BRIEF REPORT

Turkish validity and reliability study of the Body Esteem Scale

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ABSTRACT

Objective: The main aim of this research was to carry out a validity and reliability study for the Turkish version of the Body Esteem Scale.

Method: The study sample consisted of 459 volunteers studying at the faculty of dentistry and the faculty of humanities and social sciences of a state university located in Izmir. Data were collected using the Body Esteem Scale (BES), Body Cathexis Scale (BCS), Rosenberg Self-Esteem Scale (RSES), and a Demographic Information Form that recorded participants' Body Mass Index (BMI) and personal information.

Results: The internal consistency coefficient for the total BES score was 0.94 and test-retest reliability was found to be 0.74. Both exploratory and confirmatory factor analysis found a well-fit three-dimensional model consistent with the original scale. Regarding criterion validity, the total BES score positively correlated with BCS and RSES scores while being significantly and negatively associated with BMI.

Conclusion: Evidence has been provided that the Turkish version of the BES is a valid and reliable measurement tool.

Keywords: Body esteem, body image, reliability, standardization, validity

INTRODUCTION

The concept of body esteem expresses a person's assessment of his or her own body and appearance (1). The first studies on body esteem found that people's feelings about their bodies are closely related with their feelings about themselves, to the extent that body esteem and self-esteem were used synonymously (2-5). In this sense, it has been pointed out that physically attractive persons gain more acceptance from others, and feedback about appearance strongly affects an individual's self-esteem (6). Subsequently, self-esteem was found to be a multidimensional concept rather than a unified structure, and body esteem was identified as one of its significant subdimensions (1).

Body esteem has been found in close relationship with eating disorders (7-10). Especially in conditions such as anorexia nervosa, where individuals are obsessed with the ideal of a slim body to the extent that the outcome may be self-destructive, affected persons are known to be unhappy with their weight and to have low body esteem. Accordingly, in the psychotherapy of patients with eating disorders, issues of body esteem and body image need to be assessed thoroughly (11). Body esteem has also been shown to be related with depression and anxiety (12-14).

Similar to clinical psychology, sport psychology has also shown an interest in body esteem. There are studies researching the differences in body esteem between athletes and non-athletic or non-sportive persons,

examining the factors underlying these differences. Other studies deal with athletes' body esteem based on the assumption that in this group eating disorders are more common (15,16). In the literature, it is found that other factors related with body esteem include wellbeing, quality of life, personality, sexual functioning, and perfectionism (17-21).

Age and sex are accepted to be the strongest predictors of body esteem (22). In earlier studies, researchers maintaining that appearance affects self-esteem particularly during adolescence have often worked with samples of adolescents of different body weights. Their results indicated that body esteem in overweight adolescents is lower than in participants of normal or low weight, while body esteem affected self-esteem in girls more than in boys, and the most disadvantaged group consisted of overweight adolescent girls (2,23,24). These studies used body esteem synonymously with the concept of body image, denoting a person's mental image of his or her body.

However, even though in past years body image and body esteem have been used interchangeably, a number of studies since the 1980s have separated the two concepts, demonstrating that body esteem and body image have different factor structures (25). Thus, the subdimensions of body image have been examined under the 4 categories of health and physical fitness, facial and general appearance, secondary and independent body traits, and body structure and muscular strength (26). Body esteem, on the other hand, reportedly consists of 3 different dimensions: the "body weight" factor measuring a person's feelings about his or her weight ("I really like what I weigh"), the "appearance" factor corresponding to subjects' feelings about their general appearance rather than looking at individual body zones ("I like what I see when I look in the mirror"), and finally the "attribution" factor considering other persons' assessment of the individual's appearance and weight ("People my own age like my looks") (1).

Another instrument to evaluate body esteem has been developed first by Mendelson and White (27) in a study with children of different body weights. The first version of this form had been designed to measure children's emotional assessment of their bodies and consisted of 24 items to be answered with yes or no. Subsequently, when the instrument was adapted to the age group 8-15 years, 4 items were removed. After factor analysis, 2 more items with a low factor loading were eliminated, resulting in a three-factor structure. Eventually, the Body Esteem Scale for Children was published with three dimensions: appearance (12 items), body weight (3 items), and attribution (3 items). As a result, the authors of the study showed a high correlation between body image and self-image in overweight children as well as in normal-weight subjects. Later, the scale was again revised in order to adapt it to adolescent and adult samples and to address statistical weaknesses. In this process, the responses were modified from a yes-no format to a 5-point Likert-type scale, and with the increase of body weight and attribution items to 9 each, the resulting instrument consisted of 30 items. Thus the Body Esteem Scale (BES) was redesigned to be usable for adolescent and adult participants (1).

However, in Turkey there was no instrument available to measure body esteem as a concept that is highly correlated with self-esteem and eating disorders. Therefore, we believe that adapting the BES developed by Mendelson et al. in 2001 (1) to Turkish and assessing its psychometric characteristics will be an important contribution to future scientific studies to be carried out in this country. Main purpose of our study is to make the BES available for Turkish culture, testing its validity and reliability in a sample of university students.

METHOD

Sample
The study sample consists of 459 volunteers recruited by convenience sampling technique from among the students of the faculties of dentistry and social and human sciences at a state university in Izmir. Of the participants, 332 (72.3%) were female and 127 (27.7%) male with an age average of 20.38 years.

Measures
Body Esteem Scale (BES): Developed by Mendelson et al. (1), this instrument includes 23 items measured with a 5-point Likert-type scale; it consists of 3 subdimensions: appearance (10 items), attribution (5 items), and body weight (8 items). No cutoff point has been established, but higher scores correspond to higher body esteem. Construct validity, concurrent validity, and test-retest reliability had been confirmed for the original form (1).

Body Cathexis Scale (BCS): This instrument was developed in 1953 by Secord and Jourard (5); in 1993, Hovardaoglu (28) carried out a validity and reliability study for the Turkish version. The form includes 40 items, each of which is related with an organ or a body

zone (arm, leg, face, etc.) or with a function. Each item is rated between 1 and 5 points ("don't like at all," "don't like," "undecided," "like," and "like very much"), resulting in a total score between 40 and 200. The total score corresponds to the level of satisfaction with one's own body. Internal consistency and split-half reliability of the instrument were found to be high. Factor analysis found a single-factor structure, and construct validity was tested on this assumption. Furthermore, the scale's criterion validity was demonstrated (29).

Rosenberg Self-Esteem Scale (RSES): This instrument, commonly used in the literature to measure the esteem people give themselves, was developed by Rosenberg (4). It consists of 10 items in total, 5 of which are positive expressions and 5 negative. Scores are given from "strongly disagree" (0) to "strongly agree" (3). A high total score demonstrated high self-esteem, a low score low self-esteem. A validity and reliability study for Turkey has found acceptable test-retest reliability and internal consistency coefficients (30).

Demographic Data Form: This form was prepared by the researchers to assess the participants' demographic characteristics, recording height and weight in order to calculate the body mass index, and entering the participant codes to be used in test-retest administration.

Procedure
Before beginning the data collection, approval from the university's social research ethics committee was received, and then the instruments to be used were finalized in an online environment by student volunteers. Each student, before completing the forms, was informed about the study aim and confidentiality of the data. All instruments used in our study were self-report forms to be filled in by all students online. Thirty days after the first administration, participants were again asked to complete the BES for the collection of test-retest data.

Statistical Analysis
Data analysis was carried out using SPSS version 22.00 (IBM) and Amos (IBM). Particularly to gain an impression of reliability and validity, item analysis and 27% lower-upper group comparison were applied. For the reliability analyses, Cronbach's alpha coefficient was calculated to examine internal consistency both for the total score and for the subdimensions separately. Reliability was also examined by test-retest analysis and the correlation

value between the two administrations was investigated. Exploratory and confirmatory factor analyses were used to assess construct validity. To assess criterion validity, the correlation of the scale with RSES and BCS total scores was studied, and in addition, the relation between participants' body mass index (BMI) and scale scores was considered.

RESULTS

Before beginning reliability and validity analyses, item analysis and 27% lower-upper group comparison were applied. In item analysis, all adjusted item-total correlation values were higher than 0.38, and in the 27% lower-upper group comparison, mean item score differences were all significant (p<0.001). Results are presented in Table 1.

Reliability Analyses
To assess the reliability of the BES, Cronbach's alpha internal consistency analysis and test-retest analysis were applied. The internal consistency coefficient for the BES total score was 0.94, while the internal consistency coefficients for the subscales appearance, weight, and attribution were 0.91, 0.93, and 0.79, respectively. The correlation value between the two administrations made to assess test-retest reliability was found to be 0.74.

Construct Validity Analyses
To establish the construct validity of the BES, exploratory (EFA) and confirmatory (CFA) factor analyses were performed. In order to apply the analyses to 2 different samples, participants were separated into two groups by odd and even subject numbers. Then EFA was applied to the first group consisting of 229 participants. The resulting Kaiser-Meyer-Olkin (KMO) coefficient value was 0.93 and Bartlett's sphericity test χ^2 value 3929.38 (p<0.001). In conformity with the original form, the factor number in this analysis was set to 3 and varimax rotation was used. The result showed a measurement instrument consisting of 23 items and 3 subscales, explaining 65.73% of the variance. The items' factor loadings varied between 0.52 and 0.88. Data regarding the factor loadings for each item and mean factor variance values are presented in Table 1.

With the data from the second sample of 230 individuals, CFA was carried out and a measurement model was developed that was consistent with the original form as well as with the data obtained by EFA.

Table 1: Results of item analysis and exploratory factor analysis

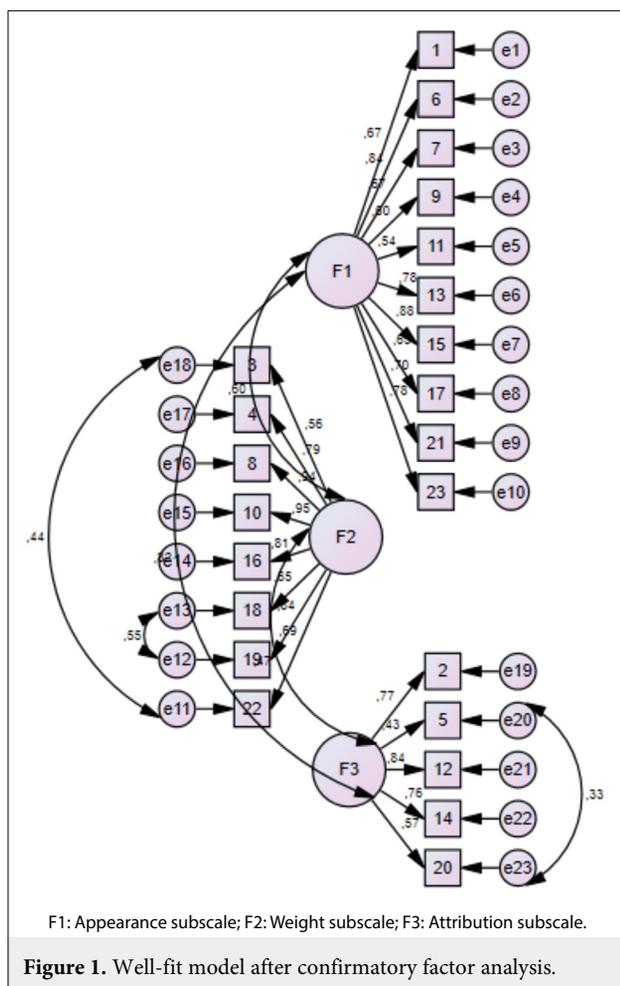|	Factor loading	Mean factor variance	Adjusted item total r	t (lower 27%-upper 27%)
FACTOR 1: Appearance				
1. I like what I look like in pictures.	0.52	0.54	0.52	12.01*
6. I like what I see when I look in the mirror.	0.62	0.74	0.68	15.72*
7. There are lots of things I'd change about my looks if I could.	0.79	0.66	0.60	15.16*
9. I wish I looked better.	0.65	0.49	0.57	14.76*
11. I wish I looked like someone else.	0.75	0.56	0.41	9.04*
13. My looks upset me.	0.72	0.68	0.70	16.74*
15. I'm satisfied with how I look.	0.57	0.77	0.80	22.45*
17. I feel ashamed of how I look.	0.58	0.50	0.57	10.66*
21. I worry about the way I look.	0.66	0.60	0.67	15.48*
23. I look as nice as I'd like to.	0.55	0.63	0.74	21.85*
FACTOR 2: Weight				
3. I am proud of my body.	0.55	0.58	0.71	20.28*
4. I am preoccupied with trying to change my body weight.	0.82	0.73	0.62	18.56*
8. I am satisfied with my weight.	0.87	0.85	0.73	25.57*
10. I really like what I weigh.	0.88	0.86	0.72	24.26*
16. I feel I weight the right amount for my height.	0.83	0.74	0.61	19.04*
18. Weighing myself depresses me.	0.73	0.67	0.62	16.12*
19. My weight makes me unhappy.	0.85	0.83	0.72	21.60*
22. I think I have a good body.	0.57	0.68	0.74	21.22*
FACTOR 3: Attribution				
2. Other people consider me good looking.	0.73	0.63	0.50	11.13*
5. I think my appearance would help me get a job.	0.72	0.55	0.38	6.89*
12. People my own age like my looks.	0.74	0.67	0.63	15.19*
14. I'm as nice looking as most people.	0.61	0.60	0.64	15.19*
20. My looks help me to get dates.	0.71	0.52	0.43	8.24*

*p<0.001.

Table 2: Correlation values for criterion validity

	1. BES	2. AP	3. WE	4. AT	5. SE	6. BCS	7. BMI	Mean	SD
1.	1							53.57	15.79
2.	0.89*	1						25.03	7.19
3.	0.87*	0.62*	1					17.57	7.94
4.	0.68*	0.56*	0.39*	1				10.96	3.60
5.	0.62*	0.59*	0.42*	0.47*	1			20.29	5.23
6.	0.70*	0.71*	0.53*	0.50*	0.41*	1		138.62	21.31
7.	-0.41*	-0.27*	-0.47*	-0.25*	0.19*	-0.06	1	20.29	3.46

BES: Body Esteem Scale, AP: Appearance subscale, WE: Weight subscale, AT: Attribution subscale, SE: Self-esteem, BCS: Body Cathexis Scale, BMI: Body Mass Index, *p<0.001.

The outcome did not show the expected level of the fit indices for the resulting 3-factor model (CMIN/df=5.02, CFI=0.81, GFI=0.77, AGFI=0.88, RMSEA=0.09). Suggestions for modifications derived from the result of the analysis were examined and accordingly, errors in items 5 and 10, 3 and 22, and 18 and 19 correlated. The model was reanalyzed and the resulting fit indices were at an acceptable level (CMIN/df=2.65, CFI=0.90, GFI=0.89, AGFI=0.93, RMSEA=0.05). Findings regarding the model are presented in Figure 1.

F1: Appearance subscale; F2: Weight subscale; F3: Attribution subscale.

Figure 1. Well-fit model after confirmatory factor analysis.

Analysis of Criterion-Related Validity

To test the BSE's criterion-related validity, correlation values were examined with RSES, BCS, and participants' BMI scores, finding that the BES total score was significantly and positively related both with the RSES total score (r=0.62, p<0.001) and with the BCS total score (r=0.70, p<0.001). In addition, a statistically significant negative correlation was found between BES total score and BMI score (r=-0.41, p<0.001). Correlation values for total and subscale scores are presented in Table 2.

DISCUSSION

We first applied item analysis to the data from a Turkish sample to examine the item construct, finding a fairly high item-total correlation, which indicated a good level of representative power. Furthermore, 27% lower-upper group comparison found significant differences in the mean item scores for all items, providing evidence for the reliability of the instrument. Internal consistency coefficients were fairly high for the total score as well as

for the subscales, and the test-retest correlation between the 2 administrations at a distance of one month was also satisfactory. In sum, these results confirm the reliability of the Turkish form.

To examine the construct validity of the scale, EFA and CFA were applied. In order not to apply these 2 analyses to the same sample, the group was divided into 2. Values of the KMO and Bartlett's sphericity test after EFA for one group of 229 individuals showed that the sample was big enough for factor analysis and the scores were normally distributed. The result of EFA demonstrated that the instrument, in line with the original form, consisted of a 3-factor scale explaining 65.73% of the total variance. All items loaded on subscales similar to those in the original form and the factor loadings were fairly high. CFA performed on the basis of the EFA results found satisfactory fit indices after making improvements to the model as suggested by the analytic program. Three error covariances were established, finding correlations between errors in the weight subscale items "I am proud of my body" and "I think I have a good body" and between "Weighing myself depresses me" and "My weight makes me unhappy." While these items appear to be very closely related, there are significant differences in their connotations; therefore, removing them was not considered to be appropriate, and as suggested by the Amos program, a modification in this way was entered. A similar situation was found in the attribution subscale between the items "I think my appearance would help me get a job" and "My looks help me to get dates." As a result, the level of construct validity of the Turkish BES form can be considered as acceptable. In addition to construct validity, external criteria measuring variables that are potentially related with body esteem were chosen in the context of criterion-related validity, finding a significant and positive correlation between BES total sore and BCS and RSES total scores. Another external criterion chosen, the subjects' BMI scores, showed significant negative correlation with the BES in correlation analysis.

In the national literature, some instruments measuring body image are already available in Turkish; examples are the Body Image Scale (31), the Body Cathexis Scale (28), the Body Appreciation Scale (32), and the Body Parts Satisfaction Scale (33). However, as we have pointed out in the introduction, in today's literature body image and body esteem are considered to be different concepts, regarding both their focus and their subdimensions. Some sources maintain that body

image is a multidimensional umbrella term, with body esteem being one of its components (34). Some of our results also suggest a differentiation between these 2 concepts under certain aspects. For example, correlation analyses found a significant correlation between BES total score and BMI, while analysis of body image did not detect any significant correlation between BCS score and BMI. Body image measurements assess how satisfied a person is with different body zones or what kind of an image they have in mind regarding their body and appearance. In other words, body image corresponds to people's attitudes to their physical self, appearance, state of health, and bodily functionality (35), while body esteem aims to measure emotions regarding the body as a whole, feelings about weight, and attributions by other people concerning body and weight. Therefore, finding a higher correlation of body esteem with BMI compared to body image is not surprising. Similarly, it seems significant that body esteem shows a higher correlation with the total score for self-esteem than body image. Accordingly, the use of measurement instruments related to body esteem will allow obtaining strong data in clinical or research-centered applications with pathological categories such as eating disorders, obesity, body dysmorphic disorder, and social phobia.

In conclusion, the results of this study have demonstrated that the Turkish form of the BES is a valid and reliable measuring instrument. As in the original form, the factor structure of the BES includes 3 dimensions. Thus, a useful tool for clinical evaluation, effectiveness studies in pathological groups, and research in normal adolescent and adult populations has become available to the Turkish literature.

Contribution Categories		Author Initials
Category 1	Concept/Design	Z.G., E.S.S.T.
	Data acquisition	Z.G., E.S.S.T.
	Data analysis/Interpretation	E.S.S.T.
Category 2	Drafting manuscript	E.S.S.T., Z.G.
	Critical revision of manuscript	E.S.S.T., Z.G.
Category 3	Final approval and accountability	E.S.S.T., Z.G.
Other	Technical or material support	Z.G., E.S.S.T.
	Supervision	E.S.S.T.

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