PSYCHOMETRIC EVALUATION OF THE GREEK VERSION OF THE BODY ESTEEM SCALE

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Abstract: This study examined the psychometric properties of the Greek version of the Body Esteem Scale (BES) in a community sample (N = 2,162) of both genders. A set of questionnaires was administered. It included demographic data, Body Mass Index, the Body Esteem Scale (BES), the Body Appreciation Scale, the Other as Shamer, the Experience of Shame Scale, and Rosenberg's Self-Esteem Scale. The best solution for BES (according to confirmatory and exploratory factor analysis) supported a four-factor structure for both men and women. Cronbach's α ranged from .77 to .89 in all subscales. All BES subscales significantly correlated (positively/ negatively) with the rest of the questionnaires. Test-retest correlation coefficients ranged from .92 to .95 in all subscales. Age and BMI significantly predicted the BES score. In conclusion, the Greek version of the BES has adequate internal consistency reliability, construct validity, test-retest reliability and is suitable for research and clinical use.

Key words: Body Esteem Scale, Body image, Body satisfaction, Shame

INTRODUCTION

Body is the whole physical structure that forms a person or animal (Cambridge Dictionary, 2019). Individuals differ in their perceptions of their own body, and their perceptions may not fit to the societal standards and expectations (Tiwari & Kumar,

2015). As research on body image has expanded in the last years, many researchers have become increasingly concerned about the high levels of body dissatisfaction reported by their participants.

Body esteem is an important dimension of self-esteem and several sociodemographic (e.g., gender, age) and psychological factors (e.g., perceived appearance, body appreciation, bodily shame etc.) presumably affect it. The aim of this study was to translate and culturally adapt the Body Esteem Scale to the Greek population. To our knowledge, there are no questionnaires that evaluate body esteem in the Greek language. The translated version of the Body Esteem Scale is expected to be a useful scale that can be distributed for clinical and research purposes in Greece.

Body image

Body image is the subjective "picture" people have of their own body, regardless of how their body does look (Schilder, 2013). It is a multidimensional concept, which reflects how people perceive, think, feel, and act towards their body (Cash & Pruzinsky, 2002). These perceptions, thoughts, feelings, and behaviors can be positive or negative and affect many aspects of one's psychosocial well-being and quality of life (Cash & Smolak, 2011).

There are four dimensions of the body image: perception, cognition, affect, and behavior (Banfield & McCabe, 2002). Perceptual body image is defined as the accuracy of one's judgment of their size, shape, and weight relative to their actual proportions. The affective dimension can be conceptualized as feelings individuals have toward their body appearance, and the cognitive dimension refers to thoughts and beliefs concerning body shape and appearance (Cash & Green, 1986). Behavioral body image refers to the behaviors in which one engages as a result of their body image. It is a manifestation or an outcome of the other dimensions (Stice, Nemeroff, & Shaw, 1996).

The body image can be experienced positively or negatively (Cash & Smolak, 2011). Many people experience mild to moderate body image dissatisfaction (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). It is useful to view satisfaction as a continuum, ranging from no body image satisfaction to extreme body image satisfaction. On the other hand, there are beliefs regarding a "perfect" body image as well as a tendency to compare one's body image to that of others (Van den Berg, Thompson, Obremski-Brandon, & Coovert, 2002). These beliefs along with a sense of insecurity are some of the major psychological correlates of body satisfaction. The level of body satisfaction determines the degree of one's body confidence and body esteem (Tiwari & Kumar, 2015). Moreover, perceived physical appearance is

most highly and consistently associated with overall self-worth and self-esteem (Harter, 2012).

Body image has also implications for one's psychological functioning and mental health. Low self-esteem and depression are some of the most studied consequences of negative body image. Negative body image can result to adverse psychosocial outcomes for both genders, including eating disorders, depression, social anxiety, impaired sexual functioning and diminished quality of life (Cash, Morrow, Hrabosky, & Perry, 2004).

Males and females differ in their level of body satisfaction. Females focus on weight and body shape, while males focus on the muscular apparatus (Tod & Edwards, 2013). Despite these differences, the desire to modify shape or weight is common to both genders (Lipowska & Lipowski, 2013).

Body satisfaction is also impacted by age. It gradually increases with the increase in age during adolescence and gets stabilized by adulthood (Holsen, Carlson Jones, & Skogbrott Birkeland, 2012). On the other hand, older adults show body image dissatisfaction of a different form. McLaren and Kuh (2004) found that 80% of the women reported weight dissatisfaction in comparison to their younger years, and this dissatisfaction affected their daily life activities.

Body esteem

Self-esteem is defined as an individual's attitude toward one's self, either positive or negative, and refers to how well people feel about themselves (Rosenberg, 1965). Body esteem is an important dimension of self-esteem. It is the feelings a person has about their body. It has typically been conceptualized as a whole construction (Mendelson, Mendelson, & White, 2001) that can be measured by self-report questionnaires, open-ended interviews, or reactions to body-related words.

Low body esteem is associated with behavioral and psychological problems including poor self-esteem, eating disorders, anxiety, depression and other mental health issues (Frost, 2013). When people experience their physical bodies as unattractive, undesirable and a source of "shamed" self, they are at risk of psychological distress and disorders. The concept of "body shame" directs attention to negative experiences of both appearance and functions of the body (Gilbert, 2002). Personal characteristics such as BMI (Body Mass Index) have also been related to body esteem and lower BMI has been related to higher body esteem (Pilafova, Angelone, & Bledsoe, 2007).

Body Esteem Scale

Body esteem has been measured with a variety of projective and subjective techniques. Franzoi and Shields (1984) developed the Body Esteem Scale (BES) and argued that there are different dimensions in body esteem, such as physical attractiveness, body strength, physical condition, and weight concern. This scale has impacted the understanding of body evaluation in health-guided research, such as eating disorder prevention and treatment. Weight concern and other aspects of body evaluation are important components for understanding anorexia, bulimia, binge eating disorders, and other problematic dieting and exercise behaviors (Frost, 2013). The Body Esteem Scale is a popular and one of the few available instruments for body esteem. It is a concise, easily administered, reliable, valid, and multidimensional assessment of body esteem. It consists of 35 items grouped into three, gender-specific subscales. The three subscales for men are: Physical Attractiveness (e.g., *nose*), Upper Body Strength (e.g., *body build*), and Physical Condition (e.g., *energy level*). The three subscales for women are: Sexual Attractiveness (e.g., *lips*), Weight Concern (e.g., *legs*) and Physical Condition (e.g., *physical coordination*). The subscale Physical Condition has the same name for men and women, but it consists of different items in each gender. The score in BES is highly correlated with general self-esteem (Lipowska & Lipowski, 2013). On the contrary, its correlation with body appreciation and internal and external shame has not been examined extensively.

The BES has been translated in several languages (e.g., Escoto Ponce de León et al., 2016; Jorquera, Baños, Perpiñá, & Botella, 2005; Lipowska & Lipowski, 2013; Neves & Tavares, 2015) and has been used in many researches and samples (e.g., Franzoi & Chang, 2002; Duncan, 2016; Haas, Pawlow, Pettibone, & Segrist, 2012; Osman & Merwin, 2019; Taleporos & McCabe, 2002).

The present study

This study examined the factor structure and psychometric properties (internal consistency, test-retest reliability, construct validity) of the Greek version of the Body Esteem Scale. We chose to examine internal consistency reliability, test-retest reliability and construct validity (convergent and discriminant) because these forms of reliability and validity are the most common in a study of cultural adaptation of a scale (Beaton, Bombardier, Guillemin, & Ferraz, 2000).

Based on the literature about body esteem, the validation study of the BES and its cultural adaptation in other languages, it was hypothesized that: a) BES consists of three factors for males (Physical Attractiveness, Upper Body Strength and Physical Condition) and three factors for females (Sexual Attractiveness, Weight Concern and

Physical Condition) (Hypothesis 1). This different factor structure based on gender has been supported in the original validation of the scale (Franzoi & Shields, 1984) and in its cultural adaptation in other languages (e.g., Escoto Ponce de León et al., 2016; Jorquera et al., 2005; Lipowska & Lipowski, 2013; Neves & Tavares, 2015). b) All BES factors are positively associated with self-esteem and body appreciation (Hypothesis 2), and c) they are negatively associated with internal and external shame (Hypothesis 3). Hypotheses 2 and 3 regard the construct (convergent and discriminant) validity of the BES. Moreover, it was hypothesized that there are significant effects of age and BMI on BES scores (Hypothesis 4).

METHOD

Design

A cross-sectional study was conducted, which lasted 15 months (February 2017-April 2018). The participants were selected based on the following eligibility criteria: 1) male-female with sufficient ability to understand and respond to the questionnaire; 2) age > 18 years; 3) resident of Greece; 4) ability to speak-understand the Greek language; 5) persons wishing to participate voluntarily in the research. Persons with severe psychiatric symptoms were excluded.

A snowball recruitment procedure was used in order to obtain the sample of the study. In this sampling procedure, the individuals selected to be initially studied recruit new participants from among their circle of acquaintances (Vogt, 1999). Thus, in this study the authors collaborated with five researchers and distributed the questionnaires in their circle of acquaintances. Subsequently, every participant was requested to disseminate the survey to other persons. The questionnaires were completed in printed version and through e-mail and google forms. They were administered to many prefectures of Greece, in order to ensure greater representativeness of the sample.

Participants

The sample comprised 2,162 persons, who represented the Greek general population from all over the country. There were 756 men (35%) and 1406 women (65%). The mean age of the participants was 33 years (SD = 12.75; Range = 18 to 86 years). In the male subsample, the mean age was 35 years (SD = 13.40, Range = 18 to 86) and in the female subsample, the mean age was 32 years (SD = 12.2; Range 18 to 78 years). Concerning the educational level, most of the participants were higher

education graduates (university/technical institutions) (38.1%). About one fourth of the sample (24.5%) were higher education students and 15.2% were Master of Science (MSc) or Master of Arts (MA) holders. Finally, 18.7% of the participants were high school graduates, while 2.3% were secondary school graduates and 1.2 % primary school graduates.

Most of the participants were residents of Athens/Attica and of Central Greece (Greek: Sterea Ellada) (68.4%). Other places of residence were the following: Peloponnese (18.2%), Macedonia (5%), Crete (2.4%), Epirus (1.7%), Aegean Islands (0.9%), Thessaly (0.6%), Thrace (0.3%), Ionian Islands (0.3%). About half of the participants (48.9%) self-reported to belong to the middle socioeconomic class.

The sample used for the testing of the test-retest reliability consisted of 100 persons randomly selected, aged between 18-65 years ($M = 29.33$, $SD = 12.19$). Half the sample were males. Concerning the educational level, most of the participants were university students (49%) and university graduates (27%). Further, 14% of the participants were high school graduates and 9% were Master of Science (MSc) or Master of Arts (MA) holders.

Measures

There were two parts in the set of questionnaires administered. The first comprised sociodemographic questions. The second part included the following questionnaires: 1) Body Esteem Scale, 2) Body Appreciation Scale (BAS), 3) Other as Shamer (OAS), 4) Experience of Shame Scale (ESS), 5) Rosenberg Self-Esteem Scale (RSES). The Body Appreciation Scale and the Rosenberg Self-Esteem Scale were used to examine the convergent validity of the BES, while the Other as Shamer and the Experience of Shame Scale were used to examine its discriminant validity. These questionnaires have been translated and culturally adapted in Greek population by several scholars (Alexias,Togas, & Mellon, 2016; Gouva, Kaltsouda, Paschou, Dragioti, Kotrotsiou, Mantzoukas, & Kotrotsiou, 2016a, 2016b; Galanou, Galanakis, Alexopoulos, & Darviri, 2014).

Sociodemographic data

Participants were firstly asked to fill in their sociodemographic data, namely their gender, age, level of education, place of residence, socioeconomic status, weight (in kilograms) and height (in meters).

Body Mass Index

Body Mass Index (BMI) scores (weight in Kgs/square of the body height in meters) were calculated for the study needs. BMI scores were classified in the following categories: < 18.5 = Underweight; 18.5-24.9 = Normal weight; 25-29.9 = Overweight; > 30 = Obese.

Body Esteem Scale

The Body Esteem Scale is a self-report scale designed to evaluate body esteem from a multidimensional perspective. Participants are asked to rate their degree of satisfaction or dissatisfaction with various body parts and functions on a 5-point Likert scale (1= strong negative feelings, 5 = strong positive feelings). The possible score range is different for each subscale and the higher the score, the higher the body-esteem (Franzoi & Shields, 1984).

The Body Esteem Scale has gained popularity because it is easy and quick to administer and has adequate psychometric properties. In the original validation the coefficient alpha was .81 to .87 for male subscales and .78 to .87 for the female subscales. The original scale has also presented good construct, convergent and discriminant validity (Franzoi & Shields, 1984; Franzoi & Herzog, 1986; Thomas & Freeman, 1990) and test-retest reliability (Franzoi, 1994).

Translation of the questionnaire. The translation strategy was based on minimal translation criteria developed by the Scientific Advisory Committee of the Medical Outcomes Trust (2002) and on a set of guidelines by the International Test Commission (Van de Vijver & Hambleton, 1996). Translation was performed using a multiple forward and backward translation protocol. Two independent bilingual professionals translated the questionnaire into Greek (forward translation). The mother language of all translators was the Greek and their level of English was advanced. Then followed the reconciliation report, which is the process of alignment of the two translations from a bilingual professional, who had Greek as mother tongue so as the final agreed version to be extracted.

Then, the re-conciliated Greek version of the questionnaire was retranslated into English by two native English speakers, who were blinded to the original version (backward translation). The last step of the translation procedure was the pretesting of the translated instrument. Fifteen people were randomly assigned in order to participate in the cognitive debriefing process and to confirm that the scale could be read and understood by the persons of the sample. After completing the questionnaire, they were asked to state their general impression on the clarity

of the items and to give translation alternatives. Moreover, they were asked about the comprehensiveness of the instructions and their ability to complete it on their own. Their comments and suggestions were used in order to prepare the instructions and to ensure that participants had no difficulties in reading the items. The average time for completing the questionnaire was two minutes. There was an attempt to maintain all the key features of the questionnaire during the translation in the Greek language, but all the necessary changes in order to adjust it to the Greek culture were also made.

Body Appreciation Scale

The Body Appreciation Scale (BAS; Avalos, Tylka, & Wood-Barcalow, 2005) evaluates the positive body image (e.g., I respect my body). The 13 items of the questionnaire are rated on a 5-point scale (1 = Never, 5 = Always) and are averaged to obtain a total score. Higher scores reflect greater body appreciation. Item 12 of the scale is gender-specific and there is a different question for men and women. In the Greek version, Item 12 is reversed scored, in order to be well understood and not confusing (in the original scale this Item contains two negative phrases). This scale has been translated and culturally adapted in several languages and has been used in many studies. In this study the Greek version of the Body Appreciation Scale (Alexias et al., 2016) was used. Cronbach's α was .88.

Other as Shamer Scale

The Other as Shamer Scale (OAS; Goss, Gilbert, & Allan, 1994) measures external shame and the individual's perceptions of how others see and judge him/her. Its items are divided into three subscales: a) *Inferior* (e.g., I feel other people see me as not good enough); b) *Empty* (e.g., Others see me as empty and unfulfilled), and c) *Mistakes* (e.g., I think others are able to see my defects). Responses are on a 5-point scale (ranging from 0 - never, to 4 - almost always) indicating how often one feels this way. A total score as well as a score for each subscale are obtained by summing up individual scores on relevant items. Higher scores reveal high external shame. The OAS has been used in various studies related to feelings of shame. The Cronbach's α for this scale was .92 (Goss et al., 1994) and for the Greek version was .87 (Gouva et al., 2016a). In the present study Cronbach's α was .93.

Experience of Shame Scale

The Experience of Shame Scale (ESS; Andrews, Qian, & Valentine, 2002) consists of 25 items, which are rated in a 4-point scale (1 = not at all, 4 = a lot). It measures only the tendency for shame and not for guilt. It evaluates shame as a dispositional characteristic and not as a state response to specific situations. The items are divided into three subscales: *Characterological shame* (e.g., Have you felt ashamed of any of your personal habits?); *Behavioral shame* (e.g., Have you felt ashamed of your ability to do things?), and *Bodily shame* (e.g., Have you wanted to hide or conceal your body or any part of it?). Besides a score for each subscale, the items are summed to a total score, with higher scores indicating more frequent and/or more intense experiences of shame. The total scale is reported to have a Cronbach's α of .92, with a test-retest reliability of .83 over 11 weeks. The subscales have alpha scores of .86 - .90 and test-retest reliability of .74 - .86 (Andrews et al., 2002). Internal consistency was also high in the Greek adaptation of the scale (Cronbach's α = .93) (Gouva et al., 2016b). In the present study Cronbach's α was .95.

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (RSES, Rosenberg, 1965) assesses global self-esteem in adults. It measures both positive and negative feelings about the self. The scale consists of ten questions (e.g., On the whole, I am satisfied with myself) and all items are answered using a 4-point Likert scale (lower end of the scale: Strongly agree-higher end of the scale: Strongly disagree). Items 2, 5, 6, 8, 9 are reversed scored. Total score ranges from 10 to 40 and a higher score indicates greater self-esteem. Cronbach's α in the original validation ranged from .77 to .88, and test-retest reliability ranged from .82 to .85. The scale has also presented a satisfactory construct validity. It has been translated and adapted to various languages and is extensively used in cross-cultural studies. The Greek version has also demonstrated adequate psychometric properties (Galanou et al., 2014). In the present study Cronbach's α was .87.

Procedure

The participants were informed in detail about the purpose of the study and were given assurances of anonymity and confidentiality. They were also assured that the collected data would be used only for the purpose of the study. All participants took part on a voluntary basis, without taking any remuneration.

The test-retest reliability of the BES scores was examined in a different study. The

participants completed the BES three weeks later under the same conditions as in the first study.

Data analysis

The statistical program SPSS v.25. was used for the analysis of data, namely descriptive statistics, ANOVA, Pearson's correlation. Moreover, both Exploratory Factor Analysis (EFA) with the Principal Component Analysis method and Confirmatory Factor Analysis (CFA) were carried out to examine the factor structure of the BES. In EFA the number of factors was determined according to those with eigenvalues > 1, as well as by examining the scree plot. The minimum loading criterion was set to .40. CFA was performed using the program AMOS 26 (Analysis of Moment Structures; Arbuckle, 2012). It was used in order to confirm the original structure of the BES (Franzoi & Shields, 1984) and the factor structure that was identified through EFA.

The suitability of the CFA solution was evaluated using the following model fit indices: χ^2/df ratio, CFI, TLI, ECVI, AIC, and RMSEA. A smaller than 3 χ^2/df ratio is considered acceptable. CFI values > .90 are indicative of good fit. A good fit is also indicated when RMSEA value is .10 or lower (Beauducel & Wittmann, 2005). In so far as the TLI is concerned, Hu and Bentler (1999) proposed ≥ .95 as a cut-off value for a good fit. The ECVI and the Akaike information criterion (AIC) are suitable for comparing competing models and the smaller values represent a better fit (Byrne, 2001).

Reliability was examined by means of Cronbach's α coefficient. Finally, paired sample *t*-test and Pearson's correlation between the first and the second administration of the BES were used in order to examine the test-retest reliability of the scale.

RESULTS

The structure of BES

Exploratory and confirmatory factor analysis were carried out for subsamples divided by gender, because male and female differences are fundamental in body esteem (Franzoi, 1994; Franzoi & Shields, 1984). Gender subsamples were used in the original validation of the BES and all the studies for its cultural adaptation in other countries.

Male subsample

Confirmatory Factor analysis (CFA) was carried out to test the model of three factors as in the original BES (Franzoi & Shields, 1984). The fit indices of the three-factor model (Model 1), however, were not acceptable (see Table 1).

Table 1: Fit indices of confirmatory factor analyses

Model Tested	χ^2/df	CFI	TLI	ECVI	AIC	RMSEA
Males						
Model 1. Original model (Franzoi & Shields, 1984).	3.54	.79	.75	3.41	88746.89	.08
Model 2. Alternative 4-factor model after EFA (35 items)	11.85	.22	.09	11.75	18835.67	.15
Model 3. Alternative 4-factor model after EFA (deletion of 6 items)	2.65	.84	.90	2.85	9235.11	.08
Females						
Model 1. Original model (Franzoi & Shields, 1984).	3.85	.78	.78	3.44	56270.82	.09
Model 2. Alternative 4-factor model after EFA (35 items)	11.72	.23	.09	11.76	41648.82	.17
Model 3. Alternative 4-factor model after EFA (after deletion of 4 items)	2.58	.81	.81	2.65	9335.14	.07

Note: CFA: Confirmatory Factor Analysis; EFA: Exploratory Factor Analysis; CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; ECVI: Expected Cross-validation Index; AIC: Akaike Information Criterion; RMSEA: Root Mean Squared Error of Approximation.

For this reason, an EFA was conducted using the Principal Components method with Varimax rotation. Bartlett's test of sphericity, $\chi^2 = 27969,815$, $p < .001$, and the Kaiser-Meyer-Olkin index (.95) confirmed that the BES items for males had adequate variance for factor analysis. The analysis revealed six factors with eigenvalues > 1, explaining 55.66% of the variance. However, due to the low loadings (< .40) of many items, a model with four factors was examined (Model 2). As the items *body scent, appetite, reflexes, body build, physical coordination and body hair* had factor loadings < .40, they were excluded, and EFA was repeated. The final four-factor model (Model 3) explained 53.54% of the total variance (Table 2).

In the last step, the three models (Model 1, Model 2, and Model 3) were compared using CFA (see Table 1). Inspection of the fit indices suggested that Model 3 had the best fit indices compared to the other two models, although its fit to the data was marginal. Model 3 for the male subsample comprises 29 items loading the following

Table 2: Exploratory factor analysis for the four-factor model (Model 3) for the male and female subsample

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Males									
Total Variance Explained									
1	10.90	37.59	37.59	10.9	3.59	37.59	5.14	17.72	17.72
2	1.79	6.16	43.75	1.79	6.16	43.75	4.09	14.12	31.83
3	1.43	4.92	48.67	1.43	4.92	48.67	3.68	12.69	44.52
4	1.41	4.87	53.54	1.41	4.87	53.54	2.62	9.02	53.54
Females									
1	9.86	31.81	31.81	9.86	31.81	31.81	5.55	17.90	17.90
2	2.01	6.47	38.28	2.01	6.47	38.28	3.65	11.78	29.68
3	1.71	5.51	43.79	1.71	5.51	43.79	3.53	11.39	41.07
4	1.49	4.79	48.59	1.49	4.79	48.59	2.33	7.52	48.59

Note: Extraction method: Principal Component Analysis.

four factors: Physical Attractiveness (12 items), Upper Body Strength (6 items), Fitness/Physical Condition (8 items), and Sexuality (3 items).

The items loading the Physical Attractiveness factor were *nose, lips, thighs, ears, chins, buttocks, appearance of eyes, cheeks/cheekbones, hips, legs, feet, face.* The items loading the Upper Body Strength factor were *physical stamina, muscular strength, biceps, width of shoulders, arms, chest.* The items loading the Fitness/Physical Condition factor were *waist, energy level, agility, physique, stomach, health, physical condition, weight.* Finally, the items loading the Sexuality factor were *sex drive, sex organs, sex activities* (see Table 3). In Model 3, factors 1, 2 and 3 correspond with remarkable accuracy to the three factors of the original validation of BES.

Female subsample

The same analytic procedure was applied in the female group. The original three-factor model (Model 1) was first examined through CFA, but the fit indices were not acceptable (see Table 1). EFA was then conducted. The analysis revealed seven factors with eigenvalues > 1. They explained 54.75% of the variance. However, due to the low loadings (< .40) of many items, Model 2 was tested with four factors. As the items *body scent, appetite, waist,* and *body hair* had factor loadings < .40, they were excluded, and the EFA was repeated without these items. The final model, Model 3, explained 48.59% of the total variance (see Table 2).

Table 3: Items and factor loadings of the Body Esteem Scale for males

Item	PA	UBS	F/PC	S
Nose	.428			
Physical stamina		.567		
Lips	.533			
Muscular Strength		.728		
Waist			.575	
Energy level			.520	
Thighs	.448			
Ears	.505			
Biceps		.717		
Chin	.688			
Buttocks	.587			
Agility			.492	
Width of Shoulders		.687		
Arms		.579		
Chest		.608		
Appearance of Eyes	.615			
Cheeks/Cheekbones	.731			
Hips	.707			
Legs	.573			
Physique			.578	
Sex Drive				.817
Feet	.482			
Sex Organs				.528
Appearance of Stomach			.655	
Health			.477	
Sex Activities				.808
Physical Condition			.736	
Face	.569			
Weight			.726	

Note: Extraction method: Principal Component Analysis. Rotation method: Varimax with Kaiser Normalization. PA = Physical Attractiveness; UBS = Upper Body Strength; F/PC = Fitness/Physical Condition; S = Sexuality.

The three models were then compared using CFA indices (see Table 1). The four-factor model (Model 3) had the best fit compared to the other two models. The BES for the female subsample consists of 31 items loading the following four factors: Sexual Attractiveness (10 items), Figure/Weight Concern (10 items), Fitness/Physical Condition (8 items), and Sexuality (3 items). The items grouped in the Sexual Attractiveness factor were: *nose, lips, ears, chin, width of shoulders, arms, breasts, appearance of eyes, cheeks/cheekbones, face;* those belonging to the Figure/Weight Concern factor were: *thighs, biceps, body build, buttocks, hips, legs, figure, feet,*

appearance of stomach, weight; items included in the Fitness/Physical Condition factor were: *physical stamina, reflexes, muscular strength, energy level, physical coordination, agility, health, physical condition* and those grouped in the Sexuality factor were: *sex drive, sex organs, sex activities* (see Table 4). In Model 3 factors 1, 2 and 3 correspond with remarkable accuracy to the three factors derived from the original validation.

Table 4: Items and factor loadings of the Body Esteem Scale for females

Item	SA	F/WC	F/PC	S
Nose	.470			
Physical Stamina			.706	
Reflexes			.599	
Lips	.546			
Muscular Strength			.720	
Energy Level			.662	
Thighs		.700		
Ears	.573			
Biceps		.507		
Chin	.641			
Body build		.640		
Physical Coordination			.494	
Buttocks		.659		
Agility			.449	
Width of Shoulders	.484			
Arms	.557			
Breasts	.493			
Appearance of Eyes	.538			
Cheeks/Cheekbones	.555			
Hips		.673		
Legs		.718		
Figure		.724		
Sex drive				.775
Feet		.698		
Sex organs				.581
Appearance of Stomach		.464		
Health			.422	
Sex activities				.742
Physical Condition			.632	
Face	.515			
Weight		.720		

Note: Extraction method: Principal Component Analysis. Rotation method: Varimax with Kaiser Normalization. SA = Sexual Attractiveness; F/WC = Figure/Weight Concern; F/PC = Fitness/Physical Condition; S = Sexuality.

Internal consistency reliability

The internal consistency of the BES subscales was analysed by means of Cronbach's α coefficient. Its value was .94 for the entire scale, .94 for the male subsample and .93 for the female subsample. In the male subsample, its value was .89 for Physical Attractiveness, .85 for Upper Body Strength, .85 for Fitness/Physical Condition, and .78 for Sexuality subscales. In the female subsample, its value was .80 for Sexual Attractiveness, .89 for Figure/Weight Concern, .83 for Fitness/Physical Condition and .77 for Sexuality subscales. These findings show high internal consistency reliability of the BES and its subscales.

Means, standard deviations and scale intercorrelations for male and female subsamples are presented in Table 5. There were significant correlations between all the BES subscales for both males and females.

Table 5. Means, standard deviations and intercorrelations of the BES subscales

	Males				
	Mean (*SD*)	PA	UBS	F/PC	S
PA	45.15 (7.35)	-			
UBS	22.73 (4.38)	.652**	-		
F/PC	29.60 (5.82)	.676**	.639**	-	
S	12.33 (2.39)	.545**	.527**	.548**	-
	Females				
	Mean (*SD*)	SA	F/WC	F/PC	S
SA	38.27(5.92)	-			
F/WC	34.51 (8.01)		-	.571**	-
F/PC	29.77 (5.59)	.549**	.617**	-	
S	11.64 (2.43)	.463**	.484**	.459**	-

Note: ** *p* < .01. PA = Physical Attractiveness; UBS = Upper Body Strength; F/PC = Fitness/Physical Condition; S = Sexuality; SA = Sexual Attractiveness; F/WC = Figure/Weight Concern.

Construct validity

Correlations between the BES subscales for males and females and the Body Appreciation Scale, Other as Shamer, Experience of Shame Scale and Rosenberg Self-Esteem Scale are presented in Table 6. There was significant positive correlation of all BES subscales with Body Appreciation Scale and Rosenberg Self-Esteem Scale for both males and females. There was also a significant negative correlation of all BES subscales with Other as Shamer and Experience of Shame Scale for both males and females. These findings suggest that the Greek version of the BES has adequate construct (convergent and discriminant) validity.

Table 6. Pearson correlations between the BES subscales, Body Esteem Scale, Other as Shamer, Experience of Shame Scale, and Rosenberg Self-Esteem Scale

	Males			
	PA	UBS	F/PC	S
Body Appreciation Scale	.453**	.463**	.558**	.380**
Other as Shamer (total score)	-.183**	-.258**	-.217**	-.246**
Other as Shamer-inferior subscale	-.197**	-.287**	-.222**	-.292**
Other as Shamer-emptiness subscale	-.169**	-.247**	-.215**	-.244**
Other as Shamer-mistakes subscale	-.114**	-.178**	-.157**	-.130**
Experience of Shame Scale (total score)	-.193**	-.284**	-.227**	-.198**
Experience of Shame Scale-characterological subscale	-.215**	-.308**	-.227**	-.233**
Experience of Shame Scale-behavioral subscale	-.109**	-.182**	-.153**	-.102**
Experience of Shame Scale-bodily subscale	-.220**	-.297**	-.269**	-.183**
Rosenberg self-esteem scale	.150**	.169**	.154**	.159**
	Females			
	SA	F/WC	F/PC	S
Body Appreciation Scale	.452**	.672**	.512**	.401**
Other as Shamer (total score)	-.291**	-.305**	-.350**	-.244**
Other as Shamer-inferior subscale	-.307**	-.299**	-.344**	-.274**
Other as Shamer-emptiness subscale	-.235**	-.264**	-.314**	-.194**
Other as Shamer-mistakes subscale	-.207**	-.243**	-.267**	-.164**
Experience of Shame Scale (total score)	-.328**	-.370**	-.389**	-.245**
Experience of Shame Scale-characterological subscale	-.305**	-.308**	-.373**	-.226**
Experience of Shame Scale-behavioral subscale	-.271**	-.272**	-.303**	-.189**
Experience of Shame Scale-bodily subscale	-.314**	-.516**	-.382**	-.280**
Rosenberg self-esteem scale	.283**	.261**	.261**	.234**

Note: ** $p < .01$. PA = Physical Attractiveness; UBS = Upper Body Strength; F/PC = Fitness/Physical Condition; S = Sexuality; SA = Sexual Attractiveness; F/WC = Figure/Weight Concern

Test-retest reliability

Positive and significant correlations for all the BES subscales were found in the test-retest sample. More specifically, the following correlation coefficients were found in males: Physical Attractiveness, $r = .95$, $p < .001$; Upper Body Strength, $r = .92$, $p < .001$; Fitness/Physical Condition, $r = .93$, $p < .001$, and Sexuality, $r = .95$, $p < .001$. In females: Sexual Attractiveness, $r = .95$, $p < .001$; Figure/Weight Concern, $r = .93$, $p < .001$; Fitness/Physical Condition, $r = .95$, $p < .001$, and Sexuality, $r = .95$, $p < .001$. The paired samples *t*-test revealed no significant differences between the two testing points. These findings suggest that the test-retest reliability for the Greek version of the BES was excellent.

Relationship to age and BMI

In the whole sample the mean BMI score was 24 ($SD = 4.23$, Range = 14.71 to 48.83). Concerning the BMI categories, 61.5% of the participants had normal weight, 26% were overweight, 8.9% were obese, and 3.7% were underweight.

In the male subsample, the mean BMI score was 25.91 ($SD = 3.95$, Range = 15 to 48.83). Concerning the BMI categories, 45.7% had normal weight, 39.8% were overweight, 14% were obese, and 0.4% were underweight. There was a significant weak positive correlation between age and Physical Attractiveness, $r = .146$, $p = .001$, and Upper Body Strength, $r = .172$, $p = .001$, subscales. BMI correlated positively with Upper Body Strength, $r = .101$, $p = .001$, and negatively with Fitness/Physical Condition, $r = -.249$, $p = .001$.

In the female subsample, the mean BMI score was 22.98 ($SD = 4.01$, Range = 14.71 to 43.23). Concerning the BMI categories, 69.9% had normal weight, 18.5% were overweight, 6.1% were obese, and 5.4% were underweight. There was a significant weak positive correlation between age and Sexual Attractiveness, $r = .098$, $p = .001$, and Fitness/Physical Condition, $r = .123$, $p = .001$, and a negative one between age and Sexuality, $r = -.08$, $p = .001$. BMI correlated negatively with Figure/Weight Concern, $r = -.355$, $p = .001$, with Fitness/Physical Condition, $r = -.086$, $p = .001$, and with Sexuality, $r = -.135$, $p = .001$. Descriptive statistics and differences between BMI categories and age groups on BES subscales are presented in Table 7.

According to one-way ANOVA, there was a significant effect, albeit very small according to the effect size index, of BMI on Upper Body Strength, $F(3, 735) = 5.08$, $p = .001$, $\eta_p^2 = 0.02$, and a small effect on Fitness/Physical Condition, $F(3, 739) = 15.49$, $p = .002$, $\eta_p^2 = 0.06$, in males. Further, a significant but very small effect on

Table 7. Descriptive statistics and differences between BMI categories and age groups in the BES subscales

BMI categories	PA	p	UBS	p	F/PC	p	S	p
			BES subscales (Males)					
Underweight	46.67		23.00		29.33		10.67	
Normal weight	45.04	ns	22.05	.002	30.68	.001	12.27	ns
Overweight	45.51		23.40		29.26		12.39	
Obese	44.02		22.62		26.40		12.19	
Age groups								
18-30 years	44.21		21.97		29.35		12.18	
31-40 years	45.14		23.00		29.50		12.57	
41-50 years	46.01	.009	23.48	.001	30.04	ns	12.58	.001
51-60 years	47.19		23.99		29.93		12.38	
61-70 years	46.23		22.79		30.50		11.71	
>71 years	44.00		22.00		28.50		7.75	

BMI categories	SA	p	F/WC	p	F/PC	p	S	p
			BES subscales (Females)					
Underweight	37.64		38.24		29.21		11.93	
Normal weight	38.15	ns	35.65	.001	30.08	.001	11.74	.001
Overweight	38.75		31.63		29.52		11.46	
Obese	38.60		27.24		27.42		10.75	
Age groups								
18-30 years	37.75		34.06		29.08		11.70	
31-40 years	39.27		35.92		30.99		12.14	
41-50 years	38.44	.003	34.52	.025	30.32	.001	11.48	.001
51-60 years	39.21		34.64		30.53		10.77	
61-70 years	36.44		30.89		29.44		9.67	
>71 years	38.20		32.60		29.40		7.40	

Note: ns = nonsignificant. PA = Physical Attractiveness; UB = Upper Body Strength; F/PC = Fitness/Physical Condition; S = Sexuality; SA = Sexual Attractiveness; F/WC = Figure/Weight Concern.

Fitness/Physical Condition, $F(3, 1363) = 6.49$, $p = .001$, $\eta_p^2 = 0.01$, a moderate effect on Figure/Weight Concern, $F(3,1367) = 51.34$, $p = .001$, $\eta_p^2 = 0.11$, and a very small effect on Sexuality, $F(3, 1373) = 5.19$, $p = .001$, $\eta_p^2 = 0.01$, in females. According to Bonferroni post hoc test, obese participants had significant lower score than underweight and normal weight participants on the above subscales. All these findings indicate that BMI is a significant determinant of Body Esteem.

One-way ANOVA showed that age affected scores on the following subscales in males, although the effect sizes were small: Physical Attractiveness, $F(5, 731) = 3.09$, $p = .009$, $\eta_p^2 = 0.02$; Upper Body Strength, $F(5, 740) = 4.68$, $p = .001$, $\eta_p^2 = 0.03$; Sexuality, $F(5, 745) = 4.09$, $p = .001$, $\eta_p^2 = 0.03$. According to Bonferroni post hoc test, participants aged 18-30 years old had lower score than those aged 41-50 years old

on Physical Attractiveness and on Upper Body Strength. In addition, participants > 71 years old had significant lower score than participants of the other age groups on the Sexuality subscale.

Moreover, age had a significant effect on all female subscale scores, although with very small effect sizes: Sexual Attractiveness, $F(5, 1383) = 3.54$, $p = .001$, $\eta_p^2 = 0.013$; Fitness/Physical Condition, $F(5, 1379) = 5.80$, $p = .001$, $\eta_p^2 = 0.021$; Figure/Weight Concern, $F(5, 1383) = 2.57$, $p = .03$, $\eta_p^2 = 0.009$; Sexuality, $F(5, 1390) = 10.02$, $p = .001$, $\eta_p^2 = 0.04$. According to Bonferroni post hoc test, participants aged 18-30 years old had lower score than those aged 31-40 years old on Sexual Attractiveness, on Figure/Weight Concern and on Fitness/Physical Condition subscales. In addition, participants > 71 years old had significant lower score than participants of the other age groups on the Sexuality subscale.

DISCUSSION

This study was conducted in order to evaluate the psychometric properties of the Greek version of the Body Esteem Scale (BES). The basic finding is that the BES consists of four subscales for men (Physical Attractiveness, Upper Body Strength, Fitness/Physical Condition, Sexuality) and four for women (Sexual Attractiveness, Figure/Weight Concern, Fitness/Physical Condition, Sexuality). Moreover, its reliability and validity are adequate.

In contrast to the findings of our study, a three-factor structure (three subscales for males and three subscales for females) was supported in the original validation of the BES (Franzoi & Shields, 1984) and in a Polish male and female sample (Lipowska & Lipowski, 2013). Neves and Tavares (2015) also found a three-factor structure in a Brazilian male sample. However, several other studies have supported a different factor structure of the BES, too. More specifically, Escoto Ponce de León et al. (2016) found a different factor structure (two subscales for males and two for females) in a Mexican women and men sample. Consequently, Hypothesis 1 was not confirmed, and we conclude that the factor structure of the BES seems to be different in the various studies and countries.

Concerning the number of the factors of the BES, the results of the present study are as found in Frost's (2013) study, in which a four-factor structure for males and females was supported. The fourth factor in the present study was called *Sexuality*. However, it is worth mentioning that in Frost's (2013) study several new items were added (e.g., teeth, metabolism, eyelashes/eyebrows, sexual performance etc.) and there were many differences in the factor loadings. For example, in the male sample

of Frost's (2013) study, Upper Body Strength consisted of only five items (muscular strength, biceps, body build, arms, chest). Physical Attractiveness consisted of only one item from the original scale (appetite) and the rest six items (body scent, face, head hair, perspiration, skin condition, teeth) were new. Sexuality consisted of four items (with the inclusion of the item sexual performance) and Physical Condition consisted of 13 items, of which two were new. About the same differences can be seen in the female sample.

The four factors in the male sample in our study accounted for 53.54% of the total variance, while 48.59% of the total variance was explained by the four female factors. This percentage is higher than the explained variance found in the original validation (35% for males and 39% for females). In the Polish version of the BES the corresponding percentages were 40.85% for males and 44% for females. All retained items met the minimal loading criterion (.40).

The analyses performed showed that the Greek BES has adequate internal consistency reliability. Cronbach's α coefficient was .94 for the entire scale, .94 for the male subsample and .93 for the female subsample. Similar results were found in the Polish version of the BES (.93 for the entire scale, .94 for men and .92 for women). The values of Cronbach's α coefficient found in this study (.78 to .89 for male subscales and .77 to .89 for the female subscales) are partly similar to those found in the Polish version of the BES (.85 to .88 for male subscales and .80 to .89 for the female subscales) and similar to that found in the original validation (.81 to .87 for male subscales and .78 to .87 for the female subscales). Adequate internal consistency of the revised BES has also been supported by Frost (2013).

Test-retest reliability was also excellent. This type of reliability has not been examined in the original validation of the BES and in its Polish version. In addition, all subscales of the BES demonstrated adequate construct validity. Similar results were reported by Frost (2013) and by Lipowska and Lipowski (2013). All male and female subscales were positively correlated with body appreciation and self-esteem. The same result about self-esteem was found in the original study (Franzoi & Shields, 1984) and in Frost's (2013) study. Concerning the correlation between body esteem and body appreciation, similar results have been reported in a Brazilian male sample (Neves & Tavares, 2015). On the other hand, the correlation of the BES subscales with internal and external shame was negative and significant, as it was expected. According to these findings, Hypothesis 2 and 3 were confirmed.

As Lipowska and Lipowski (2013) argue, in women, the Sexual Attractiveness factor refers to the perception of body parts (e.g., lips, breasts) that cannot be modified by physical exercise, while Weight Concern to body parts that can be improved by physical exercise or diet. In men, the Physical Attractiveness factor

assesses body parts and functions which make a man handsome (with an emphasis on facial traits), as well as items that cannot be altered through traditional diet and exercise (Frost, 2013). The Upper Body Strength is based on the evaluation of individual body parts (e.g., chest) and on body functions and skills, which serve as a basis for judging a man strong and active. The Physical Condition subscale refers to evaluations of strength and agility of the body (Lipowska & Lipowski, 2013).

Moreover, at the item level, several differences are worth noting. Results obtained amongst Greek men differed from those of the original BES as following: *Legs* loaded on Physical Attractiveness, while in the original validation it did not load on any male subscale; *Appetite* did not load on any subscale of the present validation, while in the original it loaded on Physical Condition. *Thighs* in the present study loaded on Physical Attractiveness and not on Physical Condition, as in the original BES, and *physical stamina* loaded on Upper Body Strength and not on Physical Condition; finally, *body scent and body hair* did not load on any male subscale in as in the original validation. These were the observed differences between the Greek BES and its original validation at the item level.

In females, there were the following differences: *Appetite* did not load on any female subscale in our study, while in the original validation it loaded on Weight Concern; *arms* and *width of shoulders* loaded on Sexual Attractiveness, while in the original validation it did not load on any subscale; *feet* loaded on Figure/Weight Concern, while in the original validation it did not load on any subscale. The above findings suggest that body ideals possibly have changed in the last 35 years and/or the Greek population differs from the American in this field.

As in the original validation, the item *body hair* did not load on any scale in the male subsample. In the female subsample, it did not load on any scale either. However, it loaded on Sexual Attractiveness in the original validation. This finding is similar to that of Frost (2013). However, Frost (2013) had added a new item called *head hair,* which loaded on the Sexual Attractiveness component. She argued that in females *head hair* better represented the assessment of the appearance of one's hair than the original item, body hair.

Another differentiation of the findings of the present study as compared to the original scale is the following: We opted to add the word Figure in the scale Weigh Concern (i.e., Figure/Weight Concern) in women sample, because this label better represents the items of the scale. Items biceps and feet (which were added in this scale) and items like body build, buttocks, hips, legs, feet (which load on this subscale) made this change necessary. The loadings of the items on this scale remained very similar to the Weight Concern component of the original BES.

As regards the Physical Condition scale in both males and females, it was found

that it was very similar to the Physical Condition component of the original validation. Especially in females, only the item Biceps did not load on it; the rest of the items were similar to the original validation. However, in this study we labelled this scale Fitness/Physical Condition. This scale continued to contain body parts and functions that assess physical fitness, exercise, strength, and agility, and we think that the addition of the word Fitness better represents the items of the scale.

Finally, the Upper Body Strength subscale of the BES in males also remained very similar to the corresponding component of the original validation. As in the original BES, this subscale consisted of the items: muscular strength, biceps, appearance of shoulders, arms, chest. However, the items Body Build, Physical Coordination, Sex Drive (which loaded on Upper Body Strength in the original BES) did not load on this subscale in the present study. Moreover, the item Physical Stamina (which loads on this subscale in our study) loaded on the Physical Condition subscale in the original validation.

The Sexuality emerged as a new component of body esteem and consisted of three items (sex drive, sex activities, and sex organs). These items loaded on Sexual Attractiveness in the original validation of the BES (in females) and on Physical Attractiveness and on Upper Body Strength (in males). As a result, it appears that the addition of this component could provide richer data regarding sexuality of men and women (Frost, 2013).

In the original validation, the three aspects of males' body esteem were more highly intercorrelated than those of females, indicating a greater degree of body esteem differentiation for females than for males (Franzoi & Shields, 1984). Similar results were found in this study.

Finally, age and BMI significantly affected the BES scores, confirming Hypothesis 4. Similar results about the effect of BMI on body esteem were presented by Frost (2013). However, the effect sizes in our study were in the main small, which suggests that the differences found were not so noticeable.

Strengths and limitations of the study

The strengths of this research included the large community sample ($N = 2,162$), which was representative of the Greek population as to place of residence. This sample is possibly the largest that has ever been recruited to examine the factor structure and psychometric properties of the BES in a Western country. However, the snowball-sampling technique that was used potentially introduces bias because it reduces the likelihood that a sample will represent a good cross-section from a population (Heckathorn, 1997; Swami & Charro-Premuzic, 2008). Another strength

of the present study is that the construct validity of BES was tested with four additional scales. Further, in contrast to the original validation of BES, this study evaluated the test-retest reliability of the scale and examined its relationship to age groups and BMI categories. As for the limitations of the study, the fact that the mean age was 33 years and 65 % were women shows that younger people and women were overrepresented in the sample, compared to older people and men.

Conclusion

The present study showed that the Greek version of the BES consists of four subscales for men and four for women and it is reliable and valid. It is easy to administer and can be used as a diagnostic tool for research and clinical purposes in men and women. Its availability will make easier the systematic investigation of body esteem in the Greek population. Additional psychometric investigation of the BES will be very useful and particularly important is the further investigation of possible cross-cultural differences in body esteem. This highlights the necessity for cultural adaptation of BES in many other languages and countries, given the history of its use within social as well as clinical psychology.

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