Published in final edited form as:

Int J Eat Disord. 2012 May ; 45(4): 603–608. doi:10.1002/eat.20981.

Does the Overvaluation of Shape and Weight Predict Initial Symptom Severity or Treatment Outcome among Patients with Binge Eating Disorder?

Rachel Ojserkis, B.A.^{1,2}, Robyn Sysko, Ph.D.^{1,2}, Juli A. Goldfein, Ph.D.^{1,2}, and Michael J. Devlin, M.D.^{1,2}

¹Division of Clinical Therapeutics, New York State Psychiatric Institute, New York, NY

²Department of Psychiatry, College of Physicians and Surgeons of Columbia University, New York, NY

Abstract

Objective—To examine whether overvaluation of shape and weight is associated with initial symptom severity or treatment outcome among patients with binge eating disorder (BED).

Method—Patients with BED (n= 116) completed assessments at baseline and treatment termination, including the Eating Disorder Examination (EDE), and self-report measures of eating-related cognitions and behaviors, depression, and self-esteem. Clinical overvaluation was determined by EDE.

Results—The clinical overvaluation group demonstrated significantly higher pre-treatment scores on measures of depression, behavioral and cognitive aspects of binge eating, and eating-related psychopathology, and lower self-esteem scores than individuals without overvaluation. At treatment termination, patients with overvaluation continued to display elevated scores on measures of binge eating severity at a trend level.

Discussion—Overvaluation of shape and weight was associated with symptom severity in patients with BED, but additional research is needed to determine whether this construct holds clinically useful predictive validity for treatment outcome.

Keywords

binge eating disorder; overvaluation; shape and weight concern; obesity

Binge eating disorder (BED), currently a provisional diagnosis in the fourth edition of the Diagnostic and Statistical Manual (DSM) of Mental Disorders (American Psychiatric Association, 1994), is characterized by recurrent binge eating episodes in the absence of extreme weight-control behaviors. The two formally recognized eating disorders in DSM-IV, anorexia nervosa and bulimia nervosa, include a criterion for the overvaluation of shape or weight, or an “undue influence of body weight or shape on self-evaluation” (American Psychiatric Association, 1994).¹ While a similar criterion is not currently included for the diagnosis of BED, studies implicate the overvaluation of shape and weight as a critical clinical distinction between binge eaters and obese individuals without the disorder.² With the fifth edition of the DSM scheduled for publication in 2012, several recent studies have

Corresponding author and address reprint requests to: Dr. Robyn Sysko, Columbia Center for Eating Disorders, New York State Psychiatric Institute, 1051 Riverside Drive, Unit 98, New York, NY, 10032.

Portions of this paper were presented at the annual meeting of the Eating Disorders Research Society, Cambridge, MA, October, 2010.

examined the potential utility of the overvaluation of shape and weight as an indicator of clinical status for individuals with BED, as well as the ability of this construct to inform the revision of diagnostic criteria for BED.

Previous research observed significant relationships between the overvaluation of shape and weight, eating disorder pathology, and psychosocial functioning among patients with BED.^{3–8} These findings have led to questions of whether the overvaluation of shape and weight should be a required diagnostic criterion for BED, or rather a diagnostic specifier that conveys additional clinical information about symptom severity. Although a number of studies have examined the presenting clinical characteristics of individuals with BED in relation to the overvaluation of shape and weight, only one study has evaluated the effect of this construct on treatment outcome. Masheb and Grilo (2008) categorized patients with BED into those with “clinical” versus “subclinical” overvaluation of shape and weight, and examined whether these subtypes predicted or moderated response to guided self-help treatments based on cognitive behavioral therapy (CBT) or behavioral weight loss.⁹ Post-treatment, participants with clinical overvaluation reported higher levels of eating disorder pathology as measured by global score on the Eating Disorder Examination-Questionnaire (EDE-Q) than those participants with subclinical overvaluation. While overvaluation of shape and weight significantly predicted one aspect of treatment outcome in this study, the construct was not found to moderate the effects of either guided self-help intervention.

The purpose of the current study was: (1) to replicate previous research relating the overvaluation of shape and weight to eating disordered and other psychiatric symptoms (i.e., depression, self-esteem, and eating disorder pathology); and (2) to determine whether overvaluation affected treatment outcome among a sample of patients with BED enrolled in a randomized controlled trial.¹⁰ Based on the extant literature, we hypothesized that patients with BED endorsing overvaluation of shape and weight would report greater depression and eating disorder pathology, and lower self-esteem than patients without overvaluation. We also hypothesized that, in keeping with the findings of Masheb and Grilo (2008), patients with BED endorsing overvaluation of shape and weight would show smaller improvements from the treatment interventions, consisting of group behavioral treatment plus individual CBT and/or fluoxetine, than those without overvaluation.

METHOD

Participants

A detailed description of the trial upon which this study is based has been reported elsewhere.¹⁰ The sample for this analysis consisted of 116 patients with BED (n= 90 women, n= 26 men) enrolled in a 16-week, randomized controlled trial of group behavioral treatment plus individual CBT and/or fluoxetine. The sample included 77% Caucasian participants, 12% black, 10% Hispanic, and 1% Asian.

Design

As part of a baseline (pre-treatment) assessment, patients completed an abbreviated version of the Eating Disorder Examination (EDE), 12th edition¹¹ with additional items that reflected the provisional BED criteria described in the appendix of DSM-IV.¹ Specifically, binge eating was measured over the 6 months prior to study entry, and the number of days on which objective bulimic episodes (OBEs) occurred was assessed rather than the total number of OBEs. In an OBE, an individual reports consuming an objectively large amount of food while experiencing a sense of loss of control over eating (i.e., the feeling that one is not able to control what or how much he/she is eating).¹¹ In addition to total days with OBEs, the abbreviated EDE included items assessing subjective bulimic episodes (during

which an individual feels a loss of control over eating but does not consume an objectively large amount of food)¹¹, objective overeating (not accompanied by a sense of loss of control)¹¹, distress about binge eating, distress about weight, self-induced vomiting, laxative abuse, diuretic abuse, compensatory exercise, 24-hour fasting, medication use/misuse, importance of shape and weight, menstrual activity in the 3 months before evaluation (if applicable), and weeks free of binge eating. At the end of the active treatment phase, diagnostic status was assessed with the EDE by an interviewer who was unaware of the participant's treatment assignment.

Participants also completed the Eating Disorder Examination-Questionnaire (EDE-Q)¹² pre- and post-treatment. Like the EDE, the EDE-Q was modified to measure the number of days on which OBEs occurred. Some patients (n= 57) received a one-page instruction sheet with detailed written definitions and examples of OBEs to be read before completing the EDE-Q, and the other participants (n=58) completed the EDE-Q without instruction.¹³ Other self-report assessments were also administered at baseline and repeated at the end of treatment, including the Beck Depression Inventory (BDI),¹⁴ the Binge Eating Scale (BES),¹⁵ the Body Shape Questionnaire (BSQ),¹⁶ and the Rosenberg Self-Esteem Scale (RSE).¹⁷ The trial that provided data for the analyses described below¹⁰ was approved by the New York State Psychiatric Institute.

Overview of Analyses

Overvaluation of Shape and Weight—On the abbreviated EDE, an average of responses to the two questions, “Over the past 6 months, has your [shape/weight] been important in influencing how you feel about (judge, think, evaluate) yourself as a person?” was calculated. These “importance of shape/weight” items are rated on a 7-point scale, with anchors of 0= no importance, 2= some importance (definitely an aspect of self-evaluation), 4= moderate importance (definitely one of the main aspects of self-evaluation), 6= supreme importance (nothing is more important in the subject's scheme for self-evaluation). To facilitate comparisons with previous research (e.g., 3, 5–6, 9), our primary analyses considered an individual to overvalue body shape and weight when their mean response was ≥ 4 on the aforementioned EDE items. Patients with an average score of < 4 on these items were considered not to overvalue shape and weight.

In secondary analyses described below, scores on the importance of shape/weight items from the EDE were used to predict post-treatment outcomes, which allowed us to evaluate overvaluation of shape and weight as a continuous measure. Additional secondary analyses were conducted with the EDE-Q importance of shape/weight items, averaging the two questions, “Over the past four weeks (28 days), has your [shape/weight] influenced how you think about (judge) yourself as a person?” As both the EDE and EDE-Q use the same 7-point scale, we dichotomized the EDE-Q as described above to obtain a self-report measure of clinical overvaluation of shape and weight (overvaluation= mean response ≥ 4 , no overvaluation= mean response < 4).

Primary Statistical Analyses

One participant did not have complete EDE data at baseline, and was excluded from additional analyses. Participants with clinical overvaluation of shape and weight (84/115; 73%) were compared to those without clinical overvaluation (31/115; 27%) using chi-square (χ^2) statistics for pre- or post-treatment categorical variables, including: ethnicity, gender, treatment condition, premature termination from the study, and abstinence from OBE days at study termination. Independent samples *t*-tests compared baseline between-group differences (overvaluation vs. no overvaluation) for the continuous variables of age, BMI, total scores on the BDI, BES, BSQ, global EDE-Q, and RSE, and days on which OBEs

occurred, as measured by the abbreviated EDE. Analyses of variance (ANOVA) or covariance (ANCOVA) for the intent-to-treat sample and completers were conducted to evaluate the effect of overvaluation of shape and weight on treatment response. The independent variables in these analyses were clinical overvaluation of shape and weight by EDE (present/absent) and treatment group (placebo + group only, fluoxetine + group only, placebo + group and CBT, and fluoxetine + group and CBT), and the dependent variables were total scores on the BDI, BES, BSQ, global EDE-Q, and RSE, and OBE days by EDE. Significant relationships were observed between baseline and termination scores on the BDI, BES, BSQ, global EDE-Q, and RSE for the intent-to-treat sample ($n = 115$), and the BES, BSQ, global EDE-Q, and RSE for the completers ($n = 74$); therefore ANCOVAs were used with these variables.

Secondary Statistical Analyses

Linear regressions were conducted to evaluate the predictive value of the overvaluation of shape and weight by EDE on post-treatment BDI, BES, BSQ, global EDE-Q, and RSE scores, and OBE days by EDE. Potential moderating effects were examined by including an interaction term (overvaluation of shape/weight $\times$ treatment condition) in the regressions. A square root transformation was required for the overvaluation of shape and weight by EDE, as the distribution was skewed. In addition, the effect of self-reported clinical overvaluation of shape and weight (as measured by EDE-Q) on treatment response was measured for the intent-to-treat sample using ANOVA (OBE days) or ANCOVA (BDI, BES, BSQ, global EDE-Q, and RSE). As above, independent variables were overvaluation by EDE-Q (present/absent) and treatment group, and dependent variables were total score of the BDI, BES, BSQ, global EDE-Q, and RSE, and days of OBEs by EDE. One participant failed to complete the EDE-Q at baseline and was excluded from the analyses reported below. Ninety-five patients were designated with (82.6%) and twenty without (17.4%) clinical overvaluation of shape and weight by EDE-Q.

RESULTS

Primary Analyses

No significant differences were observed between individuals with and without clinical overvaluation of shape and weight by EDE for age, gender, BMI, or ethnicity (see Table 1). An equal distribution of overvaluation was also found across treatments [$\chi^2(3) = 2.01, p = 0.57$; placebo + group only, $n = 25$ overvaluation, $n = 6$ no overvaluation; fluoxetine + group only, $n = 21$ overvaluation, $n = 11$ no overvaluation; placebo + group and CBT, $n = 19$ overvaluation, $n = 6$ no overvaluation; fluoxetine + group and CBT, $n = 19$ overvaluation, $n = 8$ no overvaluation].

Means and standard deviations for the self-report measures and number of days with OBEs at baseline and termination are presented in Table 2. On baseline measures, patients with clinical overvaluation of shape and weight by EDE reported significantly higher scores on the BDI [$t(112) = -3.52, p = 0.001$], BES [$t(112) = -3.14, p = 0.002$], BSQ [$t(112) = -4.95, p < 0.001$], global EDE-Q [$t(112) = -3.49, p = 0.001$], and number of days with OBEs [$t(113) = -2.42, p = 0.02$], and significantly lower RSE scores [$t(112) = 3.67, p < 0.001$], in comparison to patients without clinical overvaluation of shape and weight. At the end of treatment (week 16 or last visit carried forward), a trend with a moderate effect size ($d = -0.64$) was observed for higher post-treatment scores on the BES among patients with clinical overvaluation of shape and weight by EDE [$F(1, 105) = 3.49, p = 0.07$] than those without. No significant differences were noted between patients with and without clinical overvaluation of shape and weight for post-treatment BDI, BSQ, global EDE-Q, RSE, or the number of days on which OBEs occurred.

A greater proportion of individuals with clinical levels of overvaluation of shape and weight by EDE terminated treatment prematurely (42.9%) in comparison to individuals without overvaluation [19.4%; $\chi^2(1) = 5.40, p = 0.02$]; however, no significant differences in post-treatment abstinence from binge eating were observed [$\chi^2(1) = 2.45, p = 0.12$]. When analyzing only study completers, no significant differences were observed between patients with and without EDE clinical overvaluation of shape and weight on any of the post-treatment self-report or interview measures.

Secondary Analyses

The overvaluation of shape and weight by EDE and the interaction between the overvaluation of shape and weight and treatment assignment were not significant predictors of post-treatment scores on the BDI, BES, BSQ, global EDE-Q, and RSE, or OBE days by EDE. Patients with clinical overvaluation of shape and weight by EDE-Q were found to have significantly higher BES scores [$F(1, 106) = 5.26, p = 0.02$] and significantly lower RSE scores [$F(1, 105) = 4.54, p = 0.04$] than patients without overvaluation at the end of treatment. A trend was observed for higher post-treatment scores on the global subscale of the EDE-Q among patients with clinical overvaluation of shape and weight by EDE-Q [$F(1, 106) = 3.26, p = 0.07$] than those without.

DISCUSSION

This study compared self-reported eating pathology, depression, and self-esteem in patients with BED with and without clinical overvaluation of shape and weight enrolled in a randomized controlled trial of group behavioral treatment plus individual CBT and/or fluoxetine. Clinical levels of overvaluation of shape and weight were associated with all assessments of initial symptom severity, specifically increased scores on measures of depression, the behavioral and cognitive aspects of binge eating, body image concerns, general eating pathology, and days with binge eating episodes, as well as lower scores on a measure of self-esteem. This finding is consistent with the results of previous research on overvaluation of shape and weight.^{3–8}

In addition, in the intent-to-treat and completer samples, clinical overvaluation by EDE was not significantly related to any post-treatment outcome measure. Self-reported clinical overvaluation was significantly related to two post-treatment measures, specifically, higher scores of binge eating severity and lower scores on a measure of self-esteem. Thus, we found mixed evidence that patients with BED and clinical overvaluation of shape and weight experience smaller gains from treatment interventions in these domains than those without overvaluation. When considering our self-report data from the EDE-Q, our results are similar to those of a study by Masheb and Grilo (2008),⁹ in which overvaluation predicted treatment response, specifically, eating disorder psychopathology. Patients with BED in the Masheb and Grilo (2008)⁹ study were provided with six brief (15–20 minute) sessions in comparison to a minimum of sixteen 90-minute group sessions and 8 sessions with a psychiatrist in the current study. The intensity of our intervention could have created a ceiling effect for post-treatment differences between the patients with and without overvaluation on the EDE. In addition, the current study identified a larger proportion of patients with BED in the overvaluation group by EDE or EDE-Q in comparison to Masheb and Grilo (2008), which could also account for some of the differences observed between these two studies.

There are several important limitations to the design of this study. First, self-report measures were used to indicate pre- and post-treatment symptom severity in our primary analyses, and the presence or absence of overvaluation in our secondary analyses. In future research, it would be helpful to examine eating-related or general psychopathology using standard

interview-based measures. Further, some participants completed a version of the EDE-Q with an instruction sheet defining binge episodes and overeating while other participants completed the EDE-Q without these instructions, which might have affected the proportion of individuals in the EDE-Q overvaluation group. However, this instruction sheet was not directly relevant to the assessment of shape and weight concerns, and therefore, this difference in administration should not have produced a substantial impact on the secondary analyses in the current study. Another limitation of this study is that our analyses were based on only one sample of treatment-seeking patients with BED, in which the patients met a strict definition for BED (DSM IV–BED) and included primarily women and Caucasian participants. Finally, our sample included a much larger proportion of individuals with overvaluation of shape and weight than those without. The larger proportion of individuals in our sample endorsing overvaluation of shape and weight raises interesting questions about the centrality of this construct in BED. Future research may consider comparing levels of general and eating-related psychopathology among individuals with BED and obese individuals without an eating disorder with and without clinical overvaluation, which would allow for additional evaluation of the unique contribution of overvaluation of shape and weight in BED.

Extant data on the overvaluation of shape and weight among patients with BED suggests that overvaluation is associated with greater initial symptom severity, but questions remain about the impact of overvaluation on treatment response. In the current study and one previous study, overvaluation significantly predicted a few areas of treatment response in BED, which suggests the possible predictive validity of this construct; however, a number of negative findings have been identified in this study and others. Eating disorder diagnoses, as developed for the DSM-IV,¹ are intended to convey information on “course, complications, and effective treatment options” (pg. S4; Walsh, 2007), and in the context of the current literature, additional research is needed to determine the clinical utility of overvaluation of shape and weight prior to including this feature as a diagnostic criterion or specifier for BED. Future studies may consider examining overvaluation of shape and weight both dimensionally and categorically, which could provide useful information about the ability of overvaluation of shape and weight to predict treatment response among patients with BED along a continuum of symptom severity.

Acknowledgments

Financial Disclosures/Conflict of Interest

This work was supported in part by National Institute of Mental Health Grant MH54612 to Dr. Devlin. Dr. Sysko is supported, in part, by DK088532-01A1 from the National Institute of Diabetes and Digestive and Kidney Diseases and reports holding stock in Pfizer Pharmaceuticals.

References

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 4. Washington, DC: American Psychiatric Press; 1994.
2. Spitzer R, Yanovski S, Wadden T, Wing R, Marcus M, Stunkard A, et al. Binge eating disorder: Its further validation in a multisite study. *Int J Eat Disord*. 1993; 13:137–153. [PubMed: 8477283]
3. Hrabosky J, Masheb R, White M, Grilo CM. Overvaluation of shape and weight in binge eating disorder. *J Consult Clin Psychol*. 2007; 75:175–180. [PubMed: 17295577]
4. Goldschmidt A, Hilbert A, Manwaring J, Wilfley D, Pike K, Fairburn CG, et al. The significance of overvaluation of shape and weight in binge eating disorder. *Behav Res Ther*. 2010; 48:187–193. [PubMed: 19897174]

5. Grilo CM, Crosby R, Masheb R, White M, Peterson C, Wonderlich S, et al. Overvaluation of shape and weight in binge eating disorder, bulimia nervosa, and sub-threshold bulimia nervosa. *Behav Res Ther.* 2009; 47:692–696. [PubMed: 19552897]
6. Grilo CM, Hrabosky J, White M, Allison K, Stunkard A, Masheb R. Overvaluation of shape and weight in binge eating disorder and overweight controls: Refinement of a diagnostic construct. *J Abnorm Psychol.* 2008; 117:414–419. [PubMed: 18489217]
7. Mond JM, Hay PJ, Rodgers B, Owen C. Recurrent binge eating with and without the “undue influence of weight or shape on self-evaluation”: Implications for the diagnosis of binge eating disorder. *Behav Res Ther.* 2007; 45:929–938. [PubMed: 17010307]
8. Grilo CM, Masheb R, White M. Significance of overvaluation of shape/weight in binge eating disorder: Comparative study with overweight and bulimia nervosa. *Obesity (Silver Spring).* 2010; 18:499–504. [PubMed: 19713949]
9. Masheb R, Grilo CM. Prognostic significance of two sub-categorization methods for the treatment of binge eating disorder: Negative affect and overvaluation predict, but do not moderate, specific outcomes. *Behav Res Ther.* 2008; 46:428–437. [PubMed: 18328464]
10. Devlin M, Goldfein J, Petkova E, Jiang H, Raizman P, Wolk S, et al. Cognitive behavioral therapy and fluoxetine as adjuncts to group behavioral therapy for binge eating disorder. *Obes Res.* 2005; 13:1077–1088. [PubMed: 15976151]
11. Fairburn, CG.; Cooper, Z. The eating disorders examination. In: Fairburn, CG.; Wilson, GT., editors. *Binge eating: Nature, assessment, and treatment.* 12. New York: The Guilford Press; 1993. p. 317–331.
12. Fairburn CG, Beglin S. Assessment of eating disorders: Interview or self-report questionnaire? *Int J Eat Disord.* 1994; 16:363–370. [PubMed: 7866415]
13. Goldfein J, Devlin M, Kamenetz C. Eating Disorder Examination-Questionnaire with and without instruction to assess binge eating in patients with binge eating disorder. *Int J Eat Disord.* 2005; 37:107–111. [PubMed: 15732081]
14. Beck, A.; Steer, R.; Brown, G. *Beck Depression Inventory®-II (BDI®-II).* San Antonio, TX: The Psychological Corporation; 1996.
15. Gormally J, Black S, Daston S, Rardin D. The assessment of binge eating severity among obese persons. *Addict Behav.* 1982; 7:47–55. [PubMed: 7080884]
16. Cooper P, Taylor M, Cooper Z, Fairburn CG. The development and validation of the Body Shape Questionnaire. *Int J Eat Disord.* 1987; 6:485–494.
17. Rosenberg, M. *Conceiving the self.* New York: Basic Books; 1979.

Table 1

Demographic characteristics of participants by clinical overvaluation (absent/present) on the abbreviated Eating Disorder Examination (EDE).

Characteristic	Clinical Overvaluation Absent *	Clinical Overvaluation Present *	Total		Test statistic, <i>p</i> -value
	N	N	N		
Age (years), mean (SD)	31	84	116	43.3 (12.1)	$t(113) = 1.54, p = 0.13$
BMI, mean (SD)	31	84	116	40.9 (7.0)	$t(113) = -1.32, p = 0.19$
Gender, N (% of group)	31	84	116		$\chi^2(1) < 0.001, p = 1.00$
Female	24 (77.4)	65 (77.4)	90 (77.6)		
Male	7 (22.6)	19 (22.6)	26 (22.4)		
Ethnicity, N (% of group)	31	84	116		$\chi^2(3) = 6.07, p = 0.11$
Caucasian	28 (90.3)	60 (71.4)	89 (76.7)		
Black	3 (9.7)	11 (13.1)	14 (12.1)		
Hispanic	0 (0.0)	12 (14.3)	12 (10.3)		
Asian	0 (0.0)	1 (1.2)	1 (0.9)		

Note. SD=standard deviation; BMI=body mass index (kg/m²)

* complete EDE data to designate presence/absence of overvaluation extant for n= 115 participants

Table 2

Psychiatric symptoms of participants by clinical overvaluation (absent/present) at baseline and termination from the study (week 16 or last visit carried forward).

	Clinical Overvaluation Absent		Clinical Overvaluation Present	
	Baseline	Termination	Baseline	Termination
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
BDI^a	10.6 (7.0)	4.7 (4.7)	17.0 (9.1)	9.7 (9.1)
BES^{a, b}	27.4 (7.5)	15.3 (8.6)	31.8 (6.4)	21.7 (11.2)
BSQ^a	111.3 (31.6)	89.0 (30.5)	140.6 (26.8)	112.9 (36.2)
Global EDE-Q^a	3.2 (0.8)	2.2 (1.1)	3.8 (0.8)	2.9 (1.1)
RSE^a	20.0 (5.4)	23.3 (5.0)	15.7 (5.5)	19.4 (5.9)
Days with OBEs by EDE (of 28 days)^a	13.9 (5.2)	2.9 (5.1)	17.2 (6.8)	5.1 (7.2)

Note. SD=standard deviation; BDI=Beck Depression Inventory; BES=Binge Eating Scale; BSQ=Body Shape Questionnaire; EDE=Eating Disorder Examination; EDE-Q=Eating Disorder Examination-Questionnaire; RSE=Rosenberg Self-Esteem Scale; OBE=objective bulimic episode

^a significant difference between no clinical overvaluation and clinical overvaluation groups at baseline

^b trend difference between no clinical overvaluation and clinical overvaluation groups at termination