A Dutch Translation and Validation of the Body Appreciation Scale-2: An Investigation with Female University Students in the Netherlands

Jessica M. Alleva
Maastricht University
Carolien Martijn
Maastricht University
Jolanda Veldhuis
VU University Amsterdam
Tracy L. Tylka
The Ohio State University

Author Note
Jessica M. Alleva, Department of Clinical Psychological Science, Maastricht University, Maastricht, The Netherlands; Carolien Martijn, Department of Clinical Psychological Science, Maastricht University, Maastricht, The Netherlands; Jolanda Veldhuis, Department of Communication Science, VU University Amsterdam, Amsterdam, The Netherlands; Tracy L. Tylka, Department of Psychology, The Ohio State University, Columbus, Ohio, United States.

Correspondence regarding this article should be addressed to Jessica M. Alleva, Department of Clinical Psychological Science, Maastricht University, P.O. Box 616, 6200 MD Maastricht, The Netherlands. Telephone: 00 31 (0)43 3881609. E-mail: Jessica.Alleva@maastrichtuniversity.nl
Abstract

This paper describes a Dutch translation and validation of the Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015a), an instrument for assessing key components of positive body image. Dutch-speaking female university students ($N = 310, M_{age} = 21.31, SD = 3.04$) completed the Dutch BAS-2. To assess its construct validity, participants also completed measures of appearance satisfaction, functionality satisfaction, self-objectification, self-esteem, and optimistic life orientation. Exploratory factor analysis revealed a one-dimensional factor structure of the Dutch BAS-2, substantiating the BAS-2 factor structure found in samples of U.S., Chinese, and Iranian university students and community adults. Dutch BAS-2 scores also demonstrated good internal consistency ($\alpha = .90$), convergent validity, and incremental validity. In addition, lower body mass indices were associated with higher Dutch BAS-2 scores. The present findings support the cross-cultural equivalence of the BAS-2 and thus its promise in enabling research on positive body image in diverse cultural contexts.

Keywords: positive body image, body appreciation, Dutch women, psychometrics, translation, factor structure
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Central characteristics of positive body image include holding favourable views of one’s body, accepting the body despite any imperfections, respecting the body by caring for its needs and engaging in healthy behaviours, and protecting one’s body image from negative influences (Tylka & Wood-Barcalow, 2015a). To date, the most widely-used measure for assessing these key components of positive body image is the Body Appreciation Scale (BAS; Avalos, Tylka, & Wood-Barcalow, 2005; Webb, Wood-Barcalow, & Tylka, 2015). The BAS comprises 13 items and its scores have demonstrated good internal consistency and construct validity (Webb et al., 2015). One important limitation of the BAS, however, concerns its cross-cultural equivalence (Swami, Ng, & Barron, 2016): although some studies support a one-dimensional structure of the BAS (e.g., Swami, Stieger, Haubner, & Voracek, 2008), studies conducted in other national contexts support a two-dimensional structure (e.g., Atari, Akbari-Zardkhaneh, Mohammadi, & Soufiabadi, 2015; Ng, Barron, & Swami, 2015). This factorial non-equivalence of the BAS impedes effective cross-cultural comparisons regarding positive body image (Swami et al., 2016).

Motivated by this limitation, as well as by recent developments in the conceptualisation of positive body image, Tylka and Wood-Barcalow (2015a) created the BAS-2. In doing so, BAS items that were shown from some cross-cultural studies to load onto a second factor were discarded. In addition, BAS items with item-factor loadings consistently below .50 were removed, as was a sex-specific item. The final BAS-2 comprises five original BAS items and five new items. In U.S. adults, the BAS-2 has been found to have a one-dimensional factor
structure, as well as good 20-day test-retest reliability, internal consistency, and construct validity of its scores (Tylka & Wood-Barcalow, 2015a).

To our knowledge, the factor structure of the BAS-2 has now been investigated in three studies outside the U.S., including female and male university students from China (Cantonese language, Swami & Ng, 2015; Standard Chinese language, Swami et al., 2016) and Iran (Persian language, Atari, 2016). Importantly, in each of these studies, exploratory factor analysis has revealed a one-dimensional factor structure of the BAS-2, supporting its cultural equivalence. These studies have also upheld the internal consistency and construct validity of BAS-2 scores: Cronbach’s α has ranged from .87 to .90 in women and .86 to .91 in men, and BAS-2 scores have been significantly positively correlated with self-esteem and life satisfaction, and (in women) significantly negatively correlated with lower body mass indices. BAS-2 scores have also been significantly positively associated with age in Iranian men (Atari, 2016), and significantly negatively associated with actual-ideal weight discrepancies in Chinese women (Swami & Ng, 2015; Swami et al., 2016). Taken together, these studies form an important first step toward determining the factorial equivalence of the BAS-2 in diverse national and cultural groups.

The present study aimed to investigate the psychometric properties of the BAS-2 within an additional cultural context. Specifically, we translated the BAS-2 to Dutch and administered it among Dutch-speaking women in the Netherlands. The Netherlands represents a Western but non-English speaking cultural context, thus complementing the aforementioned BAS-2 research that has been conducted in China and Iran. To investigate the factor structure of the Dutch BAS-2, we conducted an exploratory factor analysis. In addition, we conducted a preliminary exploration of the internal consistency and construct validity of the Dutch BAS-2’s scores. We predicted that the Dutch BAS-2 would demonstrate construct validity through its relationships
with several body-related variables (appearance satisfaction, functionality satisfaction, self-objectification) and well-being (self-esteem, optimistic life orientation), given the BAS-2’s associations with these variables in the U.S. (Tylka & Wood-Barcalow, 2015a) and (with regard to self-esteem) in China (Swami & Ng, 2015; Swami et al., 2016) and Iran (Atari, 2016). Lastly, we expected the Dutch BAS-2 to predict unique variance in well-being when accounting for shared variance with appearance satisfaction and functionality satisfaction, demonstrating its uniqueness as a measure of body image (cf. Tylka & Wood-Barcalow, 2015a).

Method

Participants

Participants were 310 Dutch-speaking female undergraduates ($M_{age} = 21.31, SD = 3.04$), with body mass indices (BMI) between 15.57 and 41.40 kg/m$^2$ ($M = 22.14, SD = 3.31$). We limited our sample to women given practical limitations: because the sites of data collection predominantly comprised female students, a comparable sample of men could not be obtained within the timeframe available for the research. Most participants identified as being of Dutch ($n = 227$), German ($n = 37$), Belgian ($n = 9$), mixed-Dutch ($n = 7$), or Turkish ($n = 6$) ethnic descent. The remainder identified with a variety of other ethnic groups ($n = 23$) or did not provide an answer ($n = 1$).

Measures

Measures were completed in the order below. Table 1 presents their Cronbach’s alphas in this study.

Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015a). The BAS-2 comprises 10 items rated from 1 = Never to 5 = Always. Scores on these items were averaged, with higher scores representing a more positive body image.
Multidimensional Body-Self Relations Questionnaire (MBSRQ; Brown, Cash, & Mikulka, 1990; Cash, 2000). MBSRQ items from the Appearance Evaluation (seven items; rated from 1 = Definitely disagree to 5 = Definitely agree) and Body Areas Satisfaction (nine items; rated from 1 = Very dissatisfied to 5 = Very satisfied) subscales were administered. Scores on these 16 items were averaged (cf. Cash, 2000), after having reverse-coded two items from the Appearance Evaluation subscale; higher scores reflect greater appearance satisfaction.

Body Esteem Scale (BES; Franzoi & Shields, 1984). BES items from the Physical Condition subscale (nine items; rated from 1 = Strongly dislike to 5 = Strongly like) were administered. Scores on these items were averaged, with higher scores demonstrating greater functionality satisfaction (i.e., satisfaction with what one’s body can do, rather than how one’s body looks; Alleva, Martijn, Van Breukelen, Jansen, & Karos, 2015).

Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996). OBCS items from the Body Surveillance subscale (eight items; rated from 1 = Strongly disagree to 7 = Strongly agree) were administered. Six items were reverse-coded, and then scores on all eight items were averaged; higher scores reflect higher levels of self-objectification.

Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The RSES consists of 10 items rated from 0 = Strongly disagree to 3 = Strongly agree. Five items were reverse-coded, and then scores on all 10 items were summed; higher scores reflect higher self-esteem.

Life Orientation Test – Revised (LOT-R; Scheier, Carver, & Bridges, 1994). The LOT-R comprises six items, plus four filler items, rated from 0 = Strongly disagree to 4 = Strongly agree. Three items were reverse-coded, and then scores on all six items were summed; higher scores reflect a more optimistic life orientation.
Demographic items. Demographic items concerned participants’ age, weight, height, and ethnic descent.

Dutch translations. The BAS-2 was translated to Dutch by a research assistant, and was back-translated (Brislin, 1970) by two additional research assistants. The translation and back-translations were reviewed by the first and second authors. Disputed translations were resolved by discussion. These concerned adjusting formal phrases to better reflect more commonly-used language. Table 2 presents the Dutch BAS-2 items. Translations of the remaining measures were available from prior research and have evidenced good internal consistency and construct validity in Dutch undergraduate women (see Alleva, Martijn, Jansen, & Nederkoorn, 2014; Alleva, Lange, Jansen, & Martijn, 2014; Alleva et al., 2015; ten Klooster et al., 2010).

Procedure

Data collection occurred between September 2014 and October 2015. Participants were recruited from two universities in the Netherlands (Maastricht University and VU University Amsterdam) using campus advertisements and the universities’ online recruitment systems. They were notified that the study investigated positive body image and that, to participate, they must be female and fluent in Dutch. Participants received a survey link and signed an electronic informed consent sheet. At survey completion, participants selected their desired compensation (research credit or a chance to win a gift certificate) and were debriefed. The study was approved by the ethics committee at Maastricht University.

Results

Preliminary Analyses

There were no missing data. Skewness and kurtosis values were below the critical limits (i.e., < 3 skewness, < 10 kurtosis) for all total scales and Dutch BAS-2 items (Kline, 2005); thus,
no scale or item was transformed.

**Exploratory Factor Analysis**

We conducted an exploratory principal axis factor analysis using the quartimax rotation method, as we expected a general factor (Field, 2009). The Kaiser-Meyer-Olkin’s measure demonstrated sampling adequacy for the analysis, KMO = .93, with all KMO values for individual items above .85. Bartlett’s test of sphericity showed that the Dutch BAS-2 items were sufficiently correlated for principal factor analysis, $\chi^2(45) = 1518.47, p < .001$. The factor analysis revealed a one-dimensional factor structure of the Dutch BAS-2: one component had an eigenvalue above Kaiser’s criterion of 1 (5.32), explaining 53.24% of the variance. Its one-dimensional factor structure was upheld via parallel analysis (see Fabrigar, Wegener, MacCallum, & Strahan, 1999). All items demonstrated item-factor loadings above .61 (Table 2) and acceptable inter-item correlations (i.e., between .30 and .90; Field, 2009), with the exception of Item 5. Item 5 showed a comparatively lower item-factor loading of .33 and inter-item correlations from .18 to .37. However, we retained Item 5 because: (a) its item-factor loading exceeded the criterion considered poor (i.e., $\leq .32$; Tabachnick & Fidell, 2001); (b) although many of its inter-item correlations were low, they were all statistically significant ($ps < .001$); (c) its KMO value was high (.86); (d) its removal did not substantially increase the internal consistency of the Dutch BAS-2 (see below); and (e) it was consistent with positive body image content.

**Internal Consistency**

Cronbach’s alpha for the Dutch BAS-2 was .90, with acceptable item-total correlations from .32 to .78. Only the removal of Item 5 would have increased the overall $\alpha$, but this
difference was small ($\alpha = .90$ to $.91$). Overall, scores on the Dutch BAS-2 were internally consistent.

**Construct Validity**

Dutch BAS-2 scores demonstrated good convergent validity: they were significantly positively correlated with appearance satisfaction, functionality satisfaction, self-esteem, and optimistic life orientation, and significantly negatively correlated with self-objectification and BMI (Table 1).

Incremental validity was assessed with hierarchical regression analyses. At Step 1, appearance satisfaction and functionality satisfaction were entered as predictors, and the respective outcome (self-esteem, optimistic life orientation) was entered as the criterion variable. At Step 2, the BAS-2 was entered into the model. A significant $R^2$ increase from Step 1 to Step 2 of each regression would indicate that BAS-2 scores made an incremental contribution to the criterion variable (Field, 2009).

For self-esteem, the final model proved significant, $F(3, 306) = 103.67$, $R^2 = .50$, $p < .001$. Functionality Satisfaction, $B = 1.24$, $SE = .36$, $\beta = .16$, $t = 3.50$, $p = .001$, and BAS-2 scores, $B = 4.53$, $SE = .62$, $\beta = .52$, $t = 7.28$, $p < .001$, significantly predicted self-esteem. $R^2$ change from Step 1 to Step 2 was significant, $R^2 = .42$ to $.50$, $p < .001$. Regarding optimistic life orientation, the final model was significant, $F(3, 306) = 46.39$, $R^2 = .31$, $p < .001$. Appearance Satisfaction, $B = 1.36$, $SE = .55$, $\beta = .21$, $t = 2.46$, $p = .014$, Functionality Satisfaction, $B = 1.08$, $SE = .18$, $\beta = .18$, $t = 3.24$, $p = .001$, and BAS-2 scores, $B = 1.83$, $SE = .26$, $\beta = .26$, $t = 3.13$, $p = .002$, significantly predicted optimistic life orientation. $R^2$ change from Step 1 to Step 2 was significant, $R^2 = .29$ to $.31$, $p = .002$. These findings support the incremental validity of the Dutch BAS-2.
Discussion

This study aimed to examine the factor structure and psychometric properties of the BAS-2 in Dutch-speaking women in the Netherlands. Exploratory factor analysis revealed a one-dimensional factor structure of the Dutch BAS-2, as found in samples in the U.S. (Tylka & Wood-Barcalow, 2015a), China (Swami & Ng, 2015; Swami et al., 2016), and Iran (Atari, 2016). In addition, the internal consistency of the Dutch BAS-2’s scores was acceptable, and positive body image was associated with other body-related variables (greater appearance and functionality satisfaction, lower self-objectification), and greater well-being (self-esteem, optimistic life orientation). BAS-2 scores also predicted unique variance in well-being after extracting shared variance with appearance satisfaction and functionality satisfaction. Together, these findings provide evidence for the construct validity of the Dutch BAS-2.

These findings raise several important points. First, the one-dimensional factor structure contributes to the existing evidence for the cross-cultural equivalence of the BAS-2 (Atari, 2016; Swami & Ng, 2015; Swami et al., 2016). Factorial equivalence of the BAS-2 is necessary for enabling effective cross-cultural comparisons, thus expanding our understanding of positive body image (Swami et al., 2016). Future investigation of the psychometric properties of the BAS-2 in additional, diverse cultural contexts will be helpful. Second, in line with BAS-2 research in the U.S. (Tylka & Wood-Barcalow, 2015a), China (Swami & Ng, 2015; Swami et al., 2016), and Iran (Atari, 2016), scores on the Dutch BAS-2 were significantly negatively correlated with BMI. This may reflect the internalisation of the narrow Western beauty ideal, such that women with a lower BMI will feel more positively about their body (Tylka & Wood-Barcalow, 2015a). It also suggests that having a positive body image does not equate to weight gain and may actually encourage healthy behaviours (Tylka & Wood-Barcalow, 2015b). Lastly,
Item 5 (“I am attentive to my body’s needs”) demonstrated a comparatively lower, although still acceptable, item-factor loading and inter-item correlations. It is unclear why this might be, as the back-translations of this item produced translations that matched the wording and meaning of the original English Item 5. We recommend that future research using the Dutch BAS-2 double-check the suitability of this item.

One key limitation of this study is that we only recruited Dutch-speaking female undergraduates. Investigating the psychometric properties of the Dutch BAS-2 in men and individuals of a broader range of ages is necessary for determining the wider-spread applicability of the Dutch BAS-2 and the cultural equivalence of the BAS-2. Similarly, our Dutch-speaking sample was recruited from the Netherlands, so it is unclear whether the present findings apply to individuals in other Dutch-speaking countries, such as Suriname, Aruba, and Curaçao, which differ culturally from the Netherlands. Another limitation of this study concerns the variables that we selected to determine the construct validity of the Dutch BAS-2. This selection was made based on evidence for the relationship between positive body image and these constructs from prior research on the BAS (e.g., Avalos et al., 2005) and BAS-2 (e.g., Tylka & Wood-Barcalow, 2015a). However, this selection is far from exhaustive, and future research will profit from investigating construct validity in relation to additional variables of interest, such as intuitive eating. Lastly, we administered the study measures in a fixed order, which does not control for potential order effects; we recommend that future studies randomise the measures. Despite these limitations, the present findings are promising because they provide further evidence for the cross-cultural equivalence of the BAS-2, and thus its applicability to foster research in positive body image across cultures.
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References


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doi:10.1016/j.bodyim.2015.03.010
Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>α</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutch BAS-2</td>
<td>3.60</td>
<td>0.57</td>
<td>1-5</td>
<td>.90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance satisfaction (MBSRQ-AE-BAS)</td>
<td>3.44</td>
<td>0.60</td>
<td>1-5</td>
<td>.90</td>
<td>.82***</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Functionality satisfaction (BES-PC)</td>
<td>3.50</td>
<td>0.65</td>
<td>1-5</td>
<td>.83</td>
<td>.47***</td>
<td>.49***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-objectification (OBCS-BS)</td>
<td>4.87</td>
<td>0.95</td>
<td>1-7</td>
<td>.80</td>
<td>-.44***</td>
<td>-.34***</td>
<td>-.11*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-esteem (RSES)</td>
<td>20.12</td>
<td>4.98</td>
<td>0-30</td>
<td>.87</td>
<td>.69***</td>
<td>.62***</td>
<td>.46***</td>
<td>-.39***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimistic life orientation (LOT-R)</td>
<td>14.29</td>
<td>3.96</td>
<td>0-24</td>
<td>.79</td>
<td>.52***</td>
<td>.51***</td>
<td>.40***</td>
<td>-.31***</td>
<td>.73***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body mass index</td>
<td>22.14</td>
<td>3.31</td>
<td>NA</td>
<td>NA</td>
<td>-.14*</td>
<td>-.32***</td>
<td>-.09</td>
<td>-.06</td>
<td>-.01</td>
<td>-.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>21.31</td>
<td>3.04</td>
<td>NA</td>
<td>NA</td>
<td>.10</td>
<td>.04</td>
<td>.00</td>
<td>-.10</td>
<td>-.01</td>
<td>-.01</td>
<td>.19**</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 310. *p < .05, **p < .01, ***p < .001. α = Cronbach’s alpha of the scale or subscale(s) in this study. Range refers to the possible range of scale or subscale scores, not to the range in the present sample’s actual scores. NA = not applicable. BAS-2 = Body Appreciation Scale-2. MBSRQ-AE-BAS = Multidimensional Body-Self Relations Questionnaire – Appearance Evaluation and Body Areas Satisfaction subscales. BES-PC = Body Esteem Scale – Physical Condition subscale. OBCS-BS = Objectified Body Consciousness Scale – Body Surveillance subscale. RSE = Rosenberg Self-Esteem Scale. LOT-R = Life Orientation Test – Revised.
Table 2

*Dutch BAS-2 Items and Item-Factor Loadings Obtained Via Exploratory Principal Factor Analysis*

<table>
<thead>
<tr>
<th>Dutch BAS-2 Items (English Version)</th>
<th>Item-Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ik respecteer mijn lichaam. <em>I respect my body.</em></td>
<td>.65</td>
</tr>
<tr>
<td>2. Ik voel me goed over mijn lichaam. <em>I feel good about my body.</em></td>
<td>.80</td>
</tr>
<tr>
<td>3. Ik vind dat mijn lichaam op zijn minst een aantal goede kwaliteiten bezit. <em>I feel that my body has at least some good qualities.</em></td>
<td>.66</td>
</tr>
<tr>
<td>4. Ik heb een positieve houding ten opzichte van mijn lichaam. <em>I take a positive attitude towards my body.</em></td>
<td>.84</td>
</tr>
<tr>
<td>5. Ik besteed aandacht aan wat mijn lichaam nodig heeft. <em>I am attentive to my body’s needs.</em></td>
<td>.33</td>
</tr>
<tr>
<td>6. Ik voel liefde voor mijn lichaam. <em>I feel love for my body.</em></td>
<td>.70</td>
</tr>
<tr>
<td>7. Ik waardeer de verschillende en unieke eigenschappen van mijn lichaam. <em>I appreciate the different and unique characteristics of my body.</em></td>
<td>.68</td>
</tr>
<tr>
<td>8. Uit mijn gedrag blijkt mijn waardering voor mijn lichaam; bijvoorbeeld, ik loop met opgeheven hoofd en glimlach. <em>My behaviour reveals my positive attitude toward my body; for example, I hold my head high and smile.</em></td>
<td>.61</td>
</tr>
<tr>
<td>9. Ik voel me op mijn gemak in mijn lichaam. <em>I am comfortable in my body.</em></td>
<td>.83</td>
</tr>
<tr>
<td>10. Ik vind mezelf mooi al zie ik er anders uit dan de beelden in de media van aantrekkelijke mensen (bijv. modellen, actrices en acteurs). <em>I feel like I am beautiful even if I am different from media images of attractive people (e.g., models, actresses/actors).</em></td>
<td>.74</td>
</tr>
</tbody>
</table>

*Note. N = 310. The response scale for the Dutch BAS-2 was 1 = Nooit (Never), 2 = Zelden (Seldom), 3 = Soms (Sometimes), 4 = Meestal (Often),*
and 5 = *Altijd* (Always).