Cross-cultural adaptation, validity, and reliability of the Parenting Styles and Dimensions Questionnaire – Short Version (PSDQ) for use in Brazil

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Objective: The Parenting Styles and Dimensions Questionnaire (PSDQ) is used worldwide to assess three styles (authoritative, authoritarian, and permissive) and seven dimensions of parenting. In this study, we adapted the short version of the PSDQ for use in Brazil and investigated its validity and reliability.

Methods: Participants were 451 mothers of children aged 3 to 18 years, though sample size varied with analyses. The translation and adaptation of the PSDQ followed a rigorous methodological approach. Then, we investigated the content, criterion, and construct validity of the adapted instrument.

Results: The scale content validity index (S-CVI) was considered adequate (0.97). There was evidence of internal validity, with the PSDQ dimensions showing strong correlations with their higher-order parenting styles. Confirmatory factor analysis endorsed the three-factor, second-order solution (i.e., three styles consisting of seven dimensions). The PSDQ showed convergent validity with the validated Brazilian version of the Parenting Styles Inventory (Inventário de Estilos Parentais – IEP), as well as external validity, as it was associated with several instruments measuring sociodemographic and behavioral/emotional-problem variables.

Conclusion: The PSDQ is an effective and reliable psychometric instrument to assess childrearing strategies according to Baumrind’s model of parenting styles.

Keywords: Child psychiatry; tests/interviews – psychometric; other psychological issue; attention deficit hyperactivity disorder; psychotherapy

Introduction

Parenting – the way parents deal with rules, behavior, and affection of their children – can influence the course of the child’s emotional, psychosocial, and behavioral development.1 Parenting behaviors are classically categorized into two dimensions: one of parental control (e.g., discipline, monitoring, and autonomy-granting) and the other of affection toward the child (e.g., warmth, acceptance, and responsiveness).2 The extent to which parents demonstrate behaviors in each of these two parenting dimensions is used to classify their parenting style as authoritarian, authoritative, or permissive.3 Parents who predominantly display control behaviors and less affection are categorized as authoritarian; parents who show both control and affection are defined as authoritative or democratic; and parents who use behavioral strategies focused on affection and very few on parental control are categorized as permissive.2,3

Parenting styles correlate with children’s psychosocial outcomes, with the authoritative/democratic style being most correlated with advantageous outcomes.3,5 The authoritative style has been found to correlate with higher levels of anxiety and depression, poor emotional control, and oppositional defiant behaviors in children.4,6 The role of the permissive style in children’s outcomes is more controversial than those related to the other parenting styles. Although child and parental characteristics are also involved, the permissive style is thought to increase internalizing disorders,7 and children with permissive parents are more likely to have deficits in self-control abilities.8 Altogether, the reasons for studying parenting itself and considering parenting when investigating child development and health outcomes are overwhelming.

The Parenting Styles and Dimensions Questionnaire (PSDQ)9,10 was developed to measure parenting within the typologies and definitions described by Baumrind et al.2,11 The instrument is used worldwide for the measurement of several parenting aspects as well as broader parenting styles.11 The original version of the instrument showed good reliability and validity,10 but several studies
use selected items of the questionnaire or shortened versions. In a review of the reliability and validity of the PSDQ, the authors suggested that cross-cultural comparisons and more in-depth psychometric analyses were needed. 

The theoretical background on parenting is not as solid, with some parenting styles defined as consisting of two dimensions and others consisting of 18 dimensions. Some studies contemplate four types of parenting styles, defined as the interaction of acceptance and strictness dimensions, but do not cite this as Baumrind’s typology. One instrument was based on Baumrind’s two-dimensions model, but the instruments used were only translated for Brazilian Portuguese, not cross-culturally adapted, and were not originally based on Baumrind’s model. One instrument was based on the two dimensions of Baumrind’s model, but the questionnaire was for adolescents only. Also, the psychometric properties of the Brazilian instruments are not always satisfactory, and the age range investigated has been fairly broad: 6 to 10 years, 10 to 18 years, and 14 to 69 years. 

In this study, we aimed to translate and adapt the self-report, short-form (32-item) version of the PSDQ to the Brazilian context and investigate its reliability and validity for use in Brazil.

Methods

Ethics

The present study was approved by the institutional review board of the Faculdade de Ciências Médicas de Minas Gerais, Belo Horizonte, Brazil (CAAE: 57376016.8.0000.5134).

Participants

The sample consisted of 451 mothers of children aged 3 to 18 years, recruited from local schools, the researcher’s social network, an online platform, and an attention-deficit/hyperactivity disorder (ADHD) clinic at Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brazil. All participants consented to have their data used in this study. Participants consisted of mothers of children with ADHD (n=203) and of typically developing children (n=248). These groups did not differ regarding age (t449 = 0.61, p = 0.540), education (t449 = 1.30, p = 0.193), or socioeconomic status (t449 = 1.33, p = 0.186). In multiple-child families, only one child was considered in this study. We collapsed data across all sets to increase statistical power. Considering the full sample and correlation methods, our sample had 0.99 power to detect large and moderate effects and 0.56 power to detect small effects.

Table 1 Sociodemographic characteristics of the sample

| Characteristics                  | Mothers’ characteristics (n=451) | Children’s characteristics (n=451) |
|----------------------------------|---------------------------------|----------------------------------|
| Age (years), mean (SD)           | 38.44 (6.51)                    | 8.69 (2.84)                      |
| Educational attainment (years), mean (SD) | 11.20 (4.55)                   | 3.47 (2.58)                      |
| Household size, mean (SD)        | 3.79 (1.05)                     |                                  |
| Origin of recruitment            |                                 |                                  |
| Local community (schools, social network) | 313 (69)                      |                                  |
| ADHD clinic                       | 111 (25)                        |                                  |
| Online platform                   | 27 (6)                          |                                  |
| Marital status                   |                                 |                                  |
| Single                           | 60/390 (15)                     |                                  |
| Married                          | 262/390 (67)                    |                                  |
| Divorced                         | 40/390 (10)                     |                                  |
| Widowed                          | 12/390 (3)                      |                                  |
| Cohabitating                     | 14/390 (4)                      |                                  |
| Other                            | 2/390 (< 1)                     |                                  |
| Economic class*                  |                                 |                                  |
| B2 (1,387.89)                    | 10 (2)                          |                                  |
| C1 (755.18)                      | 419 (93)                        |                                  |
| C2 (453.37)                      | 5 (1)                           |                                  |
| D-E (200.56)                     | 17 (4)                          |                                  |
| Type of school                   |                                 |                                  |
| Public                           | 247/430 (57)                    |                                  |
| Private                          | 183/430 (43)                    |                                  |
| Lives with                       |                                 |                                  |
| Both parents                     | 248/311 (80)                    |                                  |
| Mother alone                     | 63/311 (20)                     |                                  |

Data presented as n (%) and n/N (%), unless otherwise specified. N varies due to missing data. ADHD = attention-deficit/hyperactivity disorder; SD = standard deviation. * According to the Brazilian Economic Classification Criterion. Average household income in U.S. dollars presented in parenthesis.

The overall profile of mothers and children in the sample is described in Table 1.

Participants’ assessment

Parenting Style and Dimension Questionnaire – Short Version (PSDQ)

The Short Version of the PSDQ consists of 32 items rated on a five-point Likert-type scale ranging from 1 (never) to 5 (always). On each item, the parent must inform the frequency with which he or she uses the specific behavior described. The 32 items can be grouped into three styles and seven dimensions of parenting. The authoritative parenting style includes 15 items, which are divided into three dimensions: support and affection, regulation, and autonomy. The authoritarian style has 12 items and consists of three dimensions: physical coercion, verbal hostility, and punishment. The permissive style consists of one dimension, indulgence, which is composed of five items. The parenting dimensions are calculated as the

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arithmetic mean of the scale items, and the parenting styles are the arithmetic mean of its dimensions. Therefore, the score in all dimensions and styles ranges from 1 to 5, with higher scores indicating more use of its dimensions or styles.

Parenting Styles Inventory (Inventário de Estilos Parentais – IEP)

The IEP is an inventory created to assess techniques and strategies used by parents to raise their children. The instrument consists of 42 items distributed equally across seven educational practices: A) positive monitoring; B) moral behavior; C) inconsistent punishment; D) negligence; E) lax discipline; F) negative monitoring; and G) physical abuse. The instrument can be administered to parents (answering about themselves) or to adolescents (rating their parents’ behavior). Respondents indicate the frequency of each practice on a three-point scale: never = 0; sometimes = 1; and always = 2. The sum of scores yields educational practice indices.

Brazilian Economic Classification Criteria

The Brazilian Economic Classification Criteria (Critério de Classificação Econômica Brasil – CCEB) assigns weighted points to household data (presence and number of appliances and facilities, educational attainment of the head of household) to generate a score that categorizes households into one of six economic classes: A, B1, B2, C1, C2, and D-E.

Swanson, Nolan, and Pelham – Version IV (SNAP-IV)

Parents completed the Brazilian version of the SNAP-IV, a 26-item questionnaire corresponding to criterion A of the DSM-IV for ADHD and for symptoms of oppositional defiant disorder (ODD). Parents rate inattentive, hyperactive, impulsive, and defiant behaviors of their children using a four-point Likert scale ranging from 0 (not at all) to 3 (very much). In this study, we used the scores for inattentive symptoms (which consists of the sum of ratings of nine items), hyperactive/impulsive symptoms (also consisting of the sum of ratings of nine items), oppositional defiant symptoms (the sum of ratings of eight items), and an ADHD score, which consists of the sum of inattentive and hyperactive/impulsive scores.

Child Behavior Checklist (CBCL)

Parents completed this form, which gathers information about a child’s behavioral and emotional problems. The CBCL is composed of 113 items, and parents rate their child’s behavior on a three-point Likert scale: 0 (not true), 1 (somewhat or sometimes true), and 2 (very true or often true). In this study, we used the t-scores for internalizing problems (emotionally reactive, anxious/depressed, somatic complaints, withdrawn, and sleep problems) and externalizing behavior (attention problems, aggressive behavior, rule-breaking, and aggressive behavior), corrected for age and gender (mean = 50, standard deviation = 10).

Translation and cross-cultural adaptation

The translation and adaptation of the PSDQ were conducted as a five-step process, following the methodological approach summarized by Sousa & Rojjanasrirat, as seen in Figure 1. Briefly, the first step was the development of two independent translations of the original instrument to Brazilian Portuguese. In the second step, a third bilingual individual compared the translated versions for ambiguity and discrepancy of words, sentences, and meanings. Discrepancies were then resolved by all translators, who agreed on a first synthesis version. This version was then independently back-translated to English by two other bilingual/bicultural translators. The fourth step was the comparison of the two back-translated versions to the original version by a trio of experts with extensive clinical experience in psychology, who analyzed format, wording, grammatical structure, similarity in meaning, and relevance. No item had to go through the previous steps again, and a pre-final version of the PSDQ in Brazilian Portuguese was approved.

For the fifth step, pilot testing, the pre-final version of the PSDQ was evaluated by 13 parents (age, 31 to 63 years; mean, 47.5 ± 11.8; three fathers, 10 mothers). Parents had completed at least primary and secondary education (mean educational attainment, 12.4 ± 2.7 years). Parents indicated whether the questionnaire items were clear using a dichotomous scale (i.e., clear vs. unclear). An item was deemed sufficiently clear for the target population when 80% of the pilot sample evaluated the item as clear. In our sample, six items were not evaluated as sufficiently clear (items 2, 3, 6, 16, 19, and 28). The translation and adaptation process was reapplied to those items until they met the clarity criteria.

Validity and reliability analysis

The preliminary final version was submitted to an expert panel of seven specialists, including two graduate researchers and five clinical psychologists, for determination of the concept and content equivalence of the items (content validity). Each member of the panel was asked to determine whether the instructions, response format, and items were clear. Then, the expert panel classified each item on its relevance, using the following scale: 1 = not relevant; 2 = little relevant; 3 = relevant; 4 = extremely relevant. After scoring, a content validity index (CVI) was generated for each item and for the overall scale (S-CVI).

Due to the ordinal nature of the scale (e.g., a Likert-type scale of fewer than seven points), we conducted confirmatory factor analysis (CFA) with the weighted least squares means and variance (WLSMV) estimator. Four theoretical models of the PSDQ, previously described for the population of Portugal by Pedro et al., were analyzed through CFA to ascertain whether they fit this sample, considering Brazil’s national conditions and cultural background. A range of indices was used to assess how well the data fit the proposed model: the chi-square value and corresponding p-value, the relative chi-square statistic; the root mean square error of approximation (RMSEA); the comparative fit index (CFI); and the
Tucker-Lewis index (TLI). In our sample, the subject-to-item ratio was 14/1.

To investigate convergent validity, we tested for correlation between raw data on the PSDQ styles and the seven parental educational practices of the Brazilian IEP. This procedure was conducted in a smaller maternal subsample (n=19). Due to the small sample size, correlations were performed by using a resampling strategy (bootstrapping, k = 5,000). We also analyzed the correlation of the Brazilian version of the PSDQ with sociodemographic variables (child’s age and gender, mother’s age, and educational attainment), family’s socioeconomic status, and children’s behavioral problems.

To analyze the reliability of the PSDQ, we assessed both internal consistency (McDonald’s omega) and test-retest stability with the intraclass correlation coefficient (ICC), by the two-way mixed model. Test-retest reliability was assessed by comparing two reports of 15 parents, obtained with a mean interval of 5.64±4.35 weeks. Data were analyzed in SPSS version 20, Mplus version 6.12, and JASP version 0.8.1.1.

**Results**

Table 2 presents the original items and their final translation and cross-cultural adaptation for the Brazilian population. Table 2 also lists item CVIs and the overall S-CVI, with almost all items showing adequate evidence for content validity. The CVI was higher than 0.80 for all items, except for item 24 (“I spoil our child”), which had a CVI of 0.71. The S-CVI was 0.97.

**Confirmatory factor analysis (CFA)**

Bartlett’s test of sphericity, which tests the overall significance of all correlations within the correlation matrix, was significant ($\chi^2_{496} = 4,685.127, p < 0.001$), indicating that the factor analytic model was appropriate for this set of data. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy indicated that the strength of the relationships among variables was high (KMO = 0.851). Thus, it was acceptable to proceed with the analysis. Widely adopted guidelines are available to gauge how well a model fits the data. Concerning the chi-square/degrees of freedom (df) index, a value of less than 2 indicates good fit. An RMSEA value of 0.08 or lower also indicates that a model can be considered adequate to fit the data. A CFI and TLI with values of 0.90 can be considered as adequately fitting the data. Each index of model fit is shown for the four models in Table 3: model 1 tested the original three-factor, second-order solution (i.e., three styles consisting of seven dimensions); model 2 tested a three first-order factors solution (i.e., three styles only); model 3 tested a two first-order factors solution (i.e., positive parenting vs. negative parenting); and model 4 tested a unidimensional first-order factor solution. Only model 1 was considered suitable in this study (Table 3).
| Item | Original Version | Brazilian Version | CVI |
|------|-----------------|------------------|-----|
| 1    | I am responsive to our child's feelings or needs. | Eu respondo aos sentimentos ou necessidades de meu filho(a). | 1.00 |
| 2    | I use physical punishment as a way of disciplining our child. | Eu uso castigos físicos como forma de disciplinar meu filho(a). | 1.00 |
| 3    | When our child asks why (he)(she) has to conform, I state: because I said so or I am your parent and I want you to. | Quando meu filho(a) pergunta por que tem que obedecer, eu digo: "Porque eu disse que sim" ou "Porque eu sou seu pai e eu quero assim". | 1.00 |
| 4    | I explain to our child how we feel about the child's good and bad behavior. | Eu explico ao(a) meu filho(a) como me sinto em relação ao seu bom e mau comportamento. | 1.00 |
| 5    | I spank when our child is disobedient. | Quando meu filho(a) é desobediente, eu dou uma palmada nele(a). | 1.00 |
| 6    | I encourage our child to talk about the child's troubles. | Eu encorajo meu filho(a) a conversar sobre seus problemas. | 1.00 |
| 7    | I find it difficult to discipline our child. | Eu acho difícil disciplinar meu filho(a). | 1.00 |
| 8    | I encourage our child to freely express (himself)(herself) even when disagreeing with parents. | Eu encorajo meu filho(a) a se expressar abertamente, mesmo quando eu não concordo com ele(a). | 1.00 |
| 9    | I give comfort and understanding when our child is upset. | Eu dou conforto e compreensão ao(a) meu filho(a) quando ele(a) está chateado(a). | 1.00 |
| 10   | I explain the reasons for rules. | Eu explico os motivos para as regras. | 1.00 |
| 11   | I give praise when our child is good. | Eu parabenizo meu filho(a) quando ele(a) se comporta bem. | 1.00 |
| 12   | I take into account our child's preferences in making plans for the family. | Eu levo em consideração as preferências do(a) meu filho(a) ao fazer planos para a família. | 1.00 |
| 13   | I yell or shout when our child misbehaves. | Eu grito ou berro quando meu filho(a) se comporta mal. | 1.00 |
| 14   | I think about our child when the child causes a commotion about something. | Eu penso em nosso filho quando ele causa alguma coisa. | 1.00 |
| 15   | I threatened our child with punishment more often than actually giving it. | Eu ameaço castigar meu filho(a) mais vezes do que realmente o(a) castigo. | 1.00 |
| 16   | I encourage our child to ask for privileges. | Eu encorajo meu filho(a) a fazer brinca por alguma coisa. | 1.00 |
| 17   | I respect our child's opinions by encouraging our child. | Eu respeço opiniões do(a) meu filho(a) ao fazê-lo(a) melhorar. | 1.00 |
| 18   | I allow our child to have input into family rules. | Eu permitem o(a) meu filho(a) de opiniões nas regras da família. | 1.00 |
| 19   | I support our child when he/she is being disobedient. | Eu apoio nosso filho quando ele(a) é desobediente. | 0.86 |
| 20   | I state punishments to our child and do not actually do them. | Eu determino castigos para meu filho(a), mas não os cumprimento realmente. | 1.00 |
| 21   | I show respect for our child by encouraging our child. | Eu respeito nosso filho(a) ao encorajar a expressá-lo(a). | 1.00 |
| 22   | I allow our child to have input into family rules. | Eu permito que meu filho(a) de opiniões nas regras da família. | 1.00 |
| 23   | I reward our child for good behavior. | Eu recompenso nosso filho(a) por bom comportamento. | 1.00 |
Correlations between PSDQ and IEP are shown in Table 4. We found that the PSDQ authoritative style was not associated with the educational practices measured by the IEP, not even the positive ones (i.e., positive monitoring and moral behavior). The PSDQ authoritarian style correlated with four of five negative parenting practices of the IEP. The PSDQ permissive style correlated negatively with the IEP moral behavior and negligence categories, and positively with lax discipline and physical abuse.

Association of PSDQ styles and dimensions with sociodemographic variables and children's behavioral/ emotional problems

These results are shown in Table 5. Regarding demographic characteristics, we observed that maternal warmth and support tended to decrease while verbal hostility tended to increase with the child's age. The authoritarian style and, mainly, the physical coercion dimension were negatively associated with maternal age. Maternal education was positively associated with authoritative parenting, but negatively associated with authoritarian parenting. Mothers with higher education showed higher warmth and support and regulation, as well as less physical coercion, verbal hostility, and punishment. The permissive parenting style was not associated with demographic characteristics. Additionally, family economic status was not associated with any parenting styles and dimensions in this sample, except for a weak positive association with the warmth and support dimension.

We found significant associations of child behavioral and emotional problems with parenting. Children’s inattentive ADHD problems showed a negative association with the authoritative style and its autonomy dimension, and a positive association with the authoritarian style and its three dimensions, as well as with the permissive style. Children’s hyperactive-impulsive problems showed the same pattern of association with the PSDQ styles and dimensions, although the authoritative dimension which correlated negatively with children’s hyperactive-impulsive level was warmth and support, not autonomy. Overall, lower levels of children’s ADHD problems were related to use of the authoritative parenting style, while higher levels were associated with the use of authoritarian and permissive styles. The same pattern was observed for children’s oppositional defiant behaviors. Regarding the broader categories of children’s behavioral and emotional problems, we observed that internalizing problems were positively related to the authoritarian and permissive styles and their dimensions, and negatively associated with the warmth and support dimension. The same pattern of associations was observed for externalizing problems, with even stronger correlations, particularly for the authoritarian style.

Reliability

Reliability results are shown in Table 5. The PSDQ McDonald’s omega was 0.775 for the complete questionnaire,
which is moderately good. The authoritative and authori-
tarian styles showed higher internal consistency, while the
permissive style showed lower internal consistency. None
of the PSDQ dimensions showed unacceptable or poor
(i.e., $\omega < 0.6$) internal consistency. Test-retest stability was
tested by ICCs. All PSDQ styles and dimensions showed
excellent ICCs (i.e., $\geq 75$), except for the regulation and
punitive dimensions, which showed good ICCs (i.e., $\geq 60$).
Two outliers were removed in the punitive dimension due
to their substantial impact on the results.

Discussion

This study aimed to adapt the PSDQ to the Brazilian
context and to test the reliability and validity of this version
of the scale on a sample of 451 mothers. Besides con-
ducting translation and cross-cultural adaptation through
a rigorous method, the present study found significant
evidence of validity and reliability for the Brazilian version
of the PSDQ.

Validity refers to the degree to which the scale items
represent a construct.\textsuperscript{28} Content validity was measured
using CVIs. The minimum optimal CVI is 0.78 for each
item\textsuperscript{29} and 0.90 for the whole scale (S-CVI).\textsuperscript{30} The question-
naire obtained an S-CVI of 0.97, which is satisfactory. Item
24 ("I spoil our child") was considered poor in content
validity, but was not excluded due to the good final index
of the scale.

Using CFA, we tested four factor models described
by Pedro et al.\textsuperscript{27} Only model 1, which tested the original
three-factor, second-order solution (i.e., three styles con-
sisting of seven dimensions), was considered suitable in
our study. Again, the results of CFA suggest that the
Brazilian version of the PSDQ is related to Baumrind’s
theory of parenting.\textsuperscript{2,3}

Convergent validity was tested by investigation of the
association of the PSDQ styles with the seven parental
educational practices of the Brazilian validated IEP. Although
the IEP is not based on Baumrind’s theory,\textsuperscript{23} some of its
dimensions are similar to those of the PSDQ. Sampaio &
Gomide\textsuperscript{21} describe lax discipline as not fulfilling rules
established by parents, a behavior which is common in the
permissive style in Baumrind’s theory, wherein parents
lack control of their children.\textsuperscript{16} The physical abuse dimen-
sion of the IEP is described as the use of physical punish-
ment as a form of control of children’s behavior,\textsuperscript{23} a
strategy also used by parents who have an authoritarian
style according to Baumrind.\textsuperscript{2} The moral behavior dimen-
sion is described as the ability of parents to convey to their
children values such as honesty, generosity, and a sense
of justice, helping children to discriminate between right
and wrong.\textsuperscript{21} Negligence, according to Sampaio & Gomide,\textsuperscript{21}
occurs when parents omit their responsibilities to their
children or when parents do not attend to their children’s
needs. The positive monitoring and negative monitoring
dimensions of IEP are not similar to any aspect of
Baumrind’s theory. No significant correlations were found
between the authoritative scale of PSDQ and any of
the dimensions of the IEP. The authoritarian scale was signifi-
cantly and moderately correlated with the lax discipline
and physical abuse dimensions of IEP. There was a strong
correlation between the authoritarian scale and negative
practices measured by the IEP. For example, the associa-
tion with the physical abuse scale of the IEP is consistent
with Baumrind’s theory, considering that authoritarian parents
use physical coercion when their children misbehave.

Table 3  Fit indices for confirmatory factor analysis models

| Parameter | Model 1 | Model 2 | Model 3 | Model 4 |
|-----------|---------|---------|---------|---------|
| $\chi^2$  | $-$     | 1,242.661* | 1,633.083* | 1,735.849* | 365.701* |
| df        | 455     | 461     | 463     | 464     |
| $\chi^2/df$ | < 3     | 2.73    | 3.54    | 3.75    | 7.87 |
| CFI       | > 0.85  | 0.91    | 0.86    | 0.85    | 0.63 |
| TLI       | > 0.85  | 0.90    | 0.85    | 0.84    | 0.61 |
| RMSEA     | < 0.080 | 0.062 (0.058-0.066) | 0.075 (0.071-0.079) | 0.078 (0.074-0.082) | 0.123 (0.120-0.127) |

Model 1 = three-factor, second-order solution; Model 2 = three first-order factors solution; Model 3 = two first-order factors solution; Model 4 = unidimensional first-order factor solution.

CFI = comparative fit index; RMSEA = root mean square error of approximation; TLI = Tucker-Lewis index.

\* $p < 0.05$.

Table 4  PSDQ styles and their correlation with IEP educational practices

| IEP styles | PSDQ styles |
|------------|-------------|
|            | 1. Authoritative | 2. Authoritarian | 3. Permissive |
| Positive monitoring | 0.235 | -0.157 | -0.246 |
| Moral behavior | 0.071 | -0.378 | -0.657* |
| Inconsistent punishment | -0.088 | 0.461* | 0.223 |
| Negligence | -0.035 | -0.388 | -0.468* |
| Lax discipline | 0.194 | 0.821* | 0.789* |
| Negative monitoring | 0.326 | 0.511* | 0.384 |
| Physical abuse | 0.205 | 0.679* | 0.492* |

IEP = Inventario de Estilos Parentais (Parenting Styles Inventory); PSDQ = Parenting Styles and Dimensions Questionnaire – Short Version.

Results are based on 5,000 bootstrap samples (n=19).

\* $p < 0.05$; * $p < 0.01$.
| Measure                                      | Measure                                    | 1. Authoritative | 2. Authoritarian | 3. Permissive | 1A. Warmth and support | 1B. Regulation | 1C. Autonomy | 2A. Physical coercion | 2B. Verbal hostility | 2C. Punitive | 3A. Indulgent |
|----------------------------------------------|--------------------------------------------|------------------|------------------|---------------|------------------------|----------------|-------------|-----------------------|-----------------------|-------------|---------------|
| Demographics                                 | Child's age (n=451)                       | -0.090           | 0.030            | -0.030        | -0.145*                | -0.030         | -0.030      | -0.102*               | 0.111*                | 0.020       | -0.030        |
|                                              | Mother's age (n=427)                      | 0.050            | -0.120*          | -0.020        | 0.020                  | 0.030          | 0.060       | -0.120*               | -0.103*               | -0.070      | -0.020        |
|                                              | Mother's educational attainment (n=424)    | 0.133*           | -0.154*          | -0.080        | 0.129*                 | 0.113*         | 0.070       | -0.161*               | -0.090                 | -0.155*     | -0.080        |
|                                              | Socioeconomic score (CCEB) (n=451)        | 0.060            | 0.030            | 0.010         | 0.097*                 | 0.060          | 0.030       | 0.070                 | < 0.001                | 0.040       | 0.010         |
| Child's behavioral/emotional problems        | Inattention (SNAP-IV) (n=451)             | -0.138*          | 0.263*           | 0.246*        | -0.090                 | -0.148*        | -0.129*     | 0.248*                | 0.223*                 | 0.150*      | 0.246*        |
|                                              | Hyperactivity/impulsivity (SNAP-IV) (n=451)| -0.104*          | 0.348*           | 0.223*        | -0.109*                | -0.115*        | -0.057      | 0.336*                | 0.263*                 | 0.257*      | 0.223*        |
|                                              | ADHD symptoms (SNAP-IV) (n=451)           | -0.132*          | 0.341*           | 0.263*        | -0.105*                | -0.138*        | -0.106*     | 0.320*                | 0.280*                 | 0.220*      | 0.263*        |
|                                              | ODD symptoms (SNAP-IV) (n=451)            | -0.138*          | 0.361*           | 0.268*        | -0.142*                | -0.133*        | -0.094*     | 0.344*                | 0.264*                 | 0.297*      | 0.268*        |
|                                              | Internalizing score (CBCL) (n=325)        | -0.114*          | 0.219*           | 0.217*        | -0.154*                | -0.101         | -0.039      | 0.124*                | 0.238*                 | 0.128*      | 0.217*        |
|                                              | Externalizing score (CBCL) (n=325)        | -0.203*          | 0.511*           | 0.396*        | -0.268*                | -0.139*        | -0.122*     | 0.391*                | 0.415*                 | 0.426*      | 0.396*        |
| Reliability                                  | Internal consistancy                      | 0.855            | 0.838            | 0.637         | 0.739                  | 0.764          | 0.682       | 0.786                 | 0.761                  | 0.610       | 0.637         |
|                                              | Test-retest (95%CI)                        | 0.738            | 0.872            | 0.930         | 0.761 (0.289-0.920)    | 0.691          | 0.834       | 0.803                 | 0.853                  | 0.790       | 0.930         |

95% CI = 95% confidence interval; ADHD = attention deficit/hyperactivity disorder; CBCL = child behavior checklist; CCEB = Brazilian Economic Classification Criteria; ODD = oppositional defiant disorder; PSDQ = Parenting Styles and Dimensions Questionnaire – Short Version; SNAP-IV = Swanson, Nolan, and Pelham – Version IV.

n varies due to missing data.

*p < 0.05; † p < 0.01.
The permissive scale was positively and strongly correlated with the IEP lax discipline dimension, and negatively and moderately correlated with the moral behavior dimension. Both correlations are consistent with Baumrind’s theory, wherein permissive parents are less demanding and avoid using control over their children.23

Regarding sociodemographic characteristics, we observed that older and more educated mothers with younger children seem to be more authoritative and less authoritarian. Previous studies also found similar correlations of parenting with maternal education21,32 and children’s age.23 Parenting styles were also associated with children’s behavior problems. As in other studies,34,35 we observed that children’s ADHD problems, such as inattention and hyperactivity-impulsivity, were related to higher maternal scores in the authoritarian and permissive styles and lower scores in the authoritative style. The same pattern of association was observed for children’s oppositional defiant behaviors. There is evidence suggesting a clear interaction between negative parenting and oppositional behavior.34 In fact, negative parenting may occur exactly in response to genetically influenced child traits.11 On the other hand, positive parenting practices are beneficial for externalizing behavioral symptoms.36 Using the internalizing and externalizing CBCL dimensions, we found, again, that negative parenting (i.e., authoritarian and permissive strategies) was related to higher behavioral problems in children, while positive parenting (i.e., authoritative strategies) was associated with less behavioral problems, as previously described.3,4,11,37

Reliability aims to verify how much an individual’s score represents the reality and the extent to which this result remains constant over time. Internal consistency, as measured by Cronbach’s alpha coefficient, is recognized as acceptable when the coefficient is higher than 0.7.38 However, some researchers consider coefficients above 0.6 to be acceptable for scales with few items or screening tests.38 In this study, the PSDQ Cronbach’s alpha was 0.745 for the complete questionnaire, and none of the PSDQ styles and dimensions showed unacceptable (i.e., < 0.5) internal consistency (range, 0.591 to 0.848). Therefore, the PSDQ showed mainly acceptable to good internal consistency. Additionally, most PSDQ styles and dimensions showed excellent ICCs (i.e., ≥ 75), except for the regulation and punitive dimensions, which showed good ICCs (i.e., ≥ 60). These reliability properties are similar to those obtained for the PSDQ in different countries, including in the original validation of the instrument.10,23,27,37

This study has some limitations. First, the PSDQ was only adapted for self-report use. Further studies with both self-report and spousal report could be more in line with the original idea of the PSDQ, which is an instrument that can be used by mothers or fathers to report their own practices or their spouse’s practices.21 Second, the sample included only mothers, and the range of socioeconomic classes was not representative of the Brazilian population. Future studies with mothers, fathers, and other guardians from different socioeconomic levels could be more representative of Brazilian family structures. Third, although the sample size of the pilot study in the fifth step of adaptation of the scale was in accordance with the guideline used in this study,26 some authors recommend a larger sample to increase item clarity.39 Fourth, there is no consensus on the sample size and statistical power necessary for conducting CFA; therefore, we cannot state that our sample was ideal for this specific analysis. Another limitation was the lower reliability of the permissive style and the punitive dimension. As in the Portuguese version,27 we hypothesize that the Brazilian population may consider permissive items as a natural difficulty in raising children or as positive practices (e.g., “I find it difficult to discipline our child,” “I state punishments to our child and do not actually do them”). Further studies are necessary to overcome the aforementioned limitations. Finally, the merging of clinical and non-clinical samples, as was done for our analysis, is a matter of extensive debate. It is well established in the literature that children’s behavior can change parenting strategies,34 but some authors note that, in validation studies, clinical samples may help increase validity and enable assessment of the construct in a continuum.30

In conclusion, the PSDQ was translated and adapted for use in Brazil through a rigorous methodology, and the resulting version has shown relatively good validity and reliability. This study provides an effective, reliable psychometric instrument to assess childrearing strategies according to Baumrind’s model of parenting styles.

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Disclosure

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