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Expanding binge eating assessment: Validity and screening value of the Binge Eating Scale in women from the general population

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ABSTRACT

There is growing recognition that binge eating is a prevalent problem with serious implications for both clinical and nonclinical samples. The current study aimed at examining the factor structure, psychometric properties and the screening usefulness of the Binge Eating Scale (BES) in a large sample of female college students and women from the Portuguese general population.

A sample of 1008 participants was collected to conduct a confirmatory factor analysis and test the BES psychometric properties; 150 participants were further evaluated through the Eating Disorder Examination 16.0D to assess the discriminant validity of the BES.

Results confirmed that the BES presents a sound one-dimensional factorial structure, with very good construct reliability and convergent validity. Also, the scale presented very good retest-reliability. Findings also offered evidence that the BES is positively associated with measures of eating and general psychopathology, and BMI. Furthermore, the BES revealed an excellent performance (96.7%) on discriminating clinically significant cases of binge eating, showing a sensitivity of 81.8% and a specificity of 97.8%.

Results support the validity and usefulness of the BES as an assessment and screening tool for binge eating in women from the general population.

1. Introduction

Binge eating has been increasingly recognized as a serious condition with severe implications in both clinical and nonclinical populations (Kessler et al., 2013; McManus & Waller, 1995). Binge eating is characterized by the occurrence of episodes of eating, in a discrete period of time, a definite large amount of food, with a sense of lack of control over eating (i.e., a feeling that one cannot stop eating or control what or how much one is eating). These episodes are often preceded by emotional distress and may be seen as a maladaptive attempt to avoid or escape disturbing thoughts and emotions (Arnow, Kenardy, & Agras, 1995; Goldfield, Adamo, Rutherford, & Legg, 2008; Heatherton & Baumeister, 1991), but these behaviours often generate great levels of shame and distress over the episode and its consequences. Binge eating behaviours are the hallmark feature of Binge Eating Disorder (BED) and Bulimia Nervosa (BN), but can also be present in Anorexia Nervosa or other forms of eating disorders (American Psychiatric Association, 2013).

Nevertheless, binge eating behaviours are also significantly prevalent among individuals without eating disorders (Johnsen, Gorin, Stone, & le Grange, 2003; Johnson, Rohan, & Kirk, 2002; Kinzl, Traweger, Trefalt, Mangweth, & Biebl, 1999). In fact, recent research reports growing prevalence rates of binge eating problems among the community (de Zwaan, 2001; Ribeiro, Conceição, Vaz, & Machado, 2014; Striegel-Moore & Franko, 2003), with women being more likely to present these problems than men (Hudson, Hiripi, Pope, & Kessler, 2007; Kessler et al., 2013). Among the female population a study revealed that up to 40% college students report binge eating symptoms (Saules et al., 2009). Also, research shows that even subclinical binge eating symptoms or partial syndromes may be very distressing and have a significant negative impact in individuals' physical and mental health (Striegel-Moore et al., 2000). In particular, findings from both clinical and community-based studies offer evidence that suggests that binge eating is associated with psychiatric comorbidities (e.g., anxiety and depressive symptoms; Hudson et al., 2007; Preti et al., 2009; Ricca et al., 2000), overweight, obesity and poorer outcomes in weight loss treatments (Hudson et al., 2007; Kessler et al., 2013; Ricca et al., 2000; Villarejo et al., 2012; Wilfley, Wilson, & Agras, 2003).

The assessment of binge eating offers some challenges given its private nature and because it is associated with aspects that are difficult to declare (e.g., shame about the episode) and to recall (e.g., severity of the episodes). It is consensual that investigator-based interviews are the most valid method to accurately assess binge eating. Specifically, the Eating Disorder Examination — EDE (Fairburn & Cooper, 1993) is considered to be the most accurate assessment tool for eating disorders,

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since it allows the interviewer to define some ambiguous terms and ask additional questions to facilitate a better recall of some symptoms and the identification of their frequency and severity (e.g., binge eating episodes). However, clinical interviews require extensive preliminary training and individual administration, and are expensive and time consuming (Wilson, 1993).

In order to overcome some of these constraints, there has been an effort on the examination of measures that may provide a rigorous assessment of behaviours and attitudes that characterize eating psychopathology, but that diminish the costs and burden in both the participant and researcher caused by interview-based methods (Celio, Wilfley, Crow, Mitchell, & Walsh, 2004). In particular, self-report measures have been highlighted as useful alternatives to assess the experience of binge eating, such as the Questionnaire on Eating and Weight Patterns — QEWP-R (Yanovski, 1993), the questionnaire version of the EDE, the Eating Disorder Examination Questionnaire — EDEQ (Fairburn & Beglin, 1994), and the Binge Eating Scale — BES (Gormally, Black, Daston, & Rardin, 1982).

The Binge Eating Scale (Gormally et al., 1982) was originally developed to assess affective/cognitive aspects and behavioural manifestations of binge eating problems in obese persons. This instrument has been widely used as a dimensional measure of the severity of binge eating, as a screening tool (Freitas, Lopes, Appolinario, & Coutinho, 2006; Greeno, Marcus, & Wing, 1995) and as a useful instrument of treatment outcomes (e.g., Katterman, Kleinman, Hood, Nackers, & Corsica, 2014; Telch, Agras, & Linehan, 2001). Studies, mainly conducted in obese patients and bariatric surgery candidates, have demonstrated that the BES has high sensitivity and specificity for discriminating between binge eaters and non-binge eaters, presenting similar results to those obtained by reliable and supported semi-structured interviews (Celio et al., 2004; Freitas et al., 2006; Greeno et al., 1995; Grupski et al., 2013; Robert et al., 2013). Furthermore, a growing body of research has been showing that the BES presents good validity both in clinical (e.g., obese patients, BED patients; Timmerman, 1999; Dezhkam, Moloodi, Mootabi, & Omidvar, 2009; Hood, Grupski, Hall, Ivan, & Corsica, 2013), as well as in nonclinical samples (e.g., college students; Anton, Perri, & Riley, 2000; Gordon, Holm-Denoma, Troop-Gordon, & Sand, 2012; Meno, Hannum, Espelage, & Low, 2008).

Regardless of its wide use, research on the dimensionality and psychometric properties of the BES, remains scarce. Also, most studies examining the validity of the scale have been conducted with obese women seeking or undergoing weight loss treatments (Hood et al., 2013). In particular, the adequacy of this scale and its psychometric properties in nonclinical samples is unknown. The current study aimed at examining the BES factorial structure through a confirmatory factor analysis, and its validity in a large sample of women from the Portuguese general population. Furthermore, the current study assesses the distribution of the severity of binge eating symptoms, and the sensitivity and specificity of the BES in discriminating clinically significant binge eating.

2. Material and methods

2.1. Participants

A total of 1008 female participants were enrolled in this study. The sample comprised college students (n = 553; 54.9%), mean age 20.76 (SD = 2.27), and participants from the general population (n = 455; 45.1%), mean age 39.48 (SD = 10.05). The participants' age ranged from 18 to 60, with a mean age of 29.21 (SD = 11.63). Also, participants presented a mean of 13.24 (SD = 2.63) years of education. Participants' body mass index (BMI) mean was 22.90 (SD = 3.79). Seventy-three participants (7.2%) were underweight (BMI <18.5), 684 (67.9%) had a normal weight (18.5 ≥ BMI ≤ 24.99), 194 (19.2%) were overweight (25 ≥ BMI ≤ 29.99), and 57 (5.7%) participants were obese (BMI ≥ 30), according to the standard classification, which reflects the BMI distribution in the Portuguese general female population (Poínhos et al., 2009). In particular, the students presented a mean BMI of 21.67 (SD = 3.08), and the participants from the general population a mean BMI of 24.40 (SD = 4.03). There was a difference in BMI mean values between the groups (t = 12.069; p = .000), which was expected considering the BMI distribution in young and older adult women in the Portuguese general population.

Thirty participants were randomly selected from the total sample to answer to a second administration of the BES to test the scale's temporal stability (after a one-month period).

2.2. Measures

Binge Eating Scale (BES; Gormally et al., 1982). The BES comprises 16 items measuring key behavioural (e.g., rapid eating, eating large amounts of food), and affective/cognitive symptoms (e.g., guilt, feeling out of control or unable to stop eating) that precede or follow a binge. Each item contains 3 to 4 statements that are weighted response options, which reflect a range of severity for each measured characteristic. Participants are asked to select the statement that best describes their experience. Example:

1. I usually am able to strop eating when I want to. I know when "enough is enough".
2. Every so often, I experience a compulsion to eat which I can't seem to control.
3. Frequently, I experience strong urges to eat which I seem unable to control, but at other times I can control my eating urges.
4. I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily.

The scale's possible total scores range from 0 to 46, with higher scores indicating more severe binge eating symptoms. Individuals may be categorized into three groups as defined by established cut scores of binge eating severity (Marcus, Wing, & Lamparski, 1985): no or minimal binge eating (score ≤ 17), mild to moderate binge eating (score 18–26) and severe binge eating (score ≥ 27).

The version of the scale used in the current study underwent a rigorous adaptation procedure. Prior permission to use the BES was obtained from the authors of the original version of the scale (Gormally et al., 1982). A bilingual researcher translated and adapted the scale into European Portuguese. The translation was analysed by researchers with a large experience in the field. The comparability of content was also corroborated through stringent back-translation procedures, with the cooperation of a bilingual researcher. An initial version of the adapted scale was then completed by 50 college students and was preliminarily analysed. A final version of the scale was obtained after conducting some minor adjustments in order to ensure the fidelity of the scale.

2.2.1. Eating Disorder Examination 16.0D (EDE 16.0D; Fairburn, Cooper, & O'Connor, 2008; Ferreira, Pinto-Gouveia, & Duarte, in preparation)

The EDE is an investigator-based semi-structured clinical interview that provides a comprehensive assessment of the frequency and intensity of key behavioural and psychological aspects of eating disorders. It comprises four subscales that reflect the severity of eating psychopathology: restraint, eating concern, weight concern and shape concern. A global score may be obtained by calculating the mean of the subscales' scores. Furthermore, the EDE allows for a thorough assessment of the specific psychopathology of patients with binge eating, such as the presence and frequency of binge eating episodes, features associated with binge eating (e.g., eating much more rapidly than normal), and distress over the episode. The administration of the EDE requires an experienced interviewer and takes 60–90 min. Research has shown that EDE presents high values of internal consistency, discriminant and concurrent validity, and test–retest reliability (for a review see Fairburn, 2008). The Portuguese version of the EDE (Ferreira et al., in