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The development of a short form of the EMBU¹: Its appraisal with students in Greece, Guatemala, Hungary and Italy

Willem A. Arrindell^{a,*}, Ezio Sanavio^b, Guido Aguilar^c, Claudio Sica^b,
Chryse Hatzichristou^d, Martin Eisemann^e, Luis A. Recinos^c,
Peter Gaszner^f, Monika Peter^c, Giuseppe Battagliese^{g,h}, János Kállaiⁱ,
Jan van der Ende^j

^a*Department of Clinical Psychology, Academic Hospital, University of Groningen, P.O. Box 30.001, 9700 RB Groningen, The Netherlands*

^b*Università degli studi di Padova, Padova, Italy*

^c*Universidad Francisco Marroquín, Guatemala*

^d*University of Thessaly, Argonavton and Filellinon, Greece*

^e*University of Umeå, Sweden*

^f*National Institute of Psychiatry and Neurology, Budapest, Hungary*

^g*University of Roma — La Sapienza, Italy*

^h*University of Salerno, Italy*

ⁱ*Medical University of Pécs, Hungary*

^j*Erasmus University, Rotterdam, The Netherlands*

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Abstract

Out of the necessity of having an abbreviated form of the EMBU, a measure of perceived parental rearing behavior, a short form (s-EMBU) consisting of three scales (Rejection, Emotional Warmth and Protection) with respectively 7, 6 and 9 items (plus 1 unscaled item) was developed from the original 81-item version. The factorial and/or construct validity and reliability of this s-EMBU were examined among samples of 2442 students from Italy, Hungary, Guatemala and Greece. The data were presented for the four national groups separately. The 23-item s-EMBU is recommended as a reliable functional equivalent to the 81-item early EMBU. Attention was drawn to the need for further research to explain some of the observed cross-national differences in the correlations between parental rearing styles and personality. © 1999 Elsevier Science. All rights reserved.

¹ Swedish acronym for Egena Minnen Beträffande Uppfostran ('My memories of upbringing')

* Corresponding author. e-mail: w.arrindell@ppsw.rug.nl

1. Introduction

The EMBU (Perris, Jacobsson, Lindström, von Knorring, & Perris, 1980) is among the most-widely utilized measures for the assessment of adults' perceptions of their parents' rearing behavior (Rapee, 1997). The EMBU provides four factorially-derived subscale measures: Rejection, Emotional Warmth, (Over)-Protection and Favoring Subject (cf. Arrindell & van der Ende, 1984; Arrindell et al., 1989). The measure as a whole contains a sizeable number of items, namely 81, to which Ss have to respond twice (i.e. for mothers and fathers separately). Thus, as many as 162 responses to items are required before it is possible to score the instrument. Hence, the early EMBU would qualify as a relatively long test.

There are, however, some practical disadvantages in long tests. First, our own experience in the clinic with the 81-item version of the EMBU has shown that its administration at intake to psychiatric patients is time-consuming, and also during administration distressing to some Ss in whom atypical parental rearing behavior may have functioned as an aetiological factor in their present psychological condition. Second, there are numerous occasions when a research project would benefit from including a measure of parental rearing behavior in addition to measures of personality traits, social functioning, family atmosphere and somatic and/or psychological health status, but when an additional 100 items would increase the overall questionnaire to an unacceptable length (e.g. in mail surveys where the physical dimensions of the mail questionnaire are among the bulk of factors that might affect response quality (Erdos & Morgan, 1970, p. 39; Mangione, 1995, Chap. 8)). In recognition of these facts, the present authors undertook to develop and test a short form of the EMBU, based on its early counterpart, for use with adults when time is very limited. A previous attempt to construct a short form of the EMBU was made by Winefield, Tiggemann and Winefield (1994). Using data collected among Australian Ss, Winefield et al. developed a 27-item, factorially-derived version of the EMBU purportedly assessing Support, Rejection and Overinvolvement. The corresponding scales were shown to be internally consistent, their scores considerably stable across a 4-yr time-span and to be significantly associated in predicted directions with social and psychological adjustment measures. Unfortunately, unlike the early 81-item EMBU, this specific English short equivalent form did not achieve widespread, international recognition and use among researchers and clinicians. This may be related to the fact that data to support its factorial validity across a broad sample of nations are totally lacking.

The present study was aimed at providing the first step towards the construction of a reliable and valid short form of the EMBU for use in different countries and for cross-national comparative purposes. An important precondition for achieving such an aim would be the selection not only of items that are appropriate in terms of content, but also of those items that have proven in previous psychometric analyses with the early EMBU to behave adequately across a relatively large number of nations. Using data collected among Ss in Italy, Hungary, Guatemala and Greece, the present study specifically sought to (a) select an item pool for a short-EMBU (henceforth s-EMBU) based on item-content and on previous psychometric analyses, (b) examine the factorial validity and reliability of the s-EMBU taking into account the factor structure of the early EMBU (Arrindell & van der Ende, 1984), (c) provide evidence of construct validity by relating the resulting factorially-derived dimensions of the s-EMBU to major Eysenckian dimensions of personality, sex role orientation and self-esteem (predictions as outlined below).

2. Method

2.1. Subjects and procedures

In the context of a cross-national study on personality and self-assessed fears, volunteer students in 11 countries located in Australasia, Europe and South America completed a test battery which included, among other measures, the s-EMBU. To maximize diversity in terms of geographic location and major course of study, students were, where possible, recruited from universities situated in different regions of each country and among students who were enrolled in any of the four major areas of science, which were categorized as the natural sciences (e.g. physics, chemistry, computer sciences, mathematics), humanities (e.g. history, literature, law, philosophy), life sciences (e.g. medical biology, dentistry, medicine) and social sciences (e.g. economics, women's studies, sociology, social and physical geography, education, psychology). Due to space limitations, the present study describes the results obtained in four countries, namely Greece, Guatemala, Hungary and Italy. The original samples from these four countries comprised a total of 2442 Ss: 469 from Greece, 490 from Guatemala, 410 from Hungary and 1073 from Italy. Table 1 describes each sample in terms of biological sex, age and major course of study. Variable *N*'s are due to relatively small numbers of missing data. Data describing each national sample in terms of marital status, employment status, ethnicity, religion, sibship size and birth order are available upon request.

The Greek students were enrolled at any of the following universities: the University of Athens, Technical University of Athens, Pantio University (at Athens), University of Ioannina, University

Table 1
Distribution of sex, age and major course of study for each national sample

	Nation			
	Greece	Guatemala	Italy	Hungary
<i>Biological sex</i>				
♂	174	220	483	146
♀	292	270	589	264
<i>N</i>	466	490	1072	410
<i>Age</i>				
<i>M</i>	22	21	22	22
<i>SD</i>	2	4	3	2
range	18–48	17–37	18–51	18–35
<i>N</i>	465	474	1068	406
<i>Major course of study</i>				
Natural sciences	144	142	227	65
Humanities	119	104	262	103
Life sciences	102	76	178	92
Social sciences	101	168	401	150
<i>N</i>	466	490	1068	410

of Patras, University of Piraeus, University of Thessaloniki and University of Thessaly (at Volos). The students from Guatemala came from Universidad de San Carlos de Guatemala, Universidad Rafael Landívar, Universidad del Valle, Universidad Francisco Marroquín and Universidad Mariano Gálvez. These universities were all located in Guatemala City. The Hungarian students were enrolled at either Semmelweis Medical University (Budapest), Janus Pannonius University (Pécs) or Pécs University Medical School. The Italian Ss came from any of the following universities: University of Catania, University of Padova, University of Palermo, University of Parma, University of Rome–La Sapienza, University of Salerno or University of Torino.

Measures were either group-administered in classroom settings or individually-administered through small scale mail surveys. All questionnaire sets were completed anonymously.

2.2. Measures

s-EMBU. Two criteria were used for selecting items for the short form. First, the items had to be among those that loaded at least highly on the Rejection, Emotional Warmth or (Over)-Protection factors previously identified with the early EMBU as being invariant across a large number (14) of nations and which did not result in appreciable reductions of internal consistencies if removed from their theoretically-relevant scales (cf. Arrindell et al., 1994). Using this criterion led to the removal of the favoring subject factors which in some countries had emerged as unstable and/or unreliable. Second, item selection was done in such a way that it would result in measures that sample the different elements that are reflected by a specific construct, yet still measure that specific construct in an internally consistent fashion (i.e. the bandwidth versus fidelity issue in measurement reliability). The following elements were deemed relevant (compare Arrindell, Gerlsma, Vandereycken, Hageman, & Daeseleire, 1998). For Rejection: punitive, shaming, favoring siblings over the S, rejection through criticism, rejection of the S as an individual and abusive; for Emotional Warmth: affectionate, stimulating and praising; for Protection: fearful and anxious for S's safety, intrusive, overinvolved. In following these criteria, 7, 6 and 10 items were chosen for the Rejection, Emotional Warmth and Protection factors, respectively, thereby reducing the original 81-item form to one of 23 items. These 23 items are shown in Appendix A together with the item numbers that correspond with the early EMBU.

The Eysenck Personality Questionnaire-Revised-Abbreviated or EPQR-A is a 24-item version of the 48-item short-EPQ-Revised (Eysenck & Eysenck, 1991). The EPQR-A was developed by Francis, Brown and Philipchalk (1992) and was used in the present study for measuring Neuroticism and Extraversion.

The short-Bem Sex Role Inventory or s-BSRI (Bem, 1981) was utilized for assessing Masculinity and Femininity. Each subscale contained 10 items, with filler items removed from the original short form.

Rosenberg's Self-Esteem (SE) scale was used for measuring self-esteem (Rosenberg, 1965).

As the early 81-item version of the EMBU was available in the native language for each of the countries participating in the present investigation (cf. Arrindell et al., 1994), the 23 items of interest were simply selected from the longer forms and placed in the order indicated in Appendix A. Items for the EPQR-A were also available for each of the countries involved (see Barrett & Eysenck, 1984) and, again, the relevant ones were selected from the original translations. Greek,

Hungarian, Italian and Spanish translations and backtranslations (to English) of the s-BSRI and Rosenberg's SE scale were done in accordance with guidelines proposed in the methodological literature pertaining to cross-cultural psychology (e.g. Brislin, Lonner, & Thorndike, 1973; Brislin, 1986).

2.3. *Statistical analyses*

Considering the fact that a subset of items was chosen from the early EMBU to represent each of the original factors, a descriptive test for the existence of three hypothetical parental rearing factors was made using the multiple group method (MGM) of confirmatory analysis (e.g. Nunnally, 1978; Gorsuch, 1983). MGM is closely related to rotation of component weights to perfect congruence and the cross-validation of component weights (ten Berge, 1996). Basically, with this method, factors obtained with the present samples are compared with a known theoretical structure. In doing so, the theoretical weight matrix which reflects the three primary parental rearing dimensions was cast as the hypothetical weight matrix in binary form. This implies that all items rationally defined as comprising a particular dimension (e.g. Rejection) were assigned a 1 for that dimension and a 0 for the other two dimensions, which resulted in a matrix in which each row had one nonzero entry only; the column of weights thus conformed to item sets theoretically assigned to each rearing dimension. Next, the binary weight matrix was used to compute, for each sample, a structure matrix from the 23×23 correlation matrix of s-EMBU items. Convergence between the patterns of factor loadings across binary weight matrix and structure matrix provides strong evidence of factorial invariance. The weights impose correlated factors on the data matrices. Interpretation of these factor correlations provide crucial information with respect to the extent of relative separate existence of factors. The factors are considered standardized weighted summations of item-scores. Comparison of the strength of each corresponding factor across national samples provides further information regarding the cross-sample constancy of the factors of interest. Actual calculations involved were performed with the Simultaneous Components Analysis (SCA) computer program (Kiers, 1990). For further details on the theoretical and technical backgrounds of MGM, see Gorsuch (1983) and Nunnally (1978).

Following Brand-Koolen (1972, p. 48), for purposes of interpretation, loadings < 0.20 were considered small, loadings from 0.20 to 0.39 as moderate, loadings from 0.40 to 0.70 as high and loadings > 0.70 as very high.

The item-test biserial correlation as employed in standard item analysis was used for identifying biased items (cf. Ironson & Subkoviak, 1979, p. 210). Items may be considered biased across national samples, if they provide item-discrimination indices that differ quite sizeably in magnitude from one sample to another. Application of this standard analysis served the function of improving scales across national groups through the identification and elimination of undesirable items.

For examining differences between two correlations involving three variables in a single sample, Humphreys (1978) developed a statistical method which takes into account the association between two different variables that are correlated with a similar third variable.

3. **Results and discussion**

Descriptive item-statistics indicated that no 'difficulty factors' (Gorsuch, 1983) could be expected to emerge from any of the analyses performed below.

3.1. Factorial invariance of the s-EMBU measuring constructs

Table 2 shows, for each nation, for ratings of mothers and fathers separately, the results obtained through application of the multiple group method. Due to space limitations, each of the 23 s-EMBU items has been abbreviated. Table 3 gives, for each nation separately, the correlations among the factors/scales.

It will be seen from Table 2 that all items hypothesized to load at least highly on the Rejection or Emotional Warmth factors were found to do so in a very acceptable fashion. In cases where an item loaded highly on more than one factor (e.g. item 19 in the mothers' data of the Greek sample), it loaded more highly on its theoretically-relevant factor (Emotional Warmth: a 'very high' loading of 0.78) than on a nonhomologous counterpart (Rejection: a 'high' negative loading of -0.43). Such differences in the qualifications given to the magnitudes of the loadings were deemed quite acceptable. In the Greek, Hungarian and Guatemalan samples, item No. 9 ('My parents tried to spur me to become the best', i.e. item No. 38 in the early version) failed to have satisfactory loadings on both the mothers' and the fathers' Protection factors. Interestingly, in the Guatemalan sample, item No. 9 lost its original meaning by migrating from the Protection to the Emotional Warmth factors, with high loadings of 0.67 (fathers) and 0.55 (mothers). In the Guatemalan sample, item No. 10 ("My parents would look sad or in any other way show that I had behaved badly so that I got real feelings of guilt", item No. 25 in the early version) loaded, as hypothesized highly on both Protection factors, but had a comparatively high loading on the mothers' Rejection factor as well. The observation in relation to item No. 10 may reflect a sampling accident. However, the failure to replicate the loadings on item No. 9 in three countries in relation to either one or both parents is somewhat problematic and should be studied further in item-bias analyses presented below. Thus, only 5 out of 552 (items \times nations \times factors \times sex of parent) factor loadings (i.e. practically 1% of the total number of loadings inspected) failed to load as predicted, which is an outstanding result and a strong indication of factorial invariance/validity of the s-EMBU measuring constructs.

The strengths of the Rejection, Emotional Warmth and Protection factors based on the early EMBU were reported for 14 countries by Arrindell et al. (1994, p. 154). These ranged from 9 to 15% for Rejection, from 8 to 14% for Emotional Warmth and from 7 to 11% for Protection. Table 2 gives, for each nation involved in the present study, the strength of each factor in terms of sum of squared factor loadings. The percentage explained variance = (sum of squared factor loadings/23) \times 100%. The corresponding figures for the s-EMBU factors were 18–21% for Rejection, 16–21% for Emotional Warmth and 15–19% for (Over)Protection. Homologous factors thus produced highly comparable factor loadings and factor strengths across nations which is a strong indication of cross-national invariance of the s-EMBU factors.

Cumulatively, the parental rearing factors explained 44.17% (Greece), 43.93% (Guatemala), 42.35% (Hungary) and 40.21% (Italy) of the total variance in the mothers' data. The corresponding figures for the fathers' data were 42.94% (Greece), 43.74% (Guatemala), 43.39% (Hungary) and 40.66% (Italy).

The general patterns of correlations among the early EMBU factors have been for these to be as follows: (a) statistically significant and substantially negative r 's between Rejection and Emotional Warmth, (b) statistically significant and positive associations between Rejection and (Over)Protection and (c) statistically nonsignificant and negligibly low associations between Emotional

Table 2
Multiple group method: structure matrix and sum of squared factor loadings for each factor, by nation

	Nation																							
	Greece						Guatemala						Italy						Hungary					
	R		EW		P		R		EW		P		R		EW		P		R		EW		P	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
<i>s-EMBU items</i>																								
1 bitter or angry	51	56	-25	-26	20	24	59	64	-33	-36	16	18	59	62	-37	-34	18	23	68	59	-34	-38	21	17
2 praise	-31	-26	64	61	-01	04	-26	-21	54	54	12	09	-26	-27	62	62	04	-06	-28	-34	72	67	-02	-06
3 worry	15	16	02	03	57	53	14	19	05	02	48	55	24	29	-06	-14	48	47	21	20	-05	-16	59	61
4 corporal punishment	68	68	-20	-22	26	26	71	71	-40	-31	22	30	65	67	-25	-26	24	25	66	71	-28	-46	17	21
5 account to parents	22	22	12	06	64	65	22	28	11	05	62	63	17	17	17	07	57	55	20	19	18	06	57	58
6 stimulate	-09	-15	59	59	05	04	-35	-35	73	69	15	02	-31	-33	70	68	-01	-12	-19	-31	69	64	11	-11
7 criticize	60	64	-24	-25	21	29	66	70	-33	-36	24	29	61	60	-25	-22	26	29	60	68	-24	-38	29	27
8 forbid	23	27	01	-01	69	72	31	35	-03	-06	60	68	32	25	-05	-07	69	68	30	30	-06	-16	65	64
9 spur	-01	-03	33	35	32	28	-28	-24	67	55	30	22	08	07	23	15	45	41	07	08	23	13	49	37
10 guilt engendering	37	39	-01	-03	54	59	36	44	-11	-22	44	46	28	34	00	-09	48	52	26	24	-02	-07	40	45
11 anxiety exaggerated	22	30	01	-02	60	65	25	24	07	01	68	69	25	22	-04	-06	66	65	18	16	-02	-07	64	67
12 comfort	-33	-34	76	78	03	00	-37	-41	79	81	16	06	-35	-37	78	77	01	-03	-34	-46	81	77	06	-06
13 scapegoat	69	71	-37	-37	23	28	69	69	-36	-37	20	24	70	69	-31	-34	28	24	73	71	-38	-48	26	24
14 like	-36	-39	80	79	11	04	-40	-43	80	79	13	03	-32	-35	78	79	05	-04	-41	-40	82	76	-04	-07
15 like siblings more	63	53	-25	-25	16	12	59	62	-33	-32	19	19	60	58	-26	-26	21	21	55	67	-32	-37	12	13
16 induce feelings of shame	72	71	-30	-33	27	34	74	73	-38	-40	26	33	70	67	-30	-30	35	31	45	41	-01	-06	31	29
17 no freedom allowed	02	06	05	03	48	51	-00	01	16	07	48	42	01	-07	11	13	42	40	-04	-11	18	18	47	46
18 interfere	34	38	-05	-11	72	73	40	41	00	-04	70	70	35	38	-09	-17	67	67	38	42	-14	-26	72	74
19 warmth and tenderness	-38	-43	77	78	-01	-06	-47	-46	80	78	04	02	-38	-36	79	77	01	-10	-38	-46	80	78	-06	-16
20 put definite limits	30	34	-03	-02	70	72	11	14	23	18	52	51	24	27	01	-01	59	60	30	29	01	-06	61	57
21 punish	73	72	-25	-26	37	36	66	65	-22	-30	39	39	67	63	-25	-26	35	33	73	67	-28	-35	38	38
22 influence dressing	34	38	-03	-03	57	61	40	38	-21	-15	50	53	32	33	-09	-16	46	49	38	40	-18	-25	56	59
23 proud when successful	-25	-26	68	73	14	12	-39	-35	76	75	19	12	-27	-23	67	68	06	05	-33	-43	69	67	06	-04
Factor strength	4.18	4.42	3.67	3.78	4.00	4.32	4.71	4.92	4.71	4.45	3.51	3.71	4.16	4.15	3.82	3.82	3.61	3.58	4.12	4.55	4.20	4.33	3.82	3.85

Note. R means Rejection, EW Emotional Warmth, P (Over)Protection. F Father and M Mother. Loadings × 100 (decimal points have been deleted). Item No. 17 has been recoded prior to analysis. Sample *N*'s are given in Section 2.

Table 3
Correlations (Pearsonian type) between s-EMBU factors, by nation

	Nation											
	Greece			Guatemala			Italy			Hungary		
	R	EW	P	R	EW	P	R	EW	P	R	EW	P
<i>Of the fathers</i>												
R	100			100			100			100		
EW	–41***	100		–51***	100		–44***	100		–42***	100	
P	37***	07	100	36***	18***	100	41***	04	100	40***	02	100
<i>Of the mothers</i>												
R	100			100			100			100		
EW	–43***	100		–51***	100		–44***	100		–56***	100	
P	41***	04	100	41***	08*	100	42***	–07**	100	38***	–12**	100

Note. R means Rejection, EW Emotional Warmth, P (Over)Protection. Correlations $\times 100$ (decimal points have been omitted). Minimum pairwise N 's: 462 (Greece), 464 (Guatemala), 1059 (Italy) and 406 (Hungary). * $P \leq 0.05$, ** $P \leq 0.01$, *** $P \leq 0.001$ (one-tailed tests).

Warmth and (Over)Protection (Arrindell et al., 1994, p. 158). Table 3 gives the corresponding associations for the s-EMBU, by nation, where it will be seen that patterns (a) and (b) were more than clearly replicated. The general pattern of a negligible, nonsignificant relation between Emotional Warmth and Protection was confirmed for half of the correlations, although even the significant ones were too small in order to jeopardize the relative independence of the factors of interest. Moreover, importantly, neither one of the correlations among the factors/scales exceeded the scale reliabilities. The corresponding reliabilities are displayed in Table 4. In fact, the factor correlations were clearly smaller than the scale reliabilities (see below), clearly indicating that the parental rearing measures could be distinguished reliably from one another in ratings of nonclinical Ss.

3.2. Reliability and item-bias analysis

Only one item, namely No. 9 — not surprisingly the same item that failed in the invariance analyses to have salient loadings on its theoretically-relevant factors — correlated at different magnitudes with the Protection scales. In some cases (in the Hungarian, Greek and Guatemalan data), this item was nonsignificantly associated with Protection. Hence, item No. 9 was removed from the Protection subscales. Further analyses thus focussed on Protection scales with the exclusion of item No. 9.

The results of reliability and homogeneity analyses shown in Table 4 also excluded item No. 9. From Table 4 it will be seen that the internal consistency coefficients (Cronbach's alpha's) were all, without any exception, of high magnitude (≥ 0.72). The range of the item-remainder correlations pertaining to each EMBU scale showed that the individual r 's were all well within acceptable limits

Table 4
Reliability analysis for each s-EMBU scale, by nation

	Nation												
	Greece			Guatemala			Italy			Hungary			
	R	EW	P	R	EW	P	R	EW	P	R	EW	P	
<i>Of the fathers</i>													
Cronbach's α	76	79	80	77	82	74	75	82	74	72	85	77	
Mean inter-item r	32	39	31	33	43	24	31	42	24	28	49	26	
Range of item- remainder r 's	L	32	41	35	39	33	29	37	45	28	24	56	24
	U	60	67	63	59	68	60	57	68	60	56	73	63
<i>Of the mothers</i>													
Cronbach's α	77	79	82	79	81	76	74	81	74	75	81	78	
Mean inter-item r	33	41	34	36	42	26	29	42	24	31	42	28	
Range of item- remainder r 's	L	35	42	37	47	33	24	40	44	23	20	47	28
	U	62	66	63	58	69	61	53	67	57	57	66	65

Note. R means Rejection, EW Emotional Warmth and P (Over)Protection. For sample N 's see Section 2. Analyses were conducted after the removal of item No. 9 and the obvious recoding of item No. 17. Coefficients $\times 100$ (decimal points have been deleted). L is lower bound, U upper bound.

since they ranged from 0.20 to 0.73 — the lowest acceptable bound being 0.2 (Nunnally, 1978, p. 285). In addition, the mean inter-item r 's (as measures of homogeneity) were also of acceptable magnitudes and ranged from 0.24 to 0.49. These mean inter-item figures were of particular interest since they indicated that while the sample of items from the EMBU scales would probably correlate 0.7 to 0.9 (based on the alpha's) with another sample of items drawn from the same population, at the same time we are dealing with homogeneous sets of scale items. The acceptable range for the mean inter-item r has been reported to lie somewhere between 0.1 and 0.5, with the 0.2–0.4 range of intercorrelations offering an acceptable balance between bandwidth on the one hand and fidelity on the other (Briggs & Cheek, 1986).

These reliability analyses warrant the use of a scoring key that departs only very slightly from the one based on the original subscale composition, in that only item No. 9 had to be removed from the subscale to which it was originally assigned. The actual scoring key for the s-EMBU is given in Table 5. Descriptive statistics pertaining to each s-EMBU scale will be given in a forthcoming publication for a large series of countries.

3.3. Further evidence of construct validity

Predicted from theory, many studies have previously shown that Ss who described their parents as loving also described themselves as lower in neuroticism (i.e. as well-adjusted), as having a more positive self-concept and as higher in extraversion, agreeableness and conscientiousness than Ss who described their parents as unloving. Low parental care does not necessarily imply high Rejection, but the latter has also been implicated in many psychiatric conditions, as has parental

Table 5
Scoring key for the s-EMBU

		No. of items
Rejection	1, 4, 7, 13, 15, 16, 21	7
Emotional Warmth	2, 6, 12, 14, 19, 23	6
(Over)Protection	3, 5, 8, 10, 11, 17*, 18, 20, 22	9

* Reversed scoring: 1 = 4, 2 = 3, 3 = 2, 4 = 1 (see Appendix A)

overprotection which has been especially linked with neurotic difficulties such as anxiety disorders (for reviews or actual findings, see for example Perris, Arrindell and Eisemann, 1994). On the basis of these findings, it was predicted that the following general correlational patterns would emerge in correlating the s-EMBU subscales with personality and sex role aspects.

Emotional Warmth would correlate negatively with Neuroticism. In addition, Emotional Warmth would correlate positively with high self-esteem and with measures of positive affect such as Extraversion, Masculinity (which correlates negatively and positively respectively with Neuroticism and Extraversion) and Femininity (which contains such facets as tender-mindedness, agreeableness, modesty and altruism).

Rejection was hypothesized to correlate positively with Neuroticism and with low self-esteem (typically found in depression which is correlated with neuroticism).

Overprotection was hypothesized to be significantly correlated with Neuroticism, which has obsessional worrying and anxiety as important facets, among others (Eysenck & Eysenck, 1991).

The outcome of correlational analyses linking s-EMBU scores with scores on the EPQR-A, s-BSRI and Rosenberg's Self-Esteem scale are displayed in Table 6 for each national sample. Since these correlations differed across the sexes, they are presented for females and males separately.

The findings in Table 6 may be summarized as follows.

3.3.1. Emotional Warmth

In males, Emotional Warmth correlated consistently negatively with trait-Neuroticism. In terms of Cohen (1992), the observed associations reflected small to medium effect sizes. The same was true for females, except that no significant associations were observed in the Greek data (neither with respect to mothers nor in relation to fathers). In females, significant associations all reflected small effect sizes.

In males, Emotional Warmth correlated consistently significantly positively with Extraversion (small to practically large effect sizes), with the largest association observed for the Hungarian sample, namely 0.43 (fathers' data). In females, fathers' Emotional Warmth correlated as predicted significantly positively with Extraversion in each country. In the mothers' data significant associations were observed with Extraversion in Greek and Italian Ss (small effect sizes), but not in the groups from Guatemala and Hungary. Emotional Warmth, again, correlated consistently positively with both Masculinity and Femininity in males (small to medium effect sizes). In females, Emotional Warmth correlated significantly positively with Femininity in each country (small to

Table 6

Correlations (Pearsonian type) between s-EMBU scales on the one hand and the EPQR-A, s-BSRI and Rosenberg SE scales on the other hand: males and females separately

		Nation											
		Greece			Guatemala			Italy			Hungary		
		R	EW	P	R	EW	P	R	EW	P	R	EW	P
<i>Males</i>													
<i>Of the fathers</i>													
EPQR-A	Neuroticism	33***	-30***	10	29***	-22***	20**	14**	-12**	16***	20**	-20**	15*
	Extraversion	-25***	28***	-07	-18**	20**	-17**	03	15***	06	-10	43***	01
s-BSRI	Masculinity	-27***	37***	-01	-00	19**	-06	-06	21***	05	-27***	35***	-11
	Femininity	-17**	32***	09	-14*	35***	04	-08*	22***	09*	-19**	32***	-12
Rosenberg	Self-Esteem	-12	30***	-03	-24***	29***	-15**	-15***	19***	-13**	-15*	34***	-19**
<i>Of the mothers</i>													
EPQR-A	Neuroticism	36***	-22**	11	27***	-16**	17**	20***	-17***	15***	29***	-23**	24**
	Extraversion	-27***	21**	-06	-10	13*	-11	-04	18***	-03	-09	35***	-08
s-BSRI	Masculinity	-27***	34***	-09	01	20**	01	-12**	27***	-01	-26***	32***	-22**
	Femininity	-20**	34***	07	-16**	29***	-02	-10*	26***	08*	-21**	39***	-05
Rosenberg	Self-Esteem	-13*	21**	-07	-29***	27***	-23***	-20***	25***	-11**	-18*	38***	-24**
<i>Females</i>													
<i>Of the fathers</i>													
EPQR-A	Neuroticism	18***	-04	17**	12*	-10*	22***	23***	-13***	21***	21***	-22***	19***
	Extraversion	-06	22***	00	-06	16**	-00	-06	12**	-05	01	14**	-11*
s-BSRI	Masculinity	-01	18***	02	-06	20***	05	04	08*	03	07	12*	-06
	Femininity	03	24***	04	-11*	23***	03	-03	19***	07*	-04	26***	09
Rosenberg	Self-Esteem	-16**	13**	-07	-14*	20***	08	-20***	20***	-18***	-14**	39***	-06
<i>Of the mothers</i>													
EPQR-A	Neuroticism	17**	-07	16**	18**	-10*	17**	20***	-13***	18***	13*	-17**	17**
	Extraversion	00	15**	-06	01	09	06	00	10**	-03	09	04	-12*
s-BSRI	Masculinity	03	11*	-06	07	13*	10	03	09*	05	05	08	-06
	Femininity	-04	23***	-03	-11*	25***	01	-04	16***	-02	-16**	22***	-03
Rosenberg	Self-Esteem	-12*	11*	-07	-21***	29***	-11*	-21***	24***	-11**	-17**	29***	-11*

Note. R means Rejection, EW Emotional Warmth and P (Over)Protection. EPQR-A is Eysenck Personality Questionnaire Revised-Abbreviated, s-BSRI short Bem Sex Role Inventory and SE Self Esteem scale. *N* (males): 168–173 (Greece), 206–217 (Guatemala), 476–479 (Italy) and 144–145 (Hungary). *N* (females): 281–289 (Greece), 252–265 (Guatemala), 575–585 (Italy) and 261–264 (Hungary). Correlations $\times 100$ (decimal points have been omitted). * $P \leq 0.05$, ** $P \leq 0.01$, *** $P \leq 0.001$ (one-tailed tests).

practically medium effect sizes), whereas the positive associations with Masculinity were significant in Greece, Guatemala and Italy (small effect sizes), but inequivalent across parent's sex in Hungary, i.e. only significant in fathers' data (small effect size).

In both males and females, Emotional Warmth correlated consistently positively with high self-esteem (small to medium effect sizes).

3.3.2. *Rejection*

Significantly positive associations were observed in each country with trait-Neuroticism. The effect sizes in males were small to medium, whereas in females all were small. In females, Rejection correlated significantly negatively with high self-esteem in each country (small effect sizes). In males, the prediction was confirmed in both fathers' and mothers' data collected in Guatemala, Italy and Hungary (small to medium effect sizes). In Greek males, however, Rejection correlated negatively with high self-esteem in the ratings of the mothers (small effect size), but not in those of the fathers.

3.3.3. *Protection*

In the data of the females, high Protection correlated consistently with high Neuroticism (small effect sizes). A similar observation was made in the data of the males collected in Guatemala, Italy and Hungary (small effect sizes). Neither in ratings of the Greek mothers nor in those of the Greek fathers, however, did high Protection coincide with high Neuroticism.

3.4. *Differential correlational patterns with personality?*

The findings in Table 6 provide the further possibility of inspecting whether, within each country, the different scales of the s-EMBU were differentially related to personality measures. A demonstration of this would provide further evidence of divergent validity of the s-EMBU measuring constructs.

Close inspection of Table 6 showed that Rejection and Emotional Warmth evidenced dissimilar patterns of correlations with personality measures. Rejection and Protection too showed dissimilar configurations of associations with other measures. The same was true for the correlations that Protection and Emotional Warmth showed with the range of personality measures. These observations were valid for each national sample, with a tendency for the differences to be more marked (1) in males than in females and (2) for comparisons involving Rejection vs. Emotional Warmth and Emotional Warmth vs. Protection than for those involving Rejection vs. Protection. Limitations of space preclude a report in great detail of the descriptive results and of the findings obtained through statistical testing, but one illustration will suffice.

In the Greek sample of male Ss, for instance, Rejection and Emotional Warmth correlated significantly differently with all measures ($P < 0.05$, one-tailed, following the method of Humphreys, 1978). Emotional Warmth and Protection also differed significantly from one another in all comparisons ($P < 0.05$). Rejection and Protection correlated significantly differently with all measures ($P < 0.05$), except with Self-Esteem. Altogether, this reflected an excellent distinction between the relevant measures in this national subsample.

4. Conclusions

On the basis of the psychometric findings from four national contexts, the s-EMBU can be recommended as a functional equivalent to the early 81-item EMBU when the clinical and/or research context does not adequately permit the application of the original longer version. The Rejection, Emotional Warmth and Protection scales of the short 23-item EMBU are reliable and valid and the corresponding factors invariant across national samples.

Attention should be drawn to the fact that some interesting differences emerged between nations in their patterns of associations relating parental rearing styles to personality factors. For example, when daughters' ratings of their mothers were considered, significant associations were observed between Emotional Warmth and Extraversion in Greek and Italian samples, but not in the groups from Guatemala and Hungary. These differences require social psychological explanation which probably could be most profitably sought in cross-national differences in such dimensions of national culture as Power Distance and Masculinity–Femininity (see Hofstede, 1991). Such dimensions of national culture describe, among other things, how parents in different countries think children should be raised best. These dimensions of national culture also describe the ways in which parents actually raise their children. National base-line differences in rearing styles are among the factors that probably affect the kind and magnitude of the correlations between rearing styles and personality formation. Further data from a variety of countries are needed in order to empirically test this speculation.

A convergent validity study comparing the s-EMBU with the Parental Bonding Instrument or PBI (Parker, Tupling, & Brown, 1979) is currently underway.

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Appendix A

The s-EMBU

Instructions

Below (see Table 7) are a number of questions concerning your childhood. Please read through the following instructions carefully before filling out the questionnaire.

Even if it is difficult to recall exactly how our parents behaved towards us when we were very young, each of us does have certain memories of what principles they used in our upbringing. When filling out this questionnaire it is essential that you try to remember your parents' behavior

towards you as you yourself experienced it. You will find a number of questions, to be answered according to different alternatives. For each question you must circle the alternative applicable to your own mother's and father's behavior towards you.

Be careful not to leave any questions unanswered. We are aware that certain questions are impossible to answer if you do not have any sister(s) or brother(s) or if you have been raised by one parent only. In this case leave these questions unanswered.

For each question please circle the responses applicable to your mother's and father's behavior towards you. Read through each question carefully and consider which one of the possible answers applies to you. Answer separately for your mother and your father.

Table 8 is an example to illustrate how you should fill out the questionnaire.

Table 7

Item	
(1)	It happened that my parents were sour or angry with me without letting me know the cause
(2)	My parents praised me
(3)	It happened that I wished my parents would worry less about what I was doing
(4)	It happened that my parents gave me more corporal punishment than I deserved
(5)	When I came home, I then had to account for what I had been doing, to my parents
(6)	It think that my parents tried to make my adolescence stimulating, interesting and instructive (for instance by giving me good books, arranging for me to go on camps, taking me to clubs)
(7)	My parents criticized me and told me how lazy and useless I was in front of others
(8)	It happened that my parents forbade me to do things other children were allowed to do because they were afraid that something might happen to me
(9)	My parents tried to spur me to become the best
(10)	My parents would look sad or in some other way show that I had behaved badly so that I got real feelings of guilt
(11)	I think that my parents' anxiety that something might happen to me was exaggerated
(12)	If things went badly for me, I then felt that my parents tried to comfort and encourage me
(13)	I was treated as the 'black sheep' or 'scapegoat' of the family
(14)	My parents showed with words and gestures that they liked me
(15)	I felt that my parents liked my brother(s) and/or sister(s) more than they liked me
(16)	My parents treated me in such a way that I felt ashamed
(17)	I was allowed to go where I liked without my parents caring too much
(18)	I felt that my parents interfered with everything I did
(19)	I felt that warmth and tenderness existed between me and my parents
(20)	My parents put decisive limits for what I was and was not allowed to do, to which they then adhered rigorously
(21)	My parents would punish me hard, even for trifles (small offenses)
(22)	My parents wanted to decide how I should be dressed or how I should look
(23)	I felt that my parents were proud when I succeeded in something I had undertaken

The scoring key for the s-EMBU is given in Table 5.

Coding/answer alternatives for each item are: 'No, never' = 1, 'Yes, but seldom' = 2, 'Yes, often' = 3, 'Yes, most of the time' = 4. Please observe that item No. 17 should be recoded as follows: 1 = 4, 2 = 3, 3 = 2, 4 = 1.

The item Nos. for the s-EMBU correspond with the following item Nos. in the early 81-item version: 1 = 76, 2 = 48, 3 = 66, 4 = 23, 5 = 46, 6 = 47, 7 = 59, 8 = 18, 9 = 38, 10 = 25, 11 = 73, 12 = 21, 13 = 33, 14 = 2, 15 = 16, 16 = 71, 17 = 69, 18 = 1, 19 = 74, 20 = 70, 21 = 64, 22 = 14 and 23 = 78.

Table 8

		No, never	Yes, but seldom	Yes, often	Yes, most of the time
I got beaten by my parents	F	1	2	③	4
	M	①	2	3	4
My parents praised me	F	1	2	⑤	4
	M	1	2	3	④

In the questionnaire, F is father and M mother.

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