Brief research report

Factor structure of the Body Appreciation Scale among Malaysian women

Viren Swami a,*, Tomas Chamorro-Premuzic b

a Department of Psychology, University of Westminster, 309 Regent Street, London W1B 2UW, UK
b Department of Psychology, Goldsmiths, University of London, London, UK

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ABSTRACT

The present study examined the factor structure of a Malay version of the Body Appreciation Scale (BAS), a recently developed scale for the assessment of positive body image that has been shown to have a unidimensional structure in Western settings. Results of exploratory and confirmatory factor analyses based on data from community sample of 591 women in Kuala Lumpur, Malaysia, failed to support a unidimensional structure for the Malay BAS. Results of a confirmatory factor analysis suggested two stable factors, which were labelled ‘General Body Appreciation’ and ‘Body Image Investment’. Multi-group analysis showed that the two-factor structure was invariant for both Malaysian Malay and Chinese women, and that there were no significant ethnic differences on either factor. Results also showed that General Body Appreciation was significant negatively correlated with participants’ body mass index. These results are discussed in relation to possible cross-cultural differences in positive body image.

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Introduction

Although plumpness and overweight are regarded as indicators of physical attractiveness for women in many developing societies (e.g., Swami, Knight, Toveé, Davies, & Furnham, 2007; Swami & Toveé, 2005a; Toveé, Swami, Furnham, & Mangalparsad, 2006), countries experiencing rapid industrialisation may show an increase in the prevalence of fat phobia, body dissatisfaction, and eating disorders (Miller & Pumareiga, 2001). Malaysia is one such country, but little is known about body image and eating attitudes among Malaysians (for a review, see Swami, 2006). A primary reason for this is the lack of indigenous and translated scales available in Bahasa Malaysia (Malay), which impedes psychological testing among Malay-speaking populations (Kim, Baba, Abdullah, & Zumbo, 2004).

To overcome this dearth in the literature, the present study examines the psychometric properties of the Body Appreciation Scale (BAS; Avalos, Tylka, & Wood-Barcalow, 2005), a 13-item scale measuring aspects of positive body image, with Malaysian women. The BAS is easy to use, can be scored quickly, and has a unidimensional structure among English-speaking (Avalos et al., 2005) and German-speaking populations (Swami, Stieger, Haubner, & Voracek, 2008). Moreover, these studies have provided evidence of good construct, discriminant, and incremental validity, as well as internal consistency reliability of BAS scores in both women (Avalos et al., 2005) and men (Swami et al., 2008). To date, however, the psychometric properties of the BAS have not been examined in a non-Western culture, which is important because of issues concerning the equivalence of measurement across cultures (Leong, 1997).

Using confirmatory factor analysis (CFA), therefore, we sought to verify the unidimensionality of the BAS in a sample of Malaysian women. An additional aim of this study was to examine ethnic differences in body appreciation among Malaysian Chinese and Malays, the two major ethnic groups in the study site. There is some evidence to suggest that Malay women experience more negative body image compared with their Chinese peers, possibly as a function of religious fasting (Edman & Yates, 2004; Indran & Hatta, 1995). Nevertheless, where ethnic differences
have been highlighted in this research, they appear to be smaller than within-group differences. Moreover, previous studies have tended to use untranslated scales, which raises questions about their reliability among mainly Malay-speaking populations. In short, then, the present study sought to replicate the unidimensional structure of the BAS and to examine possible ethnic differences in BAS among Malaysian Chinese and Malay women.

Method

Participants

The initial sample consisted of 660 women from Kuala Lumpur, the capital city of Malaysia. Kuala Lumpur is a modern metropolis comparable to most large cities in the West (gross domestic product per capita in 2000 was about US$ 8,000), including body size ideals (Swami & Tovée, 2005a, 2005b, 2007) and the prevalence of eating disorders (Edman & Yates, 2004; Hsien-Jin, 2000; Swami, 2006). The city has a population of some 1.8 million people, and although Malays constitute the numerical majority in Malaysia as a whole, Kuala Lumpur has comparable populations of Malays (38.0%) and Chinese (43.0%) (City Hall Kuala Lumpur, 2003).

Due to the small number of non-Malay and non-Chinese participants in the present study (n = 69), data from these participants were not analysed here. This left a sample of 315 Malay women (age M = 42.96, SD = 12.98, body mass index BMI M = 22.01, SD = 4.40), all of whom were Muslims. In terms of marital status, the majority of Malay participants were married (47.0%), single (28.3%), or in a relationship (15.9%). The Chinese participants were 276 women (age M = 43.18, SD = 13.30, BMI M = 22.33, SD = 4.31), of whom the majority were Buddhists (75.4%; Christians = 14.5%; Muslims = 5.4%; other = 4.7%). Most Chinese participants were married (48.6%), single (26.1%), or in a relationship (14.9%).

Measures

Body Appreciation Scale (BAS; Avalos et al., 2005)

The 13 items of this scale are rated on a 5-point scale (1 = Never, 5 = Always), and are averaged to arrive at a total score (higher scores reflect greater body appreciation; see Appendix A for the list of items). The English and German versions of the scale show a unidimensional structure for women, and have good construct, discriminant, and incremental validities (Avalos et al., 2005; Swami et al., 2008). The Malay version of the BAS was developed using the standard back-translation technique (Breslin, 1970). The first author initially translated the BAS into Malay, and this version was then translated back into English by an independent translator unaffiliated with the study. Minor differences that emerged during this process were resolved between translators.

Demographics

Participants provided their demographic information, namely sex, age, ethnicity, religion, height, and weight (the latter two variables were used to calculate BMI, as kg/m²).

Procedure

All participants were recruited opportunistically using a snowball-sampling technique initiated by six data collectors. Although this method of sampling is able to generate large sample sizes, it potentially introduces bias because it reduces the likelihood that a sample will represent a good cross-section from a population (Heckathorn, 1997). All participants completed paper-and-pencil versions of the questionnaire anonymously, and returned the questionnaires to their contact person. All data were treated confidentially, and participants were provided with a debrief sheet following completion. All participants took part on a voluntary basis and were not remunerated for participation.

Results

Descriptive statistics

Independent samples t-tests showed no significant ethnic differences in participants’ age, t(589) = .21, p > .05, and BMI, t(589) = .90, p > .05. There were no significant between-group differences in the distribution of marital status, z = .90, p > .05, although there were differences in religion, z = 22.45, p < .001. For the total sample, the mean of all 13 items of the BAS was 3.63 (SD = .72).

Factor structure of the BAS

To replicate the unidimensional structure of the BAS, we conducted CFA using AMOS 5.0 (Arbuckle, 2005). The hypothesised model included the 13 items of the BAS and a single latent factor on which they were allowed to load. Hu and Bentler (1999) recommend that adequacy of fit is determined by the CFI, SRMR, and RMSEA. Values indicative of good fit are a CFI >.95 and RMSEA/SRMR values at or below .05. Values indicative of adequate fit are a CFI value ranging from .90 to .94 and RMSEA/SRMR values of .06-.10 (Browne & Cudeck, 1993; Hu & Bentler, 1999). Our model did not fit the data well: χ²(65, N = 591) = 1152.5, p < .01, GFI = .76; PGFI = .54, CFI = .81; RMSEA = .17 (low = .16, high = .17); RMR = .11; AIC = 1204.5; CN = 49. Furthermore, several individual parameter estimates (items 7, 8, 9, 11, 12) had weak or non-significant loadings. As the hypothesised structure was not confirmed, principal component analysis (PCA) was used to explore the structure of the scale and item loadings. To achieve this, the sample was randomly split into two sub-samples, one with which the PCA was conducted, and another with which we aimed to confirm this structure via CFA.

Results (scree test and eigenvalues) on the first sub-sample (n = 296, age M = 42.75, SD = 13.21) suggested a three-factor solution that accounted for 76.6% of the variance. The unrotated, and two different rotated (Oblimin and Varimax) solutions, indicated that items 8, 9, and 12 did not load onto the main component, whereas items 7 and 11 did not load onto either the main or secondary components. Thus, we modified the hypothesised model and ran the CFA testing the fit of a three-factor
solution on the second sub-sample \((n = 295, \text{age } M = 43.43, SD = 13.12)\).

Fit indexes were low: \(\chi^2(62, n = 295) = 472.06, p < .01, \text{GFI} = .88; \text{PGFI} = .56, \text{CFI} = .88; \text{RMSEA} = .10 \text{ (low} = .09, \text{high} = .12); \text{RMR} = .06; \text{AIC} = 530.06; \text{CN} = 51\). Most item loadings were >.60, but item 7 loaded only weakly on the third factor (.38). Given that this factor only comprised two items (7 and 11), the factor was deleted from the model and the analysis was re-run with only two latent factors. The fit for the modified model was adequate: \(\chi^2(43, n = 295) = 342.5, p < .01, \text{GFI} = .90; \text{PGFI} = .54, \text{CFI} = .90; \text{RMSEA} = .05 \text{ (low} = .04, \text{high} = .06); \text{RMR} = .05; \text{AIC} = 388.76; \text{CN} = 51\). The final model, with item loadings, is shown in Fig. 1. After inspection of the items, the two latent factors were labelled 'General Body Appreciation' and 'Body Image Investment'. The two latent factors were allowed to inter-correlate and correlated at \(r = .44\). These correlations represent estimated 'true relationships' between the latent constructs, as they adjust for error measurement. Thus, although the two factors were inter-related, the overlap between them was only about 17%, indicating that these should indeed be conceptualised as distinct factors.

To test for the invariance of the model across ethnic groups, we performed multi-group analyses (using the entire sample) comparing the two-factor structure of the BAS among Malay and Chinese participants. When testing for invariance of the model, a prerequisite is that the unconstrained model first fits each sample individually. Adequate fit was observed for both Malay, \(\chi^2(43, n = 315) = 341.2, p < .01, \text{GFI} = .89; \text{PGFI} = .56, \text{CFI} = .90; \text{RMSEA} = .06 \text{ (low} = .05, \text{high} = .08); \text{RMR} = .05; \text{AIC} = 387.89; \text{CN} = 55\), and Chinese participants, \(\chi^2(43, n = 276) = 293.6, p < .01, \text{GFI} = .89; \text{PGFI} = .56, \text{CFI} = .90; \text{RMSEA} = .07 \text{ (low} = .06, \text{high} = .08); \text{RMR} = .05; \text{AIC} = 339.47; \text{CN} = 56\). We, therefore, proceeded by comparing the constrained and unconstrained \(\chi^2\) and respective \(df\) values: both unconstrained, \(\chi^2(86, n = 315 \text{ and } n = 276) = 634.8, p < .01, \text{GFI} = .88; \text{PGFI} = .56, \text{CFI} = .92; \text{RMSEA} = .06 \text{ (low} = .05, \text{high} = .07); \text{RMR} = .05; \text{AIC} = 726.78; \text{CN} = 112\) and constrained, \(\chi^2(96, n = 315 \text{ and } n = 276) = 648.02, p < .01, \text{GFI} = .88; \text{PGFI} = .61, \text{CFI} = .91; \text{RMSEA} = .06 \text{ (low} = .06, \text{high} = .08); \text{RMR} = .05; \text{AIC} = 720.02; \text{CN} = 110\) fit the data well and the differences between the \(\chi^2\) values (13.2) and \(df\) (10) were not significant, indicating that the structure of the model was invariant across ethnic groups.

Between-group differences in BAS Factor Scores

We calculated factor scores for each group by taking the mean of responses to items associated with each factor. Results of independent samples t-tests showed no significant differences between Malay and Chinese participants on either of the factor scores: General Body Appreciation (Malay \(M = 3.63, SD = .86, \alpha = .95\); Chinese \(M = 3.73, SD = .85, \alpha = .95\)), t(589) = 1.40, \(p > .05\), and; Body Image Investment (Malay \(M = 3.45, SD = .98, \alpha = .74\); Chinese \(M = 3.46, SD = .97, \alpha = .71\)), t(589) = 1.01, \(p > .05\).

Correlations between BAS factors and BMI

Participants’ BMI was significantly negatively correlated with General Body Appreciation (\(r = -.24\)), but did not correlate with Body Image Investment (\(r = .03\)).

Discussion

This is the first study to use the BAS in a non-Western setting. Our results suggest that, in contrast to the unidimensional structure of the BAS found among Western samples (Avalos et al., 2005; Swami et al., 2008), a two-factor structure more satisfactorily described the data for Malaysian women specifically. Body Image Investment appears to be a distinct factor from General Body Appreciation in the present sample. Judging by the goodness-of-fit values and the inter-correlations among factors, it seems unlikely that the two-factor structure revealed here is a statistical anomaly. Nor is it likely that the issue is a translational problem, given the steps taken to ensure a reliable translation of the BAS and the straightforward nature of the items.

A more likely explanation for the present results is that there exist cross-cultural differences in the variables contributing to positive body image. That is, members of different cultures may differ in the way they relate to their own bodies, have divergent body ideals, and as a consequence hold different attitudes toward their body. For example, in the industrialised setting of Kuala Lumpur, women may feel a conflict between Western notions of individual control over the body and more traditional Eastern self-abasement (Rieger, Touyz, Swain, & Beumont, 2001). When perceiving their own bodies, therefore, Malaysian women may demonstrate personal autonomy by emphasising protection of the body from alien influences.

Regardless of the ultimate explanation, our results suggest caution in using the BAS to calculate an overall score for different cultural groups, as results found in some cultures may not generalise to others. Certainly, scoring...
the BAS in terms of a single overall composite in the present study would have led to unreliable scores, as almost half the items were not assessing the main underlying construct. For researchers wishing to measure positive body image among Malay-speaking populations, therefore, it may be more reliable to calculate a single score based on items loading onto the factor that we have called General Body Appreciation. By contrast, the factor that we have called Body Image Investment may have little to do with appearance-related appreciation and could, therefore, be dropped from analyses (researchers wishing to measure body image investment separately could use alternative validated scales; Cash, Melnyk, & Harbosky, 2004).

By contrast, our results suggest that the two-factor structure satisfactorily explained the BAS data for both Malaysian Malay and Chinese women. Moreover, there did not appear to be any significant ethnic differences in responses to the two factors, which would seem to contradict earlier reports that Malay women experience greater negative body image compared with Chinese women (Edman & Yates, 2004; Indran & Hatta, 1995). Our data seem more intuitively plausible: although there may be differences between Malay and Chinese women (e.g., in terms of religious fasting), both groups inhabit the same cultural context in Kuala Lumpur and are, therefore, likely to be exposed to the similar factors influencing body image. Moreover, our data benefited from the use of a translated scale and a large sample compared with previous studies, although this does not preclude the possibility that there are ethnic differences in eating disorders (as opposed to positive body image).

One aspect of the present study partially corroborated previous work using the BAS: we found that General Body Appreciation was significantly negatively correlated with participants’ BMI. This is consistent with previous reports of a negative association in a German-speaking sample (Swami et al., 2008), as well as the finding that lower female BMIs are typically idealised in Kuala Lumpur (Swami & Tovée, 2005a, 2007). Of course, examining the discriminant validity of the Malay version of the BAS based solely on BMI is a limitation, and future work should seek to examine the Malay BAS in relation to other body image scales. Future research could also attempt to use more representative samples of Malaysians (including other ethnic groups or samples from less developed settings in Malaysia; see Swami & Tovée, 2005a, 2005b) and, importantly, examine the psychometric properties of the BAS among Malaysian men.

As a final point, our results raise some important questions about the measurement of positive body image. These relate to whether positive body image merely constitutes the measurement of body attitudes by devising positively worded items and tapping a single pole on the satisfaction–dissatisfaction continuum. It might be questioned whether the method of measuring positive body image using the BAS is any more informative than many of the bipolar scales that already exist. These are issues that go beyond the present paper, but should be considered carefully by other researchers. Answering such questions may have a positive effect on our understanding of body image, not only in the West but also in developing nations like Malaysia.

Appendix A. The Body Appreciation Scale (BAS) items

<table>
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<tr>
<th>Items</th>
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<tbody>
<tr>
<td>1 I respect my body.</td>
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<tr>
<td>2 I feel good about my body.</td>
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<tr>
<td>3 On the whole, I am satisfied with my body.</td>
</tr>
<tr>
<td>4 Despite its flaws, I accept my body for what it is.</td>
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<tr>
<td>5 I feel that my body has at least some good qualities.</td>
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<tr>
<td>6 I take a positive attitude towards my body.</td>
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<tr>
<td>7 I am attentive to my body’s needs.</td>
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<tr>
<td>8 My self worth is independent of my body shape or weight.</td>
</tr>
<tr>
<td>9 I do not focus a lot energy being concerned with my body shape or weight.</td>
</tr>
<tr>
<td>10 My feelings toward my body are positive, for the most part.</td>
</tr>
<tr>
<td>11 I engage in healthy behaviours to take care of my body.</td>
</tr>
<tr>
<td>12 I do not allow unrealistically thin images of women presented in the media to affect my attitudes toward my body.</td>
</tr>
<tr>
<td>13 Despite its imperfections, I still like my body.</td>
</tr>
</tbody>
</table>

References


