

Validity evidences of the BAID-IJ self-esteem scale

Abstract

This study analyzed psychometric properties of the Evaluation Battery for Childhood Depression Indicators (BAID-IJ) – Self-Esteem Scale through Exploratory Factor Analysis (EFA). We used a sample of 388 adolescents from Sergipe, aged between 14 and 19 years. The EFA was performed to analyze the items structure and we also estimated the internal consistency index. Results confirmed the unidimensional structure of that scale, as well as a high internal consistency. Regarding the sex variable, boys showed self-esteem scores higher than girls. Finally, we conclude that the BAID-IJ Self-Esteem scale has good psychometric qualities and it is an accurate instrument for assessing self-esteem in adolescents.

Keywords: psychometrics, self-esteem, adolescence

Volume 10 Issue 1 - 2023

Lizandra Soares

Department of Psychology, UFS Avenida Marechal Rondon, s/n.
Rosa Elze Set, São Cristóvão – SE, CEP 49000-000, Brazil

Correspondence: Lizandra Soares, Departamento de Psicologia, UFS, Avenida Marechal Rondon, s/n. Conjunto Rosa Elze, São Cristóvão – SE, CEP 49000-000, Psychologist CRP 19/3267 Cognitive-Behavioral Therapy Specialist in Psychological Assessment, Brazil, Tel (79) 99800-0498, Email lizandrapsi@gmail.com

Received: March 21, 2023 | **Published:** March 31, 2023

Abbreviations: EFA, exploratory factor analysis; UFS, universidade federal de Sergipe; SPSS, statistical package for the social sciences; RDWLS, robust diagonally weighted least squares; PA, parallel analysis; DWLS, diagonally weighted least squares; GFI, goodness of fit index; CFI, comparative fit index; RMSEA, root mean square error of approximation; KMO, Kaiser meyer olkin; UniCO, unidimensional congruence; ECV, explained common variance; MIREAL, mean of item residual absolute loadings

Introduction

Self-esteem is understood as a feeling of appreciation about oneself, having a direct relationship with the notion of self-concept and the perception of being able to confront adversity.¹⁻³ This conception deals with the individual's evaluation of him or herself, and is expressed through behaviors of approval (high self-esteem) or repulsion (low self-esteem).⁴

In developmental terms, self-esteem is perceived as a kind of primitively developed self-conceptualization around the age of 6 to 7 years, which is based on the external notion of what others say about the person or events in which the person is directly involved, such as school grades in the case of children and adolescents.⁵ In adolescence, this conceptualization tends to be better elaborated due to intellectual development, identity development, and introspection, which are typical elements of this period.^{6,7}

A study of American adolescents observed a difference in self-esteem, pointing to a parabola as a way of understanding its evolution, whose increase occurs in early adolescence, followed by a decrease in middle adolescence and a subsequent increase in late adolescence.⁴ Recent findings suggest that the trajectory of self-esteem development is increasing with age, especially in male subjects, with parents with higher education and with reports of positive parental care.⁸ In a longitudinal study conducted in Germany, it was observed that self-esteem develops in a quadratic trajectory, with an increase during adolescence and adulthood, peaking at age 60 and declining in old age.⁹

Self-esteem, throughout the life cycle, is understood as a stable trait, but subject to modification.² It is considered an important indicator of adjustment and mental health at different stages of development, especially in adolescence.^{4,8} An example of this was evidenced in a 23-year longitudinal study with a sample of 1,527 Germanic people between the ages of 12 and 35, in which it was observed that the

presence of lowered self-esteem served as a predictor of depression in adults.¹⁰

At lowered levels, self-esteem can serve as a warning sign for depression in adolescents, which justifies the need for its measurement at different points in life, for example, contributing to the early diagnosis of depressive episodes¹¹ and eating disorders in adulthood.¹² Thus, this concept has been shown to establish a relationship with psychological adaptability to adversity, and self-esteem can be understood as an indicator of mental health in adolescence and a predictor of it in adulthood.^{4,13,8}

The Rosenberg Self-Esteem Scale³ is one of the most widely used scales nationally and internationally, adapted in 53 countries¹⁴ and for the Brazilian context by Dini, Quaresma, and Ferreira,¹⁵ and is divided into two dimensions: positive self-esteem and negative self-esteem. One of the reasons alleged for its choice in different studies has been its good internal consistency.¹⁶ However, its factor structure has proved to be inconsistent, since there is evidence that it varies in terms of the number of factors (uni and multidimensional), both within the same culture and in studies in different cultures.¹⁷ In Brazil, studies have shown sometimes a unidimensional structure,^{17,18} sometimes a bifactor structure.¹⁹⁻²¹ This suggests some divergence at the level of the structure of the measure in relation to its construct, pointing on the one hand, a single meaning (general self-esteem) and, on the other hand, two possibilities (positive self-esteem and negative self-esteem).¹⁷

The Battery for the Assessment of Indicators of Childhood and Youth Depression (BAID-IJ)²² is a set of instruments that proposes to assess depression, loneliness, helplessness, self-esteem, self-concept, self-efficacy, and hopelessness in children and adolescents between 8 and 18 years old. The BAID-IJ was validated by Borges,²² from a Brazilian sample group from the State of Minas Gerais and tested for its validity evidence by Cardoso,²³ with children and adolescents aged 8 to 18 years old from Rio Grande do Sul, also in Brazil. The battery proved to be unidimensional and with good factor solution in all its subscales in both studies.

The BAID-IJ self-esteem scale is based on the theory of Coopersmith,²⁴ from which self-esteem is conceived as self-evaluation of oneself, relating to the perception of one's own competence.²² It is a scale with 18 Likert-type items in three gradations: "never," "sometimes," and "always".²² These three response levels tend to facilitate the use of such instruments with younger individuals,

which is different from Rosenberg's³ scale with four response types: "strongly agree," "agree," "disagree," and "strongly disagree".¹⁸

The BAID-IJ consists of simple and direct items and in statements in the first person singular, whose items were all positively elaborated. The fact that the BAID-IJ self-esteem scale was proposed for the children and youth public is one of the reasons that supported the proposition of an instrument with questions directed to this public.²² It is worth noting that, because the EAR - which is the best known measure - has statements that can be considered more complex, since it evaluates self-esteem through positive and negative views about it being five positive and five self-deprecating.¹⁵ Therefore, the BAID-IJ self-esteem scale was designed having as one of its advantages a more accessible language for adolescents, with simple and direct expressions, such as: "I am satisfied with myself" and "I know that people like me".²²

Unlike the set of instruments of the BAID-IJ, the EAR was not created specifically for the adolescent population and therefore, even though there are studies with this population, its items do not necessarily contemplate the daily life of this public. Thus, the analysis of the validity evidence of the BAID-IJ self-esteem scale will contribute to the knowledge about its psychometric properties and the applicability and validity of the instrument.

Only two studies on the validity of the BAID-IJ self-esteem scale were found in the literature: one conducted by Borges,²² in Minas Gerais, and the other by Cardoso,²³ in Rio Grande do Sul; both showed excellent internal consistency, satisfactory fit indices, and indicators of a single-factor model. Until then, there are no studies in the Brazilian Northeast region that have evaluated the psychometric qualities of the BAID-IJ self-esteem scale, which raises the possibility of conducting a study with this objective in this region of Brazil, since this would help analyze how the psychometric properties of this instrument behave in different contexts.

Given the above, the objective of the present investigation was to analyze the psychometric properties of the BAID-IJ self-esteem scale by means of Exploratory Factor Analysis (EFA) in a sample of adolescents from Northeastern Brazil. In addition, a comparison of the final score of the scale by sex and age of the evaluated public and the analysis of the average cut-off of the instrument were performed.

Method

Participants: A total of 388 adolescents participated in the survey, 60.9% (n = 231) of whom were female, with ages ranging from 14 to 19 years (M = 16, 3; SD = 1.18). They were high school students (1st year = 190, 48.9%; 2nd year = 111, 28.6; 3rd year = 87, 22.4%) and were contacted in one school in a capital city and two in an inland municipality of Sergipe, all public schools.

Instruments: Self-esteem Scale of the Battery for the Assessment of Indicators of Depression in Children and Youth (BAID-IJ).¹¹ The Self-Esteem scales contains 18 items and is one of the seven scales that make up the BAID-IJ. It is a scale with three-point Likert-type responses (0 - No/Never, 1 - Sometimes and 2 - Yes/Every time). The sum of the answers shows that the higher the score obtained, the higher the self-esteem index.¹¹ The total score of the Self-Esteem scale is generated from the sum of the scores of the 18 items, and can range from 0 to 36 points.

Sociodemographic questionnaire: A sociodemographic questionnaire was applied in order to characterize the sample, composed of questions related to age (in years), level of education (1st, 2nd, or 3rd year of high school), and gender (female or male).

Procedures: This work was approved by the Ethics and Research with Human Beings Committee of the Universidade Federal de Sergipe (UFS) (CAAE: omission for evaluation). Initially, permission was requested from the schools and other responsible parties. Next, visits were made for data collection. The adolescents signed the Free and Informed Consent Form and answered the instruments. Data collection lasted approximately 20 minutes.

Analysis strategy: The Statistical Package for the Social Sciences (SPSS) version 22 software was used to perform descriptive analyses of the sample (frequency, mean, and standard deviation). Factor software (version 10.8.04) was used to perform the EFA. Factor is software used to perform semi-confirmatory EFA with uni and multivariate variables. It is a free program with statistical operations considered current and robust for the type of analysis it proposes.²⁵

The Parallel Analysis (PA) technique was used to evaluate the internal structure of the items and the number of factors in the scale. Robust Diagonally Weighted Least Squares (RDWLS) was employed as the extraction method and Diagonally Weighted Least Squares (DWLS) as the parameter estimation method. As for rotation, the Promin method was used. For estimating the final model fit, which indicates how well the factors fit the data, the Goodness-of-fit index (GFI) (acceptable ≥ 0.95), the Comparative Fit Index (CFI) (acceptable, > 0.95) and the Root Mean Square Error of Approximation (RMSEA) (acceptable < 0.080) were used.²⁵ The possibility of factor extraction was measured by the Kaiser-Meyer-Olkin (KMO) index (acceptable, > 0.70) and Bartlett's test of sphericity ($p < 0.05$).²⁶

The unidimensionality of the BAID-IJ self-esteem scale (total variance of the items explained by means of a single factor) was tested based on the Closeness to Unidimensionality Assessment and the indices - Unidimensional Congruence (UniCO) > 0.95 , Explained Common Variance (ECV) > 0.85 and Mean of Item Residual Absolute Loadings (MIREAL) < 0.30 .²⁵ The replicability of the instrument was analyzed from the H-latent index, with values above 0.80 being considered acceptable. Internal consistency was assessed with Cronbach's alpha coefficient, with values greater than 0.70 expected.²⁷

Based on the results of the EFA, inferential analyses were also performed using SPSS. The social distribution of the final score of the self-esteem scale was evaluated in the general sample and, specifically, comparing the score by gender (Mann-Whitney U test) and verifying its association with age (Spearman correlation). The significance level adopted in all analyses was p-value less than 0.05.

Results

The Kaiser-Meyer-Olkin index (KMO) of the BAID-IJ Self-esteem scale was 0.93 and Bartlett's test of sphericity was significant [$\chi^2(153) = 2735.6; p = < 0.001$], suggesting that the matrix obtained was factorial. The PA performed indicated the presence of only one factor in this scale and the result in the UniCo assessment was 0.958, with ECV equal to 0.878 and MIREAL of 0.183. These last three data indicated that the unidimensional structure of the scale was the best factorial solution, as seen in the AP.

With regard to the fit indices, the GFI was equal to 1.00, CFI equal to 0.98 (95%CI = 0.98-0.99) and RMSEA of 0.06 (95%CI = 0.05-0.07), suggesting good fit and quality of fit. The factor loadings of the items ranged from 0.53 to 0.88 (M = 0.70; SD = 0.11), all of which were greater than 0.30. The explained variance of the scale was 49.6% and Cronbach's alpha was 0.91. The data referring to the factor structure of the self-esteem scale are described in Table 1.

Table 1 Mean, Standard Deviation, factorial loadings and communalities of the items of the BAID-IJ self-esteem scale

Items of the self-esteem scale	M (DP)	Λ	h^2
Item 1	1,2 (0,69)	0,747	0,603
Item 2	1,4 (0,66)	0,762	0,583
Item 3	1,5 (0,61)	0,653	0,432
Item 4	1,4 (0,64)	0,543	0,297
Item 5	1,3 (0,58)	0,761	0,590
Item 6	1,3 (0,73)	0,805	0,675
Item 7	1,4 (0,67)	0,785	0,702
Item 8	1,7 (0,50)	0,607	0,372
Item 9	1,1 (0,69)	0,805	0,647
Item 10	1,1 (0,80)	0,755	0,592
Item 11	1,2 (0,57)	0,587	0,445
Item 12	1,3 (0,58)	0,713	0,508
Item 13	1,1 (0,55)	0,538	0,729
Item 14	1,2 (0,56)	0,587	0,445
Item 15	1,2 (0,68)	0,533	0,335
Item 16	1,5 (0,59)	0,711	0,506
Item 17	1,3 (0,71)	0,548	0,313
Item 18	1,6 (0,60)	0,884	0,827

Notes:

1. M = Mean; CI = Confidence Interval; λ = factorial load; h^2 = communalities
2. Explained variance (%) of the final model equal to 58.7%
3. Explained variance (%) of the final model based on Eigenvalue equal to 49.6%
4. Fit indicators of the final model. RMSEA = 0.06, GFI = 1.00 and CFI = 0.98
5. Replicability and reliability indicators: H-latent = 0.91 and Cronbach's alpha = 0.91
6. Unidimensionality indicators: UniCO = 0.958 (95%CI = 0.94-0.98), ECV = 0.878 (95%CI = 0.87-0.90) and MIREAL = 0.183 (95%CI = 0.17-0.18)

When the distribution characteristics of the self-esteem score were evaluated, an abnormal distribution was observed (Skewness = -0.541 and Kurtosis = -0.223), and the use of non-parametric tests was indicated for the comparison tests by sex and association with age. The median (Md) score on the BAID-IJ Self-esteem scale was 25 points [Minimum (Min) = 3 and Maximum (Max) = 36]. Regarding the variable gender, boys (Md = 27; Min = 4 and Max = 36) scored higher than girls (Md = 24 Min = 3 and Max = 36), and a statistically significant difference was found regarding the BAID-IJ self-esteem scale score ($U = 13645.5$, $p < 0.001$). Age and total self-esteem score were found to exhibit a positive correlation, although statistically significant only in borderline conditions ($p = 0.060$).

Discussion

The objective of this study was to analyze the internal structure of the BAID-IJ self-esteem scale through EFA with a sample of adolescents. Regarding the KMO and Bartlett's test of sphericity, satisfactory values were observed, indicating that the scale is factorable, and, therefore, it was possible to perform the EFA process.²⁷ Similar results were found in the research conducted by Cardoso,²³ which suggests an indication of regularity of the consistency regarding its set of items in different samples. It was also observed that the factor loadings (saturation) were adequate, being greater than 0.30. Saturation is understood as the correlation between item and factor, which is organized in percentage, indicating that the closer to 1, the stronger the relationship between them.²⁸ Thus, it was concluded that the

items of the BAID-IJ self-esteem scale presented satisfactory factor loadings in the sample in question (ranging between 0.53 and 0.88), as presented in the validation study of Borges et al. and Cardoso,^{22,23} which ranged from 0.33 to 0.70 and from 0.42 to 0.86, respectively.

The fit of a scale was assessed by checking the covariance between the estimated matrix and the sample matrix, and were measured using the GFI, CFI, and RMSEA indices.²⁸ Such indices demonstrated that the BAID-IJ has a good fit, suggesting good psychometric qualities. In Cardoso and Borges,^{22,23} who used the same scale in Rio Grande do Sul and Minas Gerais, the data were similar to those obtained then, which again points to the stability of the instrument and the model in different contexts.²⁷

The variance explained refers to how much the instrument can explain the phenomenon (construct) studied.²⁶ In this research, the BAID-IJ self-esteem scale exhibited 49.6% variance when considering the presence of a single factor. In addition, the data from the PA showed the presence of one factor, which accounted for 58.7% of the variance. The results, therefore, pointed to a unidimensional structure.²⁵ By unidimensionality is understood the homogeneity between the items, which signals their relationship with a defined construct,²⁷ which in the case of BAID-IJ refers to self-esteem. In the studies of Borges and Cardoso,^{22,23} the scale also presented a unifactorial structure, which signals the uniformity of the dimensionality of the instrument, since it did not vary between the different contexts and samples.

The issue of unidimensionality, confirmed both in the PA and by the good model fit, can be understood as a positive aspect of the BAID-IJ self-esteem scale in relation to the Rosenberg Scale, which, as discussed in the literature review, is sometimes one-dimensional,^{17,18} sometimes two-factor.^{19,20} On the other hand, it is worth noting that the BAID-IJ self-esteem scale proved to be unidimensional in at least three analyses in different settings - in the present study, in Borges,²² and in Cardoso²³ - which can be considered favorable in terms of structure consistency, i.e., an important quality for a psychometric instrument.

Another point to be considered concerns the reliability of the BAID-IJ self-esteem scale, as measured by means of the internal consistency analysis. The reliability of the scale in the present study was high (Cronbach's alpha = 0.91), which was close to the data obtained by Cardoso²³ (Cronbach's alpha = 0.95). With this, the BAID-IJ self-esteem scale can also be understood as a reliable measure, since it maintained consistency between data after measurements in different conditions.²⁹

As mentioned, the BAID-IJ self-esteem scale score ranges from 0 to 36 points, which signals that the average cut-off point would be 18 points. In the sample studied it can be observed that this score was above average being found 26 points for girls and 27 for boys. This suggests that this population has high self-esteem, since the higher the sum of the score obtained, the higher the self-esteem index.²²

For the purpose of analyzing the social distribution of self-esteem, a comparison of the scores by gender was performed. It was observed that boys showed higher scores than girls, and this difference was statistically significant. It is important to mention that this was the first time the comparison of self-esteem scores by sex was carried out with the BAID-IJ self-esteem scale, and for this reason, the results found then can only be compared with analyses of self-esteem by sex from findings with other measuring instruments. A similar finding was found in the research of Hutz and Zanon, Cabballo and Salazar and Harris, Wetzel, Robins, Donnellan and Trzesniewski,³⁰⁻³² conducted with the EAR. In contrast, in other studies also with the

EAR, there were no statistically significant differences in self-esteem by gender.^{33,34}

Given the above, the results raised in the literature, even though they were not obtained through extensive review, suggest that there is not enough consistent evidence to attest to the existence of differences by sex with respect to adolescents.³⁴ On the other hand, with the present investigation it was found that boys scored higher than girls. This difference can be explained due to issues related to both social (such as economic class) and psychological aspects (such as self-perception).³⁵ Therefore, if this potential for differentiation is used as a parameter for understanding the discrepancies of self-esteem by sex, it may be that the self-esteem scale of BAID-IJ has differentiated ability to detect any differences between boys and girls, which may become something important in the study of this construct from the use of the scale in question. Anyway, this is an assumption of a favorable characteristic of the BAID-IJ self-esteem scale, which requires further studies to verify this aspect.

According to the data found, it was possible to observe an increase in self-esteem in relation to age. As previously mentioned, regarding the development cycle, an increase in this variable is observed in adolescence, mainly due to the consolidation of self-image.⁶ Although there is divergence regarding adulthood and old age, this increase in the adolescence period tends to be consensual.^{4,9,8} It is emphasized, however, that statistical significance was borderline, which does not invalidate the finding, but requires attention in future analyses of the relationship between self-esteem and age in adolescence.

In summary, the EFA demonstrated that the BAID-IJ self-esteem scale has reliability and validity, which denotes an instrument suitable for use with the adolescent public. The comparison between the present study, the one conducted by Borges²² and that of Cardoso²³ reinforces evidence that the scale has stable characteristics. In addition, a difference was observed between the medians of self-esteem by gender, indicating higher levels of self-esteem among boys.

For future research, it is recommended to perform Confirmatory Factor Analysis of the BAID-IJ self-esteem scale, in order to evaluate whether the structure obtained through EFA is corroborated by the latent structure of the theoretical model of the scale, this through another technique of psychometric evaluation of research instruments.^{36,37} Similarly, it is recommended to apply the scale in other Brazilian regions and/or states in order to verify evidence of validity and reliability. Studies already exist in the Southeast (Minas Gerais), South (Rio Grande do Sul), and now Northeast (Sergipe) regions of Brazil. It is suggested, then, that the replication of this study occurs with similar populations in the South or Midwest of Brazil, for example, in order to verify the findings of this research.

Limitation and conclusion

As a limitation of this study, it is possible to point out the relatively small sample size and convenience, even though it was carried out in the capital and interior of a Brazilian state, and this is a positive quality of this research. New studies with larger and randomized samples are important to evaluate the psychometric qualities of the instrument in a group closer to population representativeness.²⁷ Another important aspect is that there was no analysis of concurrent validity, which would serve to attest that the construct that the BAID-IJ self-esteem scale assesses is compatible with the measure of another instrument that is considered valid in the study of self-esteem, that is, if it assesses the same construct.³⁷ Therefore, it is important that research that will use the BAID-IJ self-esteem scale tests the existence of equivalence or compatibility of the measure between this scale and some other

reference scale on the subject, such as the EAR, which is considered one of the most used globally in measuring self-esteem.¹⁶

Finally, based on the present findings, it is possible to state that self-esteem can be considered a relevant variable regarding development and health in adolescence. For this reason, the use of the BAID-IJ self-esteem scale will possibly contribute to the evolution of research on psychological adjustment and mental health in adolescents.

Acknowledgments

None.

Funding

None.

Conflicts of interest

The authors declare no conflict of interest.

References

1. Leary MR, Baumeister RF. The nature and function of self-esteem: Sociometer theory. *Adv Exp Social Psychol*. 2000;32:1–62.
2. Orth U, Robins RW. The development of self-esteem. *Curr Directions Psychological Sci*. 2014;23(5):381–387.
3. Rosenberg M. Society and the adolescent self-image. Princeton University Press, Princeton NJ. 1965.
4. Baldwin SA, Hoffmann JP. The dynamics of self-esteem: A growth-curve analysis. *J Youth Adolescence*. 2002;31(2):101–113.
5. Benninger E, Savahl S. A systematic review of children's construction of the self: Implications for children's subjective well-being. *Child Indicators Res*. 2017;10(2):545–569.
6. Baek S, Yoo H. Ecological factors influencing emotional/behavioral problems and self-concept in adolescents from low-income families in South Korea. *Issues In Mental Health Nursing*. 2017;38(9):733–741.
7. Owens TJ, Stryker S, Goodman N. *Extending self-esteem theory and research: Sociological and psychological currents*. Cambridge University Press. 2006.
8. Von Soest T, Wichstrøm L, Kvalem IL. The development of global and domain-specific self-esteem from age 13 to 31. *J Pers Soc Psychol*. 2016;110(4):592–608.
9. Orth U, Maes J, Schmitt M. Self-esteem development across the life span: A longitudinal study with a large sample from Germany. *Developmental Psychology*. 2015;51(2):248–259.
10. Steiger AE, Allemand M, Robins RW, et al. Low and decreasing self-esteem during adolescence predict adult depression two decades later. *J Pers Soc Psychol*. 2014;106(2):325–338.
11. Borges LVL. Construction and psychometric studies of the Battery for the Assessment of Indicators of Childhood and Youth Depression (BAID-IJ) (Doctoral thesis). Universidade São Francisco (USF), Campinas. 2015.
12. Smink FRE, van Hoeken D, Dijkstra JK, et al. Self-esteem and peer-perceived social status in early adolescence and prediction of eating pathology in young adulthood. *Int J Eat Disord*. 2018;51(8):852–862.
13. Mruk C. Self-esteem: research, theory, and practice. 3rd Ed. New York: Springer. 1995.
14. Schmitt DP, Allik, J. Simultaneous administration of the Rosenberg self-esteem scale in 53 nations: Exploring the universal and culture-specific features of global self-esteem. *J Personality Social Psychol*. 2005;89(4):623.

15. Dini GM, Quaresma MR, Ferreira LM. Cultural adaptation of the Brazilian version of Rosenberg's self-esteem scale. *Braz J Plastic Surg.* 2004;19(1):41–52.
16. Tolentino TM, Maia MF, Formiga NS, et al. Factorial structural modeling and internal consistency of the rosenberg self-esteem scale in brazilian adolescents. *J Psychol.* 2015;6(2):40–49.
17. Hutz CS. *Adaptation of the Rosenberg self-esteem scale.* Federal University of Rio Grande do Sul. Porto Alegre, RS, Brazil. 2000.
18. Santos PJ, Maia J. Confirmatory factorial analysis and preliminary validation of a Portuguese version of Rosenberg's self-esteem scale. *Psychology Theory Research Practice.* 2003;2:253–268.
19. Andrade ER, Sousa ERD, Minayo MCDS. Intervention targeting the self-esteem and quality of life of civilian police officers in Rio de Janeiro. *Ciênc Public Health.* 2009;14:275–285.
20. Avanci JQ, Assisa SG, Santos NC, et al. Cross-cultural adaptation of a self-esteem scale for adolescents. *Psychol Reflex Scream.* 2007;20(3):397–405.
21. Romano A, Negreiros J, Martins T. Contributions to the validation of the Rosenberg self-esteem scale in a sample of adolescents from the northern interior region of the country. *Psychology Health Illness.* 2007;8(1):109–116.
22. Borges LS, Baptista MN, Serpa ALO. Structural analysis of depression indicators scale-children and adolescents (BAID-IJ): a bifactor-ESEM approach. *Psychological Themes.* 2017;25(2):545–552.
23. Cardoso C. Psychometric properties of the BAID-IJ Battery for the Assessment of Indicators of Childhood and Youth Depression (Doctoral thesis). Universidade São Francisco (USF), Campinas. 2018.
24. Coopersmith S. The antecedents of self-esteem. San Francisco, CA: Freeman. 1967.
25. Ferrando PJ, Lorenzo-Seva U. Program FACTOR at 10: Origins, development and future directions. *Psychothema.* 2017;29(2):236–240.
26. Damásio BF, Dutra DF. *Exploratory factor analysis: A tutorial with the Factor software.* In Damásio BF, Borsa JC. (Orgs.). Handbook of psychological instrument development. São Paulo: Vetor. 2017:241–265.
27. Damasio BF. Use of exploratory factor analysis in psychology. *Psychological assessment.* 2012;11(2):213–228.
28. Pedrosa RBDS, Rodrigues RCM, Padilha KM, et al. Factor analysis of the instrument for measuring the impact of illness on daily life. *Rev Bras Enferm.* 2016;69(4):697–704.
29. Pasquali L. Psychometrics: Theory of tests in psychology and education. São Paulo: Vetor. 2017a.
30. Hutz CS, Zanon C. Review of the adaptation, validation and standardization of Rosenberg's self-esteem scale. *Psychological Assessment.* 2011;10(1):41–49.
31. Caballo VE, Salazar IC. La autoestima y su relación con la ansiedad social y las habilidades sociales. *Behavioral Psychology.* 2018;26(1):23–53.
32. Harris MA, Wetzel E, Robins RW, et al. The development of global and domain self-esteem from ages 10 to 16 for Mexican-origin youth. *Int J Behavioral Development.* 2017;42(1):4–16.
33. Santos LCS, Faro A. Relations between self-esteem and meaning of life: A study with household sampling in Aracaju (SE). *Clinica Cultura.* 2015;4(2):54–69.
34. Sbicigo JB, Bandeira DR, Dell'Aglia DD. Rosenberg self-esteem scale (RAS): Factorial validity and internal consistency. *Psycho-USF.* 2010;15(3):395–403.
35. Rodrigues PVA. Relations between body image and self-esteem in a population of adolescents and youth in a municipality of Bahia (Master's Dissertation). Universidade Federal da Bahia (UFBA), Salvador. 2015.
36. Damásio BF. Contributions of confirmatory factor analysis multigroup (AFCMG) in assessing invariance of psychometric instruments. *Psycho-USF.* 2013;18(2):211–220.
37. Pasquali L. *Validity of tests. Examen: Education policy, management and evaluation.* 2017;1(1):36–36.