



ORIGINAL ARTICLE

Parenting practices during early childhood: validity evidence of a Brazilian scale

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Abstract

Objective: The present study aims to analyze the validity of evidence and internal consistency of an inventory for assessing parenting practices during early childhood.

Method: Participants were 857 mothers of one-to-42-months children recruited in three cities in the Southeast region and one city in the Midwest region of Brazil. The participants answered a sociodemographic questionnaire with maternal and child data, and the Parenting Styles Inventory for Mothers of Babies (IEPMB). The IEPMB includes 25 questions about positive and negative parenting practices that mothers use to raise their children. An exploratory and confirmatory factor analysis was conducted using the following criteria to indicate adequate model fit: root-mean-square error of approximation (RMSEA) < .08; standardized root mean square residual (SRMR) < .09; comparative fit index (CFI) > 0.90. For the hypothesis-testing method, a comparison between groups using a student's t-test based on the child's age (infants vs. toddlers) and mother's age (adolescents vs. adults) was carried out.

Results: The final 11 items model of the measure revealed an adequate overall model fit (RMSEA = 0.04; SRMR = 0.04; CFI = 0.94). The items were grouped into three constructs: Aggressiveness and Emotional Dysregulation, Relaxed Discipline, and Positive Monitoring. Adolescent mothers reported less positive monitoring than adult mothers ($p < 0.001$). Mothers of toddlers reported more aggressiveness/emotional dysregulation ($p < 0.001$) and relaxed discipline ($p = 0.05$) than mothers of infants.

Conclusions: The instrument named from this study as the Parenting Practices Inventory for Mothers of Babies showed evidence for measuring mothers' parenting practices in early childhood and allows the identification of parents who need support.

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Introduction

Parenting practices refer to specific behaviors used by parents to educate, socialize, and control their children's behavior.¹ These practices can be classified into positive, which are related to the development of prosocial behaviors, and negative, which are related to antisocial behaviors.¹ The set of parenting practices or parenting attitudes used by caregivers is defined as Parenting Style.¹ Practices used with younger children are often denominated as care practices, parenting practices, and educational practices.²

A healthy and nurturing relationship between parents and children involves the absence of negative practices (e.g., neglect and physical abuse) and the strong presence of positive parenting practices (e.g., positive monitoring, when the parent is present and adequately meets the children's needs).³ The use of positive parenting practices is associated with child development, including fewer behavioral problems.⁴ Parenting practices play a fundamental role in children's development, as they constitute a base for the acquisition of children's behavioral repertoires.⁵

Brazil has two laws "Menino Bernardo" and "Marco Legal da Primeira Infância"^{6,7} instituted for child protection that highlights the relevance of positive parenting, children's right to be educated and cared for without the use of physical punishment, and establish that public policies must provide interventions to improve the relationships between caregivers and children. Therefore, assessing parenting practices at the beginning of child development can contribute to families' interventions focusing on positive practices with children.

The literature highlights that studies should employ instruments with good psychometric qualities.⁸

In Brazil, two instruments are available for assessing parenting in early childhood: (i) Parental Beliefs and Caring Practices Scale (E-CPPC)⁹ focuses on primary care practices (e.g., cleaning the child, feeding,) and stimulation (e.g., playing games, reading books) of mothers of children aged 0 to 6 years; (ii) and the Parenting Styles Inventory for Mothers of Babies (IEPMB),¹⁰ focused on parenting practices to educate and discipline the child's behavior, mothers of children from 0 to 3 years old. The IEPMB was elaborated from an adaptation of the Parenting Style Inventory (IEP) [1] to assess the practices of mothers in early childhood.

The IEP is a well-known and highly used instrument, developed for the Brazilian context, focused on parents of children over five years old.¹ The IEP defines and assesses parenting styles from a set of the following seven parenting practices: two positives, including positive monitoring and moral behavior, and five negatives, comprising negligence, negative monitoring, relaxed discipline, inconsistent punishment, and physical abuse.¹ In this approach, the parenting style assessed refers to the type of intervention that parents need to better raise their children.¹ Considering the instrument's age limitation, it was necessary to adapt and develop the IEPMB to measure the parenting practices of parents of

younger children. The IEPMB was used in studies on parenting practices and maternal health,^{11,12} maternal and baby variables,⁸ intervention programs,^{13,14} and mother-infant interaction.¹⁵ However, it still does not have psychometric validation.

Therefore, the present study aims to analyze the validity of evidence of the IEPMB for assessing parenting practices for Brazilian mothers of children under the age of 42 months. To do so, the authors analyze the construct validity and internal consistency of the IEPMB in a Brazilian sample.

Methods

Participants

The participants were 857 mothers (208 adolescents and 649 adults) of children from 1 to 42 months living in three cities in the Southeast region (Bauru, Ribeirão Preto e Itapetininga/SP) and one city in the Midwest region of Brazil (Dourados/MS).

The inclusion criteria were mothers (biological or adoptive) of children aged 0 to 3 years. The only exclusion criteria were mothers with apparent cognitive impairment, leading to an inability to understand the project. In these cases, when researchers noticed, they did not invite to the study. The participants were recruited in extension projects offered to the community at two universities' psychology clinics and preschools.

The sample size was established based on the criteria of at least 10 participants per parameter¹⁶ (25 items of the scale) and two different samples for conducting the exploratory and confirmatory factor analysis.¹⁷ Therefore, the estimated number was at least 500 participants.

Measures

The participants answered a sociodemographic questionnaire including the mother's age and education and the child's age and gender.

Parenting practices were self-reported by the mothers using the "Parenting Styles Inventory for Babies' Mothers (IEPMB).¹⁰ This instrument consists of 25 items, grouped by the developers, into five subscales: Positive Monitoring, Negligence, Physical Abuse, Relaxed Discipline, and Inconsistent Punishment. All the items are a 3-points Likert scale, where participants answer "always" (2 points), "sometimes" (1 point), and "never" (0 points). The higher score on the negative parenting practices meant worse parenting practices. For Positive Monitoring, a high score meant better practices. The IEPMB was used in several studies and is an efficient and easy tool for the early identification of parenting practices.^{13,14}

Procedure

The Research Ethics Committee of the University of the Universidade Estadual Paulista Campus Bauru approved the project (Protocol 4205/46/01/11). All participants were informed about the objectives of the study and provided informed consent prior to answering the study's questions. The mothers responded individually to the instruments, with the support of the researcher in reading when requested.

Analytic strategy

Construct validity was assessed using an exploratory and confirmatory factor analysis, and the hypothesis-testing method.¹⁷

Exploratory and confirmatory factor analysis

To examine the psychometric properties of the IEPMB scale, an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) were conducted with a randomly selected sample, as recommended by the literature.^{17,18} Thus, 425 mothers remained in the exploratory analysis and 432 in the confirmatory analysis, totaling 857 participants.

Considering that this is the first study to analyze the psychometric properties of the IEPMB scale, all the sections were combined, and an EFA was conducted using the principal factors method with oblique Promax rotation. The number of factors retained followed field standards¹⁹ that recommend using Kaiser's criterion, which suggests retaining all factors above the eigenvalue of 1, in conjunction with the scree test. To ensure the inclusion of a broad range of items in each factor, two criteria were used to retain items: (a) items must have a standardized factor loading ≥ 0.3 , and (b) each factor must have a minimum of three items.²⁰ After the EFA, the authors conducted the CFA, using the following criteria to indicate adequate model fit: (i) a relative chi-square value (the ratio of chi-square to degrees of freedom) of 3 or less, (ii) a root-mean-square error of approximation (RMSEA) of less than .08; (iii) a standardized root means square residual (SRMR) of less than 0.09;¹⁶ (iv) a comparative fit index (CFI) of 0.90 or above (with > 0.95 considered ideal)^{21,22} of Cronbach's alphas were calculated to test the internal consistency of each latent variable. A Cronbach's alpha above 0.6 is generally acceptable.²³ The number of items also influences measurement instruments, with an instrument of 10 to 15 items having reliability > 0.50 .²⁴

Hypothesis-testing method

Another method used for the construct validity was the hypothesis-testing through comparison between groups based on child's age (children under 12 months vs. children over 12 months) and mother's age (adolescents vs. adults) was carried out for each parenting practice. The Shapiro-Wilk test was used to verify if the data were normally distributed.

Between the groups comparisons were analyzed using t-test for independent samples for the variables normal distributed and the Mann-Whitney test for the variables that were not normally distributed. Based on prior parenting research,¹⁴ the authors hypothesized that mothers of children under 12 months would demonstrate better parenting practices,²⁵ and that will be differences between the

parenting practices of adolescents (age ≤ 19 years old) and adult mothers (age ≥ 20 years old).

Results

Sample characteristics

The child sample had a slight predominance of girls (52%), and the child age median was 8.36 months (SD ± 6.57 [1–42]). Most mothers had children in the first year of life (87%). Mothers were, on average, 25.62 years old (SD ± 6.89 [14–48]), 48.3% had completed high school, and 51.7% had higher education or postgraduate education.

Measurement model

Parenting practices: IEPMB scale. The results of the EFA showed that the 21 items in the IEPMB scale were not grouped into five factors suggested initially by scale developers. Instead, based on the eigenvalues (Factor 1 = 2.94; Factor 2 = 1.90; Factor 3 = 1.07) the scree plot, and the theoretical analysis, the results suggested that a three-factor model provided the best fit for the data (Table 1).

The following items did not present a loading above 0.3 (the cutoff value) in any factor: 1 (When my child does something that displeases me, the way I answer it depends on my mood); 6 (I establish a routine but can never follow it.); 13 (My child stays with others caregivers most of the time); 20 (I do not know what my child likes.); and 24 (I leave my child's problems for others to solve). Therefore, these items were excluded after the EFA.

Following EFA, a CFA was conducted on the 19 remaining IEPMB scale items that presented a EFA loading above 0.3 to confirm the proposed three-factor model. This first model was not confirmed by the CFA (RMSEA = 0.07; SRMR = 0.07; CFI = 0.73; and $\chi^2 / df = 2.85$). The second model tested in the CFA included 13 items that presented a EFA loading above 0.40, also was also not confirmed (RMSEA = 0.05; SRMR = 0.07; CFI = 0.89; and $\chi^2 / df = 2.17$). The final CFA model included 11 items that presented a EFA loading ≥ 0.47 , the model revealed an adequate overall model fit (RMSEA = 0.04; SRMR = 0.04; CFI = 0.94; and $\chi^2 / df = 1.83$). All loadings were statistically significant and in the expected direction within this model, showing that the items represented three different constructs (Figure 1).

The items in each factor were similar in their content, and the authors named them as follows: Aggressiveness and Emotional Dysregulation; Relaxed Discipline; and Positive Monitoring. Positive monitoring and aggressiveness and emotional dysregulation were negatively correlated. Therefore, these 11 items confirmed for the IEPMB constitute the short version of the instrument (Appendix 1 - Supplementary Material in Portuguese). Quartile analyzes were performed to indicate the respective cutoff points, with the 75th percentile. Negative parenting practices were established, with a cutoff point ≥ 1.0 for Factor 1 - Aggressiveness and Emotional Dysregulation, and ≥ 4 for Factor 2 - Relaxed Discipline. For Factor 3 - Positive Monitoring - a cutoff point for scores ≤ 5 . The 75th percentile for negative parenting practices was established, with a cutoff point ≥ 1.0 for Factor 1 (Aggressiveness and Emotional Dysregulation, n) and ≥ 4 for

Table 1 IEPMB Scale items and corresponding factor loadings from an exploratory factor analysis.

Items of IEPMB Scale	Factor loadings
Factor 1 - Aggressiveness and Emotional Dysregulation	
2 - My work disrupts the attention I give to my child.	0.37
3 - I threaten that I will beat or get too mad with my child, but then I do nothing.	0.32
4 - I hit my child with my hand or with some objects.	0.47 ^a
8 - When my child cries, he or she seeks another person because I am always busy.	0.36
10 - My child is very afraid of me.	0.34
12 - I mistreat my son or daughter when I'm nervous and when the anger passes I regret it.	0.56 ^a
15 - My child is physically hurt when I hit him or her.	0.37
17 - When I'm nervous, I end up taking it out on my son or daughter	0.69 ^a
19 - I'm bad-tempered with my child.	0.52 ^a
22 - I am aggressive with my child.	0.51 ^a
25 - I am violent with my child.	0.39
Factor 2 - Relaxed Discipline	
7 - When I'm happy I do not care about my son's or daughter's behaviors that displease me.	0.41
9 - If my child cries, I say that I will not catch him or her, but if he or she insists on crying, I catch him or her.	0.51 ^a
14 - I don't make time for my child, things happen naturally.	0.50 ^a
21 - I notice that I will not put my child in my arms when he or she throws a tantrum, but then I get pity and end up doing it.	0.65 ^a
Factor 3 - Positive Monitoring	
5 - I demand to know how my child was in my absence.	0.57 ^a
11 - When my child is crying I try to figure out what bothers him or her.	0.40
16 - Even when I'm busy or traveling, I phone to find out how my child is.	0.64 ^a
18 - After staying away from my child I ask the caregiver how he or she behaved (example: if he or she cried; if he or she was fine).	0.63 ^a
23 - I establish a routine with my child and try to follow it.	0.31

^a Items remained in the final version after confirmatory analysis. Item responses all sections are made on a 3-point Likert scale.

Factor 2 (Relaxed Discipline). The percentile for Factor 3 - Positive Monitoring was 5, with a cutoff point for scores ≤ 5 , indicating the need for guidance or intervention if accompanied by negative practices Factor 1 or Factor 2 above the cutoff.

The internal consistency for all subscales, calculated based on the full sample, was adequate (aggressiveness and emotional dysregulation, $\alpha = 0.68$; relaxed discipline, $\alpha = 0.55$; and positive monitoring, $\alpha = 0.63$).

Descriptive results of parenting practices

The descriptive statistics for the whole sample revealed that the average aggressiveness and emotional dysregulation (total score) was 0.87 (SD \pm 1.43 [0 - 8]). The average relaxed discipline was 2.83 SD \pm 1.74 [0 - 6]). Finally, the average total scores for positive monitoring were high (close to the maximum score) at 5.39 (SD \pm 1.27 [0 - 6]).

Between groups comparison

The between-groups analysis showed that mothers of children under 12 months reported significantly less aggressiveness and emotional dysregulation, and relaxed discipline than mothers of children over 12 months (Table 2). There was a statically significant difference in positive monitoring regarding adolescents and adult mothers, showing that adolescents mothers reported less of this practice.

Discussion

The present study revealed, based on exploratory and confirmatory analyses, that items of the IEPMB reflected the three constructs of parenting practices: Aggressiveness and Emotional Dysregulation, Relaxed Discipline, and Positive Monitoring. Therefore, this version of the instrument, based on the present study findings, only assesses practices and not styles; therefore, the name became the Parenting Practices of Mothers of Babies Inventory ("*Inventário de Práticas Parentais de Mães de Bebês*"; IPPMB). Different from previous international instruments, validated for Brazil, that assess parenting practices of caregivers of children of different ages, such as the Parent and Family Adjustment Scales (PAFAS)²⁶ and the ACT Scale;^{4,27} the IPPMB is specific for mothers of children in early childhood.

The IEPMB items included in the aggressiveness and emotional dysregulation factor represent the mother's difficulty to deal with negative emotions, mistreating, being aggressive, and hitting the children with her hand or with some objects. Parents' self-regulation has been the central construct addressed in parenting programs²⁸ that enable caregivers to care for themselves and their children.²⁹

The factor of relaxed discipline includes IPPMB items targeting parents not establishing a routine and setting inappropriate rules in situations that should calm the child. These items are specific for children's first years of life in which some behaviors need to be mediated by the parents, such as crying and tantrums. These behaviors can be challenging for parents who do not know how to act and say that they will not catch the child when they cry or have tantrums and end up doing it. These behaviors reinforce the child's tantrums and crying to get the attention that they never know if it will come.³⁰ Additionally, establishing a routine with the child is essential at this stage of life.

The positive Monitoring factor represents the IPPMB items focused on mothers showing interest and asking for

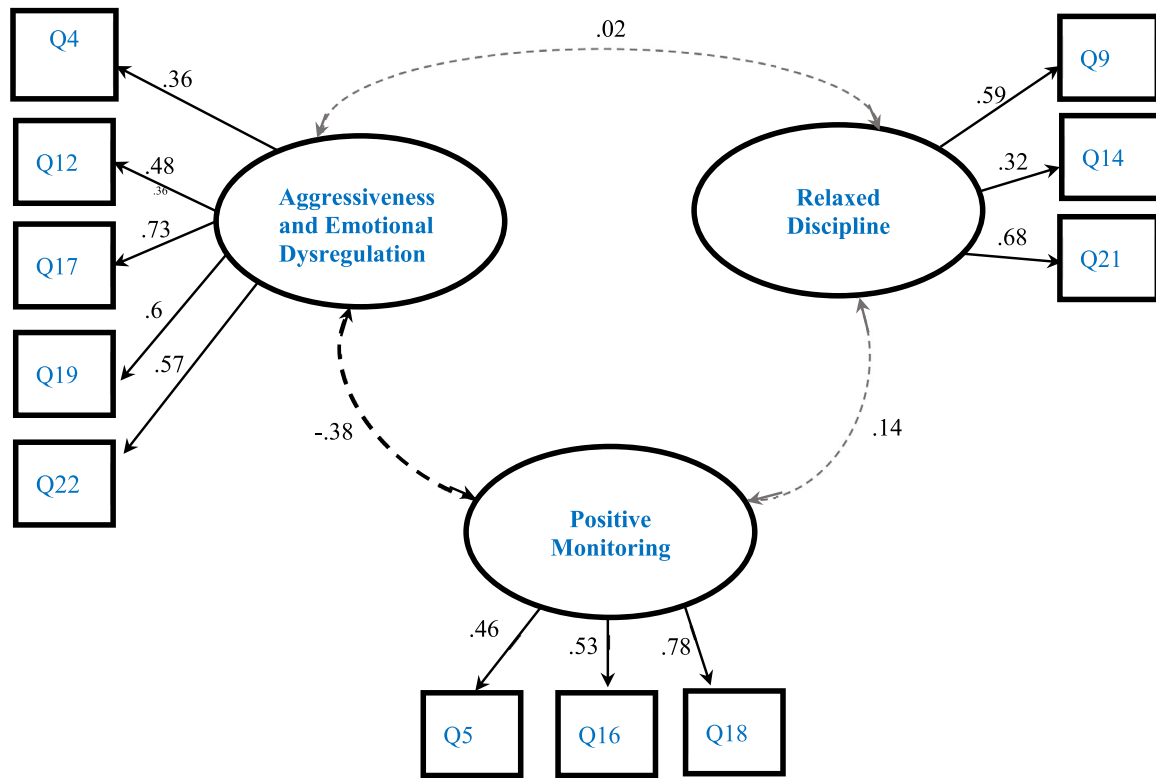


Figure 1 Confirmatory Factor Analysis of IEPMB Scale ($n = 432$). Factor loadings are standardized. The black lines represent significant pathways, gray lines represent non-significant pathways, with dashed lines indicating a correlation.

information about how the child was in her absence. Understanding how the child can offer a proper interpretation and a contingent response to the child’s behavior.³⁰

The descriptive results showed that the relaxed discipline presented higher scores among the negative parenting practices, showing that mothers report more difficulties with this practice. Mothers of toddlers reported more relaxed discipline and aggressiveness/emotional dysregulation. One

hypothesis is that when children grow up and start to interact more with the environment, the negative practices appear more frequently. Therefore, the first years of life are a moment to carry out preventive interventions focus on parenting.

The findings also showed that adolescent mothers reported monitoring less of their children than adult mothers. As highlighted by the literature young parents tend to

Table 2 Between group comparison of parenting practices.

Parenting practices	Group differentiated by child age		p	Group of adolescents vs. adult		p
	Child.1- 12 m.	Child.13 - 42 m.		Adolesc.	Adults	
	$n = 747$	$n = 109$		$n = 208$	$n = 649$	
	Mean/Median (SD; range)			Mean/Median (SD; range)		
Aggressiveness and Emotional Dysregulation	0.77 / 0 (1.39; 0-8)	1.47 / 1 (1.49; 0-5)	$< 0.01^a$	0.77 / 0 (1.41; 0-8)	0.90 / 0 (1.43; 0-8)	0.12 ^a
Relaxed Discipline	2.78 / 3 (1.74; 0-6)	3.14 / 3 (1.70; 0-6)	0.05 ^b	2.97 / 3 (1.86; 0-6)	2.78 / 3 (1.70; 0-6)	0.16 ^b
Positive Monitoring	5.36 / 6 (1.29; 0-6)	5.59 / 6 (1.05; 0-6)	0.09 ^a	5.07 / 6 (1.47; 0-6)	5.49 / 6 (1.18; 0-6)	$< 0.01^a$

Child, children; m, months; Adolesc, adolescents; SD, standard deviation; p, p value from the t test for independent samples.

Item responses for the IEPMB range from 0 to 10 from Aggressiveness and emotional dysregulation, and from 0 to 6 for Relaxed Discipline and Positive Monitoring. For Positive Monitoring higher scores indicate better parenting practices, and for the other two practices higher scores indicate worst parenting practices.

^a Mann-Whitney test used for variable not normally distributed.

^b t-test for independent samples for variable normal distributed.

be less responsive to their children than older adult parents.²⁵ Therefore, there is a need for parenting programs for teenage mothers. The IPPMB scale showed to be adequate to differentiate groups and indicate risk factors for negative parenting practices.

In this study, most participants had children up to 1-year-old, and as it was verified, there are differences in parenting practices according to the child's age. Thus, future studies should expand the sample of mothers of 2 to 3 years old children and carry out new psychometric analyzes of IPPMB. It is noteworthy that the instrument can be used in early childhood and analyzed as suggested in this study, allowing a greater understanding of parenting practices.

The present study has several strengths, including i) the focus on a developing country sample, where children are likely to be exposed to negative and violent parenting practices; ii) the inclusion of teenage mothers in the sample, which is a group with few studies and, iii) and the psychometric evaluation of parenting practices scale of mothers of children in early childhood.

However, it also has some limitations. First, this study focused only on mothers within two specific parts of Brazil and is not a population-based study. Therefore, limiting the generalizability of results to other regions. Brazil's cultural and socioeconomic diversity can be related to differences in mothers' parenting practices.²⁴ Second, the study was carried out only with mothers and not including other primary caregivers such as the fathers. However, previous studies have shown differences in mothers' and fathers' parenting practices and have evaluated these practices separately.¹ Therefore, the authors consider this sample restriction as methodological care.

The present study can act as a model for studies in other regions, other countries, and studies with fathers and other caregivers. Future studies using the IPPMB should also include designs with longitudinal data and use the scale to assess parenting programs' impacts.

The present IPPMB study provides evidence for the utility of this scale for measuring three distinct dimensions of Brazilian mothers' parenting practices in the first three years of a child's life. This instrument was used in several studies^{3,8,10–15,30} with different samples including mothers of different ages and educational levels, is a self-reported measure with few questions, therefore, showing to be a quick and easy method that can be used to understand parenting in Brazil and serve as a model for other countries.

Conflicts of interest

The authors declare no conflicts of interest.

Supplementary materials

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.jpmed.2022.01.007](https://doi.org/10.1016/j.jpmed.2022.01.007).

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