

Ecuadorian Validation of the Parent Version of the Short Mood and Feelings Questionnaire (SMFQ-P) for Children Aged 8 to 12 Years

Validación ecuatoriana de la versión para padres del *Short Mood and Feelings Questionnaire* (SMFQ-P) en niños de 8 a 12 años

Validação equatoriana da versão parental do *Short Mood and Feelings Questionnaire* (SMFQ-P) em crianças de 8 a 12 anos

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Doi: <https://doi.org/10.12804/revistas.urosario.edu.co/apl/a.13291>

Abstract

The Short Mood and Feelings Questionnaire (SMFQ) is a screening tool to assess depressive symptoms in childhood. The aim of this study is to examine the psychometric properties and factorial structure of the parent version of the SMFQ in a sample of Ecuadorian parents and their children. The sample consisted of 276 Ecuadorian children aged 8 to 12 years ($M = 9.37$;

$SD = 1.36$), of whom 59.06 % were between 8 and 9 years old and 40.94 % were between 10 and 12 years old. The gender distribution was 45.29 % girls and 54.71 % boys. The primary informants were mothers (87 %, $n = 240$), the majority of whom were between 35 and 44 years old, and married (72.1 %). Participants completed the SMFQ-P to assess depressive symptoms, as well as the Spence Children's Anxiety Scale-Short

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Sources of funding: No funding has been received. Ethical approval registration: 2017.266.E.OEP; 2018.71.E.OIR. Declaration of conflict of interest: There is no conflict of interest. Correspondence concerning this article should be addressed to Marina Serrano. Miguel Hernández University, Department of Health Psychology. Avda. de la Universidad s/n, Elche, 03202, Alicante (Spain). Email: marina.serrano@umh.es

To cite this article: Orgilés, M., Serrano, M., Idrobo, A., Espada, J. P., & Morales, A. (2025). Ecuadorian validation of the parent version of the Short Mood and Feelings Questionnaire (SMFQ-P) for children aged 8 to 12 years. *Avances en Psicología Latinoamericana*, 43(2), 1-18. <https://doi.org/10.12804/revistas.urosario.edu.co/apl/a.13291>

Version (SCAS) to examine anxiety symptoms. The results of the factorial analysis supported the unidimensional structure of the SMFQ-P. Additionally, the SMFQ-P demonstrated adequate internal consistency ($\alpha = 0.94$) and evidence of convergent validity ($r = 0.67$) with the SCAS, and strict factorial invariance. A positive correlation was found between the SMFQ-P and children's age, suggesting that depressive symptoms increase as children grow older. In conclusion, this study provides evidence supporting the utility of the SMFQ-P questionnaire for evaluating depression in Ecuadorian children.

Keywords: depression, parent report, Short Mood and Feelings Questionnaire, psychometric properties

Resumen

El *Short Mood and Feelings Questionnaire* (SMFQ) es una herramienta de cribado que evalúa los síntomas depresivos en la infancia. El objetivo de este estudio es examinar las propiedades psicométricas y la estructura factorial de la versión para padres del SMFQ en una muestra de padres e hijos ecuatorianos. La muestra estuvo compuesta por 276 niños ecuatorianos de entre 8 y 12 años ($M = 9,37$; $DE = 1,36$), de los cuales el 59.06 % tenía entre 8 y 9 años, y el 40.94 % entre 10 y 12 años. La distribución por género fue del 45.29 % de niñas y del 54,71 % de niños. Las principales informantes fueron las madres (87 %, $n = 240$), la mayoría de las cuales tenían entre 35 y 44 años, y estaban casadas (72.1 %). Los participantes completaron el SMFQ-P para evaluar los síntomas depresivos, así como la Escala de Ansiedad Infantil de Spence versión corta (SCAS) para examinar los síntomas de ansiedad. Los resultados del análisis factorial respaldaron la estructura unidimensional del SMFQ-P. Además, el SMFQ-P demostró una consistencia interna adecuada ($\alpha = 0.94$) y evidencia de validez convergente ($r = 0.67$) con la SCAS, al igual que una estricta invarianza factorial. Se encontró una correlación positiva entre el SMFQ-P y la edad de

los niños, lo que sugiere que los síntomas depresivos aumentan a medida que los niños crecen. En conclusión, este estudio proporciona evidencia que respalda la utilidad del cuestionario SMFQ-P para evaluar la depresión en niños ecuatorianos.

Palabras clave: depresión, informe de los padres, *Short Mood and Feelings Questionnaire*, propiedades psicométricas

Resumo

O *Short Mood and Feelings Questionnaire* (SMFQ) é uma ferramenta de triagem para avaliar sintomas depressivos na infância. O objetivo deste estudo é examinar as propriedades psicométricas e a estrutura fatorial da versão parental do SMFQ em uma amostra de pais e filhos ecuatorianos. A amostra foi composta por 276 crianças ecuatorianas entre 8 e 12 anos de idade ($M = 9.37$; $DP = 1.36$), dos quais 59.06 % tinham entre 8 e 9 anos e 40.94 % tinham entre 10 e 12 anos. A distribuição por sexo foi de 45.29 % das meninas e 54.71 % dos meninos. As principais informantes foram mães (87 %, $n = 240$), sendo a maioria entre 35 e 44 anos e casadas (72.1 %). Os participantes completaram o SMFQ-P para avaliar os sintomas depressivos, bem como a Escala de Ansiedade Infantil de Spence versão curta (SCAS) para examinar os sintomas de ansiedade. Os resultados da análise fatorial apoiaram a estrutura unidimensional do SMFQ-P. Além disso, o SMFQ-P demonstrou consistência interna adequada ($\alpha = 0.94$) e evidência de validade convergente ($r = 0.67$) com a SCAS, bem como invariância fatorial estrita. Foi encontrada uma correlação positiva entre o SMFQ-P e a idade das crianças, sugerindo que os sintomas depressivos aumentam à medida que as crianças crescem. Em conclusão, este estudo oferece evidências que apoiam a utilidade do questionário SMFQ-P para avaliar a depressão em crianças ecuatorianas.

Palavras-chave: depressão, relato parental, *Short Mood and Feelings Questionnaire*, propriedades psicométricas

Children's mental health is a growing concern globally (IDB et al., 2022; WHO, 2020). Currently, depression is considered one of the most prevalent mental disorders (Racine et al., 2021) and is the leading cause of disability worldwide (WHO, 2020), especially in developing countries such as Ecuador (Muñoz et al., 2021). Although the prevalence of depression in children and adolescents is influenced by various factors, it is estimated to affect between 0.6% and 3% of the child population (Ghandour et al., 2019; Merikangas et al., 2009; Polanczyk et al., 2015). Additionally, a recent study conducted in a sample of 1350 children and adolescents aged 6 to 18 years in Ecuador found that around 11.7% of participants had psychological problems (anxiety, internalizing problems, obsessive-compulsive, and thought) (Romo, 2020). Specifically, between 11.2% and 12.6% of children and adolescents had internalizing problems (Romo, 2020). Despite this, no studies have directly examined the prevalence of depressive disorders in childhood and adolescence in Ecuador.

On the other hand, depressive symptoms can manifest in early stages such as childhood and adolescence, and the presence of depression can predict the onset of future psychological disorders, as well as worsen symptoms over time (Avenevoli et al., 2015; Bufferd et al., 2012; Lewis et al., 2020; Luby et al., 2014; Muñoz et al., 2021; Rudolph et al., 2009). Therefore, it is essential to have assessment instruments that enable the early detection of the disorder and, in turn, prevent future psychological conditions (Canals-Sans et al., 2018; Luby, 2010; Wesselhoeft et al., 2013).

The participation of community populations in psychometric studies is particularly relevant, as it allows for the evaluation of the utility and applicability of instruments in everyday contexts, facilitating their implementation in preventive and clinical interventions (Lau et al., 2016). Additionally, working with this population provides

an opportunity to identify specific needs and adapt assessment tools to the characteristics of the community, contributing to equality in mental health. Multi-informant assessment, including parental reports, has proven useful for accurately evaluating children's internalizing problems (Figueras, 2006; Izquierdo-Sotorrió et al., 2016; Kerr et al., 2007; Sarmento-Henrique et al., 2017). Parents are a particularly valuable source of information in the case of preadolescent and younger children (Dougherty et al., 2008; Rey et al., 2015). This perspective complements children's self-assessments and provides a more comprehensive understanding of the manifestation of the problem.

One of the most widely used and effective questionnaires for assessing depressive symptoms in children and adolescents is the Short Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995). This questionnaire consists of 13 items, making it brief, simple, and easy to complete. Additionally, it is available for free. The SMFQ has demonstrated good psychometric properties and a unifactorial structure in various studies (Banh et al., 2012; Deeba et al., 2015; Rhew et al., 2010; Schlechter et al., 2023; Sharp et al., 2006; Talja et al., 2022; Thapar & McGuffin, 1998), making it a reliable assessment tool. Compared to other scales, such as the Children's Depression Inventory (CDI; Kovacs, 1981) and the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978), the SMFQ stands out for its brevity and high specificity in detecting depressive symptoms (Lawton & Moghraby, 2016, Table 1).

The SMFQ has been validated and translated for populations in various countries, such as Serbia (Stevanovic, 2012), Norway (Lundervold et al., 2013), Bangladesh (Deeba et al., 2015), Brazil (Pinto, 2014), China (Yu et al., 2017), New Zealand (Thabrew et al., 2018), Thailand (Lerthattasilp et al., 2020), and Spain (Espada et al., 2022). There is also a parent version of the SMFQ, where parents report on their children's depressive symptoms (Creswell

et al., 2020; Tennant et al., 2017). This type of assessment has been supported by numerous studies, as parents serve as a valuable source of information for preadolescent children (Dougherty et al., 2008), and the use of multiple informants provides a more comprehensive assessment of the problem's manifestation (Izquierdo-Sotorrió et al., 2016; Kerr et al., 2007). However, there are no studies validating this version of the questionnaire for Latin American populations.

For this reason, this study expands the literature by examining for the first time the properties of the scores and the factorial structure of the parent version of the SMFQ in a sample of Ecuadorian parents of children aged 8 to 12 years. Specifically, the study evaluated: 1) the prominence of a general factor underlying the SMFQ items using confirmatory factor analysis (CFA); 2) evidence of internal consistency; 3) convergent validity of the instrument; 4) factorial invariance by gender and age group of the children; and 5) potential differences in the SMFQ parent version's total mean scores by gender and age of the children. Based on previous studies: a) unifactorial structure of the SMFQ-P, is expected; b) the SMFQ-P will exhibit high internal consistency (alpha coefficient >0.90); c) the SMFQ-P will show evidence of convergent validity with measures of childhood anxiety; d) the instrument will show factorial invariance by gender and age group; and e) significant differences in mean scores will be observed based on the children's age and gender.

Methods

Participants

Table 1 shows the sociodemographic data of the sample. Participants were the parents of 276 children of Ecuadorian children aged 8 to 12 years ($M = 9.3$; $SD = 1.36$); 163 (59.06%) belonged to the age group 8 to 9 years, while 113 (40.94%) belonged to the age group 10 to 12 years. The gender distribution of the sample was as follows: 125 girls (45.29%) and 151 boys (54.71%). About the informants, 87% were mothers ($n = 240$) and 13% other family members ($n = 36$). Most of the mothers were between 35 and 44 years of age. In terms of family status, 72.1% of the participants were married, 14.1% were separated or divorced and 13.8% were single. In addition, 27.2% had a doctorate or master's degree, 46.7% had a bachelor's degree, 14.1% had secondary education, and 10.9% had primary education, and only 1.1% of the informants were students. Regarding the employment status of the informants, most were employed full-time (32.6%) or self-employed (32.6%); 12% had a part-time job, 20.7% were unemployed, and 2.1% were housewives. Finally, although the majority of participants (25.2%) did not wish to report their socioeconomic status, more than 50% had an income of less than €2000.

The inclusion criteria for participation in the study were that the children be between 8 and 12 years of age and that informed parental consent be obtained.

Table 1.
Characteristics of the participants and differences by children's sex and age group

	Total (n = 276)	Girls (n = 125)	Boys (n = 151)	Test ^a	Effect size ^b	8-9 years (n = 163)	10-12 years (n = 113)	Test ^a	Effect size ^b
Children									
N (%)	276 (100)	125 (45.29)	151 (54.71)	-	-	93 (57.1)	58 (51.3)	0.88	-
Mean age, years (SD)	9.37 (1.36)	9.42 (1.36)	9.33 (1.37)	-0.57	-	8.36 (0.48)	10.82 (0.79)	-32	-3.76
8 years	104 (37.7)	58 (38.4)	46 (36.8)	0.08	-	104 (63.8)	47 (41.6)	276***	1
9 years	59 (21.4)	35 (23.2)	24 (19.2)			59 (36.2)	39 (34.5)		
10 years	47 (17)	24 (15.9)	23 (18.4)				27 (23.9)		
11 years	39 (14.1)	18 (11.9)	21 (16.8)						
12 years	27 (9.8)	16 (10.6)	11 (8.8)						
Mean number of siblings (SD)	1.30 (1.03)	1.37 (1.07)	1.24 (0.99)	0.29	-	1.26 (1.01)	1.35 (1.06)	-0.76	-
Informant									
Mother	240 (87)	108 (86.4)	132 (87.4)	0.06	-	146 (89.6)	94 (83.2)	2.39	-
Other	36 (13)	17 (13.6)	19 (12.6)			94 (10.4)	19 (16.8)		
Group of age									
Under 25 years old	9 (3.3)	4 (3.2)	5 (3.3)	3.99	-	5 (3.1)	4 (3.5)	5.44	-
From 25 to 34 years old	100 (36.2)	45 (36)	55 (36.4)			67 (41.1)	33 (29.2)		
From 35 to 44 years old	129 (46.7)	56 (44.8)	73 (48.3)			70 (42.9)	59 (52.2)		
From 45 to 54 years old	35 (12.7)	18 (14.4)	17 (11.3)			20 (12.3)	15 (13.3)		
From 55 to 65 years old	2 (0.7)	2 (1.6)	-			1 (0.6)	1 (0.9)		
Over 65 years old	1 (0.4)	-	1 (0.7)				1 (0.9)		
Family situation									
Married	199 (72.1)	86 (68.8)	113 (74.8)	1.25	-	119 (73)	80 (70.8)	0.18	-

	Total (n = 276)	Girls (n = 125)	Boys (n = 151)	Test ^a	Effect size ^b	8-9 years (n = 163)	10-12 years (n = 113)	Test ^a	Effect size ^b
Separated or divorced	39 (14.1)	20 (16)	19 (12.6)			22 (13.5)	17 (15)		
Single	38 (13.8)	19 (15.2)	19 (12.6)			22 (13.5)	16 (14.2)		
Education									
PhD or Master	75 (27.2)	27 (21.6)	48 (31.8)	7.12	-	39 (23.9)	36 (31.9)	4.60	-
Undergraduate	129 (46.7)	59 (47.2)	70 (46.4)			75 (46)	54 (47.8)		
Secondary studies	39 (14.1)	18 (14.4)	21 (13.9)			25 (15.3)	14 (12.4)		
Primary studies	30 (10.9)	19 (15.2)	11 (7.3)			22 (13.5)	8 (7.1)		
Student	3 (1.1)	2 (1.6)	1 (0.6)			2 (1.3)	1 (0.8)		
Employment situation									
Full time	90 (32.6)	36 (28.8)	54 (35.8)	4.95	-	46 (28.2)	44 (38.9)	4.61	-
Part-time	33 (12)	14 (11.2)	19 (12.6)			20 (12.3)	13 (11.5)		
Self-employed	90 (32.6)	47 (37.6)	43 (28.5)			56 (34.4)	34 (30.1)		
Unemployed	57 (20.7)	27 (21.6)	30 (19.9)			36 (22.1)	21 (18.6)		
Housekeeper	6 (2.1)	1 (0.8)	5 (3.2)			5 (3)	1 (0.9)		
Socioeconomic level									
5000 or more	3 (1.1)	1 (0.8)	1 (0.8)	4.70	-	2 (1.8)	2 (1.8)	6.61	-
3000-4999	10 (3.6)	6 (4.8)	6 (4.8)			3 (2.7)	3 (2.7)		
2000-2999	23 (8.3)	11 (8.8)	11 (8.8)			10 (8.8)	10 (8.8)		
1000-1999	43 (15.6)	18 (14.4)	18 (14.4)			18 (15.9)	18 (15.9)		
500-999	54 (19.6)	30 (24)	30 (24)			28 (24.8)	28 (24.8)		
Up to 499	65 (23.6)	28 (22.4)	28 (22.4)			27 (23.9)	27 (23.9)		
No answer	78 (28.2)	31 (24.8)	31 (24.8)			25 (22.1)	25 (22.1)		

Note: M = Mean; SD = Standard Deviation; ^a Cross-table (χ^2) for categorical variables and Independent Samples *t* Test for continuous variables. ^b Effect size = Cramer's *V* for multi-categorical variables and Cohen's effect size for continuous variables. *** *p* < 0.001.

Instruments

Sociodemographic Variables

Regarding the sociodemographic variables of the children included in the study, age and sex were evaluated. For the parents, the following variables were reported: age, family situation, education, work situation, and socioeconomic level. The characteristics of the sample are described in Table 1.

SMFQ-P

SMFQ (Angold et al., 1995) adapted for parents to report their children's depressive symptoms. The SMFQ-P is a questionnaire developed to measure depressive symptomatology in children and adolescents aged 8 to 16 years, assessing both cognitive and affective symptoms. The questionnaire consists of 13 items, which are scored on a 3-point Likert-type scale (0 = not true, 1 = sometimes true, 2 = true), with a total score ranging from 0 to 26. The correction of the questionnaire is based on the raw total score, whereby higher scores indicate greater severity of depressive symptoms. The questionnaire has shown good reliability and validity, with internal consistency ranging from 0.84 to 0.87 in previous studies (Angold et al., 1995; Rhew et al., 2010).

Parents Version of Spence Children's Anxiety Scale (SCAS-P-8)

This scale is a parental version of the Spence Children Anxiety Scale (Spence, 1998) where parents respond about their children's anxious symptomatology. The SCAS-P-8 is composed of 8 items that assess the anxious symptomatology of children and adolescents aged 8 to 12 years. Responses are collected using a 4-point Likert-type scale (0: never, 1: sometimes, 2: often, 3: always)

with a total score ranging from 0 to 24; the higher the score the greater the severity of the symptoms. In this study we used the validated version of the scale for the Ecuadorian population (Orgilés et al., in review). The SCAS-P-8 showed adequate psychometric properties, with a high ordinal alpha ($\alpha = 0.85$), and corrected item-total correlations ranging from 0.41 to 0.61, indicating an acceptable level of homogeneity.

Procedure

The present study was approved by the Ethics Committee of the Miguel Hernández University (Ref. ADH.DES.MAIG.MAIG.23). First, since the original English version of the SMFQ was translated into European Spanish, it was necessary to confirm that the items were valid for the Ecuadorian population. To this end, a native psychologist affiliated with a university in Ecuador reviewed the items in the Spanish version of the SMFQ to determine whether any adaptations were needed to fit the cultural context. After thorough analysis, it was concluded that the items retained their validity in the Ecuadorian context, as the concepts assessed were culturally relevant and understandable. For this reason, no additional adaptations to the content of the scale were considered necessary. Subsequently, a pilot test of the scale was conducted with five parents of children aged 8 to 12 years to ensure that the items were understood. This pilot test confirmed that the instructions and language used were clear to the participants, and no modifications were required.

For data collection, the study sample was recruited through social media platforms (Facebook, Twitter, and Instagram). An online survey was created using Google Forms and distributed using the non-probabilistic snowball sampling method. To minimize potential biases associated with online administration, the following measures were implemented: 1) the instructions were designed

to be clear and detailed, reducing the risk of misinterpretation; 2) participants were provided with an email address for the research team to contact in case of questions or technical difficulties; and 3) parents were reminded of the importance of responding honestly and thoughtfully, without being influenced by their own perceptions.

In this study, the informants of the children's emotional symptoms were the parents, who completed the assessment online. Before completing the survey, parents were informed about the study's content, procedure, and objectives, and their informed consent was obtained. Participation was voluntary and anonymous. Sociodemographic data of the families were collected, and no incentives were offered for participation. The estimated time to complete the questionnaires was approximately 10 minutes.

Data Analysis

The sample size ($N = 276$) was based on recommended subject-to-item ratios for scale validation (Costello & Osborne, 2005; Nunnally & Bernstein, 1994), exceeding the minimum suggested. The unidimensional model and sample size also meet CFA criteria (Hair et al., 2010). Additionally, according to Monte Carlo simulations by Wolf et al. (2013), sample sizes between 90 and 200 participants are generally sufficient for one-factor models with moderate-to-high loadings (≥ 0.60), supporting the adequacy of the sample for this type of analysis.

SPSS v25 for Mac was used to analyze the sample characteristics and other descriptive analyses (e. g., means, standard deviations, etc.). Confirmatory factor analysis (CFA) and ordinal alpha were run with R Studio-2022.02.2-485 for Mac. Diagonally weighted least squares (DWLS), an estimator using polychoric correlations, was used following previous validation studies of the SMFQ (Espada et al., 2022; Fernández-Martínez, Morales, Espada et al., 2020; Fernández-Martínez, Morales, Méndez et al., 2020). Due to the ordinal nature of the

items, the DWLS was considered a better estimator than the maximum likelihood estimator (Forero et al., 2009). The goodness-of-fit of the model was assessed by the following indices and values: CFI and TLI ≥ 0.95 , RMSEA and SRMR ≤ 0.08 (Barrett, 2007; Hu & Bentler, 1999; Kenny et al., 2015; MacCallum et al., 1996). Evidence of internal consistency was provided by ordinal alpha, an index appropriate for ordinal items included in one-factor instruments (Gadermann et al., 2012). Multiple Group Confirmatory Factor Analyses (MG-CFA) were conducted to study the parent version of the SMFQ-P on children's gender ("male" and "female") and age ("8 to 9 years old" and "10 to 12 years old"). Spearman's rank correlation and the Mann-Whitney U test were applied. These non-parametric techniques are appropriate for assessing relationships between variables and comparing independent groups, respectively.

First, we examined configurational invariance, where parameters are free to vary between comparison groups. This analysis is theoretically justified based on the observed differences in depression prevalence between boys and girls, as well as the differential impact that developmental changes may have on the expression of depressive symptoms in these two age groups (Petersen et al., 1993; Zahn-Waxler et al., 2008). Next, we calculated weak invariance, in which factor loadings were constrained to be the same across groups. Next, strong invariance was calculated, in which both factor loadings and item intercepts were constrained across groups. The highest level of invariance was strict invariance, in which factor loadings, item intercepts, and residuals were restricted across groups. In accordance with classical recommendations (Chen, 2007; Cheung & Rensvold, 2002; Timmons, 2010), measurement invariance was established when changes in CFI/TLI ≤ 0.01 and RMSEA ≤ 0.015 across models. In addition, scores on the parent version of the SMFQ (SMFQ-P) were compared by sex and age group of children using Mann-Whitney U test. Finally, the convergent

validity of the SMFQ-P was assessed by calculating Spearman's correlation with the SCAS-P-8 total score. A *post-hoc* statistical power analysis was conducted using G*Power version [3.1] (Faul et al., 2007) to ensure that the sample size used in this study was adequate. With an effect size of 0.5 (medium effect size according to Cohen, 1988), an alpha level of 0.05, and a desired power of 0.80, the analysis indicated that a minimum sample size of 184 participants per group was required. The sample used in this study [N = 276] was sufficient to detect significant effects in the analyses performed.

Results

Confirmatory Factor Analysis

The original one-factor model of the SMFQ-P provided a good fit in the Ecuadorian sample. The single-factor solution provided an adequate fit,

$\chi^2 = 109.27$, $df = 65$, $\chi^2/df = 1.68$, $CFI = 0.99$, $TLI = 0.99$, and $RMSEA = 0.05$, 90% CI [0.03, 0.06]; $SRMR = 0.06$. The factor loadings shown in Figure 1 are all statistically significant with standardized loading values above 0.49, ranging from 0.50 (Item 4) to 0.91 (Item 13).

Psychometric Properties and Reliability Evidence

Table 2 shows descriptive statistics of the SMFQ-P, including means, standard deviations, corrected item-test correlations, and ordinal alphas for the total sample and the four subsamples analyzed: boys, girls, 8-9 year-olds, and 10-12 year-olds. The mean SMFQ-P was 8.60 (SD = 6). The total ordinal alpha was adequate ($\alpha = 0.94$) including all 13 items. All items were retained because, except item 8, they showed an adequate corrected item-factor correlation value (>0.50) and their elimination did not imply an increase in the internal consistency of the total scale.

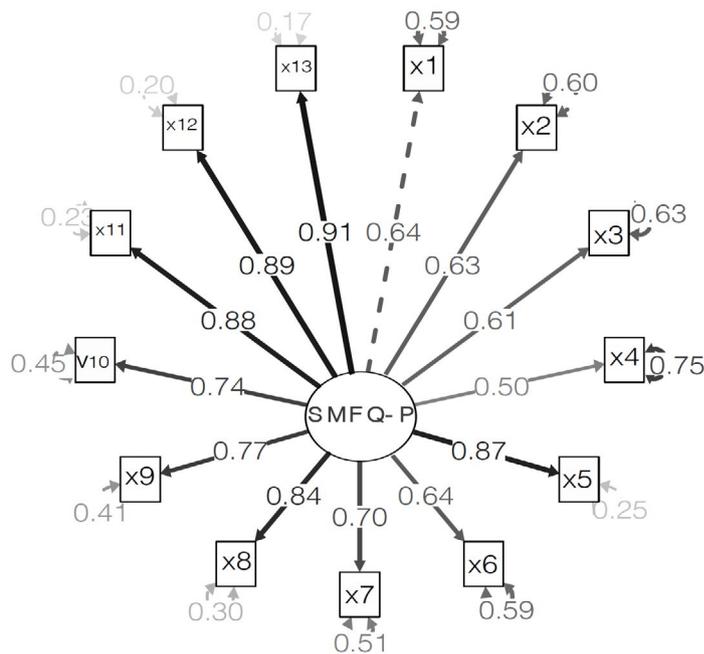


Figure 1. One-factor model for the Ecuadorian version of the SMFQ-P

Overall, the results indicate that girls tend to report a greater number of depressive symptoms than boys. However, most item differences were not significant, except for item 6 (s/he cried a lot; girls $M = 0.74$; boys $M = 0.52$), and in item 12 (s/he thought s/he could never be as good as other kids, girls $M = 0.77$; boys $M = 0.66$). In addition, boys scored higher than girls on item 4 (s/he was very restless; girls $M = 0.86$; boys $M = 1.12$).

Likewise, the results show that children aged 10 to 12 years present higher depressive symptomatology than children aged 8-9 years. Specifically, this result is observed in items 2, 3, 5, 8, 9, 11, 12, and 13. Likewise, it was found that in item 4 (s/he was very restless), children aged 8 to 9 years had a higher score than those aged 10 to 12 years ($M = 1.08$; 10-12 years $M = 0.88$).

Table 2.
Psychometric characteristics of the Ecuadorian version of the parent version of the SMFQ (SMFQ-P)

Item	Total			Boys			Girls			Group of age 8-9 years old			Group of age 10-12 years old		
	$M(SD)$	r_{ii}^c	$\alpha-i$	$M(SD)$	r_{ii}^c	$\alpha-i$	$M(SD)$	r_{ii}^c	$\alpha-i$	$M(SD)$	r_{ii}^c	$\alpha-i$	$M(SD)$	r_{ii}^c	$\alpha-i$
1. S/he felt miserable or unhappy	0.80 (0.65)	0.53	0.93	0.80 (0.67)	0.58	0.93	0.79 (0.61)	0.45	0.93	0.82 (0.64)	0.53	0.93	0.76 (0.66)	0.56	0.93
2. S/he didn't enjoy anything at all	0.45 (0.60)	0.51	0.93	0.44 (0.58)	0.53	0.94	0.46 (0.62)	0.42	0.93	0.40 (0.56)	0.48	0.94	0.52 (0.64)	0.55	0.93
3. S/he felt so tired that s/he just sat around and did nothing	0.63 (0.71)	0.51	0.93	0.65 (0.72)	0.56	0.94	0.62 (0.70)	0.55	0.93	0.52 (0.64)	0.56	0.93	0.81 (0.78)	0.46	0.93
4. S/he was very restless	1 (0.74)	0.41	0.94	1.12 (0.73)	0.40	0.94	0.86 (0.73)	0.43	0.93	1.09 (0.76)	0.40	0.94	0.88 (0.70)	0.48	0.93
5. S/he felt s/he was no good anymore	0.71 (0.69)	0.73	0.92	0.74 (0.73)	0.77	0.93	0.68 (0.66)	0.69	0.92	0.69 (0.70)	0.74	0.93	0.74 (0.69)	0.73	0.92
6. S/he cried a lot	0.62 (0.70)	0.55	0.93	0.52 (0.70)	0.70	0.93	0.74 (0.67)	0.57	0.93	0.62 (0.70)	0.64	0.93	0.61 (0.69)	0.43	0.93
7. S/he found it hard to think properly or concentrate	0.96 (0.70)	0.60	0.93	0.95 (0.73)	0.65	0.93	0.98 (0.66)	0.55	0.92	0.94 (0.70)	0.61	0.93	1 (0.69)	0.58	0.93
8. S/he hated him/herself	0.39 (0.64)	0.65	0.93	0.42 (0.67)	0.67	0.93	0.35 (0.61)	0.55	0.92	0.34 (0.59)	0.62	0.93	0.45 (0.71)	0.69	0.92
9. S/he felt s/he was a bad person	0.37 (0.57)	0.59	0.93	0.39 (0.59)	0.58	0.94	0.34 (0.55)	0.67	0.92	0.32 (0.53)	0.61	0.93	0.43 (0.63)	0.56	0.93

10. S/he felt lonely	0.71 (0.70)	0.64	0.93	0.70 (0.72)	0.60	0.93	0.72 (0.68)	0.56	0.92	0.70 (0.69)	0.58	0.93	0.73 (0.72)	0.71	0.92
11. S/he thought nobody really loved him/her	0.58 (0.69)	0.74	0.92	0.57 (0.69)	0.73	0.93	0.58 (0.69)	0.78	0.92	0.50 (0.66)	0.72	0.93	0.68 (0.71)	0.73	0.92
12. S/he thought s/he could never be as good as other kids	0.71 (0.71)	0.73	0.92	0.66 (0.70)	0.75	0.93	0.77 (0.72)	0.77	0.92	0.64 (0.69)	0.75	0.93	0.81 (0.73)	0.70	0.92
13. S/he felt s/he did everything wrong	0.67 (0.69)	0.74	0.92	0.65 (0.69)	0.74	0.93	0.70 (0.70)	0.71	0.92	0.60 (0.66)	0.72	0.93	0.78 (0.73)	0.77	0.92
Total	8.60 (6)			8.60 (6.23)			8.59 (5.73)			8.17 (5.84)			9.20 (6.19)		
α		0.94		0.94			0.93			0.94			0.93		

Note: M = Mean; SD = Standard Deviation; r_{it} = corrected item-total correlation; α -i = ordinal alpha if the item is removed; α = ordinal alpha.

Convergent Validity

To evaluate the convergent validity of the SMFQ, the SCAS-P-8 was administered. The results indicate that the correlation between the two scales is 0.64 ($p < 0.01$), suggesting evidence of convergent validity between the instruments. These results suggest that both instruments measure in part the same construct or dimension.

Sex and Age Invariance

Table 3 shows the fit statistics of the multigroup confirmatory factor analysis by sex and age of the children. Considering the values of $\Delta CFI (\leq 0.01)$, $\Delta TLI (\leq 0.01)$, and $\Delta RMSEA (\leq 0.015)$, the Ecuadorian version of the SMFQ-P reached partial measurement invariance. For sex, although configural invariance showed a good fit, the difference in RMSEA between configural and weak invariance ($\Delta RMSEA = 0.03$) exceeded the recommended cutoff, indicating that weak invariance was not fully achieved. Despite this, strong and strict invariance showed acceptable

differences in fit indices, allowing for cautious comparisons between boys and girls. For age, all levels of invariance were supported, as ΔCFI , ΔTLI , and $\Delta RMSEA$ remained within the established thresholds, demonstrating strict invariance across age groups. These results suggest that the Ecuadorian version of the SMFQ-P allows for reliable comparisons by age, while comparisons by sex should be interpreted with caution due to the lack of weak invariance.

Gender and Age Differences

The SMFQ-P scores were compared between girls and boys, as well as between 8-9 year-olds and 10-12 year-olds, as acceptable measurement invariance of the SMFQ-P across sex and age had been previously established. No differences in SMFQ-P score were observed between girls ($M = 8.59$, $SD = 5.73$) and boys ($M = 8.60$, $SD = 6.23$), *Mann-Whitney U test* = 9280.50, $p = 0.81$, and between 8- to 9-year-olds ($M = 8.17$; $SD = 5.84$) and 10- to 12-year-olds ($M = 9.20$; $SD = 6.19$), *Mann-Whitney U test* = 8280.50, $p = 0.15$). These results suggest that the level

of depression is similar by sex and age group in Ecuadorian children aged 8 to 12 years, as assessed by their parents. A small and direct correlation was found between the SMFQ-P and the age of the children ($\rho = 0.12$; $p < 0.05$), suggesting that older children tended to show a higher level of depressive symptoms.

Discussion

The SMFQ-P is a short, free, and easy-to-use self-report questionnaire used as a screening tool to obtain information about depressive symptoms in childhood and adolescence. Given its advantages, the main objective of this study was to examine the psychometric properties and factor structure of the parental version of the SMFQ in a sample of Ecuadorian parents with children aged 8 to 12 years.

The internal consistency of the scale was high, both for the total sample ($\alpha = 0.94$) and as a function of sex and age, being over 0.93 in all cases. These results are consistent with previous studies that

showed reasonable reliability indices for the questionnaire, both for those self-reported (Karevold, 2017; Sucupira et al., 2017; Tennant et al., 2017) and for those reported by the parents (Angold et al., 1995; Deeba et al., 2015; Olsen, 2015; Rhew et al., 2010; Stevanovic, 2012). Compared to previous studies, the internal consistency coefficient of the Ecuadorian version is one of the highest reported, highlighting the robustness of this adaptation and its potential usefulness in the Latin American context.

Also, as expected, a moderate correlation was found between the SMFQ and the SCAS-P supporting the convergent validity of the instrument given the high comorbidity between anxiety and depressive symptoms, (González et al., 2011; Acosta et al., 2010; Lamers et al., 2011; Wu & Fang, 2014). These results are consistent with previous research conducted in European and Asian contexts, highlighting that the comorbidity between anxiety and depression is a transnational phenomenon that can be assessed using similar tools across different countries.

Table 3.
Fit statistics for multi-group confirmatory factor analysis by gender and age

Level of invariance	χ^2	df	P	RMSEA	CFI	TLI	Δ RMSEA	Δ CFI	Δ TLI
Sex									
Configural invariance	232.38	130	0.001	0.07	0.969	0.963	-	-	-
Weak invariance	177.84	142	0.02	0.04	0.963	0.960	0.03	0.006	0.003
Strong invariance	201.42	154	0.006	0.04	0.950	0.951	0	0.011	0.009
Strict invariance	208.58	167	0.01	0.04	0.958	0.960	0	0.006	0.009
Age									
Configural invariance	206.69	130	0.001	0.06	0.988	0.985	-	-	-
Weak invariance	193.34	142	0.004	0.05	0.984	0.983	0.01	0.004	0.002
Strong invariance	221.94	154	0.001	0.05	0.979	0.979	0	0.005	0.004
Strict invariance	232.42	166	0.001	0.05	0.978	0.980	0	0.001	0.001

Note: χ^2 = Santorra-Bentler Scaled Chi-Square; df = Degrees of Freedom; CFI = Tucker Lewis index; TLI = RMSEA = Root Mean Square Error of Approximation; Δ CFI = Increase of the CFI value; Δ TLI = Increase of the TLI value; Δ RMSEA = Increase of the RMSEA value.

The confirmatory analysis shows that the SMFQ-P's original one-factor model provided a reasonable fit to the Ecuadorian sample, measuring the underlying factor of depression. The one-factor solution found in this study is consistent with previous research supporting the unidimensional structure of the scale (Angold et al., 1995; Fernández-Martínez, Morales, Espada et al., 2020; Karevold, 2017). This difference could be explained by the socio-economic and cultural context of Ecuador, where levels of childhood depression might be influenced by external factors such as family instability and limited access to mental health resources. Factor loadings, ranging from 0.50 to 0.91, suggests that they are positively related to the latent factor of the test. Although most items had an adequate corrected item-test correlation (>0.50), item 4 ("I was very restless") had a below expected item-factor correlation (0.41), consistent with previous studies (Lundervold et al., 2013; Sucupira et al., 2017). Although item 4 had a lower correlation, it was not removed from the assessment because it is useful in identifying patients who report low scores on the SMFQ (Sharp et al., 2006). Additionally, item 4 assesses "Restlessness", which has been shown to be related to changes in sleep-wake patterns in children and adolescents (Gradisar et al., 2011). Analysis also suggest that all the items should be retained, as eliminating one item would not significantly improve the properties of the scale.

The mean total depression score found in the sample was 8.6, with a standard deviation of 6, indicating significant variability in participants' responses. These results are above the range found in other studies of the SMFQ-P (Rhew et al., 2010; Tennant et al., 2017). This difference could be explained by the socioeconomic and cultural context of Ecuador, where levels of childhood depression might be influenced by external factors such as family instability and limited access to mental health resources. Regarding the measurement invariance, the Ecuadorian version of the SMFQ-P demonstrated strict invariance by age and partial

invariance by sex, suggesting that comparisons of mean scores are valid between age groups (aged 8 to 9 years and 10 to 12 years), but should be interpreted with caution between boys and girls. According to previous studies (Canals-Sans et al., 2018), the level of depression in children is similar by gender and age, although a positive correlation was found between the value of the SMFQ-P and age. This finding suggests that older children tend to have more depressive symptoms, confirming that depressive symptoms increase during adolescence (Huberty, 2012; Zahn-Waxler et al., 2008).

This study has some limitations that should be acknowledged when interpreting the results. The first limitation is that the sample belongs to a community population, so the findings may not be generalizable to clinical samples. Secondly, the sample size is small, which suggests that conclusions should be taken with caution, although the sample in this study is larger than that included in the original validation study of the scale (Angold et al., 1995). The online administration method could have introduced biases, such as the possible exclusion of participants without internet access or the impact of parental presence during the assessment, which might influence the responses. The evaluation was primarily completed by mothers (87%), so it would be advisable to assess responses from both parents to identify potential differences between informants. Finally, the study did not analyze the divergent validity or test-retest reliability of the scale, which should be addressed in future research.

In summary, despite certain limitations, this study contributes to the scientific literature by demonstrating appropriate psychometric properties and a unidimensional factor structure of the SMFQ-P, supporting its use to identify depressive symptoms in Ecuadorian children. The present study adds to the scientific literature, highlighting the usefulness of the parental version of the SMFQ for children aged 8 to 12 years, as a useful assessment tool that allows for rapid and effective assessment of depressive symptoms in children.

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Received: May 22, 2023

Accepted: September 19, 2025