



## Validity Evidence of the Vanity Scale: Adaptation to Brazil and Relations with Personality

### Evidências de Validade da Escala de Vaidade: Adaptação para o Brasil e Relações com Personalidade

### Evidencia de Validez de la Escala de Vanidad: Adaptación para Brasil y Relaciones con la Personalidad

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#### Abstract

Vanity can be understood as a relatively stable characteristic that varies between individuals and encompasses four dimensions: a concern for physical appearance, a positive (possibly inflated) view of physical appearance, a concern for achievement, and a positive (possibly inflated) view of achievement. The present study aimed to adapt to Brazilian context and search for validity evidence of a scale to measure vanity. Participants were 623 adults, 65% women. Confirmatory factorial analyses showed appropriate adjustment indices for the four-factor structure. The levels of reliability for the factors were satisfactory. Personality characteristics correlated with the vanity in the expected directions, for example, conscientiousness showed positive correlation with personal achievement dimensions of vanity; neuroticism correlated positively with concern dimensions of vanity. Still, the physical appearance dimensions of vanity correlated positively with sexual attractiveness. The results also showed that people with higher education levels presented higher means in dimensions of vanity that refer to personal achievements. We suggest that the instrument grouped evidence of validity that makes it suitable for the Brazilian context.

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## Resumo

A vaidade pode ser entendida como uma característica relativamente estável que varia entre os indivíduos e engloba quatro dimensões: uma preocupação com a aparência física; uma visão positiva (possivelmente inflada) sobre a aparência física; uma preocupação com as realizações pessoais; uma visão positiva (possivelmente inflada) sobre as realizações pessoais. O presente estudo teve como objetivos adaptar e buscar evidências de validade de uma escala para mensurar a vaidade em adultos brasileiros. Participaram 623 adultos, 65% mulheres. Análises fatoriais confirmatórias mostraram índices de ajuste adequados para a estrutura de quatro fatores. Os níveis de confiabilidade para os fatores foram satisfatórios. As características da personalidade se correlacionaram com a vaidade nas direções esperadas, por exemplo, o fator realização apresentou correlação positiva com as dimensões referentes às realizações pessoais da vaidade; o neuroticismo correlacionou-se positivamente com as dimensões de preocupação da vaidade. Ainda, encontraram-se correlações positivas entre as dimensões de vaidade referentes à aparência física e a atratividade sexual. Os resultados também mostraram que pessoas com maior escolaridade apresentaram médias maiores nas dimensões de vaidade que se referem às realizações pessoais. Considera-se que o instrumento reuniu evidências de validade que o tornam adequado ao contexto brasileiro.

## Resumen

La vanidad puede entenderse como una característica relativamente estable que varía entre los individuos y abarca cuatro dimensiones: una preocupación por la apariencia física; una vista positiva (posiblemente inflada) de la apariencia física; una preocupación por las realizaciones personales; una visión positiva (posiblemente inflada) de las realizaciones personales. Este estudio tuvo como objetivos adaptar y buscar evidencias de validez de una escala para medir vanidad en adultos brasileños. Los participantes fueron 623 adultos, 65% mujeres. Los análisis factoriales confirmatorios mostraron índices de ajuste apropiados para la estructura de cuatro factores. Los niveles de confiabilidad para los factores fueron satisfactorios. Las características de la personalidad se correlacionaron con la vanidad en las direcciones esperadas, por ejemplo, la responsabilidad mostró una correlación positiva con las dimensiones de realizaciones personales de la vanidad; el neuroticismo se correlacionó positivamente con las dimensiones de preocupación de la vanidad. Aún, las dimensiones de apariencia física de la vanidad se correlacionaron positivamente con el atractivo sexual. Los resultados también mostraron que las personas con niveles de educación más altos presentaron medios más altos en dimensiones de vanidad que se refieren a realizaciones personales. Se considera que el instrumento ha reunido evidencia de validez que lo hace adecuado para el contexto brasileño.

**Keywords** Vanity · Test validity · Personality traits · Sexual attractiveness · Scale adaptation

**Palavras-chave** vaidade · validade do teste · traços de personalidade · atratividade sexual · adaptação de escala

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A little more than two decades ago, it was published one of the earliest known papers that aimed to measure levels of vanity, a breakthrough study that opened the door to scientific research about what was presented as a new psychological construct (Netemeyer et al. 1995). Before being established as something measurable, however, vanity was already present in other disciplines, such as philosophy and sociology (Netemeyer et al. 1995), and some religious groups throughout history had even taken a stand on how much vanity would or would not be desirable. In Catholicism, for instance, excessive worship of the body and of one's own qualities is considered a sin, something that keeps man from pursuing a virtuous life and therefore should be avoided (Strehlau et al. 2015). Along this same line, a dictionary search reveals that the word vanity carries references to what is vain, futile, and worthless (Houaiss 2002) but may acquire a positive connotation at times, such as when used to refer to healthy self-care (Strehlau et al. 2015).

Regardless of whether it is considered positive or negative, vanity seems to play an important role in human behavior. Year after year, Brazil has occupied the first positions in rankings of cosmetics consumption (Brazilian Industry Association of Toiletries, Perfumes and Cosmetics [ABIHPEC] 2018) and performance of cosmetic surgical procedures (International Society of Aesthetic Plastic Surgery [ISAPS] 2018). In this respect, we must consider the strong influence of advertising, which seeks to persuade vain individuals by presenting physical attractiveness and the possession of material goods as the key to success (Wang and Waller 2006). In the present-day context, where exhibiting one's attributes seems to have been facilitated by the advent of online social networks, the scientific study of vanity becomes even more relevant. However, few studies have examined this construct in Brazil, much less proposed to measure it; in the Brazilian context, there is no measure of vanity with evidence of validity for men and women. An instrument suitable to the Brazilian reality would allow for a more detailed analysis of the variables associated with vanity.

## The Vanity Scale

Among the vanity measures available, the Vanity Scale by Netemeyer et al. (1995) conceives this construct as being a trait, that is, a relatively stable characteristic that varies between individuals. According to these authors, four factors would be necessary to explain vanity: a concern for physical appearance, a positive (possibly inflated) view of physical appearance, a concern for achievement, and a positive (possibly inflated) view of achievement. The dimension of concern for physical appearance emphasizes the extreme value ascribed to physical attractiveness as well as the search for resources that can increase it. The positive view of physical appearance denotes a high evaluation of attributes relative to one's physical attractiveness. Concern for personal achievement is related to the great importance given to personal success, such as academic and professional accomplishments. The positive view of personal achievement concerns an appreciative evaluation of one's own accomplishments.

Thus understood, vanity encompasses two central aspects, physical appearance and personal accomplishments, and for each of them there are two dimensions: one of concern for and one of overestimation of one's attributes, totaling the four factors of the instrument developed by Netemeyer et al. (1995). The factorial structure of the original

instrument was tested in two studies, which used exploratory and confirmatory analyses, demonstrating that the four-factor model was the most adequate. The scale also presented satisfactory precision indices, such as Cronbach's alpha coefficients ranging from .80 to .97. Also, vanity is related with a wide range of variables according to previous hypotheses, as a positive correlation between the four vanity factors and grandiosity factors (a construct involving aspects of egocentrism), a positive correlation between the physical concern factor and the number of people that considered undergoing cosmetic surgery, and a positive correlation between vanity and narcissism.

In subsequent studies, the Vanity Scale was used to measure vanity levels in other cultures, and the adapted versions have presented a similar structure to the original one, with satisfactory evidence of validity and suitable reliability indices (e.g., Durvasula et al. 2001; Wang and Waller 2006). In Brazil, three studies used adapted versions of the Vanity Scale. In the most comprehensive of these studies, Strehlau et al. (2015) adapted the instrument to the Brazilian reality and presented evidence of validity for the scale. However, the sample of the study consisted exclusively of women, and the adjectives in the items of the scale were in the feminine form, which could make its application to male subjects of questionable validity (see Natividade et al. 2012). The other two studies also selected samples formed by only one gender, in addition to having included in the questionnaire only vanity items related to physical appearance (Avelar and Veiga 2013; Sayon 2017). Therefore, in the Brazilian context, no adapted version of the Vanity Scale was found in which the sample submitted to the empirical test preserved the characteristics of the target population of the original instrument (i.e., adult men and women).

## Vanity and Individual Differences

A critical issue in vanity research, ever since the early studies that tried to define it operationally (e.g., LeBel 2003; Netemeyer et al. 1995), deals with how this construct relates to other personality traits, more specifically, to the traits that make up the narcissistic personality disorder. A strong correlation has been found between vanity and narcissism (Egan and McCorkindale 2007; Netemeyer et al. 1995), something to be expected considering that narcissistic individuals tend to present, among other characteristics, an inflated sense of personal importance; an excessive concern for power, beauty, and prestige; and a disrespect for the feelings of others (American Psychiatric Association [APA] 2014). In this sense, vanity and narcissism can be considered as related but distinct constructs (Netemeyer et al. 1995), and some authors highlight vanity as one of the traits of the narcissistic personality disorder (LeBel 2003).

In broad terms, personality can be understood as a relatively stable pattern of functioning that differentiates people from each other (Buss and Penke 2015). Vanity, in turn, understood as a trait, is associated with a tendency to be overly concerned for one's own attributes as well as to overestimate them (Netemeyer et al. 1995). In addition to the first examined relationships between vanity and narcissism, there arose the possibility that vanity would also be related to the personality traits that make up the Big Five model (LeBel 2003). This model proposes to explain the main aspects of personality through five factors: agreeableness, a tendency to manifest empathy, prosocial behavior; conscientiousness, a tendency to be organized and disciplined

towards established goals; extraversion, a tendency to seek stimulation in the interaction with others; neuroticism, a tendency to experience emotional instability, high levels of irritability, and worry; and openness, a tendency to experience intellectual complexity, search for new experiences (Natividade and Hutz 2015).

Although theoretically expected, the relationships between vanity and the Big Five factors of personality are still obscure. The few studies that aimed to test these relationships used definitions of vanity other than the definition by Netemeyer et al. (1995) (e.g., Egan and McCorkindale 2007; LeBel 2003). For instance, in defining vanity more comprehensively as an inflated view of one's own physical and intellectual attributes, LeBel (2003) found a positive correlation of vanity with extraversion and openness to experiences. Egan and McCorkindale (2007), using a reformulated version of the scale created by LeBel (2003), found positive correlations of vanity with extraversion and conscientiousness and negative correlations with neuroticism and agreeableness. Those studies agree that the extraversion factor would be related to high levels of positive view about one's own qualities due to an aspect common to both constructs: the interest in creating a positive image in order to obtain gratification in social interactions (LeBel 2003).

The definition of vanity by LeBel (2003), however, does not encompass aspects of concern for one's own attributes, being limited to only two factors that relate to the overestimation of one's own qualities. These factors can be compared to what would be the positive view dimensions of the Vanity Scale. In this respect, we can understand, for example, the negative correlation found between the general scale score of LeBel (2003) and neuroticism (Egan and McCorkindale 2007), considering that high levels of neuroticism are associated with low self-esteem (Natividade and Hutz 2016) and excessive self-criticism (Nunes et al. 2010)—characteristics that are opposite to what is expected of individuals who have a positive view of themselves. If concern factors were considered, however, as in the Vanity Scale, it is assumed that they would be positively correlated with neuroticism, considering that a state of concern is a central feature of this personality factor (Nunes et al. 2010).

The way vanity relates to the conscientiousness factor is also relevant. Although Egan and McCorkindale (2007) found positive correlation between the two constructs, the intellectual aspects of vanity seem to be mainly responsible for this result. When vanity factors are analyzed separately, no significant correlation was found between conscientiousness and the physical appearance dimensions. However, it was found that the higher the conscientiousness levels, the greater the vanity related to one's own abilities and skills (Egan and McCorkindale 2007). That was an expected result, considering that high levels of conscientiousness indicate people committed to achieving personal and professional goals (Natividade and Hutz 2015; Nunes et al. 2010). Thus, individuals with that characteristic would tend to be more concerned for their achievements and to obtain more often the results they desire, accumulating reasons to be proud of their skills and accomplishments.

Moreover, on the relations between vanity and other traits, no studies were found that considered possible vanity relations with characteristics related to sexuality (Natividade and Hutz 2016). It is theoretically quite plausible that high levels of sexual attractiveness, a trait relative to the level of attraction that a person exerts from the romantic-sexual point of view (Natividade and Hutz 2016), are also to be found in people that are highly vain with their own appearance. High levels of sexual

attractiveness are observed in people who perceive themselves, among other characteristics, as appealing and irresistible (Natividade and Hutz 2016); similarly, people with a high positive view of their appearance tend to consider themselves as having highly desirable physical attributes (Netemeyer et al. 1995). Because of the clear closeness between the two constructs, high correlations between sexual attractiveness and the physical appearance dimensions may be an important evidence of validity for the vanity instruments.

## Vanity and Sociodemographic Variables

In addition to personality traits, other individual and contextual variables also help to explain variations in vanity levels. For example, the concern for one's appearance tends to be higher in individuals with lower levels of education compared to those with higher levels and in younger people compared to older ones (Strehlau et al. 2010). Besides caring less about one's appearance, older people would tend to take an increasingly less positive view of one's own physical attributes (Mowen et al. 2009). Again, the evidence for these variables is scarce, and there is little information on differences between groups in vanity dimensions that refer to personal achievement.

Regarding gender differences in vanity, studies have presented inclusive and sometimes contradictory results (e.g., Durvasula and Lysonski 2008; Workman and Lee 2011). Most studies seem to reach a consensus on the dimension physical-concern, with women presenting higher levels (Mowen et al. 2009; Wang and Waller 2006; Workman and Lee 2011). According to an evolutionary perspective, gender differences in vanity were to be expected, since women and men developed distinct attractiveness criteria: whereas women tend to be more attracted by status and resources, men tend to attach greater importance to physical beauty and signs of youth (Buss and Schmitt 2019; Durvasula and Lysonski 2008). As a consequence, the strategies developed to attract and retain loving partners also differ between the sexes (Buss and Schmitt 2019), women investing more time and resources to exhibit physical attributes and men to exhibit status and technical skills (Haferkamp et al. 2012).

In light of the aforesaid considerations, the goal of this work was to present evidence of validity for a Brazilian Portuguese adapted version of scale to measure levels of vanity, namely, the Vanity Scale of Netemeyer et al. (1995). It also aimed to verify relationships between vanity and personality traits from the perspective of the Big Five factors (agreeableness, conscientiousness, extraversion, neuroticism, and openness) and relationships between vanity and sexual attractiveness. It further aimed to test relationships between vanity and age, differences in vanity levels between men and women, and also between different levels of education.

## Method

### Participants

There were 623 participants, the mean age was 28 years ( $SD = 8.33$ ,  $Min = 18$ ,  $Max = 63$ ), 65% were women ( $n = 405$ ), and 35% ( $n = 218$ ) were men. The education level of

the participants ranged from complete high school education to complete graduate education. The participants who had a high school level were 2.9% ( $n = 18$ ); 40.3% reported incomplete undergraduate level ( $n = 251$ ); 16.5% reported having completed undergraduate level ( $n = 103$ ); 14.9% said that they had an incomplete graduate course ( $n = 93$ ); and 25.4% of them had a graduate degree ( $n = 158$ ). There were participants from the five regions of Brazil, the South region being the most representative with 65% of the participants ( $n = 405$ ); the Southeast region had 14.3% ( $n = 89$ ); the Northeast region, 12.5% ( $n = 78$ ); the Central-West Region, 4.2% ( $n = 26$ ); the North region, 3% ( $n = 19$ ); and the remaining 1% lived outside of Brazil ( $n = 6$ ).

## Instruments

Two online questionnaires, similar to paper-pencil questionnaires, were used as instruments to collect data. Both questionnaires were identical concerning the sociodemographic questions (gender, age, education level, and the State of Brazil in which the participants happened to be) and the Vanity Scale. The differences between the two consisted in that one of the questionnaires included the Sexy Seven Brazil (Sexy7-Brazil) scale and the other included the Factorial Personality Battery (FPB) test. Because Sexy7-Brazil scale and FBP test have many items, we elaborated two questionnaires with just one of those instruments. We proceed in that way to reach a larger number of participants, reducing the total number of questions in each questionnaire. Below is a detailed description of the scales used.

The Vanity Scale (translated and adapted from Netemeyer et al. 1995). This scale is composed of 21 items in the form of affirmative sentences. The participants must indicate the degree of agreement with each one on a seven-point scale, where point 1 means “I totally disagree,” and point 7 means “I totally agree.” The scale assesses levels of vanity on the basis of four factors: physical-view, achievement-view, achievement-concern, and physical-concern. The procedures for translation and evidence of validity of the Brazilian version of the scale are described in this study.

Sexy Seven Brazil (Sexy7-Brasil—Natividade and Hutz 2016). The instrument evaluates personal characteristics related to sexuality by using seven dimensions: sexual attractiveness, gender orientation, emotional investment, erotic disposition, exclusivity in relationships, sexual orientation, and sexual restraint. Sexy7-Brasil is made up of 28 adjectives followed by seven-point scales in which participants must answer how well each item describes them properly, such as point 1 means “inaccurate extremely” and point 7 “accurate extremely.” In this study, we used in the analyses only the subscale related to sexual attractiveness (five items), considering that this factor evaluates the self-perception of the physical attraction on potential partners to love relationships. These are examples of items: hot, sexy, and beautiful. Natividade and Hutz (2016) reported a coefficient alpha for the sexual attractiveness factor of .89 and a test-retest correlation of .81.

Factorial Personality Battery (FPB—Nunes et al. 2010). FPB was developed to evaluate personality according to the Big Five factors of personality. The Big Five factors represent traits that comprise the following: (1) agreeableness, it refers to the types of interaction that range from compassion to antagonism, responsiveness, empathy, and cooperativity; (2) conscientiousness, it concerns the degree of organization, persistence, control, and motivation to achieve a goal; (3) extraversion, it includes levels of interpersonal interaction in terms

of quantity and intensity, activity levels, and need for stimulation; (4) neuroticism, it refers to the level of emotional adjustment and instability, degree of reality, frustration tolerance and non-adaptive coping responses, levels of vulnerability, self-criticism and impulsivity, anxiety, and depression; and (5) openness, it refers to exploratory behaviors such as openness to new experiences and curiosity. The battery consists of 126 statements, and participants must judge on a seven-point scale how much each statement applies to them. Point 1 means “I absolutely do not identify with the sentence,” and point 7 corresponds to “it describes me perfectly.”

## **Procedures**

### **Translation**

Two bilingual researchers (Portuguese-English) who knew the purpose of the scale translated it separately. Also, the instrument was translated by a third bilingual researcher who did not know the purpose of the scale. A fourth bilingual researcher compiled the three versions. Then, two bilingual researchers conjointly verified the adequacy of this compiled version, comparing the translated items’ content with the original version of the scale. These researchers made minor adjustments to make the items clearer and consistent with the original version. The final version of the scale was then empirically tested in this study.

### **Ethical**

The research followed the ethical recommendations in Brazil and was approved by the Ethics Committee for Research with Human Beings at the Universidade Federal do Rio Grande do Sul (protocol number 21792). Informed consent was obtained from all individual participants included in the study.

### **Data Collection**

The two questionnaires were hosted at different addresses on the Internet. The questionnaire containing Sexy7-Brasil was disclosed to potential participants through e-mail invitations and ads on social networking websites. The second questionnaire (which included the FPB) was made available just through e-mail invitations, which were forwarded to people other than those to whom the first questionnaire invitation was sent. Participants in this last questionnaire were asked to respond again to the Vanity Scale 2 months after providing their answers.

The first page of the questionnaires provided information about the research, the responsible researchers, the willingness to participate, and other ethical considerations. Those who agreed to participate in the study provided their consent by clicking on the accept option and then were directed to the other pages of the questionnaires. The research was conducted in accordance with the ethical guidelines of human research.

### **Analyses**

First, the answers of the two questionnaires were grouped in order to form a single database. Second, the cases with incomplete responses to the Vanity Scale were



excluded, thus avoiding the presence of missing cases in the analyses. In addition, participants who evidently responded randomly to the questions, for example, those who provided exactly the same answer to all questions, were removed from the database. After those procedures, we have reached the total of participants described before. Then, we performed confirmatory factorial analyses in order to compare the original four-factor scale model with three other possible structural configurations. These analyses were run with package lavaan version 0.6.3 (Rosseel 2012) in the software R version 3.5.3 (R Core Team 2019). For all models examined, the covariance matrix was used to estimate the parameters, and the robust maximum likelihood estimator was chosen.

In the first model (A), we specified a structure of four factors, the items in each factor following the original scale (Netemeyer et al. 1995). The second model (B) was specified for a single factor explaining all items. In the third model (C), two factors were specified, so those items related to physical composed one factor and items related to achievements the other one. In the fourth model (D), two factors were also specified; however, the items that configured one factor were those related to the physical-view and achievement-view, and the other factor was configured by items referring to the physical-concern and achievement-concern. The following indices were used as criteria of adjustment of the data to the models, as suggested by the specialized literature (Gana and Broc 2019): ratio between chi-square and degrees of freedom ( $\chi^2/df$ ), Comparative Fit Index (CFI), Goodness-of-Fit Index (GFI), Normed Fit Index (NFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Akaike Information Criterion (AIC).

Looking for validity evidence based in relationship with other variables, we performed the Pearson correlation analyses between vanity factors, the Big Five factors of personality, and sexual attractiveness and MANOVAs for sexual and education level differences in vanity. In search of indices of reliability for the scale, we calculate alpha and omega coefficients with the package MBESS (Kelley 2019) version 4.6 in the software R (R Core Team 2019). Also, we calculate the Pearson correlation from a test-retest procedure to Vanity Scale, 2-month interval period.

## Results

### Structure and Precision

The adjustment indices obtained with the confirmatory factor analysis for each model can be seen in Table 1. It can be observed that the four-factor structure, like the original scale, presents the best adjustment compared to the other possible models. Also, the indices obtained for the four-factor model, when considered together, suggest a suitable factorial structure for the instrument, considering that  $\chi^2/df < 5$ ; RMSEA  $< .08$ ; CFI, TLI, NFI, and GFI  $\geq .90$ ; and CAIC with the lowest value among the models tested.

Table 2 presents the factor loadings of items, the correlation between factors, and the coefficients of reliability. The factor loadings were all above .50, except for one item that factor loading was .47. The factors presented adequate indices of internal consistency, with values ranged from .74 to .91. The temporal consistency indices, the test and re-test with a two-month interval between applications, ranging from .74 to .87.

**Table 1** Indices of the confirmatory factorial analyses for the four tested models

|             | A           | B         | C         | D         |
|-------------|-------------|-----------|-----------|-----------|
| $\chi^2$    | 576.4       | 2731.8    | 1739.0    | 1896.4    |
| df          | 183         | 189       | 188       | 188       |
| p           | < .001      | < .001    | < .001    | < .001    |
| $\chi^2/df$ | 3.15        | 14.5      | 9.25      | 10.1      |
| CFI         | 0.93        | 0.51      | 0.71      | 0.67      |
| TLI         | 0.92        | 0.46      | 0.67      | 0.64      |
| NFI         | 0.90        | 0.49      | 0.68      | 0.65      |
| GFI         | 0.90        | 0.54      | 0.65      | 0.65      |
| SRMR        | 0.067       | 0.15      | 0.12      | 0.13      |
| RMESA       | 0.066       | 0.17      | 0.13      | 0.14      |
| IC90% RMESA | 0.060–0.072 | 0.16–0.17 | 0.12–0.14 | 0.13–0.14 |
| AIC         | 44,410.4    | 47,217.5  | 45,872.5  | 46,097.4  |

$N=623$ . A, four factors, model specified with the items composing each factor according to the original version of the scale (Netemeyer et al. 1995). B, a single factor. C, two factors, model specified with the items related to physical composing one factor and the items related to achievements the other factor. D, two factors, model specified with the items referring to the physical-view and achievement-view composing one factor and the items referring to the physical-concern and achievement-view the other factor. The robust maximum likelihood estimator was used

This set of information, considering that all values are greater than .70, suggests satisfactory precision for the instrument (DeVellis 2016).

### Relations with Other Variables

Correlations were run between vanity factors, sexual attractiveness, and five personality dimensions in order to test the relationships between the constructs. Pearson's correlation values can be seen in Table 3. As expected, correlations with sexual attractiveness were positive and higher with factors related to appearance as the factor 1 (physical-view) and the factor 4 (physical-concern). Regarding personality factors, as it was also expected, we found positive correlations of extraversion with three dimensions of vanity, being the strongest with factor 1 (physical-view), positive correlations of neuroticism with concern-related vanity factors, and stronger positive correlations of conscientiousness with factor 2 (achievement-view). Last, the negative correlations of vanity factors with the age variable are highlighted, being higher among the concern-related factors.

### Differences Between Groups

Since the vanity factors correlated with the age of participants, age was included as a covariate in all analyses of mean differences between groups. At first, gender differences were tested for vanity through a MANOVA. The results indicated significant differences between men and women for the construct, Wilks  $\lambda = 0.96$ ;  $F(4, 617) = 6.36$ ,  $p < .001$ . The univariate tests carried out showed that for the factor 1 (physical-

**Table 2** Factor loadings of the items and other psychometric properties

| Items  | F1      | F2      | F3      | F4      |
|--|---------|---------|---------|---------|
| 9.My looks are very appealing to others                                    | .85     |         |         |         |
| 3.I have the type of body that people want to look at                      | .84     |         |         |         |
| 5.People notice how attractive I am  | .83     |         |         |         |
| 20.My body is sexually appealing   | .81     |         |         |         |
| 6.I am a very good-looking individual                                      | .76     |         |         |         |
| 17.People are envious of my good looks                                     | .65     |         |         |         |
| 7.I am a good example of professional success                              |         | .90     |         |         |
| 12.In a professional sense, I am a very successful person                  |         | .84     |         |         |
| 2.Others wish they were as successful as me                                |         | .73     |         |         |
| 13.My achievements are highly regarded by others                           |         | .66     |         |         |
| 14.I am an accomplished person   |         | .61     |         |         |
| 11.I want my achievements to be recognized by others                       |         |         | .79     |         |
| 18.I want others to look up to me because of my accomplishments            |         |         | .76     |         |
| 10.Achieving greater success than my peers is important to me              |         |         | .55     |         |
| 16.Professional achievements are an obsession with me                      |         |         | .50     |         |
| 19.I am more concerned with professional success than most people I know   |         |         | .47     |         |
| 21.I am very concerned about my appearance                                 |         |         |         | .82     |
| 1.The way I look is extremely important to me                              |         |         |         | .82     |
| 15.It is important that I always look good                                 |         |         |         | .77     |
| 4.Looking my best is worth the effort                                      |         |         |         | .69     |
| 8.I would feel embarrassed if I was around people and did not look my best |         |         |         | .66     |
| Factors correlation  |         |         |         |         |
| F1   | 1       |         |         |         |
| F2   | .35     | 1       |         |         |
| F3   | .27     | .43     | 1       |         |
| F4   | .54     | .16     | .49     | 1       |
| Cronbach's Alpha   | .91     | .86     | .74     | .87     |
| CI 95% for Alpha coefficient   | .89–.92 | .84–.88 | .71–.78 | .85–.88 |
| McDonald's Omega   | .91     | .87     | .74     | .87     |
| CI 95% for Omega coefficient   | .90–.92 | .85–.89 | .71–.78 | .85–.88 |
| Test-retest correlation <sup>a</sup> ( $n = 68$ )                          | .87     | .74     | .76     | .80     |
| <i>M</i>   | 3.75    | 4.45    | 4.81    | 4.14    |
| <i>SD</i>  | 1.38    | 1.26    | 1.17    | 1.46    |

$N = 623$ . F1, physical-view; F2, achievement-view; F3, achievement-concern; F4, physical-concern. *CI* confidence interval

<sup>a</sup> 2-month interval

view), women presented a higher mean ( $M = 3.91$ ,  $SD = 1.35$ ) than men ( $M = 3.45$ ,  $SD = 1.37$ ),  $F(1, 620) = 15.7$ ,  $p < .001$ ,  $d = 0.33$ . In factor 2 (achievement-view), the gender differences were not significant,  $F(1, 620) = 0.62$ ;  $p = .43$ ,  $d = 0.07$  nor were

**Table 3** Correlations between vanity, sexual attractiveness, and personality

|                                    | 1      | 2     | 3      | 4      |
|------------------------------------|--------|-------|--------|--------|
| 1. Physical-view                   | –      |       |        |        |
| 2. Achievement-view                | .36**  | –     |        |        |
| 3. Achievement-concern             | .26**  | .41** | –      |        |
| 4. Physical-concern                | .48**  | .15** | .44**  | –      |
| Sexual attractiveness <sup>a</sup> | .74**  | .26** | .16**  | .35**  |
| Neuroticism <sup>b</sup>           | .06    | –.17  | .29**  | .21*   |
| Extraversion <sup>b</sup>          | .45**  | .29** | .14    | .26**  |
| Agreeableness <sup>b</sup>         | .03    | .09   | –.20*  | .003   |
| Conscientiousness <sup>b</sup>     | .18*   | .44** | .26**  | .19*   |
| Openness <sup>b</sup>              | .19*   | –.03  | .02    | .07    |
| Age                                | –.11** | .05   | –.26** | –.20** |

$N = 623$

<sup>a</sup>  $n = 500$ , 67% women

<sup>b</sup>  $n = 114$ , 59% women

\* $p < .05$

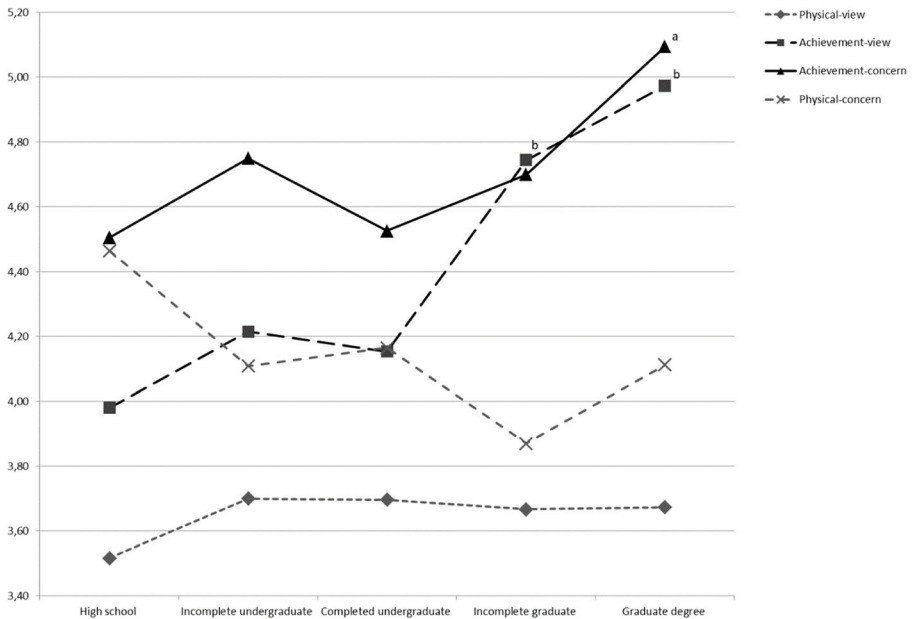
\*\* $p < .01$

significant the gender differences for factor 3 (achievement-concern),  $F(1, 620) = 2.70$ ,  $p = .10$ ,  $d = 0.13$ . For factor 4 (physical-concern), women ( $M = 4.24$ ,  $SD = 1.43$ ) scored higher than men ( $M = 3.95$ ,  $SD = 1.48$ ),  $F(1, 620) = 5.67$ ,  $p = .018$ ,  $d = 0.20$ .

Lastly, the mean differences in vanity between participants of five levels of education were tested. Considering the gender differences found for vanity, the interaction of sex and levels of education was tested, and there was no interaction between these variables for vanity levels, Wilks  $\lambda = 0.98$ ,  $F(16, 1861) = 0.92$ ,  $p = .55$ . On the other hand, there were significant differences in vanity between the groups formed by levels of education, Wilks  $\lambda = 0.90$ ;  $F(16, 1861) = 3.87$ ,  $p < .001$ . The univariate tests showed that for the factor 1 (physical-view) and for the factor 4 (physical-concern), there were no differences between the groups, respectively,  $F(4, 612) = 0.08$ ,  $p = .99$  and  $F(4, 612) = 0.86$ ,  $p = .49$ . However, for the factor 2 (achievement-view) and for the factor 3 (achievement-concern), the differences between groups were significant: factor 2,  $F(4, 612) = 10.4$ ,  $p < .001$  and factor 3,  $F(4, 612) = 4.15$ ,  $p = .003$ . The post hoc analyses, least significant difference method, indicated that in factor 2, those with a complete and incomplete graduate level presented higher means than all the other groups. For factor 3, only the participants with complete graduate level presented higher mean than all the other groups. Figure 1 shows the differences between means for the groups formed by the levels of education.

## Discussion

The results presented in this research reveal a suitable Vanity Scale for the Brazilian context, with evidences of validity and satisfactory precision indices. The four-factor



**Fig. 1** Means of vanity factors according to levels of education. a, mean of this education level significantly different from the others in this factor,  $p < .05$ . b, means of these education levels significantly different from the others in this factor,  $p < .05$ . The means are adjusted according to age of participants' covariate

structure found for the scale was tested through confirmatory analyses and was consonant with the original instrument (Netemeyer et al. 1995). Reliability indicators were also adequate, including satisfactory indices of internal consistency and temporal consistency (DeVellis 2016). Furthermore, the relations of vanity with other variables occurred according to the theoretical hypotheses. It should be emphasized that all the evidence was found for a sample with certain peculiarities, for example, high level of education, and that this sample is not representative of the Brazilian population. New studies may seek evidence of scale validity in participants with other characteristics.

Although other studies have tested relationships between vanity and the Big Five personality factors (e.g., Egan and McCorkindale 2007; LeBel 2003), studies using the four Vanity Scale factors to test these relationships were not found. The use of different measures to access vanity (e.g., LeBel 2003) and a greater emphasis on female and on the physical appearance dimensions (e.g., Avelar and Veiga 2013; Sayon 2017; Strehlau et al. 2015) have resulted in a still scarce knowledge about some variables. In this sense, this research provides important contributions, testing relations still rarely investigated, including men and women as participants, and maintaining the items that compose the four factors of the Vanity Scale.

Regarding the relationship between vanity and other variables, the strongest correlation occurred between the dimension of physical-view and sexual attractiveness. That positive correlation was expected since both factors are related to a positive assessment of one's own physical attributes (Natividade and Hutz 2016; Netemeyer et al. 1995). Thus, that result is an important evidence of validity for the adapted scale. The factor extraversion, conscientiousness, and neuroticism were also correlated with vanity in the expected directions. In keeping with the idea that extraverted people would be quite

vain in order to make sure they will be admired and sought by other people, aiming at constant social stimulation (Nunes et al. 2010), positive correlations between extraversion and the three dimensions of vanity were found. Conscientiousness was in turn positively related to the factors associated with one's own achievements, possibly due to those people's tendency to pursue their goals until they succeed in attaining them (Nunes et al. 2010). Lastly, results involving the neuroticism factor may indicate that aspects of insecurity and fear of abandonment, which are striking in this personality factor (Nunes et al. 2010), would also be present in people who worry excessively about their own attributes.

The results of vanity and age relationships suggest variations in vanity levels throughout the life cycle. As people age, they become less concerned about their own attributes, including physical appearance and personal accomplishments, and have a less positive view of their appearance. Similar results on physical appearance dimensions had previously been found (e.g., Mowen et al. 2009; Strehlau et al. 2010). As a possible explanation for lower levels of concern, it seems to be most likely that aging people would have achieved their professional and personal goals and consequently could care less about these aspects of life. At the same time, the physical changes brought about by the aging process would be more evident in those people, and this could result in a less positive view of their appearance. Other studies may delve into this issue through a longitudinal design to eliminate potential cohort effects.

Gender differences in levels of concern for one's own physical appearance reinforced what has been found in the literature that women have higher levels of concern than men (Mowen et al. 2009; Wang and Waller 2006; Workman and Lee 2011). This may be the basis of some behaviors more often observed in the female population, such as the consumption of cosmetics and the search for cosmetic surgeries (ISAPS 2016). Women also had a significantly higher mean in the positive view dimension about their own appearance. While this result reinforces what has been found previously (e.g., Workman and Lee 2011), it also contradicts other outcomes (e.g., Durvasula and Lysonski 2008). In the other dimensions of vanity, no significant gender differences were found. Contrary to what was expected, men did not present higher means in the dimensions that refer to personal achievement. Although there is consistent theoretical support for the hypothesis that men would be more conceited about their own achievements (see Buss and Schmitt 2019), this result has not been found in previous studies (e.g., Wang and Waller 2006).

On the one hand, no gender differences in these dimensions could indicate important social changes to the effect that men and women are becoming equally concerned for their own achievements, as advocated by Durvasula and Lysonski (2008). On the other hand, when evolutionary aspects are taken into account, this outcome may point, in fact, to an important limitation of studies that investigate gender differences in levels of vanity, including this research. Although women in general are more attracted by status and technical skills, women who prefer short-term relationships tend to attach greater importance to physical appearance in the selection of loving partners (Buss and Schmitt 2019). As a consequence, men who are more willing to engage in short-term relationships (casual sex) would be more committed to investing in their own physical attractiveness (Buss and Schmitt 2019). This is a most striking feature in young adults (Fielder and Carey 2010), who are usually the majority in research samples in psychology. In this respect, future studies may control the participants' sociosexual orientation (Penke and Asendorpf 2008) to clarify this issue.

Still, regarding the differences between groups, people with higher levels of education presented significantly higher levels of vanity in the dimensions that refer to personal achievements. It is possible that people more actively involved in the academic-scientific milieu (i.e., incomplete and complete graduate studies) are more concerned for success and prouder of their personal and professional track records due to specific aspects of these levels of education, such as the required vast academic production and the pursuit of academic excellence. In the physical appearance dimensions, no significant differences were found, and there was no confirmation that people with lower levels of education would be more concerned for their physical appearance (as found by Strehlau et al. 2010). However, these results should be interpreted with caution, considering that the number of participants with lower level of education (i.e., up to complete secondary school) was very small in this study. Other studies may re-investigate this question, with a more diversified sample.

Some interesting investigation possibilities are created as a consequence of this research. For example, it is known that vanity is related to other personality traits, such as narcissism and the factors that make up the Big Five model (Egan and McCorkindale 2007; Netemeyer et al. 1995). However, it is not yet known to what extent vanity would contribute to the explanation of psychological variables other than those already explained by these personality traits. Future studies may test the predictive power of vanity over other variables like, for example, self-esteem and subjective well-being. At the same time, these studies could test the predictive power on other variables besides narcissism and the Big Five factors. Thus, it will be possible to identify whether vanity can be considered as an independent psychological construct and having a unique predictive power over other variables or whether it could actually be reduced to a combination of more basic personality traits.

A suitable Vanity Scale for Brazilian men and women also makes it possible to conduct cross-cultural studies that compare the vanity levels of Brazilians with those manifested by other nationalities. Levels of concern for one's own attributes tend to be higher in collectivist cultures than in individualist ones (Wang and Waller 2006). It should be noted that Brazil is considered a predominantly collectivist country (see Hofstede Insights 2019). In these contexts, besides being more concerned about the opinion of others, people would be more likely to compare their appearance with other people's looks to make sure they are not too far removed from the socially accepted norm (Jung and Lee 2006). It is possible that social comparison helps to explain individual variations in vanity levels as well, since people in the habit of comparing themselves would present higher levels of concern about their own attributes, a question that may be investigated in the future.

It seems that there are positive and negative social consequences arising from high levels of vanity. On the one hand, strong correlations with variables such as narcissism (Netemeyer et al. 1995), conspicuous consumption (Abrar et al. 2019; Phang et al. 2016), and search for cosmetic surgical procedures (Strehlau et al. 2015) seem to indicate that high levels of vanity can be harmful; however, the positive view dimensions are related to variables generally associated with positive outcomes, such as high levels of extraversion (Egan and McCorkindale 2007), self-esteem (Avelar and Veiga 2013), and self-efficacy (Mowen et al. 2009). Apart from what is commonly speculated about vanity being essentially good or bad, these results seem to indicate the need to understand the specific outcomes of each dimension of vanity, treating them as

independent aspects of the same phenomenon. One possibility for future research would be to investigate the impacts of vanity on variables associated with well-being, trying to understand under what conditions and to what extent each vanity factor would or would not contribute to the maintenance of psychological health.

Although we have found satisfactory evidence of validity for the Vanity Scale adapted to the Brazilian context, some limitations must be considered when interpreting the results. One of the main limitations concerns the sample used to search for evidence of validity. This study was conducted mostly with highly educated people, probably with high income, most of them from the south of Brazil. These characteristics of the sample do not reflect the reality of the majority of the Brazilian population. This limitation implies that the evidence found concerns a specific population, with the characteristics of our sample. Future research may look for evidence of the validity of this instrument for Brazilians with other social characteristics, for example, with low education.

## Compliance with Ethical Standards

The research followed the ethical recommendations in Brazil and was approved by the Ethics Committee for Research with Human Beings at the Universidade Federal do Rio Grande do Sul (protocol number 21792). Informed consent was obtained from all individual participants included in the study.

**Conflict of Interest** The authors declare that they have no conflict of interest.

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