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PSYCHOMETRIC PROPERTIES OF THE GREEK VERSION OF THE BODY APPRECIATION SCALE

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***Abstract*:** This study examined the factor structure and psychometric properties of the Greek version of the Body Appreciation Scale (BAS) in a community sample in Greece. Participants were 2313 people between 18-76 years old (*M*age = 31, *SD* = 11,69). There were 675 men (29,2%) and 1638 women (70,8%). The results supported a unidimensional structure for the Greek BAS with adequate internal consistency, test-retest reliability and construct validity. The BAS was positively correlated with Rosenberg Self-Esteem Scale and negatively correlated with the Body Mass Index, Spielberger State Trait Anxiety Inventory, Experience of Shame Scale, Other as Shamers Scale, and Obsessive-Compulsive Inventory-Revised. The BAS is suitable for research use both in men and women samples in Greece as a way of assessing the positive body image.

***Key words*:** Body Appreciation Scale, Positive body image

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INTRODUCTION

Body is the the whole physical structure that forms a person or animal (Cambridge Dictionary, 2016). Body image is the subjective "picture" that people have of their own body, regardless of how their body actually looks (Schilder, 2013). It is a multidimensional concept which reflects how people see, think, feel and act towards their bodies (Cash & Pruzinsky, 2002). These perceptions, thoughts, feelings, and behaviors can be positive or negative, and affect many aspects of psychosocial well-being and quality of life (Cash & Smolak, 2011).

There are four dimensions of body image: perception, cognition, affect, and behavior (Banfield & McCabe, 2002). Perceptual body image is defined as the accuracy of individuals' judgment of their size, shape, and weight relative to their actual proportions. The affective dimension can be conceptualized as the feelings individuals have toward the appearance of their body 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 someone engages as a result of his/her body image encompass and could be argued that it is a manifestation or a consequence of the other dimensions (Stice, Nemeroff, & Shaw, 1996).

It is useful to view body image as a continuum, ranging from no body image disturbance to extreme body image disturbance. Unfortunately, most people experience mild to moderate body image dissatisfaction (Thompson, Heinberg, Altabe & Tantleff-Dunn, 1999). Negative body image is expressed in one or more of the components of body image and is often characterized by dissatisfaction with appearance and engaging in behaviors such as frequent self-weighing or mirror checking, or avoidance of public situations (Menzel, Krawczyk, & Thompson, 2011). Recently, however, it has been argued that such a negative focus has restricted a holistic understanding of body image, as well as treatment and prevention options (Tylka, 2011). Negative body image can result in adverse psychosocial consequences for both sexes, including disordered eating, depression, social anxiety, impaired sexual functioning, poor self-esteem and diminished quality of life (Cash, Morrow, Hrabosky, & Perry , 2004).

Historically, research on body image dissatisfaction has portrayed it as an issue that exclusively or predominantly affects women (Brennan, Lalonde, & Bain, 2010). Several studies indicate that women are more likely than men to engage in both safe and dangerous food restriction strategies, to show a discrepancy between their real and ideal weight, to have actively dieted during the past 6 months, to participate in organized weight loss programs and to prefer to be thinner (Brodie, Slade, & Riley, 1991; Jeffrey, Adlis, & Forster, 1991; Klesges, Mizes, & Klesges, 1987; Rozin & Fallon, 1988).

However, although compared to women, men's body satisfaction appears high, research indicates that some men are on a diet, are aware of cultural norms of male attractiveness, are concerned with physical attractiveness, upper body strength, and physical condition. Furthermore, they report a preferred size which is different than their perceived shape (Brodie et al., 1991; Jeffrey et al., 1991; Klesges et al., 1987; Rozin & Fallon, 1988).

It has been argued that mass media is a key factor in the development of body image dissatisfaction (Morrison, Kalin, & Morrison, 2004; Morrison, Morrison, & Hopkins, 2003). According to sociocultural theory, the more often an individual is exposed to mass media containing idealistic representations of the body, the less favorable an individual's body image evaluations will become. The sociocultural theory, however, does not explain why some people are affected by media messages, whereas others are not (Morrison et al., 2004).

On the other hand, research on positive, adaptive or healthy body image is essential to the future of the field (Cash & Smolak, 2011). Although much of the body image literature has traditionally stemmed from understanding negative body image experiences, the positive body image literature is growing (Bailey, Cline, & Gammage, 2016). A decade ago, research on positive body image as a unique construct was relatively non existent but now this area is flourishing, and a growing number of studies across different age groups and geographical locations have been conducted (Tylka & Wood-Barcalow, 2015).

Positive body image is distinct from an absence of body dissatisfaction (Tylka, 2011; Tylka & Wood-Barcalow, 2015; Wood-Barcalow, Tylka, & Augustus-Horvath, 2010). Avalos, Tylka, and Woood-Barcalow (2005) identified four qualities suggestive of positive body image: favorable opinions of the body, body acceptance, respecting the body by attending to its needs and engaging in healthy behaviors, and protecting the body by rejecting unrealistic ideal body images. Positive body image is (a) distinct from negative body image; (b) multifaceted (including body appreciation, body acceptance/love, conceptualizing beauty broadly, adaptive investment in appearance, inner positivity, interpreting information in a body-protective manner); (c) holistic; (d) stable and malleable; (e) protective; (f) linked to self- perceived body acceptance by others; and (g) shaped by social identities (Tylka & Wood-Barcalow, 2015).

One component of positive body image is body appreciation, which is considered to be a factor that tends to prevent negative for mental health results. It is also connected with positive characteristics, like healthy sexual functionality or the attitude of rejection of plastic surgeries (Satinsky, Reece, Dennis, Sanders, & Bardzell, 2012). It consists of four aspects that are considered to be the elements of positive body image. These are: 1) the favorable perceptions of one's body, 2) the acceptance of the body regardless its shape, 3) the respect of the body's needs through the adoption

of healthy habits, and 4) the body's protection by rejecting the non-realistic image standards which are forwarded by mass media (Avalos et al., 2005).

Until recently, however, there was not any reliable and valid measurement tool for the examination of positive body image. This dearth led to the development of the Body Appreciation Scale (BAS) consisting of 13 items (Avalos et al., 2005). The BAS measures positive opinions and acceptance of one's body, provision of attention to bodily needs, and engagement in a style of cognitive processing that protects against potentially harmful body-image related messages (Avalos et al., 2005). It is one of the most widely used measures of positive body image and has now been used in a number of studies in Western and non-Western populations. It has good construct validity and high internal consistency (Wood-Barcalow & Tylka, 2015) and its factor structure comprises a single dimension (Avalos et al., 2005).

The BAS has been culturally adapted in German (Swami, Stieger, Haubner, & Voracek, 2008) and Spanish (Lobera & Rios, 2011) language and has been used in Indonesian (Swami & Jaafar, 2012), Iranian (Atari, Akbari-Zardkhaneh, Mohammadi, & Soufiabadi, 2015), Malaysian (Swami & Chamorro-Premuzic, 2008), Brazilian (Swami et al., 2011), Korean (Swami, Hwang, & Jung, 2012), Zimbabwean (Swami, Mada, & Tovee, 2012), Turkish (Bakalim & Tasdelen-Karçkay, 2016) and Polish (Taylor, Szpakowska, & Swami, 2013) samples and in a sample in Hong Kong (Ng, Barron, & Swami, 2015). Although some studies support a one-dimensional structure of the BAS (e.g., Swami et al., 2008), studies conducted in other national contexts support a two-dimensional structure (e.g., Atari et al., 2015; Ng et al., 2015).

The aim of this study was to translate and culturally adapt the Body Appreciation Scale to the Greek population. More specifically, the objectives were to examine the factor structure of the questionnaire and its other psychometric properties (internal consistency, test-retest reliability, construct validity). To the best of the authors' knowledge there are not any other questionnaires that evaluate positive body image in the Greek language. Consequently, the Greek version of the Body Appreciation Scale overcomes this dearth and can be administered for clinical and research use.

Based on the theoretical principles of positive body image theory, on the original validation study of the BAS and on its cultural adaptation in other languages, it was hypothesized that the BAS consists of one factor (Hypothesis 1). Moreover, it was hypothesized that the BAS is positively associated with self-esteem and negatively with obsessive-compulsive symptoms, state and trait anxiety and internal and external shame. This examination was used in order to evaluate the convergent and discriminant validity of the Greek version of the BAS (Hypothesis 2). It was also hypothesized that men would have significantly higher scores of body appreciation compared to women, as it was found in previous research (Hypothesis 3).

METHOD

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 has Greek as mother tongue in order for the final agreed version to be extracted.

It was also decided that one of the items of the original scale (BAS 12: I do not allow unrealistically thin images of women presented in the media to affect my attitudes towards my body/I do not allow unrealistically muscular images of men presented in media to affect my attitudes towards my body) would be used in a positive direction in order to be more easily understood. 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 for their interpretation of the questions, 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 conducted as well.

Design

A cross-sectional study was conducted. The duration of the study was 17 months. The questionnaires were administered to many prefectures of Greece in order to ensure

greater representativeness of the sample. The participants were selected based on the following eligibility criteria:

1) male-female persons with sufficient ability to understand and respond to the questionnaire.

2) age > 18 years

3) residents of Greece

4) ability to speak-understand the Greek language

5) persons wishing to participate voluntarily in the research.

Persons who did not wish to participate voluntarily in the research and those who had severe psychiatric symptoms and were unable to respond to the questions were excluded from the study.

A snowball recruitment procedure was used in order to obtain a representative sample. The questionnaire consisted of two parts: the first part included sociodemographic data. Participants reported their height (in meters) and weight (in kilograms) for the calculation of their BMI. The second part included the following questionnaires: 1) Obsessive Compulsive Inventory-Revised (OCI-R), 2) Body Appreciation Scale (BAS), 3) Other as Shamer (OAS), 4) Spielberger State-Trait Anxiety Inventory (STAI), 5) Experience of Shame Scale (ESS), 6) Rosenberg Self-Esteem Scale (RSES). OCI-R, OAS, STAI, and ESS were used to examine the discriminant validity of the BAS, while the Rosenberg Self-Esteem Scale (RSES) to examine the convergent validity. These questionnaires have been translated and culturally adapted in Greek population by several scholars.

The participants were informed in detail about the purpose of the study and were given assurances of anonymity and confidentiality of the information. 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 BAS scores was examined by a new study. They completed the BAS three weeks later under the same conditions of the first study. The same period of time was used in the original validation of the BAS by Avalos et. al. (2005).

Participants

The sample comprised 2313 persons who represented the Greek general population from all over the country. The mean age of the participants was 31 years (M = 31,24, SD = 11,69; Min = 18, Max = 76 years old). There were 675 men (29,2%) and 1638 women (70,8%). Concerning the educational level most of the participants were higher education graduates (university/technical institutions) (41,4%). One fourth of

the sample were higher education students (25.1%) and Master of Science (M.Sc.) or Master of Arts (M.A) holders (14,4%). High school graduates represented 16% of the sample, secondary school graduates (2,1%) and primary school graduates (1%). The majority of the participants were residents of Athens and other areas of Attica (35,6%). Other places of residence were: Macedonia (19%), Central Greece (Greek: Sterea Ellada) (15%), Epirus (7,1%), Peloponnese (5,7%), Thessaly (4,5%), Crete (3,9%), Aegean Islands (4,9%), Thrace (2,3%), Ionian Islands (2%). The majority of participants self-reported as being Christian orthodox (76%).

The sample used for the testing of the test-retest reliability consisted of 150 persons randomly selected, aged between 18-61 (*M*age = 38,83, *SD* = 12,96). The 43,3% of the sample were men and the 56,7% were women. Concerning the educational level most of the participants were high school graduates (36,7%), higher education graduates (university/technical institutions) (27,8%) and higher education students (22,2 %). A percentage of 5,6 % were Master of Science (M.Sc.) or Master of Arts (M.A) holders.

Measures

Body Mass Index

The weight and height of the participants were recorded and their BMI scores (weight in Kgs/ square of the body height in meters) were calculated. Then they were classified in categories according to their BMI score: < 18,5 = Underweight; 18,5-24,9 = Normal weight; 25-29,9 = Overweight, >30 = Obese.

Body Appreciation Scale

The Body Appreciation Scale (BAS; Avalos et al., 2005) evaluates the positive body image. It measures four aspects of positive body image: favorable opinions of one's own body, acceptance of the body in spite of its imperfections, respect for the body particularly in relation to its needs, and protection of the body, including rejection of unrealistic ideals (Avalos et al., 2005). 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 (see above Translation) of the scale is gender-specific and there is a different question for men and women (for women: I do not allow unrealistically thin images of women presented in the media to affect my attitudes toward my body; for men: I do not allow unrealistically muscular images of men presented in the media to affect my attitudes toward my body).

Obsessive Compulsive Inventory-Revised

The Obsessive Compulsive Inventory-Revised (OCI-R; Foa et al., 2002) is especially designed to measure the intensity and the magnitude of variety of symptoms that characterize the Obsessive-Compulsive Disorder (OCD). The questionnaire examines the frequency of symptoms and the degree of anguish or anxiety they caused to the person during the last month (Foa et al., 2002). It consists of 18 items, which are divided by three into six subscales: Washing (e.g., "I wash my hands more often and longer than necessary"); Checking (e.g., "I check things more often than necessary"); Mental Neutralizing (e.g., "I frequently get nasty thoughts and have difficulty in getting rid of them"); Ordering (e.g., "I need things to be arranged in a particular order"); Hoarding (e.g., "I collect things I don't need"), and Obsession (e.g., "I feel I have to repeat certain numbers"). Each item is scored on a 5-point scale (0 - 4 points) and the total score is the sum of the scores on all items. Moreover, there is a score for each subscale. According to the authors (Foa et al., 2002) people with OCD typically have a score of 21 points and higher.

The OCI-R was shown to have excellent psychometric properties. In original validation internal consistency was high for the total score and for each subscale (,83 - ,90). Test-retest reliability was also moderate to high for the total score and all subscales (,57 - ,91). In terms of validity, the OCI-R was moderately correlated with the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989), r = ,53, Global Obsessive-Compulsive Scale (Goodman & Price, 1992), r = ,66, and Hamilton Rating Scale for Depression (Hamilton, 1960), r = ,58, scores and strongly correlated with the Maudsley Obsessive-Compulsive Inventory (Hodgson & Rachman,1977), r = ,85, and the Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979), r = ,70, scores. These findings confirm the satisfactory convergent and discriminant validity of the OCI-R (Foa et al., 2002). The Greek translation of the questionnaire was conducted by one of this article authors (Robert Mellon). Its psychometric properties have not been examined in Greek population. In this study Cronbach's α was ,92.

Other as Shamer Scale

The Other as Shamer Scale (OAS, Goss, Gilbert, & Allan, 1994) was created to investigate the individual's perceptions of how others see and judge him/her. It measures external shame. The OAS has been used in various studies related to feelings of shame (Gilbert, Allan, & Goss, 1996). The OAS 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 Cronbach's α for this scale was ,92 (Goss et al., 1994). Cronbach's α for the Greek version of OAS was ,87 (Gouva et al., 2016). In the present study Cronbach's α was ,95.

State-Trait Anxiety Inventory

State-Trait Anxiety Inventory (STAI) was constructed by Spielberger (1983). It consists of 40 items, divided in two subscales: a) the emotional state at the time of the survey (state anxiety) (e.g., "I feel calm") and b) the emotional state in general (anxiety as a personality trait) (e.g., "I worry too much over something that really does not matter"). The items of the questionnaire are rated on a 4-point scale (1 = Not at all, 4 = Very much). Apart from the score in each subscale there is a general index by adding all of the items. In its Greek version Cronbach's α was ,93 for the State and ,92 for the Trait subscale. The Pearson correlation coefficient between State and Trait subscales was ,79. Both subscales correlated fairly with the anxiety subscale of the Symptoms Rating Scale for Depression and Anxiety (SRSDA) (Bech, 1993). Test-retest reliability was excellent, with *r* being between ,75 and ,98 for individual items and equal to ,96 for State and ,98 for Trait (Fountoulakis et al., 2006). In the present study Cronbach's α was ,70 for the total items and ,69 for the State and ,67 for the Trait subscale.

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). The items are divided in 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?"). In addition, the items sum to a total score, with higher scores indicating more frequent and/or more intense experiences of shame. The questionnaire 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 (Tangney & Dearing, 2002). The total scale is reported to have a total 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 for the Greek population (Cronbach's α = ,93) (Gouva, Kaltsouda, et al., 2016). 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 of adults by measuring both positive and negative feelings about the self. It 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 (strongly agree-strongly disagree). The scale has been translated and adapted to various languages and is extensively used in cross-cultural studies in up to 53 different nations (Schmitt & Allik, 2005). It is uni-dimensional and reliable and valid quantitative tool for self-esteem assessment (Blascovich & Tomaka, 1993). Cronbach's α in the original validation ranged from ,77 to ,88 and test-retest reliability ranged from ,82 to ,85. The value of criterion validity was ,55. The scale was also correlated with anxiety, r = -,64, depression, r = -,54, and anomie, r = -,43, indicating a satisfactory construct validity (Rosenberg, 1965). In its Greek version the reliability and validity were satisfactory as Cronbach's α was ,80 and the scale had positive statistical significant relationship with stress levels, health locus of control and personality types (Galanou, Galanakis, Alexopoulos, & Darviri, 2014). In the present study Cronbach's α was ,70.

Data analysis

The statistical program SPSS 21.0 (Statistical Package for Social Sciences) was used for the analysis of data. To examine the normality of continuous variables the Kolmogorov-Smirnov test or the Shapiro-Wilk test in case of small samples (< 50) was used. Statistically significant differences between two variables were checked by *t*-test for independent samples, while statistically significant differences between more than two groups were checked by ANOVA. In cases it was considered necessary to make all possible paired comparisons between variables, an additional control of multiple comparisons was computed by the Bonferroni, Tukey, or Scheffe methods.

Confirmatory Factor Analysis (CFA) was carried out in order to examine the factor structure of the BAS by using the program AMOS (Analysis of Moment Structures; Arbuckle, 2012). CFA is the preferred method (e.g., as opposed to exploratory factor analysis) when there is a sufficient body of theory, empirical research, or both that postulates an apriori relationship pattern (Schumacker &

Lomax, 1996). A single-factor model where all items loaded onto a single latent variable was assessed to examine the factorial validity of the model proposed by Avalos et al. (2005; see Figure 1). Further, a two-dimensional, 13-item model consisting of General Body Appreciation and Body Image Investment factors was assessed, as this model has been proposed in a number of other studies (Swami et al., 2011; Swami & Jaafar, 2012; Swami, Mada, et al., 2012).

The suitability of the CFA solution was evaluated using the following model fit indices: ratio of the chi-square value to the degrees of freedom index, CFI, RMSEA, ECVI and AIC. A smaller than 3 χ^2/df ratio is considered acceptable. The CFI produces values between 0 - 1. Values > ,900 are indicative of good fit. A good fit is also indicated when RMSEA value is ,10 or lower (Beauducel & Wittmann, 2005). The ECVI has become quite popular in structural equation modeling (SEM) and latent variable modeling applications, particularly for the purpose of examining competing models (Raykov & Marcoulides, 2006) and while comparing different models, the smaller values of ECVI represent a better fit (Byrne, 2001). Moreover, when comparing models, the Akaike information criterion (AIC) is suitable for comparing factor structures (in our case the one- and two-factor models), with lower AIC value being preferred (Hair, Anderson, Tatham, & Black, 1998).

The statistical significance (*p*-value) was set to 5%, so the Confidence Interval (CI) was 95%.

RESULTS

The internal consistency of the 13 items of the BAS was analyzed by means of Cronbach's α coefficient. Its value was ,87. Consequently the internal consistency of the questionnaire was very satisfactory.

Factor structure of the BAS

CFA was conducted in order to determine whether the BAS items confirmed its hypothesized one-factor structure. Two models were examined: the one-factor model found in the original validation by Avalos et al. (2005) and the two-factor model found in other studies (Swami et al., 2011; Swami & Jaafar, 2012; Swami, Mada, et al., 2012). First, the one-factor model was examined. The fit indices were worse than the accepted: χ^2 (df = 66, N = 2313) = 274,65, p = ,001; χ^2/df = 4,16; CFI = ,834; RMSEA = ,90; ECVI = 1,017; AIC = 2350,653. The one-factor model is presented in Figure 1.

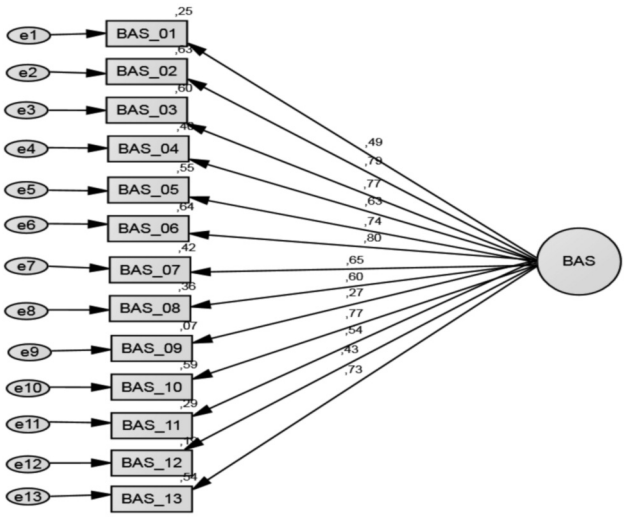

Figure 1. Confirmatory factor analysis for the one-dimensional model of the Body Appreciation Scale (Model 1).

Next, the two-factor model was examined. Factor I (GBA = General Body Appreciation) was loaded by items 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, and 13. Factor II (BII = Body Image Investment) was loaded by items 8, 9, and 12 (Swami et al., 2011; Swami & Jaafar, 2012; Swami, Mada, et al., 2012). This model did not fit the data and the fit indices were worse than those of the one-factor model: $\chi^2(76, N = 2313) = 12437{,}86$, $p = .001$; $\chi^2/df = 163{,}66$; CFI = ,069; RMSEA = ,265; ECVI = 5,404; AIC = 12493,865. The ratio of the chi-square to the degrees of freedom for Model 1 was 4.16, indicating an acceptable fit (Beauducel & Wittmann, 2005). The CFI value for the one-factor model was higher than the two-factor model although it is not satisfactory. The RMSEA value for the one-factor model indicated a good fit and the ECVI and AIC values for the one-factor model are lower than for the two-factor model. Based on these, it is suggested that the one-factor model is preferable although not fully satisfactory.

The factor loadings for the one-factor model are shown in Table 1. The correlation matrix of all the 13 items of the BAS is shown in Table 2.

Table 1. Factor loadings (in bold) and correlation matrix for the one-factor model of the BAS

	BAS Total	BAS 01	BAS 02	BAS 03	BAS 04	BAS 05	BAS 06	BAS 07	BAS 08	BAS 09	BAS 10	BAS 11	BAS 12	BAS 13
BAS 01	**,531**	1												
BAS 02	**,812**	,391**	1											
BAS 03	**,803**	,366**	,775**	1										
BAS 04	**,708**	,247**	,583**	,567**	1									
BAS 05	**,685**	,281**	,524**	,547**	,468**	1								
BAS 06	**,833**	,376**	,723**	,714**	,574**	,583**	1							
BAS 07	**,624**	,339**	,429**	,422**	,332**	,397**	,516**	1						
BAS 08	**,519**	,155**	,317**	,286**	,339**	,311**	,342**	,235**	1					
BAS 09	**,375**	,065**	,222**	,230**	,203**	,188**	,223**	,115**	,265**	1				
BAS 10	**,805**	,319**	,682**	,690**	,550**	,588**	,710**	,439**	,354**	,218**	1			
BAS 11	**,433**	,222**	,283**	,289**	,170**	,239**	,322**	,449**	,091**	-,018	,324**	1		
BAS 12	**-,353**	-,073**	-,230**	-,207**	-,220**	-,095**	-,199**	-,062**	-,197**	-,147**	-,197**	,059**	1	
BAS 13	**,766**	,307**	,586**	,574**	,582**	,532**	,626**	,392**	,420**	,219**	,642**	,206**	-,276**	1
BAS Total	**1**	,531**	,812**	,803**	,708**	,685**	,833**	,624**	,519**	,375**	,805**	,433**	-,353**	,766**

** Correlation is significant at the ,01 level (2-tailed).

Table 2. Correlations between BAS, Body Mass Index, Obsessive Compulsive Inventory-R, Other as Shamer, State Trait Anxiety Inventory, Experience of Shame Scale, Rosenberg Self-Esteem Scale

	BAS	BMI	OCI-R	OAS	STAI	ESS	RSES
BAS	1						
BMI	-,20**	1					
OCI-R	-,15**	-,04	1				
OAS	-,32**	-,01	,60**	1			
STAI	-,32**	-,06**	,35**	,38**	1		
ESS	-,51**	-,03	,23**	,48**	,52**	1	
RSES	,54**	-,02	-,22**	-,44**	-,42**	-,57**	1

** Correlation is significant at the ,01 level (2-tailed)

Abbreviations: BMI: Body Mass Index; OCI-R: Obsessive-Compulsive Inventory-Revised; OAS: Other as Shamer; STAI: State Trait Anxiety Inventory; ESS: Experience of Shame Scale; RSES: Rosenberg Self-Esteem Scale.

Test-retest reliability

A positive and significant correlation between the two BAS scores, $r = ,88$, $p < ,01$, was found in the test-retest sample. The paired samples *t*-test revealed no significant differences between the two testing points. Cronbach's α coefficient at the first administration was ,91, and at the second, ,89. These findings suggest that the test-retest reliability for the Greek version of the BAS was good.

Construct validity

Correlations between the BAS and the OCI-R, Other as Shamer (OAS), Spielberger State-Trait Anxiety Inventory (STAI), Experience of Shame Scale (ESS) and the Rosenberg Self-Esteem Scale are presented in Table 2. There were significant negative correlations between BAS and OAS, r = -,32, p < ,01; BAS and STAI, r = -,10, p < ,01; BAS and ESS, r = -,51, p < ,01; and BAS and OCI-R, r = -,15, p < ,01. The correlation between BAS and the Rosenberg Self-Esteem Scale was positive and significant, r = ,54, p < ,01.

There was also a significant negative correlation between BAS and BMI, r = -,197, p < ,01 (see Table 2). More specifically, there was a significant negative correlation between BAS and BMI in the "obese" and the "normal weight" subgroup and a positive and significant correlation in the "underweight" subgroup (see Table 3). These results suggest that the Greek version of the BAS has satisfactory construct (convergent and discriminant) validity.

Table 3. Correlation between BAS and BMI according to BMI subgroups

	BAS	
BMI of BMI subgroups	*N*	*r*
BMI of underweight subgroup	122	,333**
BMI of normal weight subgroup	1376	-,074**
BMI of overweight subgroup	512	-,071
BMI of obese subgroup	197	-,192**

** Correlation is significant at the ,01 level (2-tailed)

Gender differences

The effect of gender on BAS score was statistically significant, $t(2237) = 18{,}757$, p < ,001. The mean score of men (mean= 50,21, SD = 7,87) was significantly higher than the score of women (M = 47,82, SD = 8,82). Men have a more positive body image than women.

DISCUSSION

This study was conducted in order to examine the psychometric properties of the Greek version of the Body Appreciation Scale (BAS). The basic finding was that the BAS consists of one factor and its reliability and validity are satisfactory. CFA

confirmed the one-factor structure of the original version (Avalos et al., 2005). This finding is similar to the German (Swami et al., 2008) and Spanish version (Lobera & Rios, 2011) of the BAS. However, a two-factor structure was found in other populations with Indonesian (Swami & Jaafar, 2012), Malaysian (Swami & Chamorro-Premuzic, 2008), Brazilian (Swami et al., 2011), Korean samples (Swami, Hwang, et al., 2012) and in a sample in Hong Kong (Ng et al., 2015). The BAS in these populations consists of two factors, only one of which appears to tap the construct of body appreciation. These factors are called "General Body Appreciation" and "Body Image Investment". Consequently, body appreciation does not share the same conceptual and factorial structure across different cultures (Ng et al., 2015).

The analysis of reliability showed that the questionnaire has high degree of internal consistency and test-retest reliability. Furthermore, BAS has satisfactory construct (convergent and discriminant) validity. Specifically, it is positively correlated to self-esteem and the same result was found in the original study (Avalos et al., 2005). This finding indicates that self-esteem is likely a major factor contributing to a positive body image (Lobera & Rios, 2011). On the other hand, the correlation with state-trait anxiety, obsessive compulsive symptoms and shame (measured by Experience of Shame Scale and Other as Shamer Scale) was negative and significant, as it was expected.

The correlation between BAS and BMI, which was not evaluated in the original study by Avalos et al. (2005), was negative and significant. More specifically, there was a negative and significant correlation between BAS and BMI in "obese" and "normal weight" subgroup and a positive and significant correlation in "underweight" subgroup. It suggests that body appreciation lessens as weight increases. This result is consistent with the findings of other studies in German (Swami et al., 2008), Spanish (Lobera & Rios, 2011) and Malaysian (Swami & Chamorro-Premuzic, 2008) samples.

Men have a more positive body appreciation than women. The same result was found in German (Swami et al., 2008), in Spanish (Lobera & Rios, 2011) and in Indonesian (Swami & Jaafar, 2012) samples. This finding may reflect reports of greater body image dissatisfaction among women than men (Swami et al., 2008). It may also reflect the greater pressure on women than on men by the media about the ideal body and it may mean that women are more vulnerable than men to this pressure. Contrary to these findings, Bakalim and Tasdelen-Karçkay (2016) found that there was no difference between women and men in body appreciation among university students in Turkey.

In contrast with the original validation by Avalos et al. (2005), this study evaluated the BAS psychometric properties both in men and women and examined the correlation between BAS and BMI and BMI levels. Another advantage is that five additional scales were used to investigate the construct validity of the BAS and many

correlations were evaluated. The advantages of this research also included the large community sample ($N = 2313$), which is representative of the Greek population as to the place of residence. This sample is possibly the largest ever recruited to examine the factor structure and psychometric properties of the BAS in a Western country. Correspondingly large sample ($N = 2403$) was used by Ng et al. (2015) in Hong Kong.

As for the limitations of the study, the snowball sampling technique that was used, although is able to generate large sample sizes, it potentially introduces bias because it increases the likelihood that a sample is not representative of the total population (Heckathorn, 1997; Swami & Chamorro-Premuzic, 2008). Moreover, the fact that the mean age was 31 years and 70,8% were women shows that younger people and women were overrepresented in the sample compared to older people and men. Another limitation is that no body image-specific questionnaire was used in order to draw more information about construct validity.

In conclusion, the present study showed a unidimensional factor structure of the BAS in a Greek community sample, although the fit indices of CFA were not fully satisfactory. The Greek version of the BAS is both reliable and valid for the investigation of positive body image and has satisfactory psychometric properties. Moreover, it is easy to use and was considered as highly acceptable by the participants because it is brief, comprehensible and easy to complete. Consequently, it is suitable for research use both in men and women samples and it could be used to identify which variables contribute to positive body image.

Additional psychometric and statistical investigation of the BAS will be very useful. Future studies must examine further the sociodemographic variables affecting positive body image or being affected by it. Particularly important is to further investigate the gender differences in positive body image found in this study and the possible cross-cultural differences in body appreciation.

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