were expected to be negatively associated with self-criticism, and depressive, anxious, and stress symptoms; in turn, such memories would be positively associated with self-reassurance. Given that traumatic memories were positively associated with experiential avoidance (Orcutt et al., 2005), we expected to find the reverse pattern of association (i.e., positive) between memories of warmth

and safeness and experiential avoidance, even though this has not been explicitly assessed before.

Method

Participants and procedures

All participants were informed of the goals of the study and the confidentiality and anonymity of their responses were guaranteed. In addition to institutional authorizations, all participants provided oral consent for their own participation in the current research, as well as written consent was obtained from parents/legal guardians of participants under 18 years of age and from the participants over 18 years of age.

Participants in this study included 1464 Portuguese adolescents, aged between 12 and 21 years old (*i.e.*, combined sample; cf. Table 1). Boys and girls taken from this combined sample had similar mean ages ($t(1461) = 0.36$, $p = .72$) and were evenly distributed by socioeconomic status[1] ($\chi2(2) = 3.80$, $p = .15$).

[Insert Table 1]

Of this combined sample, 1064 adolescents were recruited from several national public schools located in the central and northern regions of Portugal, after the national ethics committee and/or the executive boards of the schools approved the study (*i.e.*, community samples); no student refused to participate. All participants in the community sample completed the Early Memories of Warmth and Safeness Scale. A

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[1] Socioeconomic status (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 farmers, cleaning staff, or undifferentiated workers.

subsample of 204 of these participants was randomly selected (4/5 students per class), and also completed the Forms of Self-Criticising/Attacking & Self-Reassuring Scale (subsample 1); of these, 141 participants were again randomly selected (2/3 from the initial 4/5 students per class), and also completed the Acceptance and Action Questionnaire (subsample 2); and 63 participants, again randomly selected (1/2 from the initial 4/5 students per class), also completed the Depression, Anxiety, and Stress Scales (subsample 3). These subsamples were randomly selected by researchers using a random number table. Data from the community sample were collected in group (during classes), in the presence of the researchers.

The combined sample also included 192 adolescents placed in Azores foster care institutions, which were referred for disruptive behavior (*i.e.*, referred sample); 18 of the contacted adolescents refused to participate in the study. Finally, 208 male young offenders, placed in all of the eight Portuguese juvenile detention facilities due to criminal behavior, were randomly selected to participate in this study (*i.e.*, detained sample), 9 young offenders refused to participate. The referred and the detained samples were randomly selected using a random number table, and completed only the Early Memories of Warmth and Safeness Scale . Data from the referred and the detained samples were collected individually by the researches or by psychologists from foster care/juvenile detention facilities.

Significant differences were found in the mean age of community, referred and detained participants ($F(2.1462) = 11.38, p < .001$). Further post-hoc test showed that detained participants were significantly older than both community and referred participants; community and referred participants had similar mean ages. Participants in these samples were not similarly distributed by gender ($\chi2(2) = 234.39, p < .001$): the community sample included more girls, whereas the referred and detained samples

included more boys. Participants in the three samples were also not similarly distributed by SES ($\chi2(4) = 296.60$, $p < .001$): more community participants descended from a high SES, more referred participants came from a low SES, and, finally, more detained participants derived from a medium SES.

Measures

   The Early Memories of Warmth and Safeness Scale - Adolescents (EMWSS-A; Ritcher et al., 2009; Portuguese version by Cunha et al., 2014) is a 21-item self-report scale designed to measure the recall of feeling warm, safe, and cared for in childhood. Each item (for examples of the items see Table 2) is rated on a five-point Likert scale (ranging from 0 = No, never to 4 = Yes, most of the time). The original version of the EMWSS presented excellent internal consistency (α= .91) and a one-factor solution was considered the best fit for the data (Richter et al., 2009). In the adolescent Portuguese version, the EMWSS-A also presented an excellent internal consistency value (α=.95) and a single factor structure was confirmed (Cunha et al., 2014). Analyses of the psychometric properties of the EMWSS-A using the current sample will be presented in the results section.

   Developmental procedures of the Brief version of the EMWSS-A. Considering the adolescents general reluctance of disclosing their subjective experiences, thus being more prone to informant inaccuracy, we proposed that selecting only items more relevant to the construct and that performed better statistically could exclude items to which intentional or non-intentional inaccurate responses may be more probable. Therefore, we proceeded with the development of a brief version of the EMWSS-A. To do so, we took into consideration two of the most often used criteria for item elimination: advice/ review of experts and low factor loadings (Fisher, Bandalos, Gerstner, 2013). As for the advice/ review of experts, we asked three doctors in

Psychology and two Ph.D students in Psychology to place the 21 items composing the

complete version of the instrument in increasing order of reference to the intended

construct, with 1 representing the closest to the construct and 21 representing the

furthest from the construct. The construct the instrument proposes to measure (*i.e.,*

memories of warmth and safeness) was presented to them in a homogeneous manner.

The experts' responses were then averaged and items were selected if they had an

average score rating of 10 or lower. Of those, items simultaneously presenting

practically significant loading values (*i.e.,* $\lambda \geq .50$), as taken from a CFA on the 21- item

one-factor model using the combined sample were taken as best (theoretically and

statistically) representing the construct. Nine items fulfilled these criteria

simultaneously (see Table 2).

[Insert Table 2]

The Forms of Self-Criticising/Attacking & Self-Reassuring Scale (FSCRS;

Gilbert, Clark, Hempel, Miles, & Irons, 2004; Portuguese version by Castilho & Pinto-

Gouveia, 2011) is a 22-item self-report scale that assesses two forms of self-criticism,

namely (1) the inadequate-self, which focuses on a sense of personal inadequacy (e.g.,

"I am easily disappointed with myself") and (2) the hated-self, which measures the

desire to hurt or persecute the self (e.g., "I have become so angry with myself that I

want to hurt or injure myself"). The scale also assesses self-reassurance (e.g., "I am able

to care and look after myself"). Each item is rated on a five-point Likert scale (ranging

from 0 = not at all like me to 4 = extremely like me). The original version of the FSCRS

presented good internal consistency values, with alphas of .90 for the inadequate-self

subscale and .86 for both the hated self and self-reassurance subscales (Gilbert et al.,

2004). In the Portuguese version, alphas ranged from .62 to .89 (Castilho & Pinto-

Gouveia, 2011). In the present study, internal consistency values were .89 for the inadequate-self, .81 for the hated-self, and .88 for self-reassurance.

The Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011; Portuguese version by Pinto-Gouveia, Gregorio, Diniz, & Xavier, 2012) is a 7-item scale measuring a person's experiential avoidance and immobility, as well as acceptance and action. Each item is rated on a seven-point Likert scale (ranging from 1 = never true to 7 = always true). Higher scores in AAQ-II are reflective of greater experiential avoidance and immobility, while lower scores reflect greater acceptance and action. The original version of the AAQ-II presented good internal consistency ($\alpha = .84$) and a one factor solution (Bond et al., 2011). In the Portuguese validation study (Pinto-Gouveia et al., 2012), as well as in the current work, the internal consistency value for the AAQ-II was .89.

The Depression, Anxiety, and Stress Scales (DASS-21; Lovibond & Lovibond, 1995; Pais-Ribeiro, Honrado, & Leal, 2004) is a 21-item scale designed to assess three dimensions of psychopathological symptoms, namely: depression, anxiety, and stress. The items describe negative emotional symptoms and are rated on a four-point Likert scale (ranging from 0 = not at all to 3 = all the time). The original version of the DASS presented good internal consistency values, with alphas of .91 for the Depression subscale, .84 for the Anxiety subscale, and.90 for the Stress subscale (Lovibond & Lovibond, 1995). In the Portuguese version, alphas were.85 for the Depression subscale, .74 for the Anxiety subscale, and .81 for the Stress subscale (Pais-Ribeiro et al., 2004). In the current work, the Cronbach alpha was .88 for the depression and stress subscales and .83 for the anxiety subscale.

Data analysis

Data was analyzed with the Mplus v6.0 (Muthén & Muthén, 2010) and IBM SPPS Statistic 21 software. The IBM SPSS Statistics was used for two-tailed correlation analyses between the scores on the EMWSS-A and other relevant measures (i.e., self-criticism, self-assurance, experiential avoidance, depressive, anxious and stress symptoms). It was also used for computing the Cronbach Alpha.

Mplus was used for confirmatory factor analyses, for multi-group analyses, and for latent mean comparisons. The adjustment of the models, investigated via confirmatory factor analyses, was judged based on the two-index approach proposed by Hu and Bentler (1999). So, for the model to be considered an acceptable fit for the data, we considered a *Standardized Root Mean Square Residual* (SRMR) lower than .09 combined with either a *Comparative Fit Index* (CFI) higher than .95 or with a *Root Mean Square Error of Approximation* (RMSEA) lower than .06. Multi-group analyses were conducted following a forward approach as suggested by Dimitrov (2010): configural, then metric and then scalar invariance was tested. Configual invariance proposes that the measurement models adequately fit each group separately. Metric invariance imposes that the loading values for each item be similar across groups. Finally, scalar invariance further imposes that the intercept values for each item be similar across groups. For invariance to be established, the fit indicators of the measurement model should not significantly worsen as each new constraint is forced upon the data. So, metric invariance was established when finding a delta CFI lower than -.01, combined with a delta RMSEA lower than .015 or a delta SRMR lower than .03, whereas scalar invariance was defined when finding a delta CFI lower than -.01, combined with a delta RMSEA lower than .015 or a delta SRMR lower than .01 (Chen, 2007). At least partial scalar invariance (i.e., less than 20% of the parameters to be estimated being variant across groups) should be achieved before groups can be

compared based on the factor variables. Having established at least partial scalar

invariance, groups were then compared based on latent mean comparisons, according to

the guidelines provided by Dimitrov (2006).

Preliminary analysis indicated that the data was not multivariate normal

[Mardia's multivariate normality test = 203629.1, p < .001; Korkmaz, Goksuluk, &

Zararsiz (2014)]. Consequently, the *Maximum Likelihood Roubust* estimator was used

for confirmatory factor analyses, as well as for multi-group analyses.

Results

Early Memories of Warmth and Safeness for adolescents – Complete

version

Factor structure. A confirmatory factor analysis (CFA) approach was used,

because the 21-item one factor solution had previously been put forward as the adequate

measurement model for the EMWSS, both with adult (Richter et al., 2009) and

adolescent (Cunha et al., 2014) samples. This one-factor solution was found to be an

acceptable representation of the data for our combined, community and referred samples

(see Table 3). Also, the Cronbach alpha value was always excellent (α = .96 for the

complete, community and referred samples). However, this measurement model did not

achieve acceptable fit indicators for the data taken from detained male participants, even

after all significant residual covariances were allowed, as suggested by the modification

indices (see Table 3).

[Insert Table 3]

Measurement invariance. Results for configural invariance (see Table 3)

indicated that the one-factor model was a good fit only for the male participants taken

from the combined and community samples; for the remaining samples, acceptable fit

indicators were only achieved after allowing several residual covariances, which, in

turn, did not overlap between samples. Hence, configural invariance may be in question and no further invariance analyses were carried out.

Construct validity in relation to external variables. We found significant and negative correlations between recollection of positive early experiences and depressive and anxious symptoms, experiential avoidance, and perceptions of an inadequate and a hated self. The correlation between a reassuring-self and recollection of positive early experiences was positive, and the strongest in magnitude (see Table 4).

[Insert Table 4]

Early Memories of Warmth and Safeness Scale for Adolescents – Brief version

Factor structure. The nine items identified as best representing the construct (cf instruments section) were submitted to CFA as representing a single construct (*i.e.,* 9-item one-factor measurement model) and achieved an acceptable fit for the combined sample and all three independent samples (see Table 3). Loading values for these factorial solutions are presented in Table 2, alongside with the internal consistency values (i.e., Cronbach alpha), which were always excellent.

Measurement invariance. Configural invariance across gender and across male groups presenting diverse levels of behavioral problems was achieved, in as much as the one-factor measurement model showed to be a good fit for the data taken from all male and female samples separately (cf. Table 2). Consequently, we were able to proceed with metric and scalar invariance analyses, in relation to gender and group, for this version of the instrument.

Gender invariance analyses on the brief EMWSS-A indicated full metric and scalar invariance for the combined (ΔCFI = -.002, ΔRMSEA = -.003, ΔSRMR = .004

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and ΔCFI = -.001, ΔRMSEA = -.002, ΔSRMR = .001, respectively), community (ΔCFI = .001, ΔRMSEA = -.004, ΔSRMR = .004 and ΔCFI = -.003, ΔRMSEA = -.001, ΔSRMR = .003, respectively), and referred samples (ΔCFI = .001, ΔRMSEA = -.004, ΔSRMR = .01 and ΔCFI = -.006, ΔRMSEA = .005, ΔSRMR = .007, respectively).

Concerning group invariance, full metric (ΔCFI = .001, ΔRMSEA = -.005, ΔSRMR = .008) and full scalar invariance was found (ΔCFI = -.006, ΔRMSEA = .000, ΔSRMR = .004) across male community, referred and detained participants.

Latent mean comparisons. A significant difference between boys and girls was found for the combined sample (latent mean for girls = .19, p = .001), even though boys and girls presented similar results when taken from the community or referred samples alone. In turn, a significant latent mean difference was found when comparing the results taken from community boys versus referred (latent mean = -.59, $p < .001$) and detained boys (latent mean = -.45, $p < .001$), with the community participants presenting the highest scores. Alternatively, there were no significant latent mean differences when comparing referred and detained boys. These results reflect those found using descriptive measures on the summed score of 9 items (*i.e.,* median, mean and standard deviation), which are presented in Table 5.

[Insert Table 5]

Construct validity in relation to external variables. Correlation analyses using the brief version of EMWSS-A replicated those found using the complete version of EMWSS-A (see Table 4). In addition, the complete and brief versions of the EMWSS-A correlated very highly (r = .98, $p < .001$). Also, when regressing the summed scores of the 21-item EMWSS-A on the 9 items that constitute its brief version, we found a significant regression model [$F(9,1463)$ = 3405.11, $p < .001$); r2 = 0.955]; all items were significant predictors in the model ($p < .001$).

Discussion

The present study set out to explore the psychometric properties of the Early Memories of Warmth and Safeness Scale for adolescents (EMWSS-A) and to develop a brief version of the instrument (EMWSSB-A), in which informant inaccuracy might be minimized. Specifically, this study intended to evaluate the psychometric properties of these versions of the instrument within diverse adolescent samples, namely: male and female youth from a community sample and from a referred sample (referred at foster care institutions for their misbehavior) and a sample of male young offenders placed in juvenile facilities due to criminal behavior.

A one-factor model for the 21 items that constitute the EMWSS-A achieved a good fit for the data used in the current work; the best fit was found the community sample, in line with previous findings with comparable samples (Cunha et al., 2014; Richter et al., 2009). However, the same model did not achieve a good fit for the data taken from detained boys. It may be the case that these subjects are more reluctant to share their emotional experiences in an open way and so, intentionally or non-intentionally, give inaccurate answers, particularly to items which refer to a more general emotional experience (*e.g.,* item 20: *I felt at ease*). Also, the detained sample used in the current work was uniquely constituted by boys, who may find it harder to broadly express their early emotional experiences, in contrast with girls who were part of the community and referred samples and overall tend to recall more (and faster) childhood memories, especially emotional ones (Boals, 2010; Davis, 1999). Further studies should explore this issue, in trying to clarify if this result is a sample related artifact or a consistent finding across diverse samples of youth and, if so, what kind of underlying factors may be contributing to these diverse gender recognition and endorsement of early positive rearing experiences. One possibility is that girls may be

more encouraged to differentiate the way they fell and to express diverse emotions, whereas boys are not. This may be particularly true for those boys whose emotional expression is framed within traumatic experiences that they perceive to be central in their lives, as is the case for young offenders (Vagos, Ribeiro da Silva, Brazão, & Rijo, 2016).

After being subjected to qualitative and quantitative evaluation, some of the 21 items of the EMWSS-A were considered as not closely referring to the construct of warmth and safeness experiences, namely because they relate mainly to generic emotional experience and not to specific experiences of warmth and safeness. So, this more concise and specific version of the instrument may tackle what adolescents consider to be warm and safe memories arising within caring relationships in a more precise way, rather than positive memories associated with unspecific relationships. Thus, we proposed a brief 9-item version of the EMWSS-A (the EMWSSB-A), which represented a good fit for the data taken from community, referred, and detained participants. Additionally, scores on this brief version of the instrument were highly correlated with the summed scores of the complete version of the scale and significantly predicted the most part of its variance. The brief EMWSS-A may, thus, be an appropriate alternative to evaluate the way early experiences of warmth and safeness are subjectively recalled, also because it was a good fit for the data taken from all male and female samples. It also proved to be gender and group invariant, meaning that the items were similarly representative of the construct for all groups, and thus differences in group comparisons are probably due to the groups' characteristics (instead of their eventual differential item response patterns). In addition, the EMWSS-A presented excellent internal consistency values with all studied samples.

We further analyzed gender differences in the recollection of positive early experiences using the brief version of the EMWSS-A. Significant differences were found for the combined sample only, whereas no differences were found for the community and referred samples separately. Due to the fact that the combined sample included only detained boys (and not girls), the gender differences found for the combined sample may represent an artifact by which the boys' mean scores were decreased and not contra balanced by girls representing the same pattern of behavioral problems. Hence, we would advance that positive early experiences are recalled as often by boys and girls similarly to what has been previously found (Cunha et al., 2014); these results should be further explored in detained samples of both boys and girls.

Once the complete EMWSS-A did not achieve a good fit for the detained boys included in the current work, we were only able to compare boys who exhibit different degrees of disruptive behavior (i.e., community, referred, and detained), using the brief EMWSS-A. By doing so, we found that community boys reported the highest frequency of having experienced warmth and safeness when in relationships with significant others. This was an expectable result, because community samples tend to have more secure attachment bonds when compared to clinical samples of youth, namely youth with externalizing behavior (Pasalich, Dadds, Hawes, & Brennan, 2012). Interestingly, it was the referred boys (and not the detained boys, representing the extreme end of our continuum of misbehavior) who reported the lowest frequency of warmth and safeness experiences in infancy. Objectively, it is well established that detained youth tend to experience more traumatic events during their childhood (Abram et al., 2004) and to present more disruptions in parent-child attachment relationships (Ford & Blaustein, 2013; Pasalich et al., 2012) than normative peers. However, little is known about positive experiences of these youth with their significant figures, particularly memories

of intrapersonal positive feelings, emotions, and experiences of warmth and safeness during childhood. The brief version of the EMWSS-A seems to be a promising invariant measure to assess those same memories and compare them in different samples of youth.

By showing that young offenders were not the ones who reported the lowest frequency of warmth and safeness experiences, our results raise an important topic for discussion. Clinical practice and research shows that the more young offenders have gone through toxic experiences (e.g., abandonment and emotional deprivation, neglect and abuse), the more they tend to resort to avoidance processes (voluntarily or involuntarily) in an attempt to block feeling disruptive negative emotions (Bennett, Modrowski, Kerig, & Chaplo, 2015; Del Giudice, Ellis, Shirtcliff 2013; Ellis, Del Giudice, & Shirtcliff, 2013; Kerig, Bennett, Thompson, & Becker, 2012; Perry et al., 1995; Ribeiro da Silva, Rijo, & Salekin, 2015). Do young offenders do the same about the lack of positive experiences? Namely, do they also tend to, consciously or unconsciously, filter or hide from others and from themselves their reality, marked by the deprivation of warmth and safeness experiences during childhood? For instance, could detained youth overvalue the (few) experiences of warmth and safeness in infancy? In either case, these seem like protective responses and adaptive strategies to cope with highly hostile rearing environments. In other words, youth that are born in harsh rearing scenarios must find some mechanisms to filter the toxic reality that surrounds them, or else they will be overwhelmed not only by the constant negative inputs of their environments (Del Giudice et al., 2013; Ellis et al., 2013; Ribeiro da Silva et al., 2015), but also by the lack of positive ones.

These questions should be explored in future studies, because they could give important answers and clues not only for research purposes, but also for clinical

interventions. Concerning research, it seems paramount that future studies should clarify the above mentioned questions. In what concerns clinical interventions, the brief version of the EMWSS-A could be used to assess how youth recall their early memories of intrapersonal positive feelings, emotions, and experiences of warmth and safeness, linking these patterns to coping styles and to the individual ability to show compassion for others and for the self. In case of youth who grow up in harsh psychosocial environments, this seems particularly relevant, because it may be associated to a more compassionate predisposition (to the others and to the self), which, in turn, is associated with several aspects of well-being and better treatment responses (Gilbert, 2010, 2014). For example, Lim and DeSteno (2016) found that, in hostile rearing scenarios, individual differences in compassion appear to positively contribute to resilience and prosocial behavior.

Construct validity in relation to external variables was also found for both versions of the instrument. According to our findings and to the literature, having experienced early positive experiences may serve as a protective factor from depressive and anxious symptoms, as well as an enhancer factor for more frequently being kind and reassuring of oneself and less frequently engaging in self-hate (Castilho et al., 2014; Cunha et al., 2014; Richter et al., 2009). Our findings suggest that not only frequent and severe traumatic experiences are experientially avoided by those who experienced them (Abram et al., 2004; Briggs et al., 2013; Dierkhising et al, 2013; Orcutt et al., 2005; Waller et al., 2005; Willis et al., 2013), but also less memories of warmth and safeness are avoided by those who experience them to a lesser amount, such as the referred and detained samples in the current work. Concerning traumatic memories, experiential avoidance may be seen as an adaptive coping strategy with what might otherwise constitute overwhelming experiences (Ribeiro da Silva et al., 2015).

This study is not free of limitations. One limitation is related to the fact that the detained sample only includes male subjects. It would be of most importance to test the invariance of the EMWSS-A and of the brief EMWSS-A across gender in detained samples of youth. Also, the application of these two versions of the instrument in different samples may further give evidence on the psychometric properties of these samples' scores, either considered individually or in comparison with one another.

Findings presented in the current work add evidence to the factorial validity of the 21-item EMWSS-A, particularly in community samples. Additionally, they provide new evidence on the theoretical and statistical appraisal of a brief 9-item version of the instrument, which also applies to community samples, but may be particularly useful when dealing with more complex, resistant, and unmotivated respondent groups. Taking into account the psychometric quality of this brief version of the scale, we would suggest that it may be an appropriate tool to continuously evaluate specific, and generic, populations, in order to try get a better understanding of the impact of early memories of warmth and safeness in the development of psychopathological outcomes.

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Table 1.

Demographic Characteristics' of the Samples and Subsamples

	Gender		Age	Socioeconomic status		
	Male	Female		Low	Medium	High
Complete sample	765 (52.3)	699 (47.3)	16.16 (1.51)	540 (36.9)	629 (430)	295 (20.2)
Community sample	449 (42.2)	615 (57.8)	16.09 (1.50)	219 (20.6)	551 (51.8)	294 (27.6)
Subsample 1	86 (42.2)	118 (57.8)	16.82 (1.08)	-	74 (36.3)	130 (63.7)
Subsample 2	60 (42.6)	81 (57.4)	16.87 (1.11)	-	52 (36.9)	89 (63.1)
Subsample 3	26 (43.1)	37 (58.7)	16.70 (1.01)	-	22 (34.9)	41 (65.1)
Referred sample	108 (56.3)	84 (43.8)	16.03 (1.70)	155 (80.7)	36 (18.8)	1 (0.5)
Detained sample	208 (100)	-	16.62 (1.26)	166 (79.8)	42 (20.2)	-

Note. Information for gender and socioeconomic status are presented as n (%); information for age is presented as M (SD).

Table 2.

Expert Average Rating Score, Loading and Internal Consistency Values for a 9-Item One-Factor Measurement Model By Samples

		Expert average rating score	Complete sample			Community sample			Referred sample			Detained sample
			Total	Male	Female	Total	Male	Female	Total	Male	Female	
			$\alpha = .92$	$\alpha = .91$	$\alpha = .92$	$\alpha = .91$	$\alpha = .90$	$\alpha = .92$	$\alpha = .91$	$\alpha = .92$	$\alpha = .89$	$\alpha = .89$
1	I felt safe and secure	6.6	.70	.69	.70	.69	.66	.71	.69	.77	.60	.69
4	I felt a sense of warmth (…)	6	.79	.77	.79	.78	.75	.81	.77	.81	.73.	.76
5	I felt comfortable sharing my feelings (…)	8.6	.63	.62	.64	.62	.60	.64	.61	.63	59	.63
7	I knew that I could count on empathy (…)	6.8	.75	.73	.76	.76	.73	.78	.74	.78.	.69	.66
9	I felt that I was a cherished member (…)	9.4	.72	.69	.75	.71	.68	.73	.73	71	.77	.64
10	I could easily be soothed by people (…)	7.4	.79	.78	.82	.81	.79	.82	.77	.77	.77	.67
14	I felt loved (…)	8.2	.74	.72	.75	.73	.71	.75	.75	.77	.72	.67
16	I had feelings of connectedness	8.4	.78	.76	.79	.78	.74	.81	.74	.77	.70	.74
17	I knew I could rely on people (…)	9.4	.79	.78	.80	.79	.76	.82	.74	.77	.69	.78

Note. All loading values were significant at *p* < .001. Some items are presented in short versions; the complete scale can be found at

http://www.compassionatemind.co.uk/downloads/scales/Early_memories_of_warmth_scale.pdf. Loading values are taken from the completely standardized CFA

solutions.

Table 3.

Fit Indicators for CFA and Multi-group Configural Invariance Analyses By Samples

	RMSEA	95% CI for RMSEA	CFI	SRMR
21-item one-factor model				
Complete sample	0.048	0.044; 0.051	0.906	0.032
Community sample	0.057	0.053; 0.061	0.906	0.036
Referred sample	0.053	0.041; 0.065	0.942	0.041
Detained sample	0.078	0.068; 0.078	0.880	0.053
9-item one-factor model				
Complete sample	0.054	0.045; 0.63	0.972	0.024
Male participants	0.049	0.036; 0.062	0.976	0.025
Female participants	0.058	0.045; 0.071	0.971	0.27
Unconstraint model	0.054	0.044; 0.063	0.973	0.026
Loading constraint model	0.051	0.042; 0.059	0.972	0.030
Intercept constraint model	0.049	0.041; 0.0.58	0.970	0.031
Community sample	0.054	0.043; 0.064	0.972	0.026
Male participants	0.050	0.032; 0.068	0.971	0.031
Female participants	0.059	0.046; 0.074	0.971	0.028
Unconstraint model	0.055	0.044; 0.066	0.971	0.029
Loading constraint model	0.051	0.041; 0.062	0.972	0.033
Intercept constraint model	0.050	0.040; 0.060	0.969	0.036
Referred sample	0.020	0.000; 0.061	0.996	0.031
Male participants	0.000	0.000; 0.073	1.000	0.032
Female participants	0.066	0.000; 0.115	0.956	0.053
Detained sample	0.068	0.039; 0.095	0.958	0.037
Unconstraint model	0.042	0.000; 0.080	0.984	0.043
Loading constraint model	0.038	0.000; 0.075	0.985	0.053
Intercept constraint model	0.043	0.000; 0.077	0.979	0.060

Note. CI = confidence interval. The detained sample included only male participants. Results

for the unconstraint, loading constraint and intercept constraint models are in reference to

gender invariance analyses. For the group invariance analyses, results were as follow:

unconstraint model (RMSEA = 0.057, 95% CI for RMSEA = 0.042, 0.072; CFI = 0.967,

SRMR = 0.035), loading constraint model (RMSEA = 0.052, 95% CI for RMSEA = 0.038,

0.066; CFI = 0.968, SRMR = 0.043), and intercept constraint model (RMSEA = 0.052, 95%

CI for RMSEA = 0.039, 0.065; CFI = 0.962, SRMR = 0.047).

Table 4.

Correlation Values Between the Complete and Brief Versions of the EMWSS-A and

Other Variables

	EMWSS-A	EMWSS-A brief
Depression Anxiety Stress Scale		
Depression	-.29*	-.27*
Anxiety	-.31*	-.28*
Stress	.20ns	-.20ns
Acceptance and Action Questionnaire	-.28***	-.29***
The Forms of Self-Criticizing/ Attacking & Self-Reassuring Scale		
Inadequate Self	-.19**	-.18**
Hated Self	-.34***	-.36***
Reassure Self	-.45***	.44***

Note. EMWSS-A: Early Memories of Warmth and Safeness Scale – Adolescent version

*** p < .001, ** p < .01, * p < .05, ns non-significant

Table 5.

Descriptive Measures for the Early Memories of Warmth and Safeness

Scale By Samples

	Brief (9-item) EMWSS-A				
	Median	M	SD	Skewness (SE)	Kurtosis (SE)
Complete sample	28	26.59	7.39	-0.88 (0.06)	0.53 (0.13)
Male	27	25.96	7.45	-0.84 (0.09)	0.49 (0.18)
Female	28	27.23	7.27	-0.95 (0.09)	0.64 (0.19)
Community sample	29	27.73	6.81	-0.97 (0.08)	0.88 (0.15)
Male	29	27.53	6.65	-0.88 (0.12)	0.72 (0.23)
Female	29	27.87	6.93	-1.03 (0.09)	1.01 (0.19)
Referred sample	23	22.68	8.19	-0.63 (0.18)	0.003 (0.35)
Male	23	22.79	8.37	0.78 (0.23)	0.44 (0.46)
Female	23.5	22.53	8.01	-0.42 (0.26)	-0.57 (0.52)
Detained sample	25.5	24.23	7.69	-0.62 (0.17)	-0.34 (0.34)

Note. SE = Standard error