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ARTIGO

Análise bifator da rosenberg self-esteem scale na obesidade mórbida

Bifactor analysis of the rosenberg self-esteem scale in morbid obesity

Análisis bifactor de la escala de autoestima de rosenberg en obesidad mórbida

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Resumo: A autoestima é um conjunto de sentimentos e pensamentos da pessoa sobre o seu próprio valor e competência, que se reflete em atitude positiva ou negativa em relação a si mesma. Este estudo examinou a estrutura fatorial da Rosenberg Self-Esteem Scale com escores de 288 mulheres brasileiras obesas que aguardavam à cirurgia bariátrica. Os estudos psicométricos têm encontrado resultados controversos acerca da estrutura fatorial desta medida com amostras de variados perfis. Na investigação atual, foram testados por meio de Análise Fatorial Confirmatória os modelos unifatorial, dois fatores oblíquos e bifator. Os resultados mostram um claro apoio à existência de uma única dimensão para a escala, mas também de efeitos do método relativos aos itens de redação positiva e negativa. Sugere-se que novas investigações sejam realizadas com a inclusão de obesos do sexo masculino.

Palavras-Chave: autoestima; obesidade mórbida; cirurgia bariátrica; psicometria

Abstract: Self-esteem is a set of feelings and thoughts a person has about his/her own worth and competence, which is reflected in a positive or negative attitude toward himself/herself. This study examined the factor structure of the Rosenberg Self-Esteem Scale with scores of 288 obese brazilian women waiting for bariatric surgery. Psychometric studies have found controversial results regarding the factor structure of this measure with samples from different profiles. In this investigation, the unifactor, two-oblique-factor and bifactor models were tested by Confirmatory Factor Analysis. The results clearly support the existence of a single dimension for the scale, but also for the method effects relating to the positively and negatively worded items. Further investigations with the inclusion of obese males are suggested.

Keywords: self-esteem; morbid obesity; bariatric surgery; psychometrics

Resumen: La autoestima es un conjunto de sentimientos y pensamientos de la persona sobre su propio valor y competencia, que se refleja en una actitud positiva o negativa hacia sí misma. Este estudio examinó la estructura fatorial de la Rosenberg Self-Esteem Scale con puntuaciones de 288 mujeres brasileñas obesas en espera de cirugía bariátrica. Los estudios psicométricos han encontrado resultados controvertidos con respecto a la estructura fatorial de esta medida con muestras de varios perfiles. En la investigación actual, los modelos unifactorial, dos factores oblicuos y bifactor se probaron mediante análisis factorial confirmatorio. Los resultados muestran un claro apoyo a la existencia de una sola dimensión para la escala, pero también a los efectos del método en los elementos de redacción positivos y negativos. Se sugieren investigaciones adicionales con la inclusión de hombres obesos.

Palabras Clave: autoestima; obesidad mórbida; cirugía bariátrica; psicometria



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INTRODUCTION

Obesity is a multidetermined disease (genetics, diet, physical inactivity, psychological and social) considered a worldwide epidemic. Forecasts show that by 2025 there will be 2.3 billion overweight adults and over 700 million obese people in the world (World Health Organization, 2018). In Brazil, overweight increased by 26% between 2006 and 2016 and obesity increased by 60% in 10 years (Vigitel Brazil, 2017). Obesity has several psychosocial implications for the individual's life, compromising psychological and social health, negatively affecting self-esteem, due to stigma, difficulty accepting body self-image, feeling of failure, inferiority and bullying (Rocha & Costa, 2012).

Many obese people have sought bariatric surgery in order to overcome the problem. This procedure, which involves stomach reduction, is indicated for obese individuals with Body Mass Indexes (BMI) ≥ 40 kg/m² - regardless of associated comorbidities - or, with BMI ≥ 30 kg / m² and associated diseases, who did not have a satisfactory result with other types of treatments (Schakarowski, Padoin, Mottin, & Castro, 2018). Psychology can contribute to preoperative preparation, increasing the success of treatment adherence, improving prognosis and reducing postoperative complications of bariatric surgery (Fagundes, Caregnato, & Silveira, 2016; Pona et al., 2017).

Self-esteem is a set of feelings and thoughts one has about his/her own value and competence, which is reflected in positive or negative attitudes toward himself/herself. It influences the way a person accepts himself/herself, values the other, sets goals, and projects them into the future. Therefore, it plays an important mediating role in the psychological, social and physical behavior of the individual (Orth, 2017). The concept of self-esteem has been one of the most studied constructs in recent decades, Bleidorn et al. (2016) found 35,000 published articles about it.

One of the most famous measures of self-esteem is the Rosenberg Self-Esteem Scale (RSES), which was developed by Morris Rosenberg (1965). The participants of the study conducted

to develop the RSES were university students and adults, of both sexes, from different social environments and ethnic groups in New York. The original instrument consists of 10 items that represent positive and negative feelings of respect and self-acceptance in a single dimension, 5 of which are positively worded items and 5 negatively worded items (Rosenberg, 1965). Although, in the original version, RSES used a Guttman scale (dichotomous) to evaluate the responses, curiously, after its construction, researchers started to use the Likert scale. The instrument has been one of the most used self-esteem measures in investigations in countless populations. However, the results of these studies are controversial regarding the factor structure of the RSES (González-Rivera & Pagán-Torres, 2017).

More than 50 years of research and hundreds of empirical studies failed to resolve the question concerning the dimensionality of the RSES (Gnambs, Scharl, & Schroeders, 2018). Many studies found a unidimensional structure (Gómez-Lugo et al., 2016; Hutz, 2000; Hutz & Zanon, 2012; Meurer, Luft, Benedetti, & Mazo, 2012). Others supported a structure composed of two correlated factors, sometimes called self-confidence and self-contempt, sometimes called positive and negative self-esteem (Avanci, Assis, Santos, & Oliveira, 2007; Cárdenas, Cárdenas, Villagrán, & Guzmán, 2015; Ceballos-Ospino et al., 2017; Cogollo, Campo-Arias, & Herazo, 2015; González -Rivera & Pagán-Torres, 2017; Ricardi & Méndez, 2016; Romano, Negreiros, & Martins, 2007; Sbicigo, Bandeira, Dell'Aglio, 2010; Tolentino, Maia, Ant, Sousa, & Melo, 2015; Ventura-Leon, Caycho-Rodriguez, Barboza-Palomino, & Salas, 2018). Another group of researchers also supported a one-factor structure of the RSES, but by controlling method effects (Alessandri, Vecchione, Eisenberg, & Laguna, 2015; Donnellan, Ackerman, & Brecheen, 2016; Gnambs, Scharl, & Schroeders, 2018; Gnambs & Schroeders, 2017; Lindwall et al., 2012; Reise, Kim, Mansolf, & Widaman, 2016; Salerno, Ingoglia, & Lo Coco, 2017; Tomas, Galiana, Hontangas, Oliver, & Sancho, 2013; Oliver, Hontangas, Sancho, & Galiana, 2015; Tomas, Sancho, Galiana, Oliver, & Hontangas, 2015).

In general, method effect refers to the variance that is attributable to the measurement method - in the case of RSES, the negative and positive expression of the items - and not to the construct of interest. The method effect on the results, in terms of sources of variance, may vary in intensity (Maul, 2013).

The construction of measures of psychological constructs with negative items, such as the RSES, has been a very recurring practice over time. This strategy would have the function of controlling possible biases of acquiescent responses. A solution that would avoid acquiescent responses in measurement instruments is the inclusion of positive items (toward the evaluated construct) and negative items (in the opposite direction). The acquiescence would be a tendency of the participants to provide affirmative answers to items regardless of their content (Valentini, 2017).

However, the presence of these negative items in the instruments also seems to interfere with their latent structure, a type of method effect. However, other studies have shown that positive and negative items can simultaneously produce effects and, if considered in the tested models, they can result in better fits to the empirical data (Marsh, Scalas, & Nagengast, 2010; Quilty, Oakman, & Risko, 2006).

For Gnambs and Schroeders (2017), there is consensus that the items of the RSES may reflect wording effects resulting from positively and negatively phrased sentences. These researchers examined the effects of cognitive abilities on the factor structure of the scale with a nonparametric latent variable technique called Local Structural Equation Models (LSEM). In the evaluation of several models that compete for the RSES, the bifactor model with a common factor and a specific factor for negatively formulated items showed an ideal fit. LSEM revealed that the unidimensionality of the RSES increased with higher levels of reading competence and reasoning, while the variance attributed to the negatively worded items decreased. Therefore, the wording effects on the factor structure of the RSES could represent a response style artifact, in this case, associated with the cognitive abilities of the respondents.

The factor structure of the RSES has also been investigated with a fixed-effects meta-analytic structural equation modeling approach with 113 independent samples and a total number of 140,671 participants (Gnambs, Scharl, & Schroeders, 2018). A confirmatory bifactor model with specific factors for positively and negatively phrased items and a global self-esteem factor showed the best fit. The global factor captured most of the explained common variance in the RSES and specific factors represented less than 15% of it. Factor loadings were invariant among the samples from North America and other countries that are more individualistic, but less invariant for the ones that are more collectivistic. Although RSES essentially represents a unidimensional construct, in cross-cultural comparisons this could vary. The cultural background of the respondents could also affect the interpretation of the items.

Nowadays, the idea that a single latent factor would be insufficient to adequately describe the responses to the RSES seems to predominate. The scale would show multidimensionality with regard to the wording of items, which could be interpreted as method effects. Although RSES is not strictly unidimensional, secondary dimensions would only have a modest impact on item responses and, therefore, introduce a seemingly small bias in composite scores of the RSES (Gnambs et al., 2018). As a matter of fact, some authors argue that the validity of the global self-esteem factor would hardly be affected even if the wording effects were not controlled (Donnellan et al., 2016).

In this study, the factor structure of the measure was examined using the scores of obese women waiting for bariatric surgery who answered the version of the RSES adapted by Hutz (2000). The analysis observed if there are method effects and if they are linked to the wording of positive items, negative items or both.

In Brazil, the first adaptation of the RSES was performed by Hutz (2000) with students. Other studies with Brazilian participants were also found: for patients undergoing preoperative plastic surgery (Dini et al., 2004); adolescents (Avanci et al., 2007; Romano et al., 2007; Sbicigo et al.,

2010); students aged 10 to 30 (Hutz & Zanon, 2011); and the elderly (Meurer et al., 2012). The literature review conducted in this study found no records of psychometric studies of the RSES with a population of obese women awaiting bariatric surgery, nationally and internationally. Thus, this research sought to contribute to the evaluation and psychological intervention in this process.

METHOD

Participants

The sample consisted of 288 obese women awaiting bariatric surgery. Their Body Mass Indexes (BMI) were between 31 and 62 Kg / m² ($M = 42.3$; $SD = 5.34$) and they were between 18 and 61 years old ($M = 36$; $SD = 8.67$). According to their marital status, 89 (30.9%) were single, 179 (62.2%) were married, and 20 (6.9%) were divorced. Regarding their educational attainment, 135 (46.9%) had a high school degree, 110 (38.2%) a bachelor's degree, 37 (12.8%) a postgraduate degree, 4 (1.4%) a master's degree, and 2 (0.7%) a doctorate's degree. In relation to the place of residence, 90.6% were living in the south and southeast regions and the rest in the other Brazilian regions.

Instruments

A sociodemographic questionnaire was used to collect the following information: age, sex, height, weight, marital status, education attainment and place of residence. Then, the participants answered the Brazilian version of the RSES, adapted by Hutz (2000) and re-examined by Hutz and Zanon (2011). This measure consists of 10 items related to a set of feelings of self-esteem and self-acceptance, half of which are positive items (statements toward the construct) and the other half are negative items (in the opposite direction of the construct). The items were answered using a four-point Likert scale, from 1 ("strongly agree") to 4 ("totally disagree"). Cronbach's alpha calculated for the global dimension of the RSES adapted by Hutz and Zanon (2011) was 0.90.

Data collect

This study was approved by the Research

Ethics Committee of the institution to which it is linked, under no. 79911017.3.0000.5289. Data was obtained through organized groups on Facebook and Whatsapp, whose participants were obese women awaiting bariatric surgery from all regions of Brazil, from December 2017 to June 2018. Questionnaires were made available online through Google Forms platform. Participants were invited to answer the instrument after reading the Informed Consent Form and expressing their willingness to participate in the research.

Data analysis

The scores of negative items of the RSES were inverted to assess self-esteem in the same direction of the positive items (toward the construct). Descriptive analyzes were performed to verify the normality of data distribution. Then, a series of structural models for the RSES were tested, which have been frequently applied in the literature through Confirmatory Factor Analysis (CFA).

CFAs were performed in the Analysis of Moment Structures software (AMOS 23, Arbuckle, 2014) to different models of the RSES using the Maximum Likelihood estimation method, which is robust even in the presence of non-normal data distribution (Marôco, 2014). The indexes reported by Lindwall et al. (2012) in a similar study were considered to evaluate the model fits. The Chi-square (χ^2), which evaluates the magnitude of the discrepancy between the population covariance matrix and the sample covariance matrix, is a conservative estimate of model fit when the sample size is > 200 (Byrne, 2016a). In this case, the ratio χ^2/df should be used and results lower than 2-3 are considered good; the Comparative Fit Index (CFI), relative indexes that compare the fit of the evaluated model with the basal model, values > 0.90 indicate a good fit (Bentler, 1990); Root Mean Square Error of Approximation (RMSEA), which measures the discrepancy by degrees of freedom between sample and population estimates, values < 0.05 are considered very good (Hair, Babin, Anderson, & Black, 2019); and the Akaike Information Criterion (AIC), which is an index based on the χ^2 statistic that penalizes the

model according to its complexity. The best-fit model will present the lowest values in this index (Arbuckle, 2014).

RESULTS

Examination of RSES scores revealed a Mardia coefficient of 15.68 (normalized = 8.58), which indicated the multivariate abnormality of their distribution. However, the univariate distribution of scores showed asymmetry $< \pm 1.5$ and kurtosis $< \pm 1.5$, which is not considered an extreme violation of normality (Finney & DiStefano, 2006).

A comparison was made between the mean scores of the positive ($M = 2.87$; $SD = 0.73$) and negative ($M = 2.75$; $SD = 0.84$) items. The purpose of this test was to verify the existence of an acquiescence effect on the participants' responses. Student's t-test results for dependent samples revealed significant differences between the two sets of items, $t(287) = 2.976$ and $p = 0.003$, but the effect size, $d = 0.16$, was very small (Cohen, 1988). Therefore, it would be unlikely to have a possible acquiescence effect in responding to the instrument.

In the framework of Structural Equation Modeling, CFAs tested the models of RSES used in previous studies (Lindwall, 2012; Marsh et al., 2010; Quilty et al., 2006). These models adopted the Multitrait-Multimethod (MTMM) conceptual framework, which presents two types to separate substantive content (self-esteem) from method effects. One is the correlated trait correlated-uniqueness (CTCU) model and the other is the correlated trait (self-esteem), correlated methods model (CTCM). The CTCU inserts correlations among the measurement errors of positively and negatively worded items, and the CTCM includes specific latent method effect factors underlying the items of the same method (ie, positively or negatively) along with a substantive latent factor (self-esteem). In order to examine the method effects, CTCU and CTCM models were compared to models that do not include method effects to establish if they fit the data better (Byrne, 2016b).

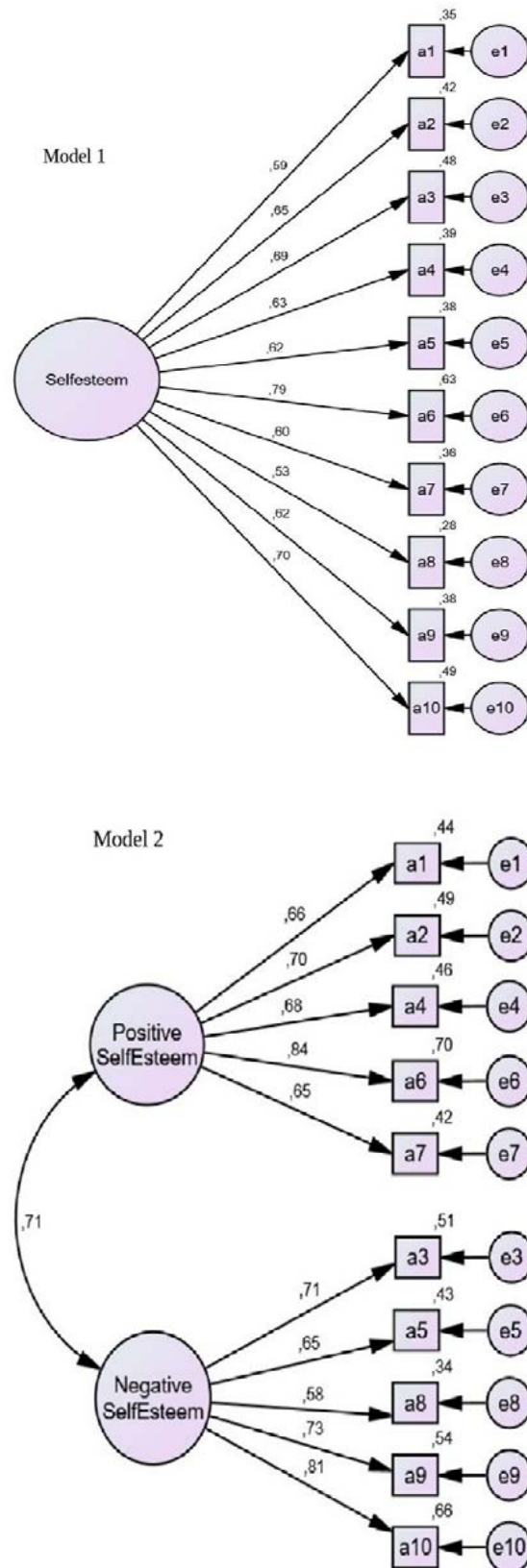


Figure 1 – Diagrams of the RSES_{unifactor} and RSES_{two.oblique.factors} models tested with factor weights (λ) and explained variances (λ²)

Model 1, consisting of a single common factor (Figure 1), corresponds to the original logic of the scale (Rosenberg, 1965). The indexes estimated for this model presented fits between bad and poor (Table 3), according to Marôco's classification

(2014). Model 2, two oblique factors, positive and negative self-esteem (Figure 1), presented better results, but also did not show a sufficiently adequate fit to the data (Table 1).

Table 1 – Different previous and current RSES models tested and their adjustment indices

Study	Model	χ^2	DF	χ^2/DF	CFI	RMSEA(LO-HI)90	AIC
Lindwall et al. (2012)	1	701,85	35	20,05	0,80	0,142(0,133-0,151)	741,85
	2	347,01	34	10,21	0,91	0,098(0,089-0,108)	389,01
	3	238,69	25	9,54	0,94	0,095(0,084-0,106)	298,69
	4	162,09	25	6,48	0,96	0,076(0,065-0,087)	222,09
	5	44,50	16	2,78	0,99	0,043(0,028-0,059)	122,49
	6	308,06	29	10,27	0,92	0,099(0,089-0,109)	358,06
	7	320,83	30	10,69	0,91	0,101(0,091-0,111)	370,83
	8	137,23	24	5,72	0,97	0,071(0,059-0,082)	199,23
Current	1	271,79	35	7,77	0,80	0,154(0,137-0,171)	311,79
	2	133,24	34	3,92	0,92	0,101(0,083-0,119)	175,24
	3	52,47	25	2,10	0,98	0,062(0,038-0,085)	112,47
	4	97,24	25	3,89	0,94	0,100(0,080-0,122)	157,24
	5	17,43	16	1,09	0,99	0,018(0,000-0,059)	95,43
	6	58,48	29	3,86	0,93	0,100(0,0,81-0,119)	165,83
	7	121,45	30	4,05	0,92	0,103(0,084-0,123)	171,45
	8	47,44	24	1,98	0,98	0,058(0,033-0,083)	109,44

The analysis of CTCU-based models (Figure 2), Model 3, (residuals of correlated negative items) presented a good fit to the data. On the other hand, Model 4 (residuals of correlated positive items) indicated poor fit to the data. This would be an evidence that the method effect of the negatively phrased items would be stronger

than the method effect of the positively phrased items (Table 1). Model 5, including correlations between the errors of positively worded items and correlations between errors of the negatively worded items, was generally the best of all models tested, revealing a very good fit to the data (Table 1).

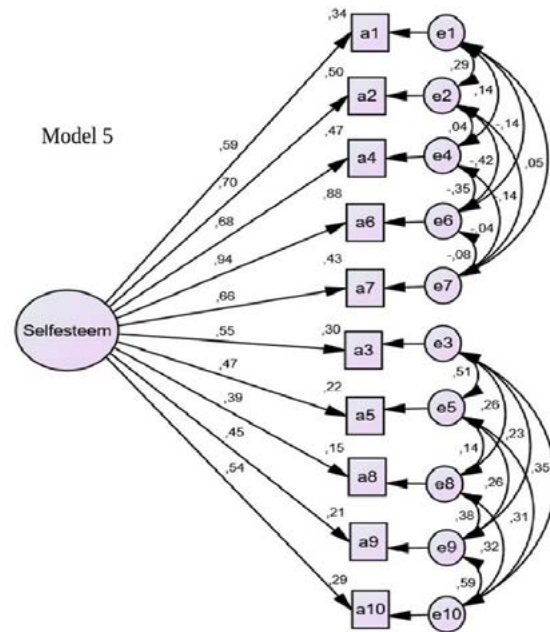
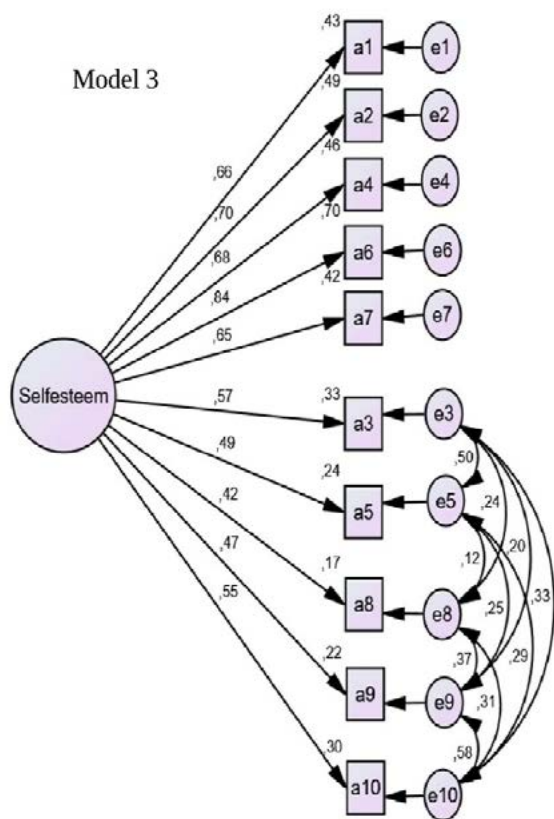
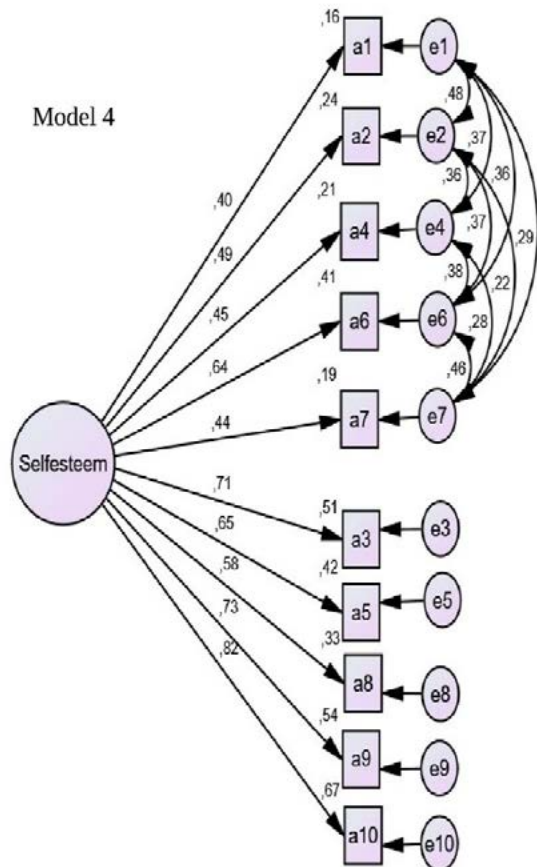
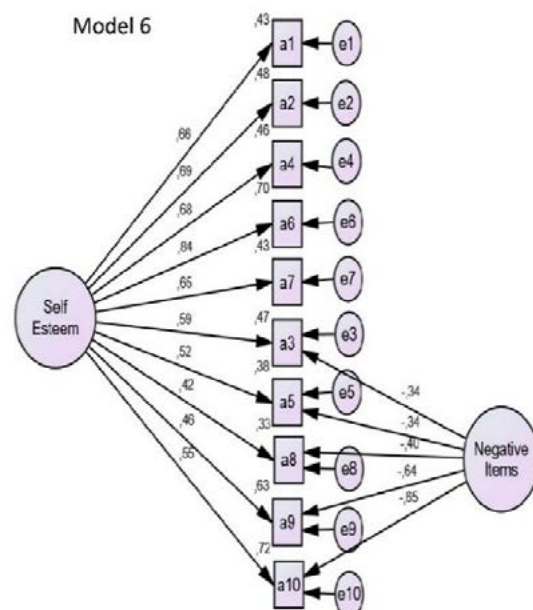


Figure 2 – RSES Correlated Trait Correlated-Uniqueness models tested with factor weights (λ), explained variances (λ^2) and correlations between residuals



Considering the CTCM models (Figure 3), Model 6, which includes a negative wording effect factor and the global self-esteem factor, and Model 7, a positive wording effect factor, showed inadequate fit to the data. Only Model 8, which included both positive and negative method factors, together with the global self-esteem factor, fit the data very well (Table 1).



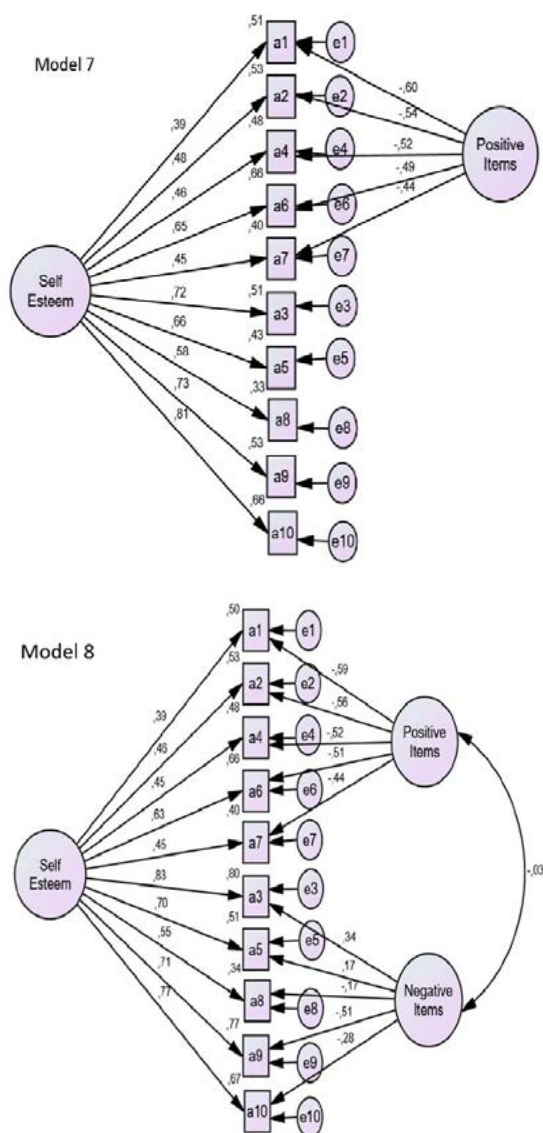


Figure 3 – RSES Correlated Trait Correlated Methods models tested with factor weights (λ) and explained variances (λ^2)

The standardized factor loadings (λ) of all models tested are shown in Figures 1, 2 and 3. In short, of all models tested, Model 5 (CTCU) and 8 (CTCM) showed very good fit to the empirical data.

In model 5 (CTCU), nine of the 10 correlations between the errors of the negatively formulated items were significant ($p < 0.05$). All 10 correlations between errors of positively worded items were significant ($p < 0.001$). This would indicate evidence of the method effect associated with negative and positive items.

In the CTCM models, regarding the factor loadings of Model 8, all items with positive and negative wording also loaded significantly in their

respective method factor ($p < 0.001$). Therefore, these results also show the concomitant existence of positively and negatively worded method effects.

Explained Common Variance (ECV) is a useful statistic because it represents the variance attributable to the global dimension out of the total common variance of the tested model, and also to the specific dimensions (Bentler, 2009). The most extreme example, the exactly unidimensional (theoretical), has an ECV = 1.0. In this study, the calculation of ECV for Model 8 revealed that the global factor accounted for 66% of the explained common variance, the negative method factor for 24% and the positive method factor for 9%. These indexes supported the theory that the substantial majority of variance is explained by global self-esteem and that the method effect of negative items is predominant, followed by the weaker method effect of positive items.

DISCUSSION

According to the supporting literature review, it is possible that this study will be the first to examine the factorial structure and the effects of the method associated with RSES with obese Brazilian women who were awaiting bariatric surgery. The results show a clear support to the existence of a single dimension for the RSES and the method effects on the responses of these participants. Thus, these results are in line with a number of previous studies with the RSES that found support for method effects in several samples, such as adolescents, young adults and the elderly (Gnambs & Schroeders, 2017; Landwall et al., 2012; Marsh et al., 2010; Quilty et al., 2006; Tomas et al. 2015).

In the present study, it was evident that the method effects were associated with both positively and negatively worded items. In the CTCU models, all correlations inserted between the residuals of negatively phrased items were significant and the same happened to the correlations between the residuals of positively formulated items. The CCTU and CTCM models that simultaneously included both types of method effects (Models 5 and 8) provided similar and better fits to the empirical data. Therefore,

there is strong evidence supporting the idea that the RSES answered by current participants contains method effects of negatively and positively worded items, as found in previous studies (Guo & Hu, 2015; Landwall et al., 2012; Marsh et al. al., 2010; Quilty et al., 2006).

According to Schmitt and Stults (1986), the method effects of negatively phrased items on instruments seem more intuitive and easier to interpret and understand. They may be the result of a process whereby respondents first establish a response pattern and then fail to attend to the subjective positive wording of the items. The method effect of the positive items may be more difficult to explain.

The ECV calculation provided subsidies that help to clarify the influence of each investigated dimension on the explained common variance. It was clear that there was a majority influence of the common factor over the variability, global self-esteem. However, when comparing the method effects, negative items had slightly more influence on the responses given by the participants than the positive items.

Some studies have found an association between female sex, depressive symptoms, low self-esteem, and responses related to the negatively worded items of the RSES (Lindwall et al., 2012; Urban et al., 2014). This method effect has been classified as a response style. Although these relations were not tested in the current study, it is possible that the tendency of the method effect linked to the negative items represents a response style of obese women.

An important question about the method effect is that it may merely reflect systematic measurement errors or response styles (DiStefano & Motl, 2006; Lindwall, et al, 2012; Quilty et al., 2006). Response style involves a willingness to interpret and endorse items based on a certain tone or valence (DiStefano & Motl, 2009).

Similar to the studies by Lindwall et al. (2012) and Urban et al., (2014) it is possible that the negative mood of these obese women results in a greater tendency to endorse items with negative words from RSES. Anyway, this hypothesis must be tested in future research.

One of the limitations of this study is that its sample consisted of female participants only. Unfortunately, the percentage of male participation in the groups where the participants were recruited was very small. Thus, it is suggested that future studies attempt to test the invariance of the RSES in a larger sample of obese Brazilian men and women.

REFERENCES

- Alessandri, G., Vecchione, M., Eisenberg, N., & Laguna, M. (2015). On the Factor Structure of the Rosenberg (1965) General Self-Esteem Scale. *Psychological assessment*, 27(2), 621-635. <https://doi.org/10.1037/pas0000073>.
- Arbuckle, J. L. (2014). *IBM SPSS AMOS 23.0. User's Guide*. Crawfordville, FL.
- Avanci, J. Q., Assis, S. G., Santos, N. D., & Oliveira, R. V. (2007). Adaptação transcultural de escala de autoestima para adolescentes. *Psicologia: Reflexão e Crítica*, 20(3), 397-405. <http://dx.doi.org/10.1590/S0102-79722007000300007>
- Bentler, P. M. (1990). Comparative fit indexes structural models. *Psychological Bulletin*, 107, 238-246. <https://doi.org/10.1037/0033-2909.107.2.238>
- Bentler, P. M. (2009). Alpha, dimension-free, and model-based internal consistency reliability. *Psychometrika*, 74, 137-143. <https://doi.org/10.1007/S11336-008-9100-1>
- Bleidorn, W., Arslan, R. C., Denissen, J. J. A., Rentfrow, P. J., Gebauer, J. E., Potter, J., & Gosling, S. (2016). Age and Gender Differences in Self-Esteem-A Cross-Cultural Window. *Journal of Personality and Social Psychology*, 111 (3), 396-410. <https://doi.org/10.1037/pspp0000078>
- Byrne, B. M. (2016a). *Structural Equation Modelling with AMOS. Basics Concepts, Applications and Programming*. London: LEA.
- Byrne, B. M. (2016b). Using Multitrait-Multimethod Analyses in Testing for Evidence of Construct Validity. In K. Schweizer & C. DiStefano (Eds.), *Principles and Methods of Test Construction: Standards and Recent Advances*, (pp. 288-307). Boston: Hogrefe.
- Cárdenas, D. J., Cárdenas, S. J., Villagrán, K. L., & Guzmán, B. Q. (2015). Validez de la Escala de Autoestima de Rosenberg em universitários de la ciudad de México. *Revista Latinoamericana de Medicina Conductual*, 5(1), 18-22. (DOI INEXISTENTE)
- Ceballos-Ospino, G. A., Paba-Barbosa, C., Suescún, J., Oviedo, H. C., Herazo, E., Campo-Arias, A. (2017). Validez y dimensionalidad de la escala de autoestima de Rosenberg em estudiantes universitários. *Pensamiento Psicológico*, 15(2), 29-39. <https://doi.org/10.11144/Javerianacali.PPS15-2.vdea>
- Cogollo, Z., Campo-Arias, A., & Herazo, E. (2015). Escala de Rosenberg para autoestima: consistencia interna y dimensionalidad en estudiantes de Cartagena, Colombia. *Psicologia: Avances de la Disciplina*, 9(2), 61-71. Disponible en: <http://www.redalyc.org/articulo.oa?id=297241658005>

- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. Hillsdale, NJ Lawrence Erlbaum Associates, Publishers.
- Dini, G. M., Quaresma, M. R., & Ferreira, L. M. (2004). Adaptação Cultural e Validação da Versão Brasileira da Escala de Autoestima de Rosenberg. *Revista Brasileira de Cirurgia Plástica*, 19(1), 41-52. (DOI INEXISTENTE)
- DiStefano, C., & Motl, R. W. (2006). Further Investigating Method Effects Associated with Negatively Worded Items on Self-Report Surveys. *Structural Equation Modeling: A Multidisciplinary Journal*, 13(3), 440-464. https://doi.org/10.1207/s15328007sem1303_6
- DiStefano, C., & Motl, R. W. (2009). Personality correlates of method effects due to negatively worded items on the Rosenberg Self-Esteem Scale. *Personality and Individual Differences*, 46(3), 309-313. <http://dx.doi.org/10.1016/j.paid.2008.10.020>
- Donnellan, M. B., Ackerman, R. A., & Brecheen, C. (2016). Extending structural analyses of the Rosenberg self-esteem scale to consider criterion-related validity: Can composite self-esteem scores be good enough? *Journal of Personality Assessment*, 98, 169-177. <https://doi.org/10.1080/00223891.2015.1058268>
- Fagundes, M. A. B. G., Caregnato, R. C. A., & Silveira, L. M. O. B. (2016). Variáveis psicológicas associadas à cirurgia bariátrica. *Aletheia*, 49(2), 47-54. (DOI INEXISTENTE)
- Finney, S. J., & DiStefano, C. (2006). Non-normal and Categorical Data in Structural Equation Modelling. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling: a second course* (pp. 269-314). Greenwich, Conn.: IAP.
- Gnambis, T., Scharl, A., & Schroeders, U. (2018). The structure of the Rosenberg Self-Esteem Scale: A cross-cultural meta-analysis. *Zeitschrift für Psychologie*, 226, 14-29. <http://dx.doi.org/10.1177/1073191115624547>
- Gnambis, T., & Schroeders, U. (2017). Cognitive Abilities Explain Wording Effects in the Rosenberg Self-Esteem Scale. *Assessment*. <https://doi.org/10.1177/1073191117746503>
- Gómez-Lugo, M., Espada, J. P., Morales, A., Marchal-Bertrand, L., Soler, F., & Vallejo-Medina (2016). Adaptation, Validation, Reliability and Factorial Equivalence of the Rosenberg Self-Esteem Scale in Colombian and Spanish Population. *The Spanish Journal of Psychology*, 19, e66, 1-12. <http://dx.doi.org/10.1017/sjp.2016.67>
- González-Rivera, J. A., & Pagán-Torres, O. M. (2017). Validación y análisis de la dimensionalidad de la Escala de Autoestima de Rosenberg en mujeres puertorriqueñas: ¿unifactorial o bifactorial? *Apuntes de Psicología*, 35(3), 169-177. (DOI INEXISTENTE)
- Guo, Q., & Hu, Y. (2015). Method Effects in Rosenberg Self Esteem Scale and Their Correlates. *Advances in Psychology*, 5(12), 770-778. <http://dx.doi.org/10.12677/ap.2015.512100>
- Hair, J. F., Babin, B. J., Anderson, R. E., & Black, W. C. (2019). *Multivariate Data Analysis*. London: Cengage Learning EMEA.
- Hutz, C. S. (2000). *Adaptação da escala de autoestima de Rosenberg*. Manuscrito não publicado. Universidade Federal do Rio Grande do Sul. Porto Alegre, RS.
- Hutz, C. S., & Zanon, C. (2011). Revisão da adaptação, validação e normatização da Escala de Autoestima de Rosenberg. *Avaliação Psicológica*, 10(1), 41-49. (DOI INEXISTENTE)
- Lindwall, M., Barkoukis, V., Grano, C., Lucidi, F., Raudsepp, L., Liukkonen, J., & Thøgersen-Ntoumani, C. (2012). Method Effects: The Problem With Negatively Versus Positively Keyed Items. *Journal of Personality Assessment*, 94(2), 196-204. <https://doi.org/10.1080/00223891.2011.645936>
- Marôco, J. (2014). *Análise de Equações Estruturais. Fundamentos teóricos, Software & Aplicações*. Pero Pinheiro: ReportNumber.
- Marsh, H. W., Scalas, L. F., & Nagengast, B. (2010). Longitudinal tests of competing factor structures for the Rosenberg Self-Esteem Scale: Traits, ephemeral artifacts, and stable response styles. *Psychological Assessment*, 22(2), 366-381. <http://dx.doi.org/10.1037/a0019225>
- Maul, A. (2013). Method effects and the meaning of measurement. *Frontiers in Psychology*, 4, 169. <http://dx.doi.org/10.3389/fpsyg.2013.00169>
- Meurer, S. T., Luft, C. B., Benedetti, T. R., & Mazo, G. Z. (2012). Validade de construto e consistência interna da escala de autoestima de Rosenberg para uma população de idosos brasileiros praticantes de atividades físicas. *Motricidade*, 8(4), 5-15. [http://dx.doi.org/10.6063/motricidade.8\(4\).1548](http://dx.doi.org/10.6063/motricidade.8(4).1548)
- Orth, U. (2017). The lifespan development of self-esteem. In J. Specht (Ed.), *Personality development across the lifespan* (pp. 181-195). London, UK: Elsevier. <http://dx.doi.org/10.1016/B978-0-12-804674-6.00012-0>.
- Pona, A. A., Marek, R. J., Heinberg, L. J., Lavers, M., Ashton, K., & Rish, J. M. (2017). Psychological correlates of body image dissatisfaction before and after bariatric surgery. *Bariatric Surgical Practice and Patient Care*, 12(4), 184-189. <https://doi.org/10.1089/bari.2017.0021>
- Quilty, L. C., Oakman, J. M., & Risko, E. (2006). Correlates of the Rosenberg Self-Esteem Scale method effects. *Structural Equation Modeling*, 13(1), 99-117. http://dx.doi.org/10.1207/s15328007sem1301_5
- Reise, S. P. (2012). Rediscovery of bifactor measurement models. *Multivariate Behavior Research*, 47(5), 667-696. <http://dx.doi.org/10.1080/00273171.2012.715555>
- Reise, S. P., Kim, D. S., Mansolf, M., & Widaman, K. F. (2016). Is the Bifactor Model a Better Model or is it Just Better at Modeling Implausible Responses? Application of Iteratively Reweighted Least Squares to the Rosenberg Self-Esteem Scale. *Multivariate Behavioral Research*, 51(6), 818-838. <https://doi.org/10.1080/00273171.2016.1243461>
- Ricardi, L., & Méndez, G. (2016). Escala de Rosenberg en Población de Adultos Mayores. *Ciencias Psicológicas*, 10(2), 119 - 127. <https://doi.org/dx.doi.org/10.22235/cpv10i2.1245>
- Rocha, C., & Costa, E. (2012). Aspectos psicológicos na obesidade mórbida: Avaliação dos níveis de ansiedade, depressão e do autoconceito em obesos que vão ser submetidos à cirurgia bariátrica. *Análise Psicológica*, 30(4), 451-466. (DOI INEXISTENTE)

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Romano, A., Negreiros, J. & Martins, T. (2007). Contributos para validação da Escala de Autoestima de Rosenberg numa amostra de adolescentes da região interior norte do país. *Psicologia, Saúde & Doenças*, 8(1), 109-116. (DOI INEXISTENTE)

Salerno, L., Ingoglia, S., & Lo Coco, G. (2017). Competing factor structures of the Rosenberg Self-Esteem Scale (RSES) and its measurement invariance across clinical and non-clinical samples. *Personality and Individual Differences*, 113(15), 13-19. <https://doi.org/10.1016/j.paid.2017.02.063>

Sbicigo, J. B., Bandeira, D. R., & Dell'Aglío, D. D. (2010). Escala de Autoestima de Rosenberg (EAR): validade fatorial e consistência interna. *Psico-USF*, 15(3), 395-403.

Schakarowski, F. B., Padoin, A. V., Mottin, C. C., & Castro, E. K. (2018). Percepção de Risco da Cirurgia Bariátrica em Pacientes com Diferentes Comorbidades Associadas à Obesidade. *Temas em Psicologia*, 26(1), 339-346. <http://dx.doi.org/10.9788/tp2018.1-13pt>

Schmitt, N., & Stults, D. M. (1986). Methodology review: Analysis of multitrait-multimethod matrices. *Applied Psychological Measurement*, 10(1), 1-22. <http://dx.doi.org/10.1177/014662168601000101>

Timmerman, M. E., & Lorenzo-Seva, U. (2011). Dimensionality Assessment of Ordered Polytomous Items with Parallel Analysis. *Psychological Methods*, 16, 209-220. <https://doi.org/10.1037/a0023353>

Tolentino, T. M., Maia, M. F. M., Formiga, N. S., Sousa, B. V. O., & Melo, G. F. (2015). Factorial Structure Modeling and Internal Consistency in the Rosenberg Self-Esteem Scale in Brazilian Teenagers. *Revista de Psicologia*, 6(2), 40-49. (DOI INEXISTENTE)

Tomás, J. M., Galiana, L., Hontangas, P., Oliver, A., & Sancho, P. (2013). Evidencia acumulada sobre los efectos de método asociados a ítems invertidos. *Avaliação Psicológica*, 34, 365-381. (DOI INEXISTENTE)

Tomás, J. M., Sancho, P., Oliver, A., Galiana, L., & Meléndez, J. C. (2012). Efectos de método asociados a ítems invertidos vs. ítems en negativo. *Revista Mexicana de Psicología*, 29(2), 105-115. <http://www.redalyc.org/articulo.oa?id=243030190001>

Tomás, J. M., Sancho, P., Galiana, L., Oliver, A., & Hontangas, P. (2015). Measuring self-esteem in Spanish adolescents: Equivalence across gender and educational levels. *Avaliação Psicológica*, 14(3), 385-393. <https://doi.org/10.15689/ap.2015.1403.10>

Tomás, J. M., Oliver, A., Hontangas, P. M., Sancho, P., & Galiana, L. (2015). Method Effects and Gender Invariance of the Rosenberg Self-esteem Scale: A Study on Adolescents. *Acta de Investigación Psicológica*, 5 (3), 2194 - 2203. [https://doi.org/10.1016/S2007-4719\(16\)30009-6](https://doi.org/10.1016/S2007-4719(16)30009-6)

Urbán, R., Szigeti, R., Kökönyei, G., & Demetrovics, Z. (2014). Global self-esteem and method effects: competing factor structures, longitudinal invariance and response styles in adolescents. *Behavior Research Methods*, 46(2), 488-498. <https://doi.org/10.3758/s13428-013-0391-5>

Valentini, F. (2017). Influência e controle da aquiescência na análise fatorial. *Avaliação Psicológica*, 16(2), 120-251. <https://doi.org/10.15689/ap.2017.1602.ed>

Ventura-León, J., Caycho-Rodriguez, T., Barboza-Palominó, M., & Salas, G. (2018). Evidencias Psicométricas de la Escala de Autoestima de Rosenberg en Adolescentes Limeños. *Revista Interamericana de Psicología*, 52(1), 44-60. (DOI INEXISTENTE)

Vitigel Brasil (2016). Recuperado em maio, 23, 2019 <http://portal.arquivos.saude.gov.br/images/pdf/2017/abril/17/Vitigel.pdf>

World Health Organization-WHO (2018). Guidance on ethical considerations in planning and reviewing research studies on sexual and reproductive health in adolescents. Geneva. Licence: CCBY-NC-SA3.0IGO.

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