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Title: Perceived parental rearing style in childhood: Internal structure and concurrent validity on the EMBU-C in clinical settings

Short title: Validity evidence on EMBU-C

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ABSTRACT

Background: We provide the first validation data of the Spanish version of the EMBU-C in a clinical context. The EMBU-C is a 41-item self-report questionnaire that assesses perceived parental rearing style in children, comprising 4 subscales (Rejection, Emotional Warmth, Control Attempts/Overprotection and Favouring Subjects). *Methods:* The test was administered to a clinical sample of 174 Spanish psychiatric outpatients aged 8-12. Confirmatory factor analyses (CFA) were performed, analyzing the children's reports about their parents rearing style. *Results:* The results were almost equivalent for father's and mother's ratings. CFA yielded an acceptable fit to data of the 3-factor model when removing the items of the Favouring Subjects scale (RMSEA<0.07). Satisfactory internal consistency reliability was obtained for two of the three scales, Rejection and Emotional Warmth (Cronbach's α>0.73), whereas Control Attempts scale showed lower values, as in previous studies. The influence of gender (of children and parents) on scale scores was inappreciable and children tended to perceive their parents as progressively less warm as they grew older. As predicted, the scores for Rejection and Emotional Warmth were related to bad relationships with parents, absence of family support, harsh discipline and lack of parental supervision. *Conclusions:* The Spanish version of EMBU-C can be used with psychometric guarantees to identify rearing style in psychiatric outpatients, since evidences of quality in this setting match those obtained in community samples.

Key-words: confirmatory factor analysis; EMBU; measurement invariance; rearing style; test reliability; test validity

INTRODUCTION

It is widely recognized that the style of education experienced during growth is correlated with psychosocial development, and the association between dysfunctional parenting and pathology has been extensively studied [1-3]. Thus, the necessity has arisen to precisely conceptualize and measure this potential risk factor on mental disorders. Since Roe [4] reported her theoretical model as a circular continuum of six categories (loving, protecting, demanding, rejecting, neglecting and casual), empirical research conducted over the past five decades has consistently identified two main dimensions of parental rearing: love vs. hostility and autonomy vs. control.

The EMBU (*Egna Minnen Beträffande Uppfostran*) is one of the most widely applied questionnaires to assess perceived parental rearing behaviours. It was originally created to evaluate the memories of adults during upbringing [5]. The 64-item version and a 22-item short form (S-EMBU) have been successfully adapted in a wide number of countries, including Spain [6,7]. At the first-order level, the former comprises four factors (Rejection, Emotional Warmth, Overprotection and Favouring Subjects), measured with some 18 items each, whereas the latter removes the Favouring Subjects scale, which has shown to be specific for some countries, and reduces the number of items per factor to 6 to 9. The Rejection scale evaluates whether parents showed hostility, criticism, punishment or verbal degradation. The Emotional Warmth scale refers to physical and verbal gestures of acceptance, stimulation, support and loving attention, and regard for the subject's point of view. The Overprotection scale assesses parents' attempts to control the child's behaviour, unreasonable worry about his/her safety and expectancy to know all about what the subject was doing, imposition of strict rules, and high expectations regarding the child's achievement. Finally, the Favouring Subjects scale refers to a more favourable treatment towards the child than towards other siblings.

In order to obtain present-day information of relevance to the psychopathology of children and adolescents, three new versions of EMBU were developed to assess current practices in children (EMBU-C; [8]), adolescents (EMBU-A; [9]) and parents (EMBU-P; [10]). Several studies have highlighted the importance of child reports, since children's perceptions of parenting have been shown to be related to children's psychosocial adjustment [11] and children and parents are considered equally valid reporters [12]. These questionnaires are of special interest in clinical environments (see for example in Spain, [13-15]), but to date, only incomplete data on its psychometric properties has been reported.

First of all, some doubts remain about the internal structure of the EMBU-C. On the one hand, the Spanish child version (41 items) evaluated in a community sample [8] showed a 4-factor structure, with factor loadings above 0.40 in the expected factor, like the adult memory version adapted into different languages [6]. On the other hand, several modifications of Castro's EMBU-C have been made in Holland and Portugal, suggesting the overlap of the Emotional Warmth and Control Attempts dimensions (a new label for the original Overprotection factor) [16], removing some items including those of the Favouring Subjects scale [17-19] or proposing a bifactorial structure of negative (Rejection and Control Attempts) and positive (Emotional Warmth) rearing behaviours [18]. Thus, the proposed structures of the EMBU-C vary between 2, 3 or 4 factors, depending on the items that each version is comprised of (ranging from 34 to 52 items). This makes it difficult to apply it to cross cultural studies or to compare it to the adult EMBU and S-EMBU forms in longitudinal studies. From a psychometric point of view this scenario is undesirable and should be redressed [20,21].

Another pending matter is the collection of additional evidence on the relationship between Emotional Warmth and Control Attempts. The results for infant samples [8,16,17] (correlations from 0.20 to 0.46) do not agree with those obtained for adults [6,7] or

adolescents [22] (values from 0 to 0.14), with the exception of a sample of Mexican adolescents [23] (0.43 for fathers' reports and 0.24 for mothers' reports). Taken together, these results suggest that it is necessary to clarify the role of the age of the child and the gender of the parents on EMBU-C internal structure.

Moreover, in order to facilitate the interpretation of results, some relevant external variables must be related to EMBU-C results. In previous research none of the scales showed an important relation with the gender of either the children or parents [6-8,16,17,23,24], and age was slightly inversely related to Emotional Warmth and Control Attempt scores [8], but to our knowledge, there is a lack of published empirical evidences relating EMBU-C to other external variables in its nomological net. Logical analysis of the constructs led us to begin to fill this gap studying the relation to family adjustment: a negative education style characterized by high Rejection and low Emotional Warmth could be related to problematic management practices as lack of supervision, harsh discipline and unsatisfactory family environment.

Lastly, validation studies of these present-day versions have focussed on psychometric data obtained from community samples [8-10,26]. Support for the hypothesis that the questionnaire structure in people with psychological dysfunctions is identical to that found in people without disorders has been obtained for the earlier version of adults' memories of upbringing with a Dutch sample [6], but to date no study has been conducted with present-day information using the Spanish versions. Studying the psychometric properties of the child version in disordered patients would meet the American Psychological Association's recommendation to provide empirical evidence of psychometric properties in the particular setting in which the test is to be used [27]. This becomes of special importance as long as the EMBU's measurement model is based on classical test theory, and thus the relevant psychometric indices are sample-dependent. Moreover, performing this local validation study

provides data for validity generalization studies [27].

The purpose of this study is to test whether the Spanish version of EMBU-C can be used with psychometric guarantees to identify rearing style in clinical settings. Thus, the specific objectives are twofold: a) to evaluate the internal structure and the internal consistency reliability of the Spanish version of the EMBU-C in a clinical sample, and b) to provide validity evidence in relation to the external variables of gender, age and family adjustment. As mentioned earlier, we expect low influence of gender and age on scale scores and that levels of poorer family adjustment are related positively to Rejection and negatively to Emotional Warmth scores.

METHOD

Participants

The total sample comprised 174 psychiatric outpatient children, 110 males and 64 females, recruited from two Primary Public Mental Health Care Centres in Barcelona (Spain), between January 1998 and May 2005. Participants were representative of the population that uses mental health services, in terms of age, sex and socioeconomic status. Age of children ranged from 8 to 12 years (mean=11.13 years; SD=1.21). Socioeconomic status, which was based on the parents' educational level and occupation according to Hollingshead's index [28], was: 2.3% high, 68.6% medium-high, medium and medium-low and 29.1% low. The vast majority were Caucasian. The inclusion criterion was suffering from a psychopathological disease diagnosed according to *DSM-IV* [29], established with the Spanish adaptation of the DICA-IV (*Diagnostic Interview for Children and Adolescents*; [30]). All the consecutive admissions that agreed to participate and whose parents also agreed were included. Table 1 contains the presence (in percentages) of the most prevalent disorders and groups of disorders in the sample of our study. Children with mental deficiency or

pervasive developmental disorder were excluded, because of their difficulties with answering some questions. Data was part of a larger study, approved by our institution's Ethics Committee.

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Measures

DICA-IV. The Spanish child version of the DICA [30] was used to establish the presence of psychiatric disorders. It is a structured interview that covers the most-frequent diagnostic categories in children aged 6-12 following DSM-IV definitions [29]). The diagnostic status for each disorder was created combining the information from parents and children at the symptom level: a concrete symptom was considered present if the parents or the child reported it. This is the most frequent algorithm in clinical and research settings for manage data of multiple informants, since it has demonstrated to be the most sensitive to identify the presence of psychological problems.

EMBU-C. The child version of the EMBU [8] originally comprises questions about Rejection (11 items), Emotional Warmth (15 items), Control Attempts (10 items) and Favouring Subjects (5 items). The response format of the items is a 4-point Likert-type scale (1: No, never; 2: Yes, but seldom; 3: Yes, often; 4: Yes, almost always). Each item allows recoding information separately for father's and mother's rearing style. To clarify interpretation in this study the original item numeration has been maintained [5]. The total score for each scale is obtained with the non-weighted sum of the item values, with higher scores indicating more presence of the construct. The internal consistency indices (Cronbach's alpha values) were moderate in the original study [8], ranging from 0.65 (mother's Favouring Subjects) to 0.78 (mother's Rejection), except for the father's Favouring Subjects (0.56).

SRF. The child version of the Schedule for Risk Factors is a structured interview based on the SURF (*Service Utilization and Risk Factors*; [14,31]). It provides extensive information about several areas that can influence the psychopathology and performance of children aged 8-17. For the present study the two sections on family management practices reported by children were adapted as in Ezpeleta et al. [32]: discipline (7 aspects, differentiating by parent) and adult supervision (8 common aspects for both parents). Scores for each question range from 0 (no, never) to 3 (yes, almost always). The total scale scores are the sum of the respective item values, reversed when necessary, with higher scores indicating more problematic practices: harsher parental discipline and less parental monitoring. Cronbach's alpha values (and mean inter-item correlations/mean item-total correlations) for the present sample were similar to those of the original instrument [31]: 0.61 (0.22/0.36) for father's discipline, 0.53 (0.18/0.29) for mother's discipline and 0.65 (0.19/0.35) for adult supervision. Other representative questions on unsatisfactory family environment used were the relationship with parents (0: good; 1: middling or bad) and the lack of family support (if the parents have ever said to child that they don't love him/her, or if there is no adult at home to attend to his/her problems or they are not interested; 0: no; 1: yes).

Procedure

After obtaining informed written consent from parents and oral consent from children, trained interviewers (doctoral fellows and experienced clinicians) conducted the assessment, by means of DICA-IV and SRF interviews with children. Later, the children answered the EMBU-C individually. They had the chance to clear up any doubts.

Statistical analyses

Firstly, an analysis of missing values was performed. The item mean substitution

method was used, rounding off to discrete values, due to the low percentage of missing data (5.6%) [33]. Next, the percentage of item-endorsement was examined to detect highly skewed items (negative response by more than 95% or less than 5% of the participants; [34]).

Confirmatory factor analysis was conducted with AMOS 7.0 [35], using Maximum Likelihood (ML) method of estimation. Covariance matrix was analyzed, considering the father's and mother's ratings as repeated measures. Following the common sequence [36], three steps were performed. First, the four models described in the introduction section were tested. The same configuration was defined for both groups of responses. Factors were allowed to be correlated and error covariances of analogous items were freely estimated [37]. Second, the selected model was evaluated to identify parameters that could be regarded as misspecified and subsequently respecified [38]. Third, factorial invariance across the two groups of children's reports (about fathers and mothers) was tested fixing factor loadings (step 1) and next factor covariances (step 2) to be equal across both groups of responses [39]. Goodness-of-fit was assessed with the common fit indices [40]. Because the use of current thresholds for several indices, such as incremental indices, has been questioned [41,42], we proceeded by comparing them among alternative models, rather than applying fixed cutoff points [43].

The other statistical analyses were carried out with SPSS 15.0 [44]. The internal consistency of the resulting scales was determined with Cronbach's alpha coefficient. Two ANOVA of each of the three scale scores of the EMBU-C were performed to analyze the interaction effect of child's gender (2x2) and age (5x2) with parental gender, the last considered as a repeated measures factor, analogously to other studies with EMBU [24,25]. Pearson's correlation coefficients between EMBU-C scale scores were calculated in order to compare our results with those yielded by previous research [6-8,16,17,22,23]. Depending on the measurement scale, Pearson's or biserial correlation coefficients also valued the relation

between scores of EMBU-C and the measures of SRF. Additionally, the Area Under the ROC Curve (AUC) was computed to assess the discriminative accuracy of Rejection and Emotional Warmth scores on the binary questions of SRF interview (relationship with parents and lack of family support), through logistic models adjusted by gender and age.

RESULTS

With respect to the endorsement criterion [34], only item 74 did not reach the usual threshold (4.0% of negative responses in father's ratings). Nevertheless, it was maintained, in line with previous studies that only removed an item when the recommended item endorsement was not achieved for both ratings, about fathers and mothers [6,22]. The influence of the skewed item on the factor solutions was checked by omitting it from analyses. The solutions of the remaining items did not differ importantly from that with the skewed item included (no change in general structure), therefore the influence of the skewed item on the factor solutions may be considered marginal. Mean (and standard deviation) values ranged from 1.10 to 3.72 (0.39 to 1.15) for the father's ratings and 1.14 to 3.68 (0.47 to 1.21) in the mother's ratings. Median (in absolute value) of skewness was 1.2 for both ratings and median of kurtosis was 1.2 and 1.1 (father's and mother's ratings, respectively). In any case, ML estimation method performs quite well with mild nonnormal data as ours [45].

a) Internal structure

Table 2 provides the goodness-of-fit indices for the confirmatory factor analysis of the four models evaluated in this work: a) 4-factor model: Rejection, Emotional Warmth, Control Attempts and Favouring Subjects (R, E, C and F; [8]); b) 3-factor model: Rejection, a single combined factor of Emotional Warmth and Control Attempts, and Favouring Subjects (R, E+C and F; [16]); c) 3-factor and 34-item model (R, E and C; [19]); d) 2-factor and 34-item

model: negative rearing behaviours including Rejection and Control Attempts, and positive style including Emotional Warmth (R+C and E; [18]). Regarding sample size, RMSEA reached satisfactory values [46] for all the tested models. The 34-item and 3-factor model (Model C) showed the best goodness-of-fit indices (in bold) including ECVI, the most suitable one to compare non-nested competing models fit to the same data [42]. In addition, SRMR was better for Model C, even taking into account that it would be expected to be lower for more complex models as Model A and Model B [47]. This model also presented the most globally acceptable factor loadings. All of the item loadings except item 50 were statistically significant ($p<0.05$) and most of them exceed the 0.30 value on their factor with few exceptions (items 14, 18, 20, 50 and 51) (data is available from the authors).

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The 34-item and 3-factor model (Model C in Table 2) was established as the starting point to evaluate a less constrained model [38]. The only noticeable change attributable to possible misspecification of factor loadings was item 20 (Control Attempts), which was allowed to load on the Rejection factor too, in accordance with its content. Additionally, the correlations between Emotional Warmth and Control Attempts were fixed to zero, based on two criteria: lack of statistical significance and previous results with adult and adolescent versions of the EMBU. The goodness-of-fit indices of the respecified model improved slightly with respect to those of the initial model: $\chi^2(2163)=3872.4$; $\chi^2/df=1.79$; TLI=0.805; CFI=0.814; RMSEA=0.068 (CI 90% RMSEA: 0.064 a 0.071); ECVI=24.50; SRMR=0.09.

This respecified model was established as the baseline model for the invariance procedure (data of the complete sequence is available from the authors). The best fitting model was mainly invariant across father's and mother's ratings. Goodness-of-fit indices of this model were: $\chi^2(2198)=3919.4$; $\chi^2/df=1.78$; TLI=0.806; CFI=0.813; RMSEA=0.067 (CI 90% RMSEA: 0.064 a 0.071); ECVI=24.37; SRMR: 0.09. All factor loadings and factor

covariances were statistically significant (p<0.05) except the factor loading of item 50, and all these parameters were equivalent across father's and mother's ratings, except the factor loading of item 51. Figure 1 presents standardized factor loadings and standardized factor covariances within each group of responses. Factor correlations between father's and mother's reports of analogous factor pairs ranged from 0.68 (Control Attempts) to 0.79 (Emotional Warmth). Factor correlations between non-analogous factor pairs were lower (−0.54 to 0.43).

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Further analyses were based on summated rating scale scores. Descriptive statistics can be seen in Table 3 (left) and will be commented later. Correlation coefficients between direct scale scores were negative between Rejection and Emotional Warmth (−0.50 fathers and −0.59 mothers), positive between Rejection and Control Attempts (0.28 fathers and 0.35 mothers) and small or nearly null between Emotional Warmth and Control Attempts (0.20 fathers and 0.01 mothers). All the results from now on are based on these direct scale scores.

b) Internal consistency reliability and homogeneity

Cronbach's alpha values and mean inter-item correlations (in brackets) for each scale of the fathers' and mothers' ratings were, respectively: 0.73 (0.22) and 0.82 (0.32) for Rejection, 0.89 (0.36) and 0.89 (0.35) for Emotional Warmth, and 0.47 (0.09) and 0.51 (0.11) for Control Attempts. Alpha comparison tests [48] showed no statistical differences across groups, except for the Rejection scale (p=0.004), mother's reports being more consistent. All the items positively contributed to the internal consistency of their scale. Standard error of measurement (Table 3) ranged from 2.2 (Rejection) to 3.1 (Emotional Warmth about fathers).

c) Relation to gender and age

Table 3 (right) shows the results of the 2×2 ANOVA (gender × parent) for each scale. Mothers were viewed as more rejecting (p=0.008; CI 95%: 0.2 to 1.3 points) and warmer (p=0.016; CI 95%: 0.2 to 2.2 points) than fathers. In Control Attempts the interaction was significant (p=0.010): mothers were perceived to be more controlling than fathers, but to a greater extent by girls (p<0.001; CI 95%: 1.8 to 3.2 points) than boys (p<0.001; CI 95%: 0.8 to 1.9 points).

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The 5×2 ANOVA (age × parent) did not reveal any statistically significant interaction (Rejection: p=0.542; Emotional Warmth: p=0.206; Control Attempts: p=0.747). The main effect of age was not statistically significant for Rejection (p=0.152) and Control Attempts (p=0.299), but it was significant for Emotional Warmth (p=0.001), showing a decreasing linear trend (p=0.004; slope=−2.1).

d) *Relation to family adjustment*

Table 4 presents the correlation coefficients between EMBU-C scale scores and the SRF measures. Bad or middling relationships, lack of family support, harsh discipline and lack of parental supervision correlated positively with Rejection (0.20 to 0.44; p<0.01) and negatively with Emotional Warmth (−0.21 to −0.35; p<0.01). Harsh discipline also correlated positively with Control Attempts, but most of the correlation coefficients were lower (0.18 to 0.24; p<0.05).

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The discriminative accuracy of Rejection and Emotional Warmth scores on the presence of conflicts with parents and the child's perception of lack of family support was from good to very good (AUC ranging from 0.69 to 0.79).

DISCUSSION

The EMBU-C presented an adequate 3-factor structure (Rejection, Emotional Warmth and Control Attempts) in psychiatric settings, after removing the Favouring Subjects scale, in accordance with the model proposed by two previous studies [17,19], and allowing item 20 of Control Attempts to also load on the Rejection factor. All the items except item 50 of Control Attempts showed significant factor loadings, which were equivalent across the ratings given by the children for both parents except for item 51 of Control Attempts. Factor loadings and fit indices are aligned with those found by Muris et al. [19] in a Dutch community sample.

Our results in a clinical sample support the proposal made by diverse authors [7,17-19,23,24,26] to eliminate the Favouring Subjects scale. This factor was not replicable in most countries where the original adult form has been evaluated, and seems to be a culture-specific dimension, only successfully retrieved in Holland [6]. Other arguments support the omission of this scale: children without siblings are more common these days and moreover the EMBU-C would present the same structure as the S-EMBU.

The bifactorial structure of a negative and a positive dimension [18] showed a poorer goodness of fit. Regarding the possible grouping of the items of Emotional Warmth and Control Attempts in a single dimension, Markus et al. [16] referred to intrusiveness, perceived in a different way by small children (as affection and interest) than by adolescents (as control). In our opinion their explanation only applies to some items on the scale. Two examples of such items would be questions about whether parents tell the child how to dress or whether they want to know the child's secrets. Other items not referring to intrusive behaviour would be questions about whether parents look sad when the child does something wrong. Thus, it seems reasonable to assume that in disordered children the EMBU-C maintains the same structure as in community samples and the factor of Control Attempts remains a separate dimension.

Turning to the factor correlation pattern between Emotional Warmth and Control Attempts, the explanation of Markus et al. [16] mentioned above supports that the relationship between these two dimensions disappears with age, since some help and protection behaviours in children are seen as intrusion if they continue into adolescence. According to this explanation, our results are consistent with most previous studies: in younger children (mean age 9-10 years) a moderate association was found [8,16,17]; in our study (mean age 11 years) the correlation was low (fathers) or null (mothers); and in adolescents (mean age 12-13 years) no relation was observed [22], nor in young adults [6,7]. This might suggest an important change in the perception of rearing style at 10-11 years, indicating a different structure in younger children. The lower correlation value we obtained for mothers than for fathers is also compatible with the claim that such a perception (intrusion rather than affection) might be established sooner for the mother than for the father, thus the father's interest is perceived as being greater warmth for more years [23]. However, the relation found in an adolescent Mexican sample with an average age of almost 14 years [23] was moderate, so we agree that it would be necessary to examine the structure of the EMBU-C systematically for different age groups to clarify the discrepancies between studies.

In relation to the mean scores, the fathers' ratings were slightly smaller than those of the mothers. However, taking into account the magnitude of the differences found (average from 0.8 to 2.5), which were below the standard error of measurement, we consider that the influence of the gender of the children and the parents on all scales is negligible, as in previous studies [6-8,16,17].

Internal consistency of Rejection and Emotional Warmth was satisfactory, regarding the length of each scale. Mean inter-item correlation and Cronbach's alpha value of Control Attempts were lower, but none of the items damaged the scale consistency. This scale has presented smaller internal consistency coefficients than the other scales (excluding Favouring

Subjects) in all test validation studies in adults, adolescents or children [6-9,16-19,22-26]. This could be due to a greater heterogeneity of the evaluated construct, in which case it would be appropriate to prioritize content validity over internal consistency [34], but in our case the latter does not reach acceptable levels [49]. Therefore a revision of the scale seems highly recommendable.

The magnitude of most of the correlations between the EMBU-C and the SRF was moderate but highly significant. Thus, EMBU-C scale scores showed an acceptable concurrent validity in the sample analyzed, since they correlated with other indicators such as bad relationship with parents, lack of family support, harsh discipline and lack of supervision in the expected direction. Only correlations involving Control Attempts were almost non-existent, except for harsh discipline, which in part may be due to the low reliability [34].

The results for the EMBU-C in this clinical context, which we can consider representative of a child population with psychiatric pathology using the public network of mental health services in the Barcelona area, indicate acceptable psychometric properties. The Rejection and Emotional Warmth scales proved to have a satisfactory factor structure and internal consistency as in other validation studies in Spanish community samples of children [8], adolescents [9,26] or adults [6,7]. Although the Control Attempts scale showed poorer indices in terms of structure and reliability, this result also agrees with previous research. The satisfactory AUC values obtained provide support for the use of the EMBU-C as a clinical screening tool in applied settings. This feasible and easy-administration questionnaire may help detecting children with family problems.

The main limitation of this study is the borderline size of the sample, due to the difficulty of recruiting disordered children, which impeded the use of robust methods of factor analysis. Greater samples will allow to use the Satorra-Bentler scaled chi-square [50] or the Weighted Least Squares (WLS) method of estimation, in order to obtain higher

accuracy in terms of significance tests and to avoid the possible underestimation of standard errors. Moreover, Unweighted Least Squares (ULS) would be an alternative approach with non-normal data and small samples, but this method of estimation does not provide significance tests, and therefore it is not suitable for invariance procedures. However, following the proposal of Olsson [45] we compared the results of our final model obtained with ML and ULS estimation methods. The very similar parameter estimates (r=0.93) indicate that the correct structure was identified and that parameter estimates were accurate. Nevertheless, we provide the first validation indicators collected for the EMBU-C in the Spanish clinical population.

Parents and children do not agree in their perception of many aspects related to environment and behaviour. In the case of education style, it is important to know the reports of children about their parents, since different informants or members of the family can differ in their perception. For example, if parents have to care for many children, the level of attention given to the idiosyncratic situation of each sibling could be perceived low or insufficient by each child, although the parents' perception of the global attention to the group will be high. In addition, in the study of children and adolescents psychology, it is usual to include teachers' reports; but teachers are not reliable informants of rearing style since they have not the opportunity to value this set of family behaviours. Finally, recent studies have found that the psychological state and functional impairment during childhood (in special for the presence and severity of anxiety symptoms) is more strongly related to the consistency of parental styles and the perception of children about these behaviours than the specific levels of obedience or autonomy [51]. In short: family environment factors (parental rearing and attachment styles) contribute to the children functioning, but it is not enough with the parents' reports about their rearing since the way that children perceive and judge these family contexts are more crucial. From this point of view, the EMBU-C appears as an easy,

valid and reliable questionnaire to obtain information of the own child, and it can be used in a wide range of contexts, including those in which it is not feasible to administer an extensive interview. Knowledge of perceived education style can help to identify high-risk groups for selective preventive interventions and to develop the required preventive strategies. In future research of the EMBU-C we propose the incorporation of more information on children's psychopathological problems and adjustment, with the aim to obtain evidence of the predictive validity of the test, in terms of appearance and maintenance of mental disorders.

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Table 1: Presence (in percentages) of the most prevalent disorders and groups of disorders

Disorder	Presence
Disruptive disorders	59.5%
Attention deficit hyperactivity disorder	43.9%
Oppositional disorder	38.7%
Conduct disorder	8.7%
Anxiety disorders	41.6%
Specific phobia	28.3%
Generalized anxiety	21.4%
Separation anxiety	11.0%
Social phobia	6.4%
Obsessive-compulsive disorder	4.6%
Elimination disorders	22.0%
Enuresis	18.5%
Encopresis	6.9%
Mood disorders	15.6%
Depression	15.0%
Dysthymia	3.5%
Tics or Tourette disorders	7.5%
Eating disorders	2.9%
Substances	0%
Comorbidity (2 or more disorders)	57.8%

Table 2: Confirmatory factor analysis goodness-of-fit indices for alternative EMBU-C factor structure models

	Goodness-of-fit indices								
Model	χ^2	df	*p*	χ^2/df	TLI	CFI	RMSEA (CI 90%)	ECVI	SRMR
Model A: 4-factor model (R, E, C, F)	5314.3	2858	<0.001	1.86	0.763	0.775	0.070 (0.068; 0.073)	33.20	0.10
Model B: 3-factor model (R, E+C, F)	5474.6	2860	<0.001	1.91	0.748	0.760	0.073 (0.070; 0.076)	34.20	0.19
Model C: 3-factor model (R, E, C)	**3902.1**	**2161**	**<0.001**	**1.81**	**0.801**	**0.811**	**0.068 (0.065; 0.072)**	24.69	**0.09**
Model D: 2-factor model (R+C, E)	4082.5	2163	<0.001	1.89	0.781	0.792	0.072 (0.068; 0.075)	25.71	0.21

Note: R=Rejection; E=Emotional Warmth; C=Control Attempts; F=Favouring Subjects; df=degrees of freedom; χ^2/df = Chi-square/degrees of freedom; TLI = Tucker & Lewis Index; CFI = Comparative Fit Index; RMSEA = Root Mean Squared Error of Approximation; ECVI = Expected Cross Validation Index;

Table 3: Mean, standard deviation (SD) and standard error of measurement (SEM) for each scale with respect to gender and ANOVA results

EMBU-C scale (minimum÷maximum)	Gender of children	N	father		mother		ANOVA (p value)		
			Mean (SD)	SEM	Mean (SD)	SEM	Interaction	Parent's gender	Child's gender
Rejection (10÷40)	Masculine	110	14.20 (4.17)		14.91 (5.30)				
	Feminine	64	14.33 (4.48)		15.14 (5.11)				
	Total	174	14.25 (4.28)	2.21	14.99 (5.22)	2.23			
							0.855	0.008	0.797
Emotional Warmth (15÷60)	Masculine	110	45.70 (9.06)		47.08 (8.52)				
	Feminine	64	45.30 (10.01)		46.33 (9.41)				
	Total	174	45.55 (9.39)	3.07	46.80 (8.84)	2.96			
							0.724	0.016	0.669
Control Attempts (9÷36)	Masculine	110	17.97 (4.02)		19.31 (4.28)				
	Feminine	64	17.58 (3.57)		20.05 (3.90)				
	Total	174	17.83 (3.85)	2.81	19.58 (4.15)	2.90			
							0.010	<0.001	0.772

Table 4: Correlation coefficients between the EMBU-C scale scores and the SRF measures provided by the children

EMBU-C scale	SRF							
	Bad relationship		Lack of support		Harsh discipline		Lack of supervision	
	father (n=158)	mother (n=158)	father (n=170)	mother (n=170)	father (n=160)	mother (n=171)	father (n=171)	mother (n=171)
Rejection	*0.31***	*0.32***	*0.23***	*0.35***	0.32**	0.44**	0.20**	0.26**
Emotional Warmth	*−0.27***	*−0.35***	*−0.22***	*−0.32***	−0.21**	−0.31**	−0.21**	−0.27**
Control Attempts	*−0.01*	*0.07*	*0.01*	*0.06*	0.18*	0.24**	0.06	0.10

Normal font: Pearson's correlation; *italic*: point-biserial correlation

* $p<0.05$; ** $p<0.01$

Figure 1: Standardized factor loadings and factor correlations for father's (left) and mother's (right) ratings. Only item C51 had non-equivalent factor loadings. Error variances and covariances are omitted.