



# Factor structure and psychometric properties of a Romanian translation of the Body Appreciation Scale-2



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## ABSTRACT

We examined the psychometric properties of a Romanian translation of the 10-item Body Appreciation Scale-2 (BAS-2). A total of 453 university students from Romania completed the BAS-2, along with measures of disordered eating, self-esteem, satisfaction with life, and subjective happiness. In addition, a separate sample of university students ( $N = 109$ ) completed only the BAS-2 at two time-points three weeks apart. Principal-axis factor analysis indicated that BAS-2 scores had a one-dimensional factor structure in both women and men. Confirmatory factor analysis indicated that this factor structure had adequate fit, but invariance across sex was not supported. Further analyses indicated that BAS-2 scores evidenced internal consistency, convergent validity, and test–retest reliability in both women and men. These results suggest that BAS-2 scores reduce to one dimension in Romanian adults, but the lack of sex invariance may indicate that the same latent construct is not being measured in women and men.

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## 1. Introduction

Over the past decade, researchers have given sustained attention to the construct of positive body image, signalling an important shift in the field from a primary focus on pathology to a comprehensive account of the body image concept (e.g., Smolak & Cash, 2011; Tylka, 2012). One particular facet of positive body image that has benefitted from this attention is *body appreciation*, which Tylka and Wood-Barcalow (2015a, p. 53) defined as “accepting, holding favorable opinions toward, and respecting the body, while also rejecting media-promoted appearance ideals as the only form of human beauty.” To measure this facet, Avalos, Tylka, and Wood-Barcalow (2005) developed a 13-item measure, the Body Appreciation Scale (BAS), and its scores were found to have a one-dimensional factor structure in college women in the United States (U.S.). In a later study, Tylka (2013) reported that this one-dimensional factor structure was invariant across U.S. college women and men.

Studies using factor analysis have supported the one-dimensional nature of BAS scores in a community sample of Austrian adults (Swami, Stieger, Haubner, & Voracek, 2008),

Spanish adolescents (Lobera & Ríos, 2011), and Turkish college women (Swami, Özgen, Gökçen, & Petrides, 2015; but see Bakalim & Tasleden-Karçkay, 2016). However, in an early study with Malaysian women, Swami and Chamorro-Premuzic (2008) reported, using confirmatory factor analysis (CFA), that the one-dimensional factor structure of BAS scores had poor fit. Using principal-axis factor analysis, these authors instead extracted a two-dimensional structure consisting of a primary factor tapping what they termed “general body appreciation” and a secondary factor that was said to measure “body image investment.” Later studies also supported a two-factor structure of BAS scores across distinct linguistic and national groups (for reviews, see Swami, 2017; Webb, Wood-Barcalow, & Tylka, 2015), including in Brazil (Ferreira, Neves, & Tavares, 2014; Swami et al., 2011), Indonesia (Swami & Jaafar, 2012), South Korea (Swami, Hwang, & Jung, 2012), Poland (Taylor, Szpakowska, & Swami, 2013), Zimbabwe (Swami, Mada, & Tovée, 2012), Hong Kong (Ng, Barron, & Swami, 2015), and Iran (Atari, Akbari-Zardkhaneh, Mohammadi, & Soufiabadi, 2015).

In addition to these discrepant factor structures, the BAS was also developed prior to sustained focus on the concept of positive body image (e.g., Coppola, Dimler, Letendre, & McHugh, 2017; Holmqvist & Frisén, 2012; McHugh, Coppola, & Sabiston, 2014; Wood-Barcalow, Tylka, & Augustus-Horvath, 2010). In particular, some items of the BAS reflected the antiquated belief that positive body image was equivalent to the absence of indices of negative

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body image. Given these issues, Tylka and Wood-Barcalow (2015b) developed a revised version of the BAS. Specifically, they deleted one sex-specific item, two items that represent low levels of negative body image, and two items that are inconsistent with current conceptualizations of positive body image (i.e., containing language that assumes bodies are flawed). They developed additional items that would better reflect positive body image and, alongside the eight remaining original items, conducted a factor analysis, in which items were retained that had high factor loadings and low item redundancy. This revised measure, known as the Body Appreciation Scale-2 (BAS-2), consists of 10 items (five original BAS items and five newly developed items), and scores on the scale have been found to have a one-dimensional factor structure in college and community adults from the U.S. (Tylka & Wood-Barcalow, 2015b).

As with the BAS, scholars have also been quick to examine the factor structure of scores derived from translations of the BAS-2. Thus, using principal-axis factor analysis, the one-dimensional factor structure of BAS-2 scores has been supported with college samples from Hong Kong (Swami & Ng, 2015), the Netherlands (Alleva, Martijn, Veldhuis, & Tylka, 2016), and Iran (Atari, 2016), as well as a community sample from Serbia (Jovic, Sforza, Jovanovic, & Jovic, 2016). In addition, using CFA, the one-dimensional factor structure of the BAS-2 has been confirmed in a mixed college staff-and-student sample from mainland China (Swami, Ng, & Barron, 2016), in a college sample from France (Kertechian & Swami, 2017), and in community samples from Spain (Swami, García, & Barron, 2017) and Poland (Razmus & Razmus, 2017). As in the parent study (Tylka & Wood-Barcalow, 2015b), these CFA-based studies have also reported that BAS-2 scores are invariant across participant sex, evidence internal consistency, and reveal patterns of convergent validity. In addition, most studies with relevant data have reported that men have significantly higher BAS-2 scores than women, with small-to-moderate effect size ( $d_s = 0.15\text{--}0.58$ ; Atari, 2016; Kertechian & Swami, 2017; Swami & Ng, 2015; Tylka & Wood-Barcalow, 2015), although two studies have failed to find significant sex differences (Swami et al., 2017, 2016). Taken together, the available evidence suggests that BAS-2 scores have a one-dimensional factor structure across cultural groups, with good psychometric properties.

### 1.1. The Romanian context

Here, we examined the factor structure and psychometric properties of a Romanian (*limba română* or *лимба ромыніэ* in Moldovan Cyrillic) translation of the BAS-2. We believe this is important for several reasons. First, Romanian is spoken by around 24 million people as a first language, mainly in Romania and Moldova (where it has official status), as well as by several million more as a second language (European Commission, 2012). The availability of a translation of the BAS-2 would, therefore, provide an important tool for the assessment of positive body image in relatively neglected linguistic groups within the body image literature. To be sure, a Romanian translation of the BAS appears to have been prepared (Dumitrescu, Zetu, Teslaru, Dogaru, & Dogaru, 2008), but the authors neglected to report on the translational procedures. Just as important, the authors of this translation also did not examine the factor structure of Romanian BAS scores, instead assuming that these scores were one-dimensional. This is problematic because the assumed one-dimensional structure may not be appropriate for these data and may result in spurious associations with other variables.

Second, investigating body image issues in Romania is important in its own right because of the unique cultural and historical trajectories of its population. For example, it has been suggested that, prior to the adoption of free market economics in Eastern European nations, Communism may have protected women in the

region from body image disturbances through a rejection of objectification and a promotion of egalitarianism (Catina & Joja, 2001; Haavio-Mannila & Purhonen, 2001). Although this claim is contested (Eisler, 2001), what is clear is that the introduction of a market economy brought a raft of social and cultural changes (e.g., an influx of Western media emphasising the thin ideal and an ethos of working on the body as necessary) that may have contributed to a rise in body image disturbance in women (e.g., Catina & Joja, 2001; Frederick, Forbes, & Berezovskaya, 2008). Conversely, however, few studies have specifically focused on issues of positive body image in these nations (but see Taylor et al., 2013). In addition, body image research in Romania specifically remains piecemeal and hampered by a lack of psychometrically sound assessment tools, although it is clear that the country is experiencing nutrition and physical activity transitions with increased intake of foods rich in carbohydrates and saturated fats, and an increase in sedentary lifestyles (Mocanu, 2013; Ulijaszek & Koziel, 2007).

### 1.2. The present study

As a contribution to the literature, therefore, we prepared a Romanian translation of the BAS-2 and examined its factor structure and psychometric properties in a sample of Romanian adults. First, we began by examining the factor structure of the Romanian BAS-2 using both principal-axis factor analysis and CFA, and based on the available literature we expected to find evidence of a one-dimensional structure with all 10 items. Second, we assessed the scale's internal consistency, expecting that scores would demonstrate internal reliability. Third, we examined whether BAS-2 scores were invariant across sex, hypothesising that they would be. Based on our expectation of sex invariance, we also hypothesised that men would have significantly higher body appreciation than women. Fourth, we examined the test–retest reliability of BAS-2 scores after three weeks, hypothesising that scores would demonstrate stability across time. Finally, we conducted a preliminary examination of the convergent validity of BAS-2 scores by examining associations with scores from measures of disordered eating, self-esteem, satisfaction with life, subjective happiness, and body mass index (BMI). Evidence of convergent validity would be provided by negative associations with disordered eating and BMI, and positive associations with self-esteem, satisfaction with life, and subjective happiness (cf. Tylka & Wood-Barcalow, 2015b).

## 2. Method

### 2.1. Participants

#### 2.1.1. Main sample

Participants of the main study were 212 female and 241 male students from a university in Timiș County in the west of Romania. Participants ranged in age from 17 to 61 years ( $M = 23.57$ ,  $SD = 7.86$ ) and in self-reported BMI from 13.98 to 37.11 kg/m<sup>2</sup> ( $M = 22.18$ ,  $SD = 3.46$ ). Most participants were enrolled on undergraduate programmes (72.2%; Masters programmes = 16.1%, other = 11.7%) and self-reported as being of Romanian ethnicity (97.3%). In terms of religion, 68.1% reported being Eastern Orthodox, 8.4% Catholic, 8.0% atheist, and the remainder reported being of some other religious affiliation. These participants completed all the measures listed below.

#### 2.1.2. Test–retest sample

The test–retest sample consisted of 57 female and 52 male university students from the same university in the west of Romania. All participants were of Romanian ethnicity and ranged in age from 18 to 57 years ( $M = 25.02$ ,  $SD = 8.91$ ). No further demographics were

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