Body Image 15 (2015) 68–71

Contents lists available at ScienceDirect

Body Image

journal homepage: www.elsevier.com/locate/bodyimage

Brief research report

Factor structure and psychometric properties of the Body Appreciation Scale-2 in university students in Hong Kong

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ARTICLE INFO

Article history:
Received 29 April 2015
Received in revised form 24 June 2015
Accepted 25 June 2015
Available online 15 July 2015

Keywords:
Body appreciation
Positive body image
Cultural equivalence
Factor structure
Hong Kong

ABSTRACT

Previous studies have suggested that there may not be cross-cultural equivalence in the factor structure of body appreciation. Here, we examine the conceptual equivalence of a Chinese (Cantonese) translation of the Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015b), a newly-developed measure of body appreciation. Participants were 457 women and 417 men from a university in Hong Kong. The results of exploratory factor analyses showed that, like its English version, the Chinese BAS-2 had a one-dimensional structure. Body appreciation scores had good internal consistency and were also significantly associated with respondent body mass index, self-esteem, life satisfaction, and (in women) actual-ideal weight discrepancy. Men had significantly higher scores than women, while comparisons with data from Tylka and Wood-Barcalow (2015b) suggest that cross-cultural differences are small-to-moderate at best. The present findings suggest that the BAS-2 may prove to be a useful tool for the assessment of body appreciation across cultures.

Introduction

Scholars are shifting from a focus on body image disturbances to a comprehensive account of the body image concept that includes positive body image (Tylka & Wood-Barcalow, 2015a). In particular, the concept of positive body image was informed by the development of the Body Appreciation Scale (BAS; Avalos, Tylka, & Wood-Barcalow, 2005). In its original form, the BAS measured four components of positive body image: favourable opinions of one's body, body acceptance, bodily respect, and a protective cognitive style that rejects unrealistic appearance ideals. The BAS is one of the most widely-used measures of positive body image, with strong evidence of construct validity and internal consistency (Webb, Wood-Barcalow, & Tylka, 2015). In addition, the BAS has been used to understand the outcomes of positive body image, including psychological well-being and sexual functioning (Tylka & Wood-Barcalow, 2015b).

However, one limiting issue with the BAS concerns its cross-cultural equivalence. Whereas its one-dimensional structure has been upheld in adults in North America, Austria, and Turkey (Swami, Özgen, Gökçen, & Petrides, 2015; Swami, Stieger, Haubner, & Voracek, 2008; Tylka, 2013), the same is not true in all surveyed populations. In samples from Malaysia, Indonesia, Brazil, South Korea, Poland, Zimbabwe, and Hong Kong, several items of the BAS failed to load onto a primary factor that measures body appreciation (Ng, Barron, & Swami, 2015; Swami et al., 2011; Swami & Chamorro-Premuzic, 2008; Swami, Hwang, & Jung, 2012; Swami & Jaafar, 2012; Swami, Mada, & Tovée, 2012; Taylor, Szpakowska, & Swami, 2013). This lack of factorial equivalence limits our ability to compare BAS scores across cultures.

Recently, Tylka and Wood-Barcalow (2015b) revised the BAS in line with developments in the conceptual understanding of body appreciation (but without redefining the body appreciation construct itself). They deleted one sex-specific item and several items that consistently had item-factor loadings <.50. This revised measure, the BAS-2, consists of 10 items, five of which were retained from the parent scale and five of which are newly devised. Across three studies with adults from the United States, Tylka and Wood-Barcalow (2015b) confirmed the BAS-2's one-dimensional factor structure, which was invariant across participant sex. They also provided evidence for the scale's test–retest reliability after 20 days ($rs = .90$) and construct validity including convergent, incremental, and discriminant validity.

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http://dx.doi.org/10.1016/j.bodyim.2015.06.004
1740-1445/

Table 1
Body Appreciation Scale-2 (BAS-2) standardised item-factor loadings for women and men.

BAS-2 items	Women[a]	Men[b]
1. I respect my body.	.48	.65
2. I feel good about my body.	.83	.80
3. I feel that my body has at least some good qualities.	.80	.75
4. I take a positive attitude towards my body.	.85	.86
5. I am attentive to my body's needs.	.45	.63
6. I feel love for my body.	.76	.82
7. I appreciate the different and unique characteristics of my body.	.80	.81
8. My behaviour reveals my positive attitude toward my body; for example, I hold my head high and smile.	.52	.72
9. I am comfortable in my body.	.78	.67
10. I feel like I am beautiful even if I am different from media images of attractive people (e.g., models, actresses/actors).	.72	.80

Note.
[a] Rotated component matrix.
[b] Component matrix.

As with its predecessor, it is important to establish the extent to which the BAS-2 can be considered cross-culturally invariant. As such, our aim in the present study was to examine the factor structure of the BAS-2 in a university sample in Hong Kong. Previous work has found that the original BAS has a two-dimensional factor structure in university students from Hong Kong (Ng et al., 2015). Thus, Hong Kong provides a useful reference site in which to examine the factor structure of the BAS-2, aside from being an important site in which to examine body image issues more broadly (see Ng et al., 2015, for a discussion). In addition, we also conducted a preliminary examination of the newly translated scale's construct validity by examining associations between body appreciation and body mass index (BMI) in women and BMI^2 in men, with the expectation of negative associations in both cases. We also examined associations between body appreciation and actual-ideal weight discrepancy in women, and self-esteem and life satisfaction in women and men. We hypothesised that body appreciation would be negatively correlated with weight discrepancy, and positively correlated with self-esteem and life satisfaction.

Method

Participants

Participants were 457 women and 417 men from a university in Hong Kong, who ranged in age from 16 to 54 years (M = 19.97, SD = 4.58) and in self-reported BMI from 14.87 to 32.05 kg/m^2 (M = 20.35, SD = 2.47).

Measures

Body appreciation. Participants completed the 10-item BAS-2 (Tylka & Wood-Barcalow, 2015b; see Table 1). All items were rated on a 5-point scale (1 = *Never*, 5 = *Always*).

Actual-ideal weight discrepancy. Women completed the Photographic Figure Rating Scale (PFRS; Swami, Salem, Furnham, & Tovée, 2008; Chinese translation: Ng et al., 2015), a figural rating scale that depicts 10 photographic images of women ranging from emaciated to obese. Participants were asked to select the figure that most closely matched their own body and the figure that they would most like to possess on a 10-point scale, ranging from 1 (*Figure with the smallest body size*) to 10 (*Figure with largest body size*). A measure of actual-ideal weight discrepancy was computed as the difference between absolute current and ideal ratings, so that higher scores reflect greater weight discrepancy. Previous work has shown that the PFRS has good patterns of test–retest reliability and construct validity (Swami, Stieger, et al., 2012). Men did not complete this portion of the questionnaire because no male version of the PFRS is available.

Self-esteem. We used the 10-item Rosenberg's Self-Esteem Scale (RSES; Rosenberg, 1965; Chinese translation: Kwan, Bond, & Singelis, 1997) to measure participants' overall sense of self-worth. All items were rated on a 4-point scale, ranging from 1 (*Strongly disagree*) to 4 (*Strongly agree*). Tian (2006) recommended removal of one item of the Chinese RSES, which improves internal consistency and construct validity estimates. In the present study, Cronbach's α for the resultant 9-item measure was .86 in women and .88 in men.

Life satisfaction. Participants completed the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; Chinese version: Choy & Moneta, 2002), which gauges respondents' overall assessment of the quality of their lives. All items were rated on a 5-point scale, ranging from 1 (*Strong disagree*) to 5 (*Strongly agree*). The Chinese version of this scale has evidence of good construct validity (Choy & Moneta, 2002). In the present study, Cronbach's α for this scale was .84 in women and .85 in men.

Procedure

Once ethics approval was obtained, we translated the five new items of the BAS-2 into Cantonese using the standard back-translation technique. Recruitment of participants took place between November 2014 and April 2015 in classroom settings. Potential participants were invited to take part in a study on health and well-being. Those who agreed to participate provided informed consent and completed the questionnaire individually in a classroom setting. The order of presentation of the scales above was pre-randomised for each participant. All questionnaire materials were anonymous and participants were not remunerated. Once completed questionnaires had been returned, all participants were provided with a debriefing sheet that contained information about the study and the contact details of the second author.

Statistical Analyses

To examine the factor structure of the BAS-2, we computed principal-axis exploratory factor analysis (EFA) for women and men separately using quartimax rotation (because of the expectation of a single, general factor). EFA is the appropriate method of data reduction when the aim is to explore the possible underlying structure of a variable in the absence of a preconceived structure. Given the cross-cultural discrepancies in the underlying structure of the original BAS, we did not assume Tylka and Wood-Barcalow's (2015b) one-dimensional structure for the BAS-2. Where EFA indicated the existence of more than one factor with an eigenvalue (λ) above 1.0, we determined the final number of factors to be extracted based on an examination of the scree-plot and the results of parallel analysis (Hayton, Allen, & Scarpello, 2004). Parallel analysis works by creating a random dataset with the same number of cases and variables as the actual dataset. When the λ from the random data are larger than the λ from the actual data, then that factor is retained and all other factors are omitted. Factor loadings were interpreted following Tabachnick and Fidell's (2013) recommendation of $\leq$.32 as poor, .45 as fair, .55 as good, .63 as very good, and $\geq$.71 as excellent.