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Psychometric Properties of the Breast Size Rating Scale (BSRS) in Brazilian University Women

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**Highlights**

* The Breast Size Rating Scale has good psychometric properties in Brazilian women
* Ratings of breast size were correlated with actual bra size and body mass index
* Breast size dissatisfaction was significantly correlated with body image measures
* Most women desired larger breasts than they currently had.

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**Abstract**

The present study examined the psychometric properties of a Brazilian Portuguese translation of the Breast Size Rating Scale (BSRS). A total of 194 Brazilian university women completed the BSRS along with measures of body satisfaction, body appreciation, weight discrepancy, and attitudes toward societal appearance ideals. They also had their actual bra size and body mass indices (BMIs) objectively measured. Results indicated evidence of adequate convergent validity insofar as greater breast size dissatisfaction was significantly associated with greater weight discrepancy, higher BMI, lower body appreciation, lower body satisfaction, greater use of information from society about appearance ideals, greater perceived pressure from society about appearance ideals, and greater internalisation of general and athletic appearance ideals, respectively. In our sample, 20.6% of women reported no breast size dissatisfaction, 65.5% desired a larger breast size, and 13.9% desired a smaller breast size. Findings demonstrate that BSRS scores are psychometrically sound and that breast size dissatisfaction is common among Brazilian women.

**Keywords:** breast size dissatisfaction; breast size; psychometrics; Breast Size Rating Scale; Brazil; body appreciation

**Introduction**

An important contributor to negative body image in women is dissatisfaction with one’s breasts (Grogan, Gill, Brownbridge, Kilgariff, & Whalley, 2013), and particularly with breast size (Forbes & Frederick, 2008). This is unsurprising given that popular culture consistently objectifies, idealises, and fetishises larger breasts (Seifert, 2005; Swami & Tovée, 2013). Indeed, studies of breast size dissatisfaction in the U.S. indicate that a majority of women are dissatisfied with their breasts and that an important concern is a desire for larger breasts (Frederick, Peplau, & Lever, 2008; Jacobi & Cash, 1994; Tantleff-Dunn & Thompson, 2000). Such findings are important because breast size dissatisfaction is associated with greater general body dissatisfaction (Forbes & Frederick, 2008), lower psychological well-being (Koff & Benavage, 1998; Swami, Cavelti, Taylor, & Tovée, 2015), and with less frequent breast self-examination and greater delay in seeking help following breast change (Swami & Furnham, 2018).

 A number of attitudinal measures, such as the Breast Size Dissatisfaction Scale (BSDS; Frederick et al., 2008), have been used to measure breast size dissatisfaction. A limitation of these measures, however, is that their psychometric properties have not been subjected to in-depth analyses (e.g., in terms of test-retest reliability). Alternatively, a number of figural rating scales have been developed to measure to breast size dissatisfaction as a discrepancy between self-perceived and ideal breast size (for a review, see Swami et al., 2015). However, most such measures – such as the Breast/Chest Rating Scale (Thompson & Tantleff, 1992) – include a limited number of stimuli (typically < 6), suffer from poor ecological validity, may not capture the full range of breast sizes in a given population, and depict facial features that may distract attention away from the body (cf. Gardner & Brown, 2010).

 To overcome these limitations, Swami and colleagues (2015) developed the Breast Size Rating Scale (BSRS), a figural rating scale consisting of 14 computer-generated images varying in breast size alone. Across four studies with British women, these authors provided evidence for the measure’s construct validity, test-retest reliability of BSRS-derived scores after 3 months, and convergent validity. In terms of the latter, evidence of convergent validity was established through significant associations between breast size dissatisfaction and actual-ideal weight discrepancy, body appreciation, body dissatisfaction, drive for thinness, greater internalisation of and perceived pressure from societal messages about appearance, social physique anxiety, and body mass index (BMI). In addition, Swami and colleagues (2015) reported that breast size dissatisfaction significantly predicted self-esteem once the effects of weight discrepancy, body dissatisfaction, and BMI had been accounted for.

 Although the BSRS may be considered a valid tool for the assessment of breast size dissatisfaction, the measure’s psychometric properties have not been examined beyond British women. In the present study, therefore, we sought to examine the psychometric properties of the BSRS in a sample of Brazilian women. Brazil is a useful site for this purpose for a number of reasons, including the high frequency of breast size enhancement cosmetic procedures (see Swami et al., 2011), low rates of breast self-examination among some Brazilian female groups (Carelli et al., 2008), and the lack of validated tools to measure breast size dissatisfaction in this cultural context. To assess the psychometric properties of the BSRS in Brazilian women, we examined correlations between BSRS-derived breast size dissatisfaction and weight discrepancy, body appreciation, body dissatisfaction, attitudes toward societal messages about appearance, and BMI. We also assessed test-retest reliability of BSRS-derived scores after 15 days.

**Method**

**Participants.** The participant pool initially consisted of 200 women recruited from a private university in the city of Ribeirão Preto in the Brazilian state of São Paulo. However, data from six participants were excluded (one was in treatment for breast cancer and five failed to complete the BSRS). The remaining 194 women had a mean age of 21.80 years (*SD* = 4.24) and a mean BMI of 23.99 kg/m2 (*SD* = 4.94). The majority of the sample (88.7%) self-reported as being ethnically White.

**Measures**

**Breast size dissatisfaction**. Participants were asked to complete the BSRS, which consists of 14 computer-generated images of women varying in breast size alone. The images are presented without facial features and in greyscale to minimise the impact of perceived ethnicity. Participants were asked to rate the figure that most closely represented their current breast size and the figure that most closely represented their ideal breast size (1 = *figure with the smallest breast size*, 14 = *figure with the largest breast size*). Breast size dissatisfaction score computation is described in the Results.

**Weight discrepancy**. To measure actual-ideal weight discrepancy, we used the Photographic Figure Rating Scale (PFRS; Swami, Salem, Furnham, & Tovée, 2008; Brazilian Portuguese translation: Swami et al., 2011). This is a figural rating scale of 10 photographic images of real women varying in BMI from emaciated to obese. The images are presented with facial features obscured and in greyscale. Participants were asked to rate the figure that most closely represented their current and ideal body sizes (1 = *figure with the lowest BMI*, 10 = *figure with the highest BMI*). Actual-ideal weight discrepancy was then computed as the absolute difference between current and ideal body size scores. PFRS-derived scores have been found to have adequate psychometric properties in Brazilian university women (Swami et al., 2011).

**Body appreciation**. Participants completed the Body Appreciation Scale (BAS; Avalos, Tylka, & Wood-Barcalow, 2005; Brazilian Portuguese translation: Swami et al., 2011), which measures a facet of positive body image. The validation of the Brazilian Portuguese translation of this measure in university women indicated that only 10 of the original 13 items tapped the construct of body appreciation (Swami et al., 2011), so the remaining three items were excluded in the present study. All items were rated on a 5-point scale (1 = *never*, 5 = *always*) and an overall score was computed as the mean of all 10 items. Although a revised version of the BAS (i.e., the BAS-2) has been validated in Brazilian adolescents (Ibáñez, Chiminazzo, Camacho, & Fernandes, 2017), this measure was not available when we began the study. Cronbach alpha for the 10-item BAS in the present study was .89.

**Body satisfaction**. To measure body satisfaction, we used the Body Areas Satisfaction Subscale (BASS) for the Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000; Brazilian Portuguese translation: Laus, 2016). This is a 9-item measure that assesses satisfaction with a range of body parts, with items rated on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Scores on the Brazilian Portuguese version of this measure retains all 9 items and has been shown to have adequate psychometric properties in university women (Laus, 2016). An overall body satisfaction score was computed as the mean of all 9 items. Cronbach alpha in the present study was .80.

 **Sociocultural attitudes toward appearance**. Participants completed the Sociocultural Attitudes Towards Appearance Questionnaire-3 (SATAQ-3; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004; Brazilian Portuguese translation: Swami et al., 2011), a 30-item measure that assesses internalisation of general appearance ideals and athletic ideals, respectively, as well as a tendency to use societal information as a source of information about appearance ideals and perceived pressure to attain societal ideals. Scores on the Brazilian Portuguese translation of the SATAQ-3 mirror the 4-factor structure of the parent scale and has been shown to have adequate psychometric properties in university women (Swami et al., 2011). Although a revised version of the measure is available (i.e., the SATAQ-4; Schaefer et al., 2014), this measure has not been validated for use in Brazilian Portuguese-speaking populations. All items of the SATAQ-3 were rated on a 5-point scale (1 = *totally disagree*, 5 = *totally agree*), and subscale scores were computed as the mean of relevant items. Cronbach alpha was > .84 for all subscales.

**Actual bra size**. Trained researchers measured participants’ actual bra size, which may be a useful proxy for breast size in Brazil (Mendonca et al., 1999). Brazilian bra sizes do not take into account cup sizes, but rather takes into account the width of the back just below the back (i.e., band size). All measurements were made following the national reference benchmarks of the Brazilian Association of Technical Standards, with bra sizes ranging from 36 to 58.

**Body mass index**. Weight and height were measured using a digital platform scale (200 kg capacity, 100 g precision) and a professional stadiometer (2 mm precision at 2.20 m). All participants were barefoot and wearing the least amount of clothing possible when measurements were taken. BMI was calculated by dividing weight by squared height (kg/m2).

**Demographics.** Participants provided their demographic details consisting of age, ethnicity, and current breast cancer treatment.

**Procedures**

The project was approved by the relevant Institutional Review Board. The BSRS was translated into Brazilian Portuguese using the back-translation technique (Brislin, 1970). First, a bilingual translator blindly translated the instructions and items of BSRS from English into Brazilian Portuguese; next, a further bilingual translator independently back-translated the BSRS from Brazilian Portuguese to English. The two versions of the BSRS were compared for conceptual, item, and semantic equivalence and minor discrepancies were resolved through committee approach (Swami & Barron, 2018). Once the translation had been completed, participants were opportunistically recruited from various university campus locations by two trained research assistants. Interested participants were provided with information about the study and those who agreed to participate gave written informed consent. All testing was conducted in a laboratory setting, where participants completed paper-and-pencil, anonymous questionnaires in which the order of presentation of measures was counterbalanced. Weight, height, and bra size measurements were taken once the questionnaire had been completed. Fifteen days after the initial testing session (a widely-used minimum duration between test and retest; Lavrakas, 2008), a randomly-selected subsample of 100 participants returned to the laboratory to complete the BSRS a second time. Participation was voluntary and participants did not receive any remuneration. All analyses were conducted using SPSS 22.0 and missing data were handled using listwise deletion.

**Results**

**Preliminary Analyses**

The mean rating for current breast size for the total sample (*N* = 196)was 5.87 (*SD* = 3.47, skewness = 0.57, kurtosis = -0.58). Current breast size ratings were significantly and positively correlated with actual bra size, *r* = .40, *p* < .001, and BMI, *r* = .33, *p* < .001. The mean ideal rating on the BSRS was 7.68 (*SD* = 2.38, skewness = 0.35, kurtosis = -0.36). The mean breast size dissatisfaction (signed) score was -1.81 (*SD* = 3.11, skewness = 0.67, kurtosis = 0.89). In this sample, 20.6% of women reported no breast size dissatisfaction, while 79.4% reported breast size dissatisfaction (65.5% desired a larger breast size and 13.9% desired a smaller breast size). These results provide preliminary support for the construct validity of BSRS scores in Brazilian women.

**Convergent Validity**

We calculated absolute (unsigned) breast size dissatisfaction for further analyses, such that higher scores reflect greater breast size dissatisfaction (*M* = 2.88, *SD* = 2.16). Bivariate correlations were computed between this score and all additional variables. As seen in Table 1, greater breast size dissatisfaction was significantly associated with greater weight discrepancy, higher BMI, lower body appreciation, lower body satisfaction, greater use of information from society about appearance ideals, greater perceived pressure from society about appearance ideals, and greater internalisation of general and athletic appearance ideals, respectively. Because direction of breast size desires are not captured by absolute scores, additional analyses only with women who desired larger breasts were conducted (reported as Supplementary Materials) and were consistent with the findings reported for the total sample.

**Test-Retest Reliability**

We examined test-retest reliability of current and ideal breast size, as well as signed (absolute) and unsigned breast size dissatisfaction after 15 days in a subset of 100 participants. As reported in Table 2, intraclass correlational coefficients were high across all four variables, suggestive of good test-retest reliability.

**Discussion**

 This is the first study to examine the psychometric properties of BSRS scores in non-British women. Our results suggest that BSRS-derived scores have adequate convergent validity in Brazilian university women, insofar as ratings of current breast size were significantly correlated with actual bra size. Although the strength of the correlation was moderate, it should be noted that Brazilian bra sizes do not take into account cup sizes and is more akin to band size used in bra size measurements in other cultural contexts. Indeed, the moderate correlation reported here is consistent with weak-to-moderate correlations between current breast size ratings and bra band size reported by Swami and colleagues (2015).

In addition, the findings of the present study suggest that BSRS scores have adequate convergent validity, insofar as breast size dissatisfaction scores were significantly correlated with BMI, measures of negative and positive body image, and attitudes toward appearance ideals. In broad outline, these findings mirror those reported by Swami and colleagues (2015) using similar indices of convergent validity. Finally, the results of the present study indicated that BSRS-derived scores retain their test-retest reliability over a 15-day period. Taken together, these results suggest that BSRS scores have good psychometric properties in Brazilian women.

 The results of the present study indicated that a majority of participants (79.4% were dissatisfied with their current breast size, with a clear majority (65.5%) desiring larger breasts than they currently had. These data are notable because they suggest that the majority of women in the present sample desired larger breasts than they currently had, which is substantively higher than comparable data from Swami and colleagues (2015, Studies 2 and 3: 49.7% and 54.3% of female university students, respectively, wanted larger breasts than they currently had). One explanation for the greater desire for larger breasts in the present study may be related to cultural pressure on Brazilian women to demonstrate femininity and sexuality through breast fullness (Guimarães et al., 2015). Indeed, it has been noted that the most common type of cosmetic surgery procedure in Brazil is breast augmentation, with young women in particular seeking larger breasts (Campana, Ferreira, & Tavares, 2012; Finger, 2003).

 A number of limitations of the present study should be considered. First, the study was conducted with university women from a single region in Brazil. This may limit the generalisability of our findings, particularly given the diversity of the Brazilian demographic in terms of cultural, geographical, and socioeconomic factors. In addition, the present study did not examine indices of discriminant and predictive validity, which could be rectified in a future study. In particular, it would be useful to include variables related to psychological functioning in future studies, such as indices of self-esteem, depression, and subjective happiness. In a similar vein, it would be useful to examine the predictive validity of BSRS scores in relation to attitudinal measures of breast size dissatisfaction (e.g., the BSDS; Frederick et al., 2008) as well as other indices of breast dissatisfaction (e.g., dissatisfaction with shape, symmetry, and firmness; cf. Frederick et al., 2008). Finally, it should be noted that we did not collect information about whether participants had undergone breast modifying procedures, which should be considered in future research.

The availability of the BSRS in Brazilian Portuguese may be particularly useful for practitioners and researchers studying reasons for delay in treatment-seeking following breast change detection in Brazilian women (cf. Swami & Furnham, 2018). To date, much of the available research has focused geographical and socioeconomic factors (e.g., Ferreira et al., 2017), but the availability of the BSRS will allow scholars to consider the impact of breast size dissatisfaction as an additional factor. More broadly, the availability of the BSRS in Brazilian Portuguese provides an important tool for scholars wishing to examine the impact of breast size dissatisfaction on general body dissatisfaction and psychological well-being in a context marked by heightened pressure to attain large breasts (Guimarães et al., 2015).

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*Table 1. Inter-scale Correlations between Breast Size Dissatisfaction and Other Variables Included in the Present Study (N = 194)*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1. Breast size dissatisfaction | - | .30\*\* | -.39\*\* | -.37\*\* | .14\* | .16\* | .25\*\* | .16\* | .17\* |
| 2. Weight discrepancy |  | - | -.61\*\* | -.58\*\* | .35 | .28\*\* | .23\*\* | .10 | .78\*\* |
| 3. Body appreciation |  |  | - | .65\*\* | -.52 | -.34\*\* | -.37\*\* | -.21\*\* | -.36\*\* |
| 4. MBSRQ - Body areas satisfaction |  |  |  | - | -.36 | -.31\*\* | .31\*\* | -.15\* | -.36\*\* |
| 5. SATAQ - Information |  |  |  |  | - | .41\*\* | .47\*\* | .30\*\* | -.07 |
| 6. SATAQ - Pressure |  |  |  |  |  | - | .73\*\* | .56\*\* | .22\*\* |
| 7. SATAQ - Internalisation (general) |  |  |  |  |  |  | - | .56\*\* | .09 |
| 8. SATAQ - Internalisation (athlete) |  |  |  |  |  |  |  | - | .01 |
| 9. Body mass index |  |  |  |  |  |  |  |  | - |

*Note*: MBSRQ: Multidimensional Body-Self Relations Questionnaire – Appearance Scales; SATAQ: Sociocultural Attitudes Towards Appearance Questionnaire. \**p* < .05. \*\**p* < .001.

*Table 2. Mean Rating (SD) for BSRS-Derived Scores and Intraclass Correlation Coefficient between Test and Retest (N = 100)*

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Test | Retest | Intraclass Correlation Coefficient |
| Current breast size | 5.87 (3.47) | 5.47 (3.11) | .96 \*\* |
| Ideal breast size | 7.68 (2.38) | 7.70 (2.46) | .83 \*\* |
| Breast size dissatisfaction | -1.81 (3.11) | -2.23 (2.77) | .84\*\* |
| Absolute breast size dissatisfaction | 2.88 (2.16) | 2.89 (2.00) | .85\*\* |

\*\* *p* < .001.

**Supplementary Material**

In order to verify how wanting larger breasts is linked to body dissatisfaction, bivariate correlations were computed between this score and all additional variables. For this, all of the women who wanted smaller breasts or those who were satisfied with their breasts were excluded from the analyses, and only women who wanted larger breasts were included. As seen in Supplementary Table 1, greater breast size dissatisfaction was significantly associated with greater weight discrepancy, higher BMI, lower body appreciation, lower body satisfaction, greater use of information from society about appearance ideals, greater perceived pressure from society about appearance ideals, and greater internalisation of general and athletic appearance ideals, respectively. These results showed that greater breast size dissatisfaction was correlated to negative dimensions of body image in women desiring larger breasts.

In addition, partial correlations with BMI as a covariate were computed between breast size dissatisfaction and all additional variables among women who wanted larger breasts. As can be seen in Supplementary Table 2, greater breast size dissatisfaction was significantly associated with weight discrepancy, greater use of information from society about appearance ideals, greater perceived pressure from society about appearance ideals, and greater internalisation of general and athletic appearance ideal and also with lower body appreciation and body areas satisfaction.

*Supplementary Table 1. Inter-scale Correlations between Breast Size Dissatisfaction and Other Variables Included in the Present Study among women who wanted larger breasts (N = 127)*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1. Breast size dissatisfaction | - | .20\* | -.40\*\* | -.32\*\* | .20\* | .19\* | .38\*\* | .29\*\* | .20\* |
| 2. Weight discrepancy |  | - | -.51\*\* | -.44\*\* | -.06 | .31\*\* | .27\*\* | .06 | .78\*\* |
| 3. Body appreciation |  |  | - | .66\*\* | -.04 | -.36\*\* | -.41\*\* | -.16 | -.41\*\* |
| 4. MBSRQ - Body areas satisfaction |  |  |  | - | -.03 | -.34\*\* | .39\*\* | -.11 | -.41\*\* |
| 5. SATAQ - Information |  |  |  |  | - | .35\*\* | .43\*\* | .20\* | -.11 |
| 6. SATAQ - Pressure |  |  |  |  |  | - | .70\*\* | .45\*\* | .28\*\* |
| 7. SATAQ - Internalisation (general) |  |  |  |  |  |  | - | .50\*\* | .17 |
| 8. SATAQ - Internalisation (athlete) |  |  |  |  |  |  |  | - | .01 |
| 9. Body mass index |  |  |  |  |  |  |  |  | - |

*Note*: MBSRQ: Multidimensional Body-Self Relations Questionnaire – Appearance Scales; SATAQ: Sociocultural Attitudes Towards Appearance Questionnaire. \**p* < .05. \*\**p* < .001.

*Supplementary Table 2. Partial correlations between Breast Size Dissatisfaction and Other Variables Included in the Present Study among women who wanted larger breasts (N = 127)*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1. Breast size dissatisfaction | - | .06 | -.29\*\* | -.27\*\* | .24\* | .16 | .33\*\*\* | .31\*\* |
| 2. Weight discrepancy |  | - | -.33\*\*\* | -.22\* | -.04 | .16 | .24\*\* | .06 |
| 3. Body appreciation |  |  | - | .60\*\*\* | -.09 | -.29\*\* | -.38\*\*\* | -.17 |
| 4. MBSRQ - Body areas satisfaction |  |  |  | - | -.08 | -.27\*\* | .35\*\*\* | -.11 |
| 5. SATAQ - Information |  |  |  |  | - | .40\*\*\* | .46\*\*\* | .21\* |
| 6. SATAQ - Pressure |  |  |  |  |  | - | .69\*\*\* | .46\*\*\* |
| 7. SATAQ - Internalisation (general) |  |  |  |  |  |  | - | .51\*\*\* |
| 8. SATAQ - Internalisation (athlete) |  |  |  |  |  |  |  | - |

*Note*: MBSRQ: Multidimensional Body-Self Relations Questionnaire – Appearance Scales; SATAQ: Sociocultural Attitudes Towards Appearance Questionnaire. \**p* < .05. \*\* *p* < .01. \*\*\* *p < .*001