ORIGINAL ARTICLE

VALIDATION OF THE OTHER AS SHAMER SCALE IN BRAZILIAN PORTUGUESE (B-OAS) FOR ADOLESCENTS

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Highlights: (1) Assessing shame can contribute to reduction of mental disorders in adolescence. (2) B-OAS proved to be a reliable instrument. (3) B-OAS had satisfactory psychometric properties for Brazilian adolescents. (4) Future studies in adolescents could benefit by using the B-OAS.

PRE-PROOF
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VALIDATION OF THE OTHER AS SHAMER SCALE IN BRAZILIAN PORTUGUESE (B-OAS) FOR ADOLESCENTS

ABSTRACT

Objective: Validate the Other as Shamer (OAS) scale in Brazilian adolescents. **Methods:** The cross-culturally adapted version for Brazil (B-OAS) was administered to 325 adolescents aged 12 to 18 from Northeast Brazil. Psychometric properties analyzed were internal consistency, temporal stability (intraclass correlation coefficient – ICC), convergent validity (Depression, Anxiety and Stress Scale - DASS-21), discriminant validity (sociodemographic variables), predictive validity (dental caries and occlusal aspects) and factorial validity (exploratory factor analysis – EFA and confirmatory factor analysis -CFA) (α = 5%). **Results:** The instrument exhibited excellent internal consistency (α = 0.91; ω = 0.91) and stability (ICC = 0.96). A significant positive correlation was found between B-OAS and DASS-21 scores (r_s = 0.66). EFA suggested a single-factor solution (41.6% variance). No associations were found between B-OAS scores and the presence of dental caries or the need for orthodontic treatment (p = 0.55). Scores were significantly higher in female adolescents (p = 0.003) and those with a family income of up to the monthly minimum wage (p = 0.025). **Conclusion:** B-OAS had satisfactory psychometric properties for Brazilian adolescents and, despite not being associated with the oral problems analyzed, it can be reliably used for other situations related to external shame.

Keywords: Adolescent Behaviors; Oral Health; Questionnaires; Reproducibility of Results; Shame; Validation Study.

VALIDAÇÃO DA ESCALA *OTHER AS SHAMER* PARA ADOLESCENTES BRASILEIROS (B-OAS)

RESUMO

Objetivo: Validar a escala Other as Shamer (OAS) scale para adolescentes Brasileiros. **Método:** A versão adaptada para o Brasil (B-OAS) foi administrada para 325 adolescentes entre 12 a 18 anos do Nordeste do Brasil. As propriedades psicométricas analisadas foram consistência interna, estabilidade temporal (coeficiente de correlação intraclasse – CCI), validade convergente (Escala de Depressão, Ansiedade e Estresse -

VALIDATION OF THE OTHER AS SHAMER SCALE IN BRAZILIAN PORTUGUESE (B-OAS) FOR ADOLESCENTS

DASS-21), validade discriminante (variáveis sociodemográficas), validade preditiva (cárie dentária e aspectos oclusais) e validade fatorial (análise fatorial exploratória – AFE e confirmatória -AFC) (α =5%). **Resultados:** Observou-se excelente consistência interna (α = 0,91; ω = 0,91), estabilidade (CCI = 0,96) e uma correlação significativa e positiva entre o escores do B-OAS e DASS-21 (r_s =0,66). A AFE sugeriu uma solução unifatorial (41,6% de variância). Não houve associação entre os escores do B-OAS e presença de cárie ou necessidade de tratamento ortodôntico (p=0,55). Os escores foram significativamente maiores em adolescentes do sexo feminino (p=0,003) e naqueles com renda familiar mensal de até um salário-mínimo (p=0,025). **Conclusão:** O B-OAS apresentou propriedades psicométricas satisfatórias para os adolescentes brasileiros e, apesar de não estar associada aos problemas bucais analisados, pode ser utilizado de forma confiável para outras situações relacionadas à vergonha externa.

Palavras-chave: Comportamento do Adolescente; Saúde Bucal; Questionários; Reprodutibilidade dos Testes; Vergonha; Estudo de Validação.

1 | INTRODUCTION

Shame is characterized as a deep, complex, self-conscience emotion that appears at around two years of age. After this period, shame requires a consciousness about oneself and interpersonal relationships, assisting human beings in assessing their behavior and whether they are socially adequate. Mental health problems are correlated with levels of shame[1,2] that can be modeled through direct and specific interventions designed to enhance positive outcomes in cognitive-behavioral therapies and decrease social anxiety levels[3].

Adolescence is a transition phase in which there is a greater occurrence of oral health risk behaviors that can generate a greater quantity of caries. Malocclusion is another condition of considerable prevalence in this period. These aspects can lead to a greater awareness and seeking aesthetics[4]. In this context, shame plays a considerable role in dissatisfaction with one's self-image in this age group[5].

The period of adolescence is also characterized by the development of a sense of identity and the establishment of the maintenance of habits that can either diminish or

improve one's mental health. Thus, assessing the level of shame can assist in the identification of possible environmental and social exposures, which can contribute to the reduction in mental disorders throughout development[6-8].

Due to the complexity of this feeling, researchers have developed instruments with the aim of measuring this construct such as Other as Shamer (OAS) scale[9] and its short version for adolescents (OAS-A)[10]. The first instrument is currently one of the most widely used [2,10-12] but is not applicable to some population groups and has unsatisfactory reliability and internal consistency for particular subscales[6].

The Other as Shamer (OAS) has 18 items with the purpose of exploring expectations of how individuals see and judge themselves. This scale seeks to offer an indicator of the conceptions of each individual about how the "I" is judged by others. Each item has five possible response options, with a higher score denoting a greater level of external shame[13]. The original version exhibited excellent psychometric properties[14], proving to be a valid, reliable measure[9]. However, the scale has not yet been validated and cross-culturally adapted for use in Brazil.

Instruments designed for a standard assessment are valuable in clinical practice and for the definition of the behavior of a target population[15]. However, few validated instruments with good psychometric properties are currently found in Brazil for the analysis of feelings such as shame, especially for adolescents, who undergo the process of the formation and affirmation of their personalities[16,17].

The obtainment of the Brazilian version of the OAS scale will enable a greater understanding of the feelings experienced by adolescents with the goal of addressing the needs identified, especially by health providers. Therefore, the aim of the present study was to validate the Other as Shamer (OAS) scale in Brazilian adolescents.

2 | METHODS

2.1 | Design of the study

A validation study with an analytical cross-sectional approach was conducted for validation of the Other as Shamer (OAS) scale in Brazilian Portuguese. The study population comprised adolescents 12 to 18 years of age enrolled in public and private schools in the municipalities of Santa Luzia and Campina Grande in the state of Paraíba,

Brazil. The hypothesis was raised that the scale to be validated has adequate validity and reliability properties for the age group in question.

2.2 | Sample size

The sample was composed of 325 students 12 to 18 years of age at public and private schools in the municipalities of Santa Luzia and Campina Grande. This sample size is large enough to detect correlation coefficients as low as 0.20 based on a two-sided test, an alpha of 0.05 and a 95% test power[18].

2.3 | Eligibility criteria

Adolescents 12 to 18 years of age of both sexes duly enrolled in public and private schools in the municipalities of Santa Luzia and Campina Grande, Brazil, were included. The participants could not have any systemic diseases, physical disabilities or learning problems (reported by the teachers present at the time of data collection). Adolescents undergoing orthodontic treatment at the time of data collection were excluded, as such treatment could hinder the diagnosis of dental caries during the clinical examination.

2.4 | Calibration

The calibration of the examiner for dental caries followed the method proposed by Peres, Traebert and Marcenes[19], using the International Caries Detection and Assessment System (ICDAS). Cohen's Kappa coefficient was ≥ 0.81 ($p < 0.05$).

Malocclusion was assessed using the Dental Aesthetic Index (DAI). The examiner underwent training and calibration exercises, obtaining Cohen's Kappa coefficient ≥ 0.90 ($p < 0.05$). The training of the examiner for the OAS scale was achieved during the pilot study and calibration was not necessary.

2.5 | Cross-cultural adaptation

Prior to the onset of the cross-cultural adaptation, the original authors were contacted and authorized the translation and validation of the scale for Brazilian Portuguese.

This process was performed by a team with experience in the construct studied and followed a preestablished method[20], the steps of which are described below:

a) Translation: The translation of the scale from English to Brazilian Portuguese by two independent translators native to Brazil.
b) Unification of the questionnaire: An expert panel unified the two translated versions, defining the writing of the items in the unified version in Portuguese.
c) Backtranslation: The unified version of the scale in Portuguese was backtranslated into English by a native English-speaking translator with ample skill in Brazilian Portuguese and no prior knowledge of the scale.
d) Revision of the backtranslation and unification of the questionnaire: The expert panel reviewed the back-translated version against the initial scale and produced a second unified version, which was then sent to the authors for their evaluation.
e) Pretest of the scale: Cognitive interviews with probing questions were held with a group of 25 adolescents enrolled at a public school to identify possible understanding difficulties of the scale. The participants in this step were encouraged to point out difficulties in terms of clarity and suggest synonyms for terms or words that were difficult to understand.
f) Final discussion of the expert panel and production of the final questionnaire: The expert panel met, considering the suggestions of the adolescents interviewed and those of the authors of the original scale, creating the final version of the questionnaire in Brazilian Portuguese (B-OAS).

2.6 | Pilot study

Prior to the onset of the main study, a pilot study was conducted to test the proposed methods. This phase was held at two schools (one public and one private) selected by conveniences. The 40 adolescents who participated in this phase were not included in the main study.

2.7 | Nonclinical data collection

The guardians of the adolescents answered a sociodemographic questionnaire with items related to the guardian (sex, ethnicity, marital status, degree of relatedness to the adolescent, income and main occupation) and adolescent (age, grade, type of school,

sex and date of birth). The adolescents were then conducted in groups of five to another room at the school for the self-administration of the Brazilian version of the OAS and the Depression, Anxiety and Stress Scale (DASS-21).

The Brazilian version of the Other as Shamer (B-OAS) scale addresses global judgments on how the respondents think that others see them through 18 items, each with five response options, with higher scores denoting a greater level of external shame. The B-OAS was applied to identify the degree of external shame of the adolescents[10].

The DASS-21 is directed at adolescents to identify the levels of depression, anxiety and stress based on the possible sensations experienced by the participants. The 21 items address the three disorders simultaneously[21]. The scale is composed of seven items for each of the three constructs assessed (anxiety, depression and stress) and considered a clear instrument that is easy to apply and has been translated and validated in Brazil for adolescents[22].

The sum of the scores is multiplied by 2 to correspond to the original DASS-42. For each subscale, the score is categorized as normal, mild, moderate, severe and extremely severe, with higher final scores of each construct denoting a greater number of symptoms[22].

2.8 | Clinical data collection

After answering the questionnaires, the participants performed supervised toothbrushing, followed by the collection of the clinical data (dental caries and malocclusion) for the divergent validity analyses.

The adolescents were examined individually in a reserved room and near a source of natural light. The clinical examination was performed with the participant sitting in front of the examiner and assistant, who were using personal protective equipment. Examinations were performed with the aid of a head lamp (Petzl Zoom head lamp, Petzl America, Clearfield, UT, USA), probes recommended by the World Health Organization (Trinity Indústria e Comércio Ltda., São Paulo, SP, Brazil), mouth mirrors (Golgran Indústria e Comércio de Instrumental Odontológico, São Caetano do Sul, SP, Brazil) and sterilized gauze to obtain a dry surface and good visualization. The ICDAS criteria were used, which include non-cavitated and cavitated active and inactive lesions. The codes

included in the present study ranged from 2 (white spot visible with moisture) to 6 (caries with dentin exposed occupying more than half of the surface)[23].

2.9 | Statistical analysis

Internal consistency of the B-OAS scale was analyzed using Cronbach's alpha (α) coefficient and McDonald's omega coefficient[24]. Test-retest reliability was determined using the intra-class correlation coefficient (ICC), considering 95% confidence intervals. For such, the scale was applied a second time with after a 15-day interval in 20% of the adolescents in the study[25].

The validity of the construct was determined using convergent, divergent and predictive validities. Convergent validity was determined through the correlation of the B-OAS and DASS-21 scores. Spearman's correlation coefficients were calculated, as the total B-OAS and DASS-21 scores had nonparametric distribution. Divergent validity was investigated by comparing the B-OAS scores among the sociodemographic variables using the Mann-Whitney and Kruskal-Wallis tests. Predictive validity was determined by correlating the B-OAS scores with the number of cavitated lesions on anterior teeth and by comparing the B-OAS scores between adolescents with and without dental caries, with the presence or absence of caries on anterior teeth and the presence or absence of malocclusion using the Mann-Whitney test. The hypothesis was that adolescents with more external shame would have greater caries experience and occlusion problems.

Factorial validity was investigated using exploratory and confirmatory factor analyses, the viability of which was determined using the Kayser-Meyer-Olkin (KMO) measure (>0.50) and Bartlett's Sphericity Test ($p < 0.05$). The Promax method was used for rotation[24].

Confirmatory factor analysis (CFA) was performed to confirm the dimensionality of the instrument suggested in the exploratory factor analysis (EFA) and assess the goodness-of-fit of the suggested model. The goodness-of-fit of the model was assessed using the following statistical parameters: chi-square (X2) statistic, comparative fit index (CFI), Tucker-Lewis index (TLI) and root mean square error of approximation (RMSEA)[24]. The entire statistical analysis process was performed using the IBM SPSS

Statistics (Statistical Package for the Social Sciences), version 25.0, (IBM Corp., Armonk, NY, USA) and the Mplus program (version 8.2; Muthén & Muthén).

2.10 | Ethical considerations

This study received approval from the Human Research Ethics Committee of *Universidade Estadual da Paraíba* in accordance with Resolution Nº 466/2012 of the Brazilian National Board of Health (approval certificate number 60413722.0.0000.5187).

3 | RESULTS

3.1 | Adaptation to Brazilian Portuguese

A total of 25 adolescents 12 to 18 years of age of both sexes answered the B-OAS in the presence of the researcher with the purpose of determining whether the items and instructions were understandable. The students understood the items well and made suggestions for minor changes in some of the terms employed on the questionnaire. The suggestions were accepted, as they only altered some words without compromising the overall meaning of the sentence.

No changes to the structure of the questionnaire were necessary beyond the linguistic adjustments to questions that were difficult to understand in the Brazilian context. The decision was made to make small changes to sentences to achieve greater semantic and cultural equivalence. The Brazilian version had the following changes to facilitate understanding: Item 10 – “People see that I strive for perfection, but I am incapable of meeting may own expectations” was replaced with “People think that I try to do my best, but I am incapable of meeting my own expectations”; Item 16 – “People find me dissatisfied” was replaced with “People find me dissatisfied with life”. After this procedure, the authors of the original scale were contacted to assess and authorize the final version of the scale in Brazilian Portuguese.

3.2 | Characteristic of the participants

Three hundred twenty-five adolescents and their respective parents/guardians participated in the study. Mean age was 13 ± 1.3 years (median: 13 years). Table 1 shows

that the guardians interviewed were mainly women (88.3%), self-declared non-white (73.2%), with complete high school or upper education (64.9%) and a family income of up to the monthly minimum wage (64.5%). A large part of the adolescents studied at public schools (90.2%) during the morning shift (43.4%), were females (53.2%) and up to 13 years of age (69.5%) (Table 1).

3.3 | Psychometric properties

The B-OAS scale exhibited excellent reliability with high internal consistency (Cronbach's alpha = 0.91; McDonald's omega = 0.91) and test-retest reliability (ICC = 0.96; 95% CI: 0.94-0.97). All item-total correlations had coefficients close to 0.40 or higher, indicating adequate correlation of all items with the scale[14].Table 2 displays the average total and variance if one item were deleted. Cronbach's alpha did not increase if any item were removed.

The prerequisites for EFA were obtained (KMO = 0.936; significant Bartlett's sphericity test). EFA suggested a single-factor solution as the most suitable, which explained 41.6% of the variance. CFA was performed to confirm the one-dimensionality of the B-OAS scale. Factor loadings found in the CFA were high (> 0.51) for all items. The goodness-of-fit indices were X2 = 345.504, *df* = 135, CFI = 0.096, TLI = 0.893, RMSEA = 0.069 and SRMR = 0.048, indicating the excellent fit of the model.

Divergent validity was assessed using the Mann-Whitney and Kruskal-Wallis tests. Associations were found between the B-OAS scores and some sociodemographic variables. The scores were significantly higher in adolescents of the female sex (p = 0.003) and those with a family income of up to the monthly minimum wage (p = 0.025) (Table 1).

Spearman's correlation test was used for the analysis of convergent validity. The B-OAS and DASS-21 scores were positively correlated (*rs* = 0.663, p <0.001), demonstrating a statistically significant moderate correlation. In the analysis of predictive validity, a statistically significant positive correlation was found between the B-OAS scores and number of cavitated lesions on anterior teeth (*rs* = 0.110, p = 0.04). Adolescents with caries, cavitated lesions, caries on anterior teeth and upper midline diastema had higher B-OAS scores compared to those without these oral problems.

However, no statistically significant associations were found between these variables and the B-OAS score (Table 3).

4 | DISCUSSION

The B-OAS scale exhibited adequate psychometric properties, following the same characteristics as the original scale developed in the English language. This instrument had a Cronbach's alpha coefficient of 0.91, which is similar that of the original scale (0.92)[9] and those validated in Italy (0.87)[26], Portugal (0.91)[14] and Japan (0.94)[27]. Instruments with an alpha coefficient ≥ 0.70 are considered acceptable[28].

The experts involved in the adaptation and semantic and cross-cultural equivalence process of the 18 items on the scale decided to make small changes in the construction of two items (10 and 16) to facilitate the understanding of the participants in the study. After the backtranslation step, the scale greatly resembled the original. The changes were justified by the understanding difficulty of the final meaning of the item from the original scale reported during the pretest step.

One of the possibilities of measuring the reliability of instruments is through the test-retest method[18]. Reliability was determined using the ICC, which demonstrated the excellent temporal stability of the B-OAS. The studies that validated the OAS in Portugal[14], Italy[26], the United States[9] and Japan[27] did not assess temporal stability, with limits the comparison of our findings. Our result seems to be better than one of the validations performed in Portugal, in which the authors found strong positive correlation between the answers on the test and retest with a three-week interval between applications ($r = 0.76$)[10]. However, the comparison between the two studies should be performed with caution, as different statistical approaches were employed to test this property.

Adolescent girls had a higher level of external shame than the boys, attesting to the discriminant validity of the B-OAS. However, no statistically significant associations were found between the level of external shame and age, type of school or schooling (grade). These results align with a previous study, which girls reported higher levels of both internal and external shame, while age and education showed a weak positive association with shame[10].

An association was found in the present study between a higher level of external shame and a lower socioeconomic status of the adolescents[29]. Academic shame among high school students is directly and negatively influenced by family socioeconomic status. Indirectly, this relationship is mediated by effects on self-control and gratitude[30]. Maladaptive shame regulation can have lifelong repercussions and increase the risk of suicidal ideation in those with pathological narcissism[31].

During the analysis of convergent validity, the B-OAS scores were positively correlated with those of the DASS-21. Thus, a greater level of external shame means higher levels of depression, anxiety and stress. Individuals with a negative self-perception, characterized by feelings of inferiority, exclusion, emptiness, and criticism, are more likely to engage in less favorable social comparison, regardless of the level of external shame[10]. Adolescents with a greater history of cases of shame, especially more traumatic events, are more likely to assume that others see them as inferior and experience more symptoms of depression, anxiety and stress[13].

One of the hypotheses of the present study (predictive validity) was that individuals with greater caries experience, those with caries on anterior teeth (white spots and/or cavitated lesions) or malocclusions would have higher levels of external shame. Indeed, higher B-OAS scores were found in adolescents with caries on anterior teeth and those with diastema between the incisors, but the differences were not statistically significant. This may be explained by the possibility that the scale is not sensitive for these types of issues, calling attention to the need for an important reflection on the selection criteria of scales and questionnaires that can meet the objectives of studies.

Exploratory factor analysis demonstrated that the B-OAS scale is unidimensional. A similar structure was found in versions of the scale validated in Japan[27] and Portugal[13,32], which described an adequate fit of the items in a single factor. The results of confirmatory factor analysis (CFA) confirm that the scale is unidimensional and no items had low factor loadings (> 0.516), demonstrating the same structure found in previous studies[14,32].

Some limitations of the present investigation should be discussed, such as the lack of studies that performed an association between oral problems and the feeling of shame, limiting our comparisons. Future studies should be conducted with other age groups and

involving qualitative assessments to complement and expand the assessment of convergent, divergent and predictive validities of an emotion as complex as shame.

Although this scale was not significantly associated with dental caries or dental aesthetics, the B-OAS proved to be a reliable instrument of considerable importance to assist in the assessment of the influence of external shame in different contexts of adolescence. Investigations have shown that external shame is linked to general health problems such as eating disorders and paranoid ideation[33,34]. Oral health problems, particularly those affecting dental aesthetics, may intensify adolescents' vulnerability to negative social comparison, self-consciousness, and stigma, suggesting that shame could act as a mediating construct linking oral conditions to broader psychosocial outcomes[35].

Therefore, more theoretically grounded and methodologically robust investigations are needed to clarify how external shame interacts with oral health determinants within the broader field of public health. Thus, future studies addressing these and other health-related issues in adolescents could benefit by using the B-OAS. The scale can also be employed to gain a better understanding of the feelings experienced by adolescents and foster health actions directed at addressing the needs identified.

5 | CONCLUSION

B-OAS had satisfactory psychometric properties for Brazilian adolescents and, despite not being associated with the oral problems analyzed, it can be reliably used for other situations related to external shame.

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