THE ROLE OF OVERVALUATION OF SHAPE AND WEIGHT IN LATINAS WITH BINGE EATING DISORDER

by

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ABSTRACT

BROOKE ELIZABETH PALMER. The role of overvaluation of shape and weight in Latinas with binge eating disorder. (Under the direction of DR. FARY CACHELIN and DR. JEANETTE BENNETT)

Binge eating disorder (BED) is characterized by episodes of eating unusually large amounts of food while experiencing a sense of loss of control. Binge eating behavior occurs in all ethnic/racial groups, yet the majority of research has focused on White women. This study sought to understand the role of overvaluation of shape and weight (OV S/W) in a community sample of Latinas with binge eating symptomatology. OV S/W refers to the excessive importance of shape and weight on self-evaluation and is a diagnostic criterion for other eating disorders, but not BED. In White women and ethnically diverse patient samples, OV S/W is related to poorer: BED progress, treatment outcomes, and psychological functioning. Community samples of Latinas are absent in these studies. It was hypothesized that Latinas who overvalued their shape and weight would exhibit more BED symptomatology and have poorer psychological functioning than those who did not overvalue. Participants included 151 Latinas with clinically significant levels of binge eating. Each participant completed the Eating Disorder Examination (Fairburn & Cooper, 1993) to assess OV S/W and BED symptomatology as well as self-report measures to assess levels of psychological functioning. In the overall sample, OV S/W significantly predicted the more frequent binge episodes and related distress. In a subset of 54 participants with BED, those who overvalued had significantly more distress due to binge eating ($p < .05$), but no differences were found in binge eating frequency or levels of self-esteem, depression, or psychological distress.

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INTRODUCTION

Binge Eating Disorder (BED) is a serious mental illness associated with various physical and mental health comorbidities afflicting individuals of all ages across the world (Kessler et al., 2013). Overall, BED is characterized by recurrent binge eating (BE) episodes that cause distress and an absence of compensatory behaviors such as inducing vomiting or using laxatives (American Psychiatric Association, 2013). BED is more common in females with an estimated 12-month prevalence rate of 1.6% (APA, 2013), a 2.6%-3.0% lifetime prevalence rate (Kessler et al., 2013; Stice, Marti, & Rhode, 2013), and up to 30-40% prevalence rates in obese females undergoing gastric bypass surgery (Latner, Wetzler, Goodman, & Glinski, 2004). Importantly, BED is the most commonly diagnosed eating disorder in the United States (Franko, Lovering, & Thompson-Brenner, 2013).

Diagnostically, BED became a unique eating disorder diagnosis in the most recent publication of the American Psychiatric Association's (APA) Diagnostic and Statistical Manual of Mental Disorders (DSM-5; 2013). Previous editions of the DSM, such as the DSM-IV-TR (APA, 2000), included BED as an Eating Disorder Not Otherwise Specified (EDNOS) along with various subthreshold eating disorders and aberrant eating symptomatology. This classification brought attention to BED as a disorder associated with significant health risks, psychiatric comorbidity, and distress. However, with the EDNOS classification, researchers tended to focus their efforts on the more established disorders of Bulimia Nervosa (BN) and Anorexia Nervosa (AN; Fairburn & Bohn, 2005).

According to the DSM-V (APA, 2013), a BED diagnosis requires an individual to report BE episodes at least once per week for a period of at least three months prior to diagnosis. BE episodes are defined by eating an objectively large amount of food in a distinct period of time and experiencing a sense of loss of control (APA, 2013). In addition, one must experience marked distress due to BE and no effort to compensate for the excessive behavior. The final component is that individuals with BED endorse at least three of five additional symptoms such as experiencing disgust or guilt after BE, eating until uncomfortably full, when not physically hungry, much more rapidly than normal, or alone due to embarrassment (APA, 2013).

Appropriate prevention, identification, and treatment of BED in patients is important due to physical and mental health risks associated with the disorder. Specifically, individuals with BED are at an increased risk of developing depression and anxiety disorders; possibly due to affect regulation difficulties or distress from BE (APA, 2013). Further, those with BED are more prone to develop diabetes, hypertension, and overweight and obesity because of the increased energy intake from BE (Kessler et al., 2013). Two factors that can complicate an effective approach towards detecting and treating BED in women are patient's treatment-seeking behaviors and the biases within health care professionals (Kessler et al., 2013; Dovidio & Fiske, 2012). Specifically for health care professionals, cultural biases are a major mechanism leading to inconsistent detection and treatment of BED, particularly for Latinas (Cachelin, Gil-Rivas, & Vela, 2014).

Among women diagnosed with BED, all ethnic/racial groups are represented, especially Latinas (Franko, Lovering, & Thompson-Brenner, 2013). For example, Latina

women exhibit higher rates of BE compared to other ethnic/racial groups (Alegría et al., 2007) and as Latina women acculturate to the United States' culture, the diagnosis of BED increases (Swanson et al., 2012). Together, these facts suggest that Latinas are at risk for developing BED and its related psychopathology or health complications.

In mental and physical healthcare settings, Latinas are less likely than White women to seek treatment for their symptoms possibly due to additional barriers (Alegría et al., 2007; Marques et al., 2011). First, Latinas are more likely to consult a primary care physician who might not have the proper training to accurately detect eating disorder symptoms (Cachelin & Striegel-Moore, 2006). Second, health care professionals may misinterpret symptoms or misdiagnose the presentation because of implicit biases based on cultural assumptions. For example, when seeking treatment, White women were more likely to receive a correct eating disorder diagnosis and appropriate treatment than Latina women (Cachelin & Striegel-Moore, 2006). These implicit biases held by providers can affect treatment decisions and lead to health disparities (Dividio & Fiske, 2012). Lastly, the majority of current treatments have typically been validated within homogenous groups of primarily White women; thus they may not be adequate for Latinas. The need for a better clinical understanding of BED is clear for Latinas, a demographic group that is continuing to grow in the United States (U.S. Census Bureau, 2012).

Few studies have sought to elucidate the presentation of BED in Latinas above and beyond prevalence rates. Of those that examined psychosocial and presentation factors, most investigations have explored the role of culture, acculturation, and characteristics of food in binge episodes (Vela, 2014), or specific BED symptomatology in Latinas such as binge frequency and shape and weight concerns (Franko et al., 2012).

Thus, enhancing knowledge surrounding diagnosis, prognosis, and treatment in Latinas is necessary. One related, but understudied factor especially in Latinas, is overvaluation of weight and shape.

BED diagnostic criteria do not include overvaluation of shape and weight; however, it is a criterion for BN and AN (DSM, 2013). Overvaluation of shape and weight refers to the amount of importance shape and weight plays in terms of self-evaluation. When one places undue or exaggerated importance on their shape and weight, it is considered overvaluation (Goldschmidt et al., 2010). Overvaluation is strongly tied to the prognosis of BED as well as treatment response in the general population (Grilo, 2013).

Overvaluing one's shape and weight is a cognitive style that seems to be stable and resistant to change when compared to body dissatisfaction or shape and weight concerns and is also closely tied to self-esteem (Fairburn, 2008; Grilo, 2013). Body dissatisfaction refers to the negative self-evaluation of a person's body in any of its facets (Wade, Zhu, & Martin, 2011), and shape and weight concerns are a more global cognitive style related to various components of shape- and weight-related attitudes (Goldschmidt et al., 2010). Overvaluation differs from our understanding of body image and body dissatisfaction because it captures the extreme way in which individuals integrate shape and weight as the main measure to rate their self-worth (Grilo, 2013). It is considered one of the core components of eating disorder pathology (Fairburn, 2008).

Recent evidence has demonstrated clinical significance of overvaluation in predominantly White BED patients suggesting that it might have clinical utility and should at least be included as a diagnostic specifier to help inform treatment (Grilo,

2013). For example, in a racially and ethnically diverse sample of treatment-seeking women diagnosed with BED, those who overvalued their shape and weight had significantly higher levels of eating disorder symptomatology as well as higher levels of depressive symptoms and lower self-esteem compared to women who did not overvalue (Grilo, White, & Masheb, 2012). Interestingly, BMI and BE frequency did not differ by overvaluation group, suggesting that the construct of overvaluation is not a byproduct of overweight/obesity or BE-related distress but a separate indicator of psychopathology and psychological distress. Therefore, overvaluation may serve well as a diagnostic specifier, indicating a more severe BED presentation and concurrent psychopathology.

Another example of the clinical utility of overvaluation of shape and weight in BED comes from Goldschmidt and colleagues (2010). Researchers compared White and African-American women with BED to women with other psychiatric diagnoses using overvaluation as a predictor of BED severity. Women who overvalued could be reliably categorized as having more severe BED psychopathology. In addition, women with BED without overvaluation demonstrated similar levels of impairment and distress as women with other psychiatric diagnoses (Goldschmidt et al., 2010). Overall, these findings provide further support for overvaluation as a diagnostic specifier to demonstrate symptom severity and help with treatment planning. If it were a diagnostic criterion, women with BED symptoms without overvaluation would not be diagnosed with BED and consequently not receive treatment despite having a clinically significant amount of distress.

A third example of the potential clinical utility of overvaluation of shape and weight comes from studies that have used overvaluation as a predictor of BED treatment

outcome. Overvaluation has been related to lower remission rates 12 months after treatment completion in racially and ethnically diverse male and female BED patients (Grilo, White, Guerguieva, Wilson, & Masheb, 2012). The pattern remained after controlling for gender and race/ethnicity. Additionally, overvaluation status was related to more frequent binge episodes and related distress at the end of BED interventions as well as a higher likelihood of premature treatment termination (Osjerkis, Sysko, Goldfein, & Devlin, 2012).

Overall, investigators have examined overvaluation in ethnically diverse samples of BED patients, but only in treatment-seeking populations (Franko et al., 2012; Grilo, White, & Masheb, 2012). When community samples have been analyzed, Latinas were not represented (Goldschmidt et al., 2010), or analyses did not examine specific ethnic differences (Grilo et al., 2008). Based on evidence suggesting that Latinas do not commonly seek treatment for eating disorders (Alegría et al., 2011; Marques et al., 2011), previous research most likely has not captured an accurate picture of overvaluation in the community Latina population suffering with BED.

Current research suggests that Latinas may exhibit similar patterns to White women in how overvaluation of shape and weight relates to BED symptomatology and comorbid psychopathology. Some evidence comes from the body dissatisfaction literature. While overvaluation of shape and weight is conceptually distinct from the construct of body dissatisfaction, there is a strong association between the two where body dissatisfaction has been found to predict overvaluation of shape and weight (Trottier, McFarlane, & Olmsted, 2012). Research on Latinas and body image and body dissatisfaction have produced conflicting results at times, but there is sufficient evidence

demonstrating that Latinas have similar or higher levels of body dissatisfaction when compared with White women (Franko et al., 2012). For example, in a meta-analysis conducted on body dissatisfaction literature in ethnically and racially diverse samples of women, Latina women were no different than both White and Asian women in terms of their amount of body dissatisfaction and had more dissatisfaction than African American women (Grabe & Hyde, 2006). Based on the strong relationship between the constructs of body dissatisfaction and overvaluation, it is possible that overvaluation of shape and weight will affect Latinas as much as women of other racial and ethnic groups if not more.

Further evidence can be extrapolated from clinical presentations of Latinas with BN, a disorder inherently linked to the overvaluation of shape and weight. For example, in a multi-ethnic/racial community sample, Latinas were just as likely to be diagnosed with BN as White women, implying they were just as likely to endorse overvaluation which is one of the diagnostic criterion for BN (Cachelin, Veisel, Barzegarnazari, & Striegel-Moore, 2000). Similarly, in a multi-ethnic/racial sample of treatment-seeking participants diagnosed with BN, there were no significant differences in the Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) subscales of shape and weight concern (Chui, Safer, Bryson, Agras, & Wilson, 2007). On a national scale, Marques et al. (2011) found lifetime BN rates for Latinas to be 2.34 compared to .97 for White women, which was a significant difference. Such findings provide further support that Latinas exhibit overvaluation of shape and weight in the context of BE pathology at similar or greater levels than women of other races and ethnicities.

The primary objective of this study was to examine the role of overvaluation of shape and weight in a community sample of Latinas with BED and non-eating disordered controls. Specifically, researchers assessed if overvaluation was significantly related to a more severe BED presentation as measured by frequency of BE and level of distress due to BE. It was hypothesized that after accounting for relevant covariates, overvaluation of shape and weight would be associated with more frequent BE and more distress as a result of BE.

The secondary objective of the study was to explore which aspects of BED presentation (i.e. frequency of BE and distress) and concurrent psychopathology (i.e. depressive symptoms and self-esteem) are related to overvaluation in Latinas with a clinical diagnosis of BED. Previous research has used a standard to determine overvaluation which was established with White women. Because White standards may not apply to Latinas, this project first examined the distribution of shape and weight valuation in the Latina sample in order to ascertain if a different cut-off would be necessary. BED participants were divided into two groups based on the cut-off score: those who overvalued shape and weight and those who did not. Groups were then compared in terms of relevant BED symptomatology such as BE frequency and level of distress due to BE. It was hypothesized that results would follow previous findings with participants who overvalued their shape and weight exhibiting more severe symptomatology than participants who did not overvalue.

In addition, psychological functioning (i.e. depressive symptoms, self-esteem, and other psychiatric symptoms) were compared based on overvaluation status. Various studies have demonstrated a relationship between higher levels of overvaluation of shape

and weight and more depressive, anxiety, and somatic symptoms (Grilo, White, & Masheb, 2012; Goldschmidt et al., 2010), poorer self-esteem (Osjerkis et al., 2012), and more psychological distress among women with BED (Grilo 2013). Therefore, it was hypothesized that Latinas with BED who overvalued would have poorer psychological functioning than Latinas who did not overvalue.

Both objectives attempted to increase understanding of the clinical presentation of BED among Latinas, a group of women who have been found to suffer from BED yet do not have their concerns sufficiently addressed. Results on how overvaluation of shape and weight relates to BED symptomatology and psychological functioning in Latinas could be used to inform healthcare providers, community members, and treatment considerations. Findings from this study have important implications for the health of the Latina population. For example, BED is closely tied to overweight and obesity, conditions that are very prominent in Latinas (Ogden, Carroll, Kit, & Flegal, 2014), so understanding the complexities of BED may in turn help address the trend in overweight and obesity for this population.

METHOD

Participants

One hundred and fifty-one females who self-identified as Latina were recruited from the community via flyers in English and Spanish posted in clinics, college campuses, and other community areas in Los Angeles, California and Charlotte, North Carolina. The flyers advertised a research study targeting Latinas who have problems with bingeing or overeating. Participants were required to be 18-55 years old, have a BMI $\geq$ 18, and endorse significant overeating which was defined as eating the equivalent of at least two to three meals worth of food in less than a 2-hour period. Being currently pregnant or receiving treatment for an eating disorder excluded potential participants. Both native Spanish- and English-speaking women were included. Of the 151 participants, the current project analyzed a subset of 121 (67 non-ED participants and 54 with BED).

The average age of participants included in this study was 26.89 years (*SD* = 7.82). Average BMI calculated from self-reported height and weight was 30.58 (*SD* = 7.87) indicating a high rate of overweight and obese participants. Participant characteristics were representative of a student profile: the majority were single (71.1%), highly educated (81% with at least some college experience), had no children (67.8%), had insurance coverage during some point in the past 5 years (72.7%), and earned less

than $50,000 annually (64.9%). Additionally, the majority (58.1%) were born in the United States. [1]

Procedure

Data collected in Los Angeles, California, as well as primary data collected in Charlotte, North Carolina, were analyzed. Both studies were approved by the appropriate IRBs (California State University, Los Angeles and the University of North Carolina Charlotte) and used similar protocols.

Interested individuals contacted research personnel and were screened for relevant inclusion and exclusion criteria. If participants satisfied inclusion requirements, they were administered a diagnostic interview by a trained graduate student over the phone. Informed consent was completed at the beginning of the telephone interview. Using DSM-5 criteria, participants who were diagnosed with BN (both purging and non-purging) and BED were recruited into a randomized control trial study for a culturally adapted cognitive behavioral guided self-help treatment for BE (CBT-gsh). In addition, if participants met threshold criteria for an eating disorder they completed a number of questionnaires related to mental and physical functioning. The current project solely analyzed pre-intervention data and only included Latinas with no diagnosable eating disorder but sub-threshold BED symptoms and those diagnosed with BED. Participants received $25 compensation in the form of gift cards for the EDE interview and another

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[1] Analyses based on geographic region indicated few differences between LA and Charlotte. Age and BMI were not significantly different based on region; however Charlotte participants were more representative of the community than the student population. For example, Charlotte participants were significantly more likely to have less education $X^2(5) = 15.06$, $p < .05$, be a first generation immigrant $X^2(4) = 15.40$, $p < .01$, and they were more likely to have children. Regional differences among the participants with BED yielded no significant differences.

$25 for completing the questionnaires. Participants in the L.A. portion of the study received slightly more compensation because they completed more questionnaires and an additional interview.

Measures

***BMI*.** Body mass index (BMI; kg/m^2) was calculated from participants' self-reported height and weight collected at the time of the diagnostic telephone interview. BMI is a common method of determining weight status and is calculated using a formula based on an individual's height and weight (Centers for Disease Control and Prevention, 2011). BMI represents body mass, and as such, can be used to approximate overweight and obesity. A BMI score of 18-24.9 kg/m^2 signifies normal weight, 25-29.9 kg/m^2 indicates overweight, and a score of 30 kg/m^2 and greater indicates obesity.

Demographics and treatment-seeking behavior. Participants provided relevant information to the interviewer regarding marital status, age, income and education level, and health insurance status. The Hollingshead 2-factor social class index was used to capture both highest education level attained and occupation (Hollingshead, 1969). If participants were not employed, occupation of the mother or father was used as a proxy. Higher values represent lower socioeconomic status (SES). Participants also provided information related to treatment history, their perception of the severity of their overeating, and their desire for help in dealing with overeating.

BED Diagnosis and Symptomatology. The Eating Disorder Examination 12th Edition (EDE; Fairburn & Cooper, 1993) is a widely used semi-structured diagnostic interview that assesses eating disorder symptomatology. It focuses mainly on eating disorder symptoms that have occurred in the previous four weeks except when assessing

diagnostic-specific duration criteria. The number of objective binge episodes (OBEs) is counted, both in terms of days and episodes in the last 6 months in order to assess diagnostic-relevant frequency of episodes. An OBE is an episode in which the participant consumes an objectively large amount of food and experiences a sense of loss of control related to the eating. Subjective binge episodes (SBE; not consuming a large amount of food but still experiencing loss of control) and objective overeating episodes (OO; consuming a large amount of food without loss of control) are also counted. In addition, this version of the EDE assesses distress related to binge eating and weight, compensatory behaviors such as self-induced vomiting, laxative abuse, fasting, excessive exercise, and diuretic abuse, importance of shape and weight, and weeks without BE. The EDE has demonstrated sufficient psychometric properties in relation to all eating disorders and continues to do so when used with racial and ethnic minority participants (Fairburn & Cooper, 1993; Grilo, Lozano, & Elder, 2005).

Overvaluation of Shape and Weight. The EDE was used to assess the degree to which a participant's shape and weight factors into their self-evaluation based on a 7-point scale (0 – no importance; 6 – supreme importance: nothing is more important in participant's self-evaluation). Questions ask "Over the past 4 weeks, has your shape influenced how you feel about (judge, think, evaluate) yourself as a person?" and the same question exists with weight instead of shape (Fairburn & Cooper, 1993). A follow-up question is used to help participants comprehend the question: "if you imagine the things which influence how you feel about (judge, think, evaluate) yourself – such as your performance at work, being a parent, your marriage, how you get along with other

people – and put these things in order of importance, where does your shape (or weight) fit in?"

Consistent with the literature on overvaluation of shape and weight, the average of the two ratings for importance of shape and weight was used to demonstrate clinical versus subclinical overvaluation (Grilo et al., 2008; Goldfein, Walsh, & Midlarsky, 2000). Traditionally, ratings of 4-moderate and above designate clinical concern and represent threshold overvaluation for White samples (Franko et al., 2012). Ratings of 3.5 and below are typically subclinical. This project used the current data to establish a population-specific cut-off for clinical overvaluation based on the average overvaluation score for non-eating disordered participants plus one standard deviation.

Because multiple interviewers were used in the studies, the authors conducted an inter-rater reliability analysis to verify consistency of ratings. Authors randomly selected 10 (8.3%) participant recordings to transcribe and rate the relevant overvaluation questions and answers. Inter-rater reliability was then assessed using a one-way random, average measures intraclass correlation to determine how consistent interviewers were in their ratings of overvaluation across subjects. The ICC was .77 which is considered excellent inter-rater reliability (Hallgren, 2012). Because of the high ICC, it can be said that measurement error, or individual differences between raters, was not high enough to decrease statistical power of the rating.

Depression. The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) measures depressive symptoms with 21 items. It captures the cognitive, affective, and somatic symptoms of depression. Participants rate severity of symptoms for the previous two weeks and the total ranges from 0 to 63 with higher scores representing

greater depression. The measure demonstrates good internal consistency (α = .85). The BDI-II is an acceptable measure of depression in a Latino population (Beck, Steer, & Brown, 1996); acceptable internal consistency (α = .91) and test-retest reliability (.86) exists in the Spanish version of the BDI-II as well (Wiebe & Penley, 2005). Cronbach's alpha for the current sample was .93. Total score on this measure was used to assess depressive symptom severity.

Self-Esteem. The 10-item Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) is a commonly used measure assessing global self-esteem. Participants rate how much they agree with various self-referencing statements with a 4-point scale. Higher scores signify higher self-esteem. Various studies have demonstrated adequate test-retest reliability (r > .85) and internal consistency (α = .72-.92; Rosenberg, 1965). In the current sample, responses on the RSES demonstrated a similar, adequate internal consistency (α = .84). The RSES demonstrates good validity in adult Latino populations (α = .90; Sinclair, Blais, Gansler, Sandberg, Bistis, & LoCicero, 2010) as well as in the Spanish language version (α = .88; test-retest r = .84; Martín-Albo, Núñez, Navarro, & Grijalvo, 2007). Total scores from this measure were used in data analyses.

General Mental Health. The Brief Symptom Inventory-18 (BSI; Derogatis, 2000) was administered in order to evaluate general psychiatric functioning and distress experienced in the previous 7 days. Ratings were provided on a scale of 0 (not at all distressed) to 4 (extremely distressed). Total scores on this measure range from 0 to 72 with higher scores signifying higher levels of psychological distress. This measure has good internal consistency and correlates highly with other psychiatric symptom measures such as the Symptom Checklist 90-Revised (SCL-90-R; Derogatis, 1992). Internal

consistency is acceptable (α = .89) and test-retest reliability estimate over a six-week time frame is .90 (Derogatis, 2000). Reliability in Latino samples is good (α = .81-.91 across different scales; Asner-Self, Schreiber, & Marotta, 2006) and the Spanish-language version also has demonstrated acceptable internal consistency (α = .70-.91 across different scales; Ruipérez, Ibáñez, Lorente, Moro, & Ortet, 2001). The current sample's internal consistency was also good (α = .93). Analyses for this project used the total score on this measure to represent psychological functioning and related distress.

Data Analyses

Data Management. Data was initially entered by a research assistant into IBM's SPSS Statistical Software, version 20, and then a separate research assistant checked the data entry and any discrepancies were discussed and corrected.

Overvaluation Cutoff Score. The overvaluation of shape and weight was computed by averaging the two responses regarding the value of shape and weight respondents indicated from the EDE. In order to determine a cutoff score for overvaluation of shape and weight in Latina women, the average plus one standard deviation of the non-eating disordered Latinas' overvaluation score was used as the cutoff for what is considered clinically significant overvaluation of shape and weight. This method was chosen based on previous research with BN and setting cutoffs for overvaluation (Goldfein, Walsh, & Midlarsky, 2000). Specifically, using the average overvaluation score of non-clinical participants as the cutoff did not allow for enough specificity in diagnosis, whereas going two standard deviations above was too rigorous. Previous research has used cutoff scores based on primarily White women's scores and it may be problematic to assume that Latina women would have the same overvaluation

pattern. After the cutoff score was calculated, the participants with BED were then categorized into meeting the overvaluation of shape and weight threshold or not (i.e., 1= yes, 0= no).

Descriptive Analyses. Means and standard deviations were calculated for all continuous variables. Frequencies for categorical variables such as education level and marital status were counted and interdependence among categorical variables was examined by X^2 analysis. Independent samples *t*-tests were conducted to examine group differences between geographic location and baseline characteristics (e.g., age, etc.)**.** When any significant differences on baseline characteristics were found between the groups, they were to be included in the hypotheses 1 analyses as covariates.

Hypothesis 1 Analyses. Two hierarchical multiple regression analyses were used in order to examine if overvaluation predicted severity of eating disorder symptom presentation and distress in the entire sample of participants. The entire sample was used in order to maximize power and because all participants exhibited some aspect of BE, so it was relevant to attempt to understand how overvaluation impacted BE across a wide range of symptom presentations. Additionally, because this is the first study to use a sample of Latina community participants, authors wanted to broadly assess for the predictive power of overvaluation of shape and weight.

Step 1 of the regression included BMI and age because they were significantly correlated with overvaluation of shape and weight. Step 2 included the average overvaluation score. Separate regression analyses were conducted for each dependent variable. All dependent variables related to eating disorder pathology were pulled from the EDE; specifically, total number of OBEs for the previous 3 months, and subjective

distress due to BE were used. The change in R^2 going from step 1 to step 2 was used to assess significance of the role of overvaluation on eating disorder symptomatology. If a significant change was found, a significance level of .05 for the regression weights was set to evaluate the influence of overvaluation.

Hypothesis 2 Analyses. In order to better understand what was associated with overvaluation status in Latinas with BED, independent samples *t*-tests were used to test group differences between those who overvalued and those who did not. Dependent variables were OBE frequency, distress, as well as frequency of subjective binge episodes (SBE) and objective overeating (OO) eating episodes. SBEs and OOs were included because they help capture a more nuanced look at BE pathology and SBEs have been shown to illicit equivalent amounts of distress in women who binge (Brownstone et al., 2013). The BDI-II, RSES, and BSI-18 were also included as dependent variables in order to examine the relationship between overvaluation and psychological distress which typically occurs in conjunction with BED. Any group differences with a *p*-value $< .05$ were considered statistically significant.

RESULTS

Data Management. After Charlotte data were entered and checked, it was combined with the data from Los Angeles on the matching variables of interest. Participants diagnosed with BED and non-ED participants were identified and all other participants (e.g. those diagnosed with BN) were removed (n = 24). Missing data were then evaluated, and participants were removed completely (n = 6) if they were missing any relevant EDE variables (i.e. overvaluation scores, number of binge episodes, etc.).

Descriptive Analysis. The BED and control groups differed on various demographic measures. For example, Latinas with BED were more likely to be older and significantly more likely to have a higher BMI (see Table 1). The BED group also had significantly more OBEs and higher levels of distress and overvaluation, yet significantly fewer episodes of objective overeating than controls (See Table 1). This is to be expected given that the diagnostic hallmark of an OBE is loss of control. The two groups may have been eating similar amounts of food in the OBE versus OO episodes, but the loss of control is what separates the two and moves participants into a clinical diagnosis of BED.

Participants reported mild levels of distress and psychological symptoms. The BDI-II average for BED participants was 17.94 (SD = 12.33) suggesting mild depressive symptoms (Beck et al., 1996) with a wide range of variability (range of scores for participants was 1-52). The average score on the BSI-18 was 17.51 (SD = 14.73) which demonstrates some psychological distress, but not enough to be considered clinically significant based on scoring criteria for the measure (Derogatis et al., 1996). On average, participants reported low self-esteem (M = 27.39. SD = 5.82).

Overvaluation. The average overvaluation score for the non-ED women was 3.35 (*SD* = 1.49). Therefore, taking one standard deviation above this yielded a sample-specific overvaluation cutoff score of 4.84. Because the average overvaluation score can only be measured in increments of .5, the closest cutoff would be 5.0 to accommodate this sample-specific value and is higher than current 4.0 cutoff determined in White women (Fairburn & Cooper, 1993).

Correlation Analyses. Correlation analyses were conducted with demographic variables and overvaluation scores in order to identify potential confounders in hypothesis 1 analyses. In the sample, overvaluation was significantly correlated with age ($r = .19$, $p < .05$) and BMI ($r = .28$, $p < .01$), but not with SES ($r = .09$, $p = .31$). Therefore, regression analyses controlled for age and BMI.

Hypothesis 1 Results. Hierarchical regression analyses were used to analyze the relationship between overvaluation scores and eating disorder symptomatology such as number of OBEs and amount of distress. Results demonstrated a significant relationship between overvaluation level and BED symptomatology. The index of fit, R^2, indicated that 7% of the variance in OBE frequency was accounted for by age and BMI, and that when including overvaluation of shape and weight, the model accounted for 14% of the variance. The model was statistically significant and overvaluation had a strong and meaningful effect ($F(3, 116) = 6.04$, $p < .01$). Additionally, overvaluation was the only significant predictor of OBE in the model for the current sample. According to the regression coefficients and holding age and BMI constant, with each one-unit increase in overvaluation score (.50 on a 0-6 point scale) there was a predicted increase of 4.51 OBE episodes (See Table 2).

Results regarding overvaluation of shape and weight and levels of distress followed a similar, and stronger pattern of results (See Table 3). Age, BMI, and overvaluation accounted for 18% of the variance in distress due to binge eating. According to the regression coefficients for this model, a one-unit increase in overvaluation score predicted a .36 increase in distress level ($p < .01$) which is measured on a scale from 0-6.

Hypothesis 2 Results. This objective sought to analyze what symptomatology and comorbid psychopathology was associated with overvaluation status in the current sample. It was predicated that overvaluation status would be associated with poorer BED symptomatology as measured by number of OBEs, SBEs, and OO episodes, as well as reported distress. *T*-test analyses demonstrated that participants who overvalued their shape and weight, based on the cut-off of 5, expressed significantly more distress due to binge eating. No significant differences were found in frequency of OBE, OO, or SBE episodes (See Table 4).

No significant differences were found when comparing scores on the BDI-II, BSI-18, and RSES based on overvaluation status. Participants who overvalued their shape and weight did have higher scores on the BDI-II and BSI-18 indicating higher levels of depression and more psychiatric symptoms, but they also had higher levels of self-esteem than those who did not overvalue, although the difference was almost negligible and not statistically significant. These results demonstrate that in this community sample of Latinas with BED, valuing one's shape and weight excessively was not significantly associated with psychological functioning.

Table 1: Group differences based on eating disorder status

	Control (*n* = 67)	BED (*n* = 54)	*t*-test result	*p*-value
	M (SD)	*M (SD)*		
Age	25.79 (7.78)	28.26 (7.72)	*t*(119) = -1.74	.084
BMI	28.54 (6.39)	33.07 (8.81)	*t*(118) = -3.26	.001
Hollingshead SES Score	41.69 (16.25)	43.81 (15.11)	*t*(116) = -.73	.469
OBE past 3 months	1.95 (3.26)	38.5 (21.84)	*t*(119) = -13.52	.000
SBE	2.83 (6.16)	4.81 (6.10)	*t*(119) = -1.76	.080
OO	5.85 (8.25)	3.11 (4.83)	*t*(119) = 2.16	.033
Overvaluation	3.35 (1.49)	4.23 (1.14)	*t*(119) = -3.58	.001
Distress	2.79 (1.39)	3.65 (.76)	*t*(86) = -3.73	.000
BDI-II	-	17.9(12.33)		
BSI-18	-	17.51(14.73)		
RSES	-	27.39(5.82)		

Note. Control participants did not complete self-report questionnaires which is why those scores are missing. BMI = body mass index, Hollingshead SES Score range = 11-77, OBEs = the total number of days of objective binge episodes in previous three months, Overvaluation and Distress scores range = 0-6 with higher scores indicating more severity, BDI-II = Beck depression inventory and scores range from 0-63 with higher scores indicating more depressive symptoms, RSES = Rosenberg self-esteem scale and scores range from 10-40 with higher scores indicating higher self-esteem, BSI-18 = brief symptom inventory 18 and scores range from 0-72 with higher score indicating more psychiatric distress due to symptoms, SBE = subjective binge episodes in past month, and OO = objective overeating in past month

Table 2: Hierarchical regression analyses predicting OBEs based on overvaluation

Model		*b*	*S.E.*	B	R^2	*F*	95% CI	
							LL	UL
Step 1					.07*	4.26*		
	(intercept)	-7.71	9.38				-26.28	10.87
	Age	.23	.29	.08			-.36	.81
	BMI	.66*	.29	.22			.08	1.24
Step 2								
					.14**	6.04**		
	(intercept)	-16.76	9.56				-35.70	2.18
	Age	.16	.29	.05			-0.41	.72
	BMI	.46	.29	.16			-.11	1.04
	Overvaluation	4.51**	1.50	.27			1.53	7.49

Note. N = 120. CI = confidence interval; LL = lower limit, UL = upper limit. *p <.05, **p<.001. R = .26 and .37

Table 3: Hierarchical regression analyses predicting distress based on overvaluation

Model		*b*	*S.E.*	B	R^2	*F*	95% CI	
							LL	UL
Step 1					.05	2.27		
	(intercept)	2.26**	.52				1.23	3.29
	Age	.02	.02	.14			-0.01	.05
	BMI	.02	.02	.13			-.01	.05
Step 2								
					.23**	8.17**		
	(intercept)	1.46**	.51				.45	2.46
	Age	.01	.02	.07			-0.02	.04
	BMI	.01	.02	.04			-.02	.04
	Overvaluation	.36**	.08	.44			.20	.52

Note. $N = 87$. This sample size is smaller due to the fact that only individuals who endorsed OBEs were asked about their distress. CI = confidence interval; LL = lower limit, UL = upper limit. *$p < .05$, **$p < .001$. R=.23 and .48.

Table 4: Group differences based on overvaluation status in BED women only

	No overvaluation	Overvaluation	*t*-test result	*p*-value
	M (SD)	*M (SD)*		
Age	26.94 (7.52)	30.50 (7.73)	*t*(52) = -1.66	.102
BMI	31.92 (8.98)	35.02 (8.37)	*t*(52) = -1.26	.215
OBE past 3 months	36.38 (20.04)	42.10 (24.74)	*t*(52) = -.93	.358
SBE	5.65 (3.40)	3.40 (5.86)	*t*(52) = 1.32	.194
OO	3.03 (5.02)	3.25 (4.62)	*t*(52) = -.16	.873
Overvaluation	3.54 (.81)	5.40 (.48)	*t*(52) = -9.32	.000
Distress	3.44 (.70)	4.00 (.73)	*t*(52) = -2.78	.007
BDI-II	17.13 (10.31)	19.24 (15.27)	*t*(42) = -.55	.587
BSI-18	15.84 (12.36)	20.33 (18.14)	*t*(41) = -.97	.340
RSES	27.19 (5.20)	27.77 (7.00)	*t*(40) = -.31	.761

Note. $N = 54$ except for the variables of BDI ($n = 44$), BSI ($n = 43$), and RSE ($n = 42$). BMI = body mass index, Hollingshead SES Score range = 11-77, OBEs = the total number of days of objective binge episodes in previous three months, Overvaluation and Distress scores range = 0-6 with higher scores indicating more severity, BDI-II = Beck depression inventory and scores range from 0-63 with higher scores indicating more depressive symptoms, RSES = Rosenberg self-esteem scale and scores range from 10-40 with higher scores indicating higher self-esteem, BSI-18 = brief symptom inventory 18 and scores range from 0-72 with higher score indicating more psychiatric distress due to symptoms, SBE = subjective binge episodes in past month, and OO = objective overeating in past month

Table 5: Post-hoc analyses

Measure	1	2	3	4	5	6
1. OBEs	-					
2. Distress	.35**	-				
n = 88						
3. BMI	.25**	.19	-			
n = 121						
4. BSI-18	.38**	.03	.09	-		
n = 46						
5. BDI-II	.29*	.23	.00	.71**	-	
n = 47						
6. RSES	-.22	-.25	-.22	-.53**	-.59	-
n = 45						

Note. *$p < .05$, **$p < .001$. BMI = body mass index, OBEs = the total number of days of objective binge episodes in previous three months, BDI-II = Beck depression inventory, RSES = Rosenberg self-esteem scale, BSI-18 = brief symptom inventory.

DISCUSSION

The current project investigated the role overvaluation of shape and weight played in a community sample of Latinas with BED and non-ED controls. In the total sample, overvaluation was significantly related to more frequent BE episodes and distress due to BE. When looking solely at women with BED, those who overvalued their shape and weight had significantly more distress than those who did not overvalue, but no significant group differences were found in terms of BE frequency or concurrent psychological functioning.

Latina women are just as likely to suffer from binge-related eating disorders as women of other racial/ethnic identities, but are less likely to seek healthcare for eating disorders (Marques et al., 2011). When Latinas do seek treatment, they are less likely to receive diagnoses which appropriately reflect their eating disorder status (Cachelin & Striegel-Moore, 2006). Therefore, it is important to have a clear picture of how BED manifests in Latinas in order to increase access to proper treatment by helping healthcare professionals accurately recognize and diagnose BED when encountered.

According to responses on the measure of BED symptomatology, participants were as severe as typical treatment-seeking participants in previous studies. For example, average weekly BE in the past three months for the current study was 4.56 episodes/week (*SD* = 4.77) while studies with racially/ethnically diverse treatment-seeking BED participants reported BE ranging from 4.05 (*SD* = 2.59) to 4.28 (*SD* = 2.56) episodes/week (Grilo et al., 2009). Regarding psychiatric symptoms such as depression and anxiety as well as self-esteem, the sample was representative of both the Latino

community and those with eating disorders. For example, scores on the BSI-18 (M = 17.51, SD = 14.73) were greater than the average scores for a community-based Latina immigrant sample reported by other investigators (M = 15.57, SD = 12.42; Asner-Self, Schreiber, & Marotta, 2006), and lower than a diverse college sample of females with eating disorders (M = 20.40, SD = 12.71; Masuda, Hill, & Tone, 2012). Participant scores on the RSES and BDI-II followed a similar pattern in relation to Latina samples and eating disordered samples.

In this study, overvaluation increased with age which was an unexpected finding. The literature suggests that while body image and body dissatisfaction are very stable over the lifespan, the importance of shape and weight may decrease (Tiggeman, 2004); demonstrating that women's body dissatisfaction remains consistent, but it may not affect their self-evaluation as they age. Researchers acknowledge the risk and protective factors at play as women age; there is a natural increase in weight and thus distancing from the thin ideal, but less cognitive importance is placed on appearance. However, when women are obese, shape and weight may still play a large role in self-evaluation. Mangweth-Matzek, Hoek, and Pope's (2014) research demonstrated that obese women and normal-weight women in the 35-44 year age range had the largest amount of body dissatisfaction as measured by the discrepancy ratings between ideal and actual figure ratings. In the current sample, BMI and overvaluation were significantly related (r = .28, $p < .01$) and had a stronger relationship than age and overvaluation. Additionally, age and BMI were significantly related (r = .42, $p < .01$). Therefore, the significant effect of age and overvaluation may be more of a reflection of weight status than developmental stage.

In the full sample, overvaluation of shape and weight was associated with greater BE frequency and distress. These results are consistent with findings from Goldschmidt et al. (2010) in which women with BED who overvalued shape and weight reported significantly greater levels of distress because of their BE compared to BED patients who did not overvalue. Also, these results are consistent with Grilo et al. (2008) where overvaluation of shape and weight predicted poorer BED symptomatology including frequency of OBEs.

The current results have clinical implications because frequency of OBEs and subsequent distress are both DSM-5 diagnostic criterion for BED and higher levels of both symptoms are associated with a poorer prognosis of the disorder. For example, having more frequent OBEs at the initiation of BED treatment was associated with higher non-response to treatment (Peterson et al., 2000). Also, higher frequency of OBEs was significantly related to psychological comorbidity among men and women seeking BED treatment (Grilo, White, & Masheb, 2009). In addition, self-reported distress due to BE has been shown to be related to greater BED symptomatology and comorbid depressive symptoms (Grilo & White, 2011).

Our data corroborate these patterns. In the entire sample, frequency of OBEs was significantly related to a poorer presentation and prognostic features: BMI, distress due to binge eating, psychiatric symptoms, and depressive symptoms. Also, greater levels of distress were related to poorer self-esteem although the relationship was not significant (See Table 5). These findings have direct implications for diagnosis and treatment of BED. If overvaluation predicts OBE frequency and distress, two key characteristics for

diagnosis and maintenance of BED, then the cognitive component of valuing shape and weight may be an important treatment target in order to improve BED prognosis.

Latinas with BED who overvalued their shape and weight had more distress due to BE than Latinas who did not overvalue. There were no significant group differences in other measured BED symptomatology - OBEs, SBEs, or OO frequency – or in comorbid psychological functioning such as depression, self-esteem, or other psychiatric symptoms. These findings are only partially consistent with existing literature.

Our findings are consistent with Goldschmidt et al. (2010) who found that women with BED who overvalued their shape and weight had significantly greater levels of distress than women with BED who did not overvalue. In addition, Goldschmidt and colleagues (2010) did not find a difference in frequency of OBE; suggesting that attitudes towards shape and weight were not the most relevant triggers for OBEs; other psychological or environmental stressors may have had a greater impact. Our data mirror these results; indicating that a qualitative investigation of OBE triggers is warranted. OBE frequency was significantly correlated with depression and psychiatric symptom scores. Thus, it is possible that negative affectivity, anxiety, or somatic symptoms may be more prominent triggers for BE than individual beliefs about shape and weight.

The current results are inconsistent with literature regarding BED symptomatology and concurrent psychopathology. Overvaluation has been linked to elevated depressive symptoms in individuals diagnosed with BED (Grilo et al., 2008), and also associated with poorer self-esteem (Grilo et al., 2012). However, in the current study the relationship did not reach statistical significance, suggesting that the value Latinas with BED place on their shape and weight may not affect their mental wellbeing

or self-esteem as much as other women with BED. The lack of relationship in this sample could be due to a number of issues.

Previous studies utilized patient populations who were actively seeking treatment (Franko et al., 2012; Grilo et al., 2012; Goldschmidt et al., 2010), while the current study used a community, non-treatment seeking sample. Treatment-seeking participants are traditionally more symptomatic in their eating disorder symptomatology and comorbid psychopathology and may have more variability in responses allowing for the detection of expected relationships among symptoms (Cachelin, Striegel-Moore, & Regan, 2006). It is possible that the participants in the current sample were in the beginning stages of their BED trajectory, and significant differences may appear in the future.

Perhaps certain characteristics of the current sample, such as acculturation or cultural values towards gender roles, prevented a significant relationship between overvaluation of shape and weight and concurrent psychopathology. One example that unites cultural and gender role factors is of the emphasis on *marianismo* in which women are valued as second to men and should put the needs of others before their own (Castillo, Perez, Castillo, & Ghosheh, 2010). When asked to rank the important aspects of their self-evaluation, participants who ascribe to the concept of *marianismo* may have rated their family and marital duties as having more importance than their shape and weight. This response style could have suppressed the true influence of shape and weight on self-concept, but the current study did not collect data related to cultural identity and adherence to traditional gender roles and thus cannot make a definitive claim. Future research should assess for acculturation and cultural values in order to shed more light on their role in overvaluation of shape and weight.

In the clinical setting, our data suggest overvaluation of shape and weight should be used as a diagnostic specifier, not a diagnostic criterion for BED. Overvaluation was linked to BED severity; indicating that healthcare providers must assess overvaluation of shape and weight in Latinas with BED and use this information to direct treatment. For example, a psychologist who works with a Latina with BED who endorses overvaluation of shape and weight might want to first implement behavioral interventions to reduce the BE frequency and then cognitive interventions to reduce the heavy focus on shape and weight and distress due to BE.

Results from this study are in line with Grilo (2013) and suggest that this cognitive component has clinical utility as a diagnostic specifier. In the current sample, if a diagnosis of BED required a clinically significant overvaluation score, only 70% of participants would have received that diagnosis. This means that 30%, or 16 individuals, would not have been diagnosed with BED and perhaps not have received necessary treatment for their eating disorder symptoms despite experiencing clinically significant rates of distress and BE. Thus, in accordance with the DSM-5 (2013), overvaluation should not be a diagnostic criterion, but a specifier, even in Latinas

Strengths of this study included the use of a community sample of Latinas and the psychometric strength of the measures. Researchers recruited a unique and understudied population in the literature, a community sample of Latinas who endorsed BE. Previous studies have recruited primarily treatment-seeking participants and thus inherently missed a large portion of a population that is suffering from a disorder yet may not have the ability to access services. Another strength of the study is its use of well-validated measures with trained interviewers. All measures, both self-report and interview, have

been validated with Latinas and thus provided reliable information as evidenced by the high cronbach's alphas previously reported. In addition, interviewers and study staff participated in a closely-supervised training process to ensure reliability and fidelity to study procedures.

The present study was limited by its sole use of self-report measures. Despite the fact that all measures were well-validated, self-report measures are inherently problematic and prone to response bias. Participants may under-report in order to portray a healthier presentation, for example. In addition, Latinos tend to have an extreme response style when answering likert-type items, but this tendency is strongly related to cultural beliefs, acculturation, and gender (Davis, Resnicow, & Couper, 2011). A second limitation of the current study was the relatively small sample size and thus, limited power. Specifically, overvaluation may have had more of an effect than was shown, but due to low sample size, there was not adequate power to detect the differences.

Future research could seek to remedy some of the current limitations and further expand what is known on the topic of BED in Latinas. It would behoove investigators to collect more data on cultural identity and ethnic group membership along with generation status in order to better understand which, if any, cultural values are involved in the relationship between overvaluation of shape and weight and BED symptomatology. Perhaps cultural values are protecting Latina participants from experiencing detrimental effects of overvaluing their shape and weight.

Another area to improve in the current study would be to add a control group that does not suffer from BE. Grilo et al. (2008) included an overweight comparison group in their study on BED patients with and without overvaluation in order to rule out if BED

symptomatology and comorbid psychopathology occurred mostly because of weight-status or if it was unique to BED. Moreover, future research should aim to recruit a larger sample in order to allow for the effective detection of significant results. Researchers could also include anthropomorphic measures of height, weight, as well as waist to hip circumference and other measures in order to eliminate potential inaccuracy associated with self-reported height and weight.

Research in the future could expand from the current methodological approach and incorporate qualitative research methods and intervention research. A qualitative approach would be able to provide a more in-depth analysis of what Latinas associate with their shape and weight and how they arrive at their self-evaluations. A longitudinal research design would be useful in elucidating the development of the relationship between overvaluation and BED.

Finally, the current study results have interesting implications for future intervention research. Specifically, results suggest a gap in the intervention literature; participants were non-treatment seeking, yet endorsed a desire for treatment as well as experiencing distress due to eating habits. There is currently no intervention adequate or accessible to this group who wants and needs treatment, but does not seek it. This issue suggests that efforts are needed toward making BE interventions more accessible in terms of time, money, and professional-contact. Accessible interventions for BED which include an integration of overvaluation of shape and weight as a symptom would have large benefits for Latinas.

In conclusion, the current study extends existing information about Latinas who suffer from binge eating disorder and binge eating-related distress. Overvaluation of

shape and weight was a strong predictor of a poorer symptom presentation of BED, yet there was no relationship with overvaluation of shape and weight and depressive symptoms, self-esteem, and other psychiatric symptoms such as anxiety. While current results do not provide enough support for the overvaluation of shape and weight to be included as a diagnostic criterion for BED, the results can arm healthcare providers and researchers with more tools and knowledge to help an underserved population receive much-needed interventions and support.

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