



Brief research report

Gender-based differential item functioning in common measures of body dissatisfaction

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ABSTRACT

Many widely used measures of body image were developed using all-female samples and thus may not adequately capture the male experience of body dissatisfaction. The current study examined differential item functioning (DIF) in three commonly-used measures of body image: The Body Shape Questionnaire ($N = 590$, 39.7% male), the Body Dissatisfaction subscale of the Eating Disorders Inventory ($N = 529$, 44.6% male), and the Shape and Weight Concern subscales of the Eating Disorders Examination Questionnaire ($N = 1116$, 43.5% male). Participants completed a series of measures evaluating body image and eating pathology. Results evidenced statistically significant DIF in several of the items; one item met criteria for clinically significant DIF. While most items did not evidence clinically elevated levels of DIF, additional evaluation is necessary in order to determine overall quality of the measures in terms of capturing the experience of male body image concerns.

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Introduction

Body dissatisfaction is proposed to arise when individuals compare themselves to an “ideal” shape or weight that is different from their current size (Williamson, Gleaves, Watkins, & Schlundt, 1993). For women, the most ubiquitous standard in the Western media is that of the “thin ideal,” in which females are expected to be “young, tall, thin, and White, with at least moderately large breasts.” (Levine & Chapman, 2012, p.102). Conversely, the Western media portrays the perfect male body as extremely lean and muscular, defined as the “muscular ideal” (Cafri & Thompson, 2004). Consequently, while both men and women report body image concerns, their evaluation of their bodies may differ by the relevant ideal to which they subscribe.

Research suggests that most individuals in the general population of the Western world are dissatisfied with their bodies. For instance, Neighbors and Sobal (2007) found that among a sample of undergraduates, more than half of participants expressed dissatisfaction with their current weight; of those in the sample, 100%

of females classified as overweight according to their BMI reported wanting to weigh less. At its inception, researchers investigating negative body image and its implications predominately focused on women. Nonetheless, there is a growing body of research examining this construct in men. Such research efforts have demonstrated that while body dissatisfaction is often lower in male samples, it still appears to be widespread; for instance, the majority of males in the Neighbors and Sobal (2007) study reported body weight dissatisfaction. While some degree of body dissatisfaction has been considered normative (Rodin, Silberstein, & Streigel-Moore, 1985), there exists consensus that elevated levels of unhappiness due to shape or weight place individuals at higher risk of developing eating pathology (Polivy & Herman, 2002). Thus, for professionals who work in the field of eating disorders, it is of central importance to understand how this construct develops and may manifest itself differently in different subgroups of the general population.

Due to potentially divergent body concerns in men and women, measures of body image and dissatisfaction with shape should presumably account for the differences in ideal shape that are typically observed by gender. For instance, measures of body dissatisfaction in women might center more on drive for thinness and typical areas of concern for women, such as the hips and buttocks (Olivardia, 2001). Measures of body image in men might instead focus more on muscular concerns, such as the size of biceps (Cafri & Thompson, 2004). The majority of the existing body image research has used more general measures of body dissatisfaction and pool data from both males and females in their results, a decision that has been

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criticized recently, as male body image concerns have not been incorporated explicitly into assessment of the construct (Cafri & Thompson, 2004).

Much of the existing literature on body dissatisfaction has employed a small number of popular measures (Shroff, Calogero, & Thompson, 2009). These include the Eating Disorders Inventory (EDI; Garner, 1991), the Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1986), and the Eating Disorders Questionnaire (EDE-Q; Fairburn & Beglin, 2008). While some recent research has evaluated the norms and psychometric properties of these widely-used measures in men (e.g., Penelo, Villarroel, Portell, & Raich, 2012), these scales were developed using all-female samples, and consequently, it is possible that the scales are biased and do not adequately capture the male experience of body dissatisfaction.

Differential item functioning (DIF) analyses represent one way to study how measures may function differently in different subgroups (i.e., gender or socioeconomic status). DIF is said to be present in a measure when a member of one group has a decreased probability of endorsing an item relative to a member of another group, regardless of the latent trait of interest (Clauser & Mazor, 1998). When DIF is present within a measure, it reduces validity and can lead to misleading results (Clauser & Mazor, 1998). Alfano, Hildebrandt, Bannon, Walker, and Walton (2011) found that substantial item bias was present for gender on the Body Checking Questionnaire (Reas, Whisenhunt, Netemeyer, & Williamson, 2002) and the Male Body Checking Questionnaire (Hildebrandt, Alfano, & Langenbucher, 2010), measures of body checking, a construct related to body image. Other research has shown gender-based DIF in other psychological measures such as the Anxiety Sensitivity Index (Van Dam, Earleywine, & Forsyth, 2009).

The present study sought to examine gender-related DIF in three well-validated and widely used measures of body dissatisfaction (Shroff et al., 2009): the EDI-2; (Garner, 1991), the EDE-Q (Fairburn & Beglin, 2008), and the BSQ (Cooper et al., 1986). Each measure was developed using an all-female sample; however, the measures have been used in samples of both genders (e.g., Grilo, Masheb, Brody, Toth, Burke-Martindale, & Rothschild, 2005; Paxton, Wertheim, Gibbons, Szmulker, Hiller, & Petrovich, 1991). The presence of DIF in any of these measures would have implications for use of the measures in mixed-gender samples.

Method

Participants

A sample size of 200–250 per group has shown to be adequate for many of the typical analyses that examine DIF (Clauser & Mazor, 1998). As analyses were conducted separately by measure, the number of participants and demographic makeup of each sample varied by each analysis and are listed below. In order to meet sample size criterion, data were pooled from several studies conducted at a large, northeastern university between 2009 and 2013. Participants in the various studies were undergraduates recruited via the university's subject pool and compensated with course credit; all studies required that participants attended an in-lab appointment where they consented to participation and then immediately completed various measures related to body dissatisfaction and disordered eating. While the studies used varied in specific purpose, they were all investigations into specific facets of disordered eating or body image and thus represented a common use of the measures of body dissatisfaction.

Measures

Eating Disorders Inventory-2 (EDI; Garner, 1991): Body Dissatisfaction subscale. The EDI-2 was developed to assess common characteristics of anorexia and bulimia; while the 2nd version of the EDI was used in our analyses, a 3rd version of the measure was released in 2004 and has shown good reliability and validity (Garner, 2004). One of 8 subscales, the Body Dissatisfaction subscale (BD) is intended to measure the dissatisfaction with shape characteristic of eating pathology using items such as, "I think that my thighs are just the right size." Analyses of the EDI-BD contained 529 undergraduates (44.6% male). The subscale has 9 items and in our sample, showed a Cronbach's α of .89 for females, and .86 for males.

Body Shape Questionnaire (BSQ; Cooper et al., 1986). The BSQ is a 34-item self-report measure used to determine an individual's dissatisfaction with their shape. The test has high internal consistency (Cronbach's α = .97; Cooper et al., 1986); items include questions such as, "Over the past four weeks, have you thought that your thighs, hips or bottom are too large for the rest of you?" Test-retest reliability has been shown as .88 in a three-week span; additionally, correlations between the BSQ and other body image tests (i.e., EDI-Body Dissatisfaction subscale) have been between .61 and .81. The test has been shown to be able to discriminate between clinical and nonclinical groups of individuals (Cooper et al., 1986). Our sample was 39.7% male (N = 590); additionally, the internal consistency in our sample was excellent for both genders (Cronbach's α s: female = .98; male = .97).

Eating Disorders Questionnaire (EDE-Q; Fairburn & Beglin, 2008): Shape Concern/Weight Concern subscales. The EDE-Q is a 28-item measure of disordered eating. It contains four subscales that are thought to capture the chief attitudes that characterize eating pathology, and our analyses examined the shape and weight concern subscales, which include items such as, "Over the past 28 days, how dissatisfied have you felt about your shape?" Our analysis of DIF in the EDE-Q had a sample of N = 1116; 43.5% male. The subscale has 12 items and showed good internal consistency in our sample (Cronbach's α s: female = .92; male = .89).

Analyses

To evaluate DIF in each measure, we developed three predictors of an item score, and calculated the significance of these predictors utilizing ordinal logistic regression (OLR). Logistic regression approaches represent one of several strategies for examining DIF, and are thought to have an advantage over other types of strategies for prediction of non-uniform DIF (Van Dam et al., 2009). Predictors included the total score on each measure as an overall measure of body dissatisfaction, gender, and the interaction between the overall measure and gender. An item is identified as a DIF item if the latter two variables show a statistically significant improvement beyond a model that includes only ability (Clauser & Mazor, 1998).

Uniform DIF is present when one group has a difference in the rate in which they endorse a certain level of an item, given their overall level of a construct. Uniform DIF indicates that the level of DIF between groups depends on the overall level of the construct that is endorsed. For instance, uniform DIF would be present on a body image item, if, given a constant overall level of body dissatisfaction, men endorsed an item more frequently than women. Non-uniform DIF would be present if, at low levels of body dissatisfaction, men were more likely than women to endorse an item, but, at high levels of body dissatisfaction, women were more likely to endorse an item as compared to men (Clauser & Mazor, 1998).

In accordance with the recommendations posited by Zumbo (1999), to classify an item as exhibiting DIF, the chi-square difference test was used to compare models as variables were entered

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