Brief research report

Factor structure and psychometric properties of the Body Appreciation Scale-2 in Iran

Mohammad Atari *

Department of Psychology, University of Tehran, Tehran, Iran

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ABSTRACT

Tylka and Wood-Barcalow (2015b) developed the Body Appreciation Scale-2 (BAS-2) as a psychometrically robust measure that is conceptually consistent with recent findings on positive body image. The present study aimed to examine the factor structure and psychometric properties of the BAS-2 in Iran. Participants were 568 men and 525 women from seven universities in Tehran, Iran. Two exploratory factor analyses were performed on data from women and men separately. Similar to the original English version, the Persian BAS-2 had a one-factor solution. Persian BAS-2 scores had satisfactory convergent validity (indexed by significantly correlations with self-esteem and life satisfaction) and internal consistency. Men had significantly higher scores on BAS-2 compared to women. The present study suggests that the Persian BAS-2 has adequate psychometric properties to assess body appreciation.

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Introduction

Scholars who work on body image are increasingly shifting their attention from pathological to positive aspects of body image (Tylka & Wood-Barcalow, 2015a). One component of positive body image is body appreciation, which was operationalized through the development of the Body Appreciation Scale (BAS; Avalos, Tylka, & Wood-Barcalow, 2005). The BAS is one of the most widely used measures of positive body image and consists of 13 items with good construct validity and high internal consistency (Webb, Wood-Barcalow, & Tylka, 2015).

While the original BAS is a psychometrically robust measure in some national contexts (Tylka, 2013), the available evidence suggests that the scale has some limitations in terms of its cross-cultural factorial equivalence. While its one-dimensional has been replicated with samples from Turkey (Swami, Özgen, Gökçen, & Petrides, 2015), Spain (Jáuregui Lobera & Bolaños Rios, 2011), and Austria (Swami, Stieger, Haubner, & Voracek, 2008), multi-dimensional factor structures have been reported with samples in Brazil (Swami et al., 2011), Hong Kong (Ng, Barron, & Swami, 2015), Indonesia (Swami & Jaafar, 2012), Iran (Atari, Akbari-Zardkhaneh, Mohammadi, & Soufiabadi, 2015), Malaysia (Swami & Chamorro-Premuzic, 2008), Poland (Taylor, Szpakowska, & Swami, 2013),

South Korea (Swami, Hwang, & Jung, 2012), and Zimbabwe (Swami, Mada, & Tovée, 2012). Due to this lack of cross-cultural equivalence, comparing scores of BAS across cultures is methodologically problematic.

In order to address the above-mentioned limitations and update the content in line with recent findings on positive body image, Tylka and Wood-Barcalow (2015b) revised the BAS. Of note, the conceptual definition of body appreciation remained unchanged in this revision (the BAS-2). One sex-specific item in the BAS was deleted in the revised version of the scale and items with low loadings in factor analytic studies were discarded. Retaining 5 items from the BAS and devising 5 new items, Tylka and Wood-Barcalow (2015b) reported that the BAS-2 was psychometrically sound in community and college samples of adults from the United States, including in terms of its one-dimensional factorial validity, internal consistency, temporal stability, and convergent and divergent validity. Specifically, internal consistency coefficient (Cronbach's α) of the BAS-2 was high across community and college samples in the United States (.93 < αs < .97; Tylka & Wood-Barcalow, 2015b).

Similar to the BAS, it is crucial to investigate the psychometric properties of the BAS-2 across different cultures and languages. Aside from the parent study, the BAS-2 has only been subjected to psychometric evaluation in Hong Kong (Swami & Ng, 2015). These authors reported that the BAS-2 showed good psychometric properties among university students in Hong Kong. Specifically, the one-dimensional structure of the BAS-2 was supported and internal consistency coefficient (Cronbach's α) of the Cantonese BAS-2 was high among women (α = .90) and men (α = .91). Furthermore, convergent validity of BAS-2 scores was supported through

* Correspondence to: Department of Psychology, Faculty of Psychology and Educational Sciences, University of Tehran, Jalal Ale-Ahmad Bridge, Guisha, P.O. Box 14155-6456, Tehran, Iran. Tel.: +98 912 6363263.
E-mail addresses: Atari@ut.ac.ir, Mohammad.attari@yahoo.com

significant relationships with self-esteem, life satisfaction, and actual-ideal weight discrepancy (in women). Finally, men had significantly higher body appreciation scores than women in Hong Kong, although the effect size was small (Cohen's $d = 0.19$).

The present study aimed to examine the factor structure and psychometric properties of the BAS-2 in Iran. Previously, Atari et al. (2015) suggested a two-dimensional factor structure for the Persian version of the BAS, but no previous study has examined the psychometric properties of a Persian translation of the BAS-2. Iran provides a useful population for investigation of the factor structure and psychometric properties of the BAS-2 in a non-Western culture which is being increasingly influenced by Westernized mass media. Convergent validity, factor structure, and internal consistency of the Persian version of the BAS-2 were evaluated. It was hypothesized that BAS-2 score would be positively correlated with self-esteem and life satisfaction, and negatively correlated with body mass index (BMI). Moreover, sex differences were evaluated and, in line with previous research, it was hypothesized that men would have significantly higher scores of body appreciation compared with women.

Method

Participants

A total of 1093 university students (568 men and 525 women) were recruited from seven universities in Tehran, Iran. Participant age ranged from 18 to 50 years ($M = 25.87$, $SD = 4.66$) and self-reported BMI ranged from 16.14 to 36.07 kg/m^2 ($M = 23.69$, $SD = 3.48$).

Measures

Body appreciation. All participants completed the 10-item Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015b). All items were rated on a 5-point Likert-type scale, ranging from 1 (*Never*) to 5 (*Always*).

Self-esteem. All participants completed the Rosenberg Self-Esteem Scale (RSES), which is a brief and widely used measure of global self-esteem (Rosenberg, 1965). It consists of 10 items that are rated on a 4-point Likert-type scale (1 = *Strongly disagree*, 4 = *Strongly agree*). Five items were reverse-coded prior to statistical analysis and an overall score was computed by averaging all 10 items. Previous work has shown that scores on the Persian version of the RSES have adequate reliability and factorial and criterion validity (Shapurian, Hojat, & Nayerahmadi, 1987). In the present study, Cronbach's α was .84 in men and .81 for women.

Life satisfaction. Participants completed the 5-item Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). All 5 items are scored on a 7-point Likert-type scale, ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Scores on the Persian version of the SWLS have shown satisfactory psychometric characteristics in college samples (Bayani, Koocheky, & Goodarzi, 2007). In the present sample, the internal consistency coefficient (Cronbach's α) for the SWLS was .73 in men and .70 in women.

Demographics. Participants were asked to report their sex, age, and highest educational qualification. Participants also self-reported their weight (in kilograms) and height (in centimeters), which were used to calculate BMI.

Procedure

Permission to use the BAS-2 was obtained from the scale developer in May of 2014. Subsequently, the ethics approval was obtained and translation and back-translation were performed following these steps: (a) two bilingual translators translated the BAS-2 into Persian, resulting in two distinct versions; (b) a third professional translator compared these versions and evaluated semantic and linguistic differences. Thereafter, a single Persian version was formed; (c) a fourth translator examined this version and compared it with the original items, suggesting a minor adjustment; (d) a bilingual psychologist and a professional translator translated this Persian version back into English; and (e) the corresponding author examined the final translation and back-translation. There was no substantial difference between the final Persian version and the original English form. Data collection took place between December 2014 and June 2015 in seven large universities in Tehran (University of Tehran, Sharif University of Technology, Shahid Beheshti University, Tarbiat Modarres University, Islamic Azad University, Shahed University, and Iran University of Medical Sciences). Potential participants were approached and invited to participate in a psychological study regarding body attitudes and physical health among university students. Upon agreement to take part, participants were given the paper-and-pencil version of the survey. Participants individually and anonymously completed the questionnaire in classroom settings. The BAS-2 was counterbalanced with other measures. Participation was on a voluntary basis and participants were not remunerated.

Statistical Analyses

The factor structure of the BAS-2 was examined using a principal-axis exploratory factor analysis (EFA) with quartimax rotation (because of the expectation of a single factor; see Swami & Ng, 2015; Tylka & Wood-Barcalow, 2015b). The EFA was conducted separately for women and men. Eigenvalues above 1.0 (The EGV1 criterion), examination of the scree plot, and parallel analysis were used as factor retention strategies in the EFA. Ten independent t-tests were used to compare BAS-2 items between men and women. Moreover, another independent-samples t-test was performed to compare the total score of BAS-2 between men and women. Pearson correlation coefficients were used to investigate associations between body appreciation, self-esteem, life satisfaction, BMI, and age.

Results

Factor Structure in the Male Subsample

The descriptive statistics of all 10 items in the male subsample are presented in Table 1. All items were examined for normality of distribution. Skewness and kurtosis for all items were lower than limits suggested by Kline (2005). The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.86 and Bartlett's test of sphericity was significant, $\chi^2(45) = 2550.95$, $p < .001$. The results of principal-axis EFA for the male subsample showed that two factors had eigenvalues greater than 1.00 (4.98 and 1.06). However, inspection of the scree plot suggested one factor and a steep cut-off to the secondary factor. The parallel analysis on 1000 sets of parallel data ($\lambda_1 = 1.27$ and $\lambda_2 = 1.20$) suggested that only one factor should be retained, explaining 49.9% of the total variance. Of note, all ten items loaded on the primary factor adequately (see Table 1). Internal consistency coefficient of the BAS-2 was acceptable in men (Cronbach's $\alpha = .89$).