



# A test of an interactive model of binge eating among undergraduate men



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## ABSTRACT

Past research has shown that a combination of high perfectionism, high body dissatisfaction, and low self-esteem is predictive of binge eating in college women (Bardone-Cone et al., 2006). In the current study, we examined whether this triple interaction model is applicable to men. Male undergraduate college students from a large Midwestern university ( $n = 302$ ) completed self-report measures online at two different time points, a minimum of eight weeks apart. Analyses revealed a significant interaction between the three risk factors, such that high perfectionism, high body dissatisfaction, and low self-esteem at Time 1 were associated with higher levels of Time 2 binge eating symptoms. The triple interaction model did not predict Time 2 anxiety or depressive symptoms, which suggests model specificity. These findings offer a greater understanding of the interactive nature of risk factors in predicting binge eating symptoms among men.

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## 1. Introduction

Binge eating episodes are characterized by the consumption of substantially more food than would be expected in a given situation and the subjective experience of loss of control (American Psychiatric Association, 2013). Individuals with binge eating disorder (BED; characterized by binge eating episodes occurring at least once per week over a three month period, as well as associated distress and impairment; American Psychiatric Association, 2013) are at increased risk for a variety of physical and mental health problems (Hudson, Hiripi, Pope, & Kessler, 2007; Pike, Dohm, Striegel-Moore, Wilfley, & Fairburn, 2001). Physical problems include extreme fluctuations in glucose levels and those associated with the weight gain that accompanies binge eating (e.g., type 2 diabetes, high blood pressure, heart disease) and psychological problems include higher rates of anxiety disorders, depression, substance abuse, and personality disturbance (Bulik & Reichborn-Kjennerud, 2003; Wonderlich, Gordon, Mitchell, Crosby, & Engel, 2009). Therefore, it is important to understand factors that contribute to binge eating so that it can be treated and prevented.

The lifetime prevalence for recurrent binge eating among men and women in the United States is approximately 4% and 5%, respectively, and subclinical BED has been found to be even more prevalent among men than women (1.9% and 0.6%, respectively; Hudson et al., 2007). However, research on disordered eating among men is inadequately represented in the literature as compared to research on disordered eating among women (Jones & Morgan, 2010). The relatively comparable

rates of binge eating among men and women highlight the necessity for determining factors that put men at risk for binge eating.

Existing studies show that men and women presenting with disordered eating share common risk factors and exhibit overlap in clinical presentation (Jones & Morgan, 2010). With regard to binge eating, men and women appear to exhibit similar levels and types of symptoms (Barry, Grilo, & Masheb, 2002; Morgan et al., 2002; Tanofsky, Wilfley, Spurrell, Welch, & Brownell, 1995), comorbid mental health problems (Tanofsky et al., 1995), medical complications, and impairment (Striegel, Bedrosian, Wang, & Schwartz, 2012). Given the similarities in the presentations of men and women who engage in binge eating, theoretical models relevant to binge eating among women may also apply to men.

Past research has reported significant correlations between single risk factors and binge eating (Wonderlich et al., 2009); however, it is unlikely that a single factor accounts for the majority of the risk for the development of binge eating. Simultaneously examining the potential contributions of multiple vulnerability factors may aid in the development of a more predictive risk factor model. One such model is the triple interaction model (Bardone-Cone, Abramson, Vohs, Heatherton, & Joiner, 2006; Joiner, Heatherton, Rudd, & Schmidt, 1997; Vohs, Bardone, Joiner, & Abramson, 1999). This risk model has shown that the combination of high perfectionism, high body dissatisfaction, and low self-esteem interacts to predict bulimia nervosa symptom (e.g., binge eating, purging) development among women (Bardone-Cone et al., 2006).

The triple interaction model was developed after Joiner et al. (1997) reported that perfectionism served as a risk factor for bulimic symptoms for individuals who perceived themselves as overweight, an appraisal

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that is comparable to body dissatisfaction. Joiner et al. (1997) postulated that, because perfectionists feel compelled to attain unrealistic standards, the perception that they are overweight implies an unmet standard, and this perceived failure would result in negative affect. *Vohs et al. (1999)* expanded upon Joiner et al.'s (1997) model by adding self-esteem as a moderator variable. Specifically, they proposed that people with high levels of perfectionism who perceive themselves to be overweight would have high levels of bulimic symptoms if they also had low self-esteem. *Vohs et al. (1999)* proposed that perfectionistic individuals who perceived themselves as overweight would be more likely to engage in maladaptive behaviors such as binge eating if they had low self-esteem, whereas those with high self-esteem would be more likely to engage in adaptive behaviors such as making healthy food choices and/or exercising for weight loss. *Bardone-Cone et al. (2006)* added further precision to the triple interaction model by demonstrating that it predicts binge eating but not inappropriate compensatory behaviors such as purging. Thus, the triple interaction model, initially thought to predict bulimia nervosa symptoms, appears to apply most to binge eating.

Subsequent researchers have examined the triple interaction model in a variety of populations. For instance, *Holm-Denoma et al. (2005)* found that the model predicted the maintenance and exacerbation of bulimic symptoms in middle-aged women over 2.5 years. In contrast, *Shaw, Stice, and Springer (2003)* failed to replicate the predictive power of the triple interaction model in a sample of adolescent girls. However, methodological differences (e.g., ages of participants, measurements used) may explain the inconsistent findings (*Shaw et al., 2003*). It is possible that the model's predictive power was not captured in a sample of middle-school aged girls, as there is evidence that the peak age of onset of binge eating is at 18 years old (*Stice, Killen, Hayward, & Taylor, 1998*).

Researchers have also examined whether the triple interaction model specifically predicts binge eating versus other internalizing syndromes characterized by negative affect. For example, *Vohs et al. (2001)* found that the triple interaction model did not predict anxiety symptoms, but did predict depressive symptoms, among college women. In contrast, *Holm-Denoma et al. (2005)* found that the model predicted both the onset and exacerbation of anxiety symptoms in a sample of middle-aged women, but not depressive symptoms. Thus, support is consistently found for the triple interaction model predicting binge eating, but more sporadically found for it predicting anxiety or depression.

Although many risk factors for eating pathology appear to be similar for men and women (*Jones & Morgan, 2010*), certain variables have been shown to differentially impact people depending on their sex. For instance, while women tend to idealize a very slim physique, men tend to simultaneously desire a body characterized by minimal body fat and high muscle mass (*Ridgeway & Tylka, 2005*). The tendency for men to concurrently desire thin and muscular bodies has led researchers to examine two distinct but related constructs when assessing eating pathology risk among men: muscle dissatisfaction and body dissatisfaction (*Bergeron & Tylka, 2007*). It is currently unknown whether muscle dissatisfaction may be more important than body dissatisfaction in the prediction of binge eating among men.

### 1.1. The current study

To date, no one has examined whether the triple interaction model predicts binge eating among men. Thus, the current study examined the hypothesis that triple interaction model (i.e., the combination of high perfectionism, high body dissatisfaction, and low self-esteem) would significantly predict binge eating among college men. Furthermore, we hypothesized that the model would predict binge eating symptoms above and beyond the influence of depressive and anxiety symptoms. We also conducted an exploratory examination on whether muscularity dissatisfaction would work in the triple interaction model

in place of body dissatisfaction. No a priori hypotheses were made in regard to the significance of the model when muscle dissatisfaction was included as a predictor variable. Finally, we tested whether the interaction model would display specificity to binge eating symptoms, as opposed to being predictive of anxiety and depressive symptoms as well.

## 2. Method

### 2.1. Participants & procedures

Participants were recruited from undergraduate psychology courses from a public Midwestern university. The study advertised among a larger pool of studies through an online database. They were given course credit for their participation in the study. All procedures were approved by the university's institutional review board, and the participants provided informed consent prior to participation. Participants completed all questionnaires through a secure online system. The current study was a planned secondary analysis of data collected as part of a larger project examining relationships between peer victimization and disordered eating symptoms. The data were collected over three semesters from 2010–2011. Measures were completed at two time points approximately eight weeks apart and participants received course credit at each time point.

Sixty-three percent of participants completed both the Time 1 and Time 2 assessments. An independent samples *t*-test revealed no significant differences between those who only completed the Time 1 assessment and those who completed both assessments on any predictor or outcome variable at Time 1 (all *p*-values > .05). Following the suggestion of *Malhotra (2008)*, participants who took less than 18 min (i.e., 1.5 standard deviations below the mean completion time) to complete to the questionnaires (*n* = 19) were excluded from analyses.

The final sample consisted of 302 male participants with a mean age of 19.2 years (*SD* = 1.3; age range = 18–24). The ethnic composition of the sample was 88.8% White (*n* = 269), 1.3% African-American or Black (*n* = 4), 5.3% Asian (*n* = 16), 2% Hispanic/Latino (*n* = 6), and 2.7% Other (*n* = 8).

### 2.2. Measures

#### 2.2.1. Eating Disorder Inventory (EDI; *Garner, Olmstead, & Polivy, 1983*)

The EDI, which was given at Time 1, is a 64-item self-report measure that assesses psychological and behavioral characteristics common in people with eating disorders. Items are rated on a scale of 1 (never) to 6 (always). The total score was summed by adding the rating responses for all items on that subscale. Studies have shown evidence of the usefulness of the EDI in non-clinical samples using the full-scale scoring method (*Crowther, Lilly, Crawford, & Shepherd, 1992; Klemchuk, Hutchinson, & Frank, 1990; Lee, Lee, Leung, & Yu, 1997; Shore & Porter, 1990*).

Two subscales of the EDI, the perfectionism subscale and the Body Dissatisfaction subscale, were used in this study as predictor variables. The perfectionism subscale consists of six items, and includes statements such as "I hate being less than best at things." The Body Dissatisfaction subscale consists of nine items and includes statements such as, "I think that my stomach is too big." The ranges of scores for the perfectionism and body dissatisfaction subscales are 0–36 and 0–54, respectively. In addition, a single item from the EDI Bulimia subscale EDI (item 16) was used to gather descriptive data on what percentage of participants endorsed binge eating at Time 1. The perfectionism and body dissatisfaction subscales had Cronbach's alphas of .83 and .85 at Time 1, respectively, which indicates good reliability. *Espelage et al. (2003)* reported evidence that the EDI is a reliable and valid assessment tool based on the data from three samples (archival clinical, treatment study, and nonpatient college). Important for the present study, the EDI has been shown to have the same eight-factor structure for both

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