Weight and Shape Overconcern and Emotional Eating in Binge Eating Disorder

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(Accepted 26 September 1994)

Objective: *This study investigated two issues: the level of weight and shape concerns, and the self-reported tendency to eat in response to negative emotions among obese individuals with binge eating disorder (BED), eating disorder not otherwise specified (EDNOS), and no eating disorder (CONTROL).* ***Method:*** *On the basis of demographic and diagnostic surveys, 156 participants in a weight loss program were categorized on two dimensions, eating disorder category and weight (BED vs. EDNOS vs. CONTROL/ low vs. high body mass index), yielding a 2 × 3 experimental design.* ***Results:*** *Individuals with BED reported a greater tendency to eat in response to negative mood states than CONTROL subjects and low weight EDNOS subjects, but not high weight EDNOS subjects. Weight did not influence self-reported weight and shape concerns. Individuals with BED expressed greater concern for weight and shape than non-eating disordered CONTROLs.* ***Discussion:*** *The findings suggest that overconcern with weight and shape be further investigated as a diagnostic feature of BED and that emotional eating is associated with BED but not obesity per se.* © *1996 by John Wiley & Sons, Inc.*

Binge eating disorder (BED) is a newly defined subtype of eating disorder not otherwise specified (EDNOS) within the *Diagnostic and statistical manual of mental disorders*, 4th ed. (DSM-IV; American Psychiatric Association, 1994). Unlike bulimia nervosa, for which individuals who meet diagnostic criteria are typically of normal weight (Mitchell, Pyle, Eckert, Hatsukami, & Soll, 1990), most individuals who binge eat but do not purge are either overweight or obese (Marcus, 1993). This has led researchers to compare overweight binge eaters and nonbinge eaters on a number of dimensions. (For a comprehensive overview of research comparisons of obese binge eaters and the nonbinge eating

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International Journal of Eating Disorders, Vol. 19, No. 1, 73–82 (1996)

CCC 0276–3478/96/010073–10

obese on dietary attitudes and behavior, eating behavior, psychiatric status, and response to weight loss treatment see Marcus, 1993.)

This study was designed as a preliminary investigation of two neglected issues: (1) Whether obese individuals with and without BED demonstrate overconcern for weight and shape in their self-evaluation (i.e., weight and shape are primary to how they evaluate their self-worth) and (2) whether the tendency to eat in response to negative emotions distinguishes those with BED from obese nonbingers. Both groups are also compared to those falling within the EDNOS category, but who did not meet criteria for BED.

Whereas overconcern for weight and shape is a diagnostic feature of bulimia nervosa, it is not among the research diagnostic criteria for BED (DSM-IV). The reason for this omission is unclear, but may relate to uncertainty regarding the influence of obesity on such concerns (i.e., the possibility that increasing levels of obesity, independent of binge eating, are associated with greater emphasis on weight and shape as determinants of self-worth). In a field study of the diagnostic criteria for BED, Spitzer et al. (1993) found individuals with bulimia nervosa to score higher than individuals with BED on a one-item measurement of weight and shape concern. Utilizing a more comprehensive assessment instrument, the Eating Disorder Examination (EDE; Cooper & Fairburn, 1987), Marcus, Smith, Santelli, and Kaye (1992) have data to suggest that individuals with BED are comparable to bulimics in their level of overconcern for weight and shape.

Direct comparisons between non-eating disordered obese and obese BEDs on overconcern for weight and shape are few. Spitzer et al. (1993) utilized a single question to assess weight and shape overconcern among overweight individuals in a field trial of the diagnostic criteria of BED. They found overweight individuals with BED to evidence greater concern than overweight non-BEDs, but less concern than individuals with bulimia nervosa. Brody, Walsh, and Devlin (1994) similarly used a single-item question to compare obese nonbingers and BEDs on overconcern and found no differences between groups (however, their sample size of 13 individuals with BED may have been too small to detect group differences). Finally, in the only survey to date utilizing a more comprehensive measure of weight and shape concern, a self-report version of the EDE, Wilson, Nonas, and Rosenblum (1993) found significantly greater weight and shape concern among overweight individuals with BED than overweight non-BEDs. Thus preliminary data suggest that individuals with BED do have elevated weight and shape concerns. Note, however, that none of the preceding studies comparing BEDs and non-BEDs controlled for the influence of weight on overconcern, raising the possibility that it is weight, per se, and not binge eating which is associated with overvalued weight and shape concerns.

A second area where the behavior of obese nonbingers and BEDs may overlap is in the tendency to eat in response to negative emotions. Among normal weight binge eaters (i.e., bulimics), negative mood is a well-established precipitant of binge eating (Davis, Freeman, & Garner, 1988; Johnson & Larson, 1982; Mitchell, Hatsukami, Eckert, & Pyle, 1985; Wilson, Rossiter, Kleifield, & Lindholm, 1986). Early laboratory studies found mixed results regarding the role of emotional eating in obesity (reviewed in Lowe & Fisher, 1983), while at least one naturalistic study suggests that percentage overweight is associated with emotional eating of both snacks and meals (Lowe & Fisher, 1983). Recent data suggest that obese bingers also binge eat in response to negative emotion (Arnow, Kenardy, & Agras, 1992). No studies exist to date comparing obese BEDs and nonbingers on their tendency to eat in response to negative emotion.

METHOD

Overview

One hundred surveys were sent to each of 10 franchise offices of a commercial weight loss program located at various sites across the country. Due to the number of measures of interest, two separate survey packets were compiled, and an equal number of these packets (i.e., 50) were distributed to each franchise office. An announcement was also distributed to each office for posting above the box of surveys. This notice invited all interested clients who were within the first 2 weeks of their diet to take a packet. Each packet contained consent forms, a demographic questionnaire, portions of the Questionnaire on Eating and Weight Patterns (QEWP; Spitzer et al., 1992), and a stamped and addressed return envelope. Additionally, packets included either (1) the Emotional Eating Scale (EES; Arnow, Kenardy, & Agras, in press) or (2) the Weight and Shape subscales of the EDE-Q-R, a self-report version of the EDE (Cooper & Fairburn, 1987) and the Self-Evaluation Questionnaire (SEQ), a series of questions designed for this study about self-evaluation in reference to weight and shape.

Informed Consent

Contents of the survey packets were approved by the Stanford University Institutional Review Board (IRB) and the governing board of the commercial weight loss program. Each packet included an information letter, explaining the nature of the survey, and an information notice, explaining the voluntary nature of participation, and the right of the subject to refuse to participate without prejudicing his or her participation in the weight loss program. Subjects were also provided the phone numbers of the project investigators and the Stanford IRB should any inquiries or difficulties with participation arise.

Measures

All subjects completed a demographic questionnaire and portions of the QEWP (Spitzer et al., 1992). On the basis of information provided on the QEWP, subjects were classified into one of three diagnostic categories: BED, EDNOS, and non-eating disordered (CONTROL). DSM-IV (American Psychiatric Association, 1994) research diagnostic criteria were used for diagnosis of BED. Diagnostic criteria for EDNOS included: (1) binge eating at a frequency that did not meet diagnostic criteria for BED and/or did not include a sense of loss of control and (2) purging which, in combination with binge eating, did not meet diagnostic criteria for bulimia nervosa. Individuals who reported no binge eating or purging during the past 6 months met criteria for the CONTROL group.

EDE-Q-R

The EDE-Q-R is a self-report version of the EDE. Two of the subscales from the EDE-Q-R, the Weight and Shape subscales, were included in this study. These subscales assess thoughts and feelings about weight and shape which may have occurred for the subject over the previous 28-day period. While the interview version of the EDE has been well validated and is considered by many to be the "gold standard" interview for the assessment of eating disorder symptomatology (Fairburn & Cooper, 1993). The EDE-

Q-R has been validated against the EDE (Fairburn & Beglin, 1994) and compares favorably on most dimensions.

EES

The EES is a 25-item self-report measure that assesses the tendency to eat in specific negative mood states. A recent series of studies (Arnow et al., in press) demonstrated the EES to have adequate psychometric properties (i.e., internal consistency, test-retest reliability, construct validity, criterion, and discriminant validity) and a stable factor structure. The EES contains three subscales: Anger/Frustration, Depression, and Anxiety.

SEQ

The SEQ, designed specifically for this study, included two items of specific relevance to overconcern for weight and shape. The first item, "weight related problems," asked subjects to list "any aspects of yourself or your life which you would like to change." At the end of the questionnaire, subjects were asked to review their list and indicate which, if any, of these aspects they "believe is in some way connected to your weight." Scores on this item were the percentage of aspects subjects reported to be related to their weight (i.e., number of weight related aspects/total number of aspects listed). The second item, "weight related mood triggers," is a composite score of frequency ratings (1 = never; 5 = always) on how often thoughts about weight occur for subjects while in a series of seven negative mood states (feeling frustrated, bored, or lonely; experiencing conflict with someone; feeling uncomfortable in a social situation; feeling that things aren't going your way; and feeling disappointed by someone). These two measures were included in the study based on the a priori assumption that overvalued weight and shape concerns would lead to greater perceived relevance of weight to personal problems and negative mood states.

Study Design

The study design is a comparison of three groups (BED, EDNOS, and CONTROL) at two different weight levels (low and high weight) on the EDE-Q-R, EES, and SEQ. Body mass index (BMI), a measure of weight adjusted for height, was used as the measure of subjects' weight.

RESULTS

Sample Description

One hundred sixty-three subjects returned completed packets. Seven subjects were not included in the results for the following reasons: 2 subjects met diagnostic criteria for bulimia nervosa based on responses to the QEWP, 2 subjects failed to provide information about their height and weight, 3 subjects had extremely high BMIs. While no BMI limit was set for participation in the survey, these 3 individuals, each with BMIs greater than 50, were identified by Tukey's Hinges procedure within Procedure Examine in SPSS (Norusis, 1990) to be extreme statistical outliers. Thus the final sample size was 156.

Of the final pool of subjects, 75 completed the packet containing the EES (Packet 1)

and 81 completed the packet containing the EDE-Q-R and the SEQ (Packet 2). To assure that no bias occurred in the selection of these two subsamples, a series of analyses of variance (ANOVAs) were conducted comparing them on baseline characteristics. The two samples were equivalent on all measures, allowing us to compare measures drawn from the separate samples. Additionally, data from all measures which were distributed to both samples will be collapsed into one sample.

Of the total sample of subjects, 35 (22.4%) met diagnostic criteria for BED, 53 met EDNOS criteria (34.0%), and 68 reported no binge eating (CONTROL; 43.6%). Seventy-five subjects completed the packet which contained the EES and 81 completed the EDE and SEQ packet. No difference for race was found between eating disorder groups (white/nonwhite), chi-square = 2.30, n.s. Most subjects in the sample were female (96.2%). The distribution of men and women in the eating disorder groups did not differ, chi-square = .78, n.s. The mean age of the sample was 40.3 years (SD = 12.4). Groups did not differ significantly for age, $F(2,153) = 1.71$, n.s. The mean BMI for the group was 30.69 (ranging from 20.38 to 45.20), with a SD of 5.61. The median BMI was 30.32; this served as the cutoff point for the low and high weight categories used in this study. Descriptive statistics for the sample are summarized in Table 1.

Prior to the main analyses, eating disorder groups (i.e., BED, EDNOS, and CONTROL) were compared on self-reported histories of depression, drug and alcohol

Table 1. Descriptive statistics for eating disorder groups

	BED (n = 35)	EDNOS (n = 53)	CONTROL (n = 68)
Race			
White	31	51	59
Nonwhite	4	2	7
(Chi-square: 2.30, p = .32)			
Gender			
Male	1	3	2
Female	34	48	65
(Chi-square: .782, p = .68)			
Age (mean)	39.7 (±10.2)	42.6 (±13.0)	39.0 (±12.9)
Binge			
Less than 1 day/week	0	13 (26%)	0
One day a week	0	27 (54%)	0
Two or 3 days/week	21 (60%)	7 (14%)	0
Four or 5 days/week	7 (20%)	3 (6%)	0
Nearly every day	7 (20%)	0	0
Usual length of binges (in min) (mean)	108.1 (±170.7)	71.3 (±91.5)	
Purge			
Less than 1 day/week	4 (80%)	5 (41.7%)	0
One day a week	1 (20%)	3 (25.0%)	0
Two or 3 days/week	0	3 (25.0%)	0
Four or 5 days/week	0	0	0
Nearly every day	0	1 (8.3%)	0
History of depression			
Yes	16 (45.7%)	17 (34.0%)	19 (29.2%)
(Chi-square: 2.74, p = .25)			
History of alcohol abuse			
Yes	11 (31.4%)	8 (16.0%)	6 (9.2%)
(Chi-square: 8.10, p = .0175; BED > CONTROL)			
History of drug abuse			
Yes	3 (8.6%)	1 (2.0%)	1 (1.5%)
(Chi-square: 3.91, p = .14)			

Note. BED = Binge eating disorder; EDNOS = eating disorder not otherwise specified.

abuse. Groups were found not to differ on self-reported history of depression, chi-square = 2.74, n.s., nor on drug abuse, chi-square = 3.91, n.s. Overall group differences on self-reported history of alcohol abuse were detected, chi-square = 8.10, p = .0175. Subsequent 2 × 2 chi-squares indicated that BED subjects reported a significantly greater prevalence of a history of alcohol abuse than CONTROL subjects, chi-square = 7.95, p = .0048. Eleven BED subjects (31.4%) reported a history of alcohol abuse, compared to 8 EDNOS subjects (16.0%) and 6 CONTROLs (9.2%).

Comparisons between groups were also conducted for questions regarding current weight and weight history. An ANOVA for group differences on BMI was significant, $F(2,153) = 4.91$, p = .0086. Post-hoc Scheffe tests to detect between-group differences indicated that EDNOS subjects were significantly heavier than CONTROL subjects (see Table 2 for means and statistics). This pattern of differences were replicated on two other weight history variables. ANOVAs demonstrated overall differences among groups for highest weight ever (excluding pregnancy), $F(2,153) = 5.94$, p = .0033, and for the rate of greatest weight loss (pounds/month), $F(2,144) = 4.29$, p = .0155. Again, Scheffe tests showed that EDNOS subjects had a significantly larger highest weight ever and rate of greatest weight loss than CONTROL subjects. No differences were found between groups for the age subjects reported first becoming overweight, $F(2,137) = .58$, n.s., or for the number of times subjects reported having lost more than 10 lb (not due to illness), $F(2,75) = .994$, n.s.

Self-Evaluation and Emotional Eating

The primary questions posed in this study are whether low and high weight BED, EDNOS, and CONTROL subjects differ on measures of overconcern for weight and shape, and eating in response to negative emotions. A series of ANOVAs, with eating disorder category (BED/EDNOS/CONTROL) and weight category (low/high BMI) as independent variables, were conducted on the EDE-Q-R Weight and Shape subscales, the "weight related problems" and "weight related mood triggers" questions of the SEQ, and the EES. Weight category failed to reach significance for all variables, while eating disorder category was significant for most variables. Thus, main effects for eating disorder category were found for the EDE Shape and Weight subscales, Weight Related Mood Triggers, and the EES (see Table 2 for statistics). In addition, eating disorder category was marginally significant for Weight Related Problems. Post-hoc Scheffe tests were conducted to detect between-groups differences for the preceding main effects. Since weight was not significant in any of these analyses, weight categories were collapsed on these analyses, allowing for direct comparisons of eating disorder groups. An alpha level of .0167 was set to correct for the number of comparisons within each variable. The results of these analyses are presented in Table 2.

As can be seen in Table 2, BED subjects differed from CONTROL subjects on the Shape and Weight subscales of the EDE-Q-R and the EES. No other comparisons were significant, although BED scores were marginally greater than those of EDNOS (p = .0385) and CONTROL subjects (p = .0208) for Weight Related Mood Triggers. Thus, in comparison to CONTROLs, BEDs demonstrated significantly greater overconcern for weight and shape, and a greater tendency to eat in response to negative mood states.

An interaction effect between eating disorder and weight categories was found only for the EES, $F(2,68) = 4.30$, p = .0175. As can be seen in Figure 1, individuals with BED generally score higher than individuals with EDNOS and CONTROLs. Weight itself does not appear to influence the EES scores of BEDs and CONTROLs, but has a signif-

Table 2. Main Effects for eating disorder category on weight history and dependent variables

	BED (n = 35)	EDNOS (n = 53)	CONTROL (n = 68)	F	p
Weight history					
Body mass index[a]	31.03 (±5.64)	32.34 (±5.81)	29.22 (±5.10)	4.91	.0086
Highest weight ever[a]	190.11 (±37.34)	203.02 (±43.94)	178.68 (±34.53)	5.94	.0033
Rate of greatest weight loss (lb/month)[a]	8.13 (±5.03)	8.98 (±5.89)	6.39 (±3.51)	4.29	.0155
Age first became overweight	20.34 (±11.64)	17.73 (±9.73)	18.53 (±10.98)	.58	.5618
No. of >10 lb weight losses	4.94 (±6.10)	9.31 (±22.57)	4.17 (±8.63)	.994	.3750
Dependent variables					
EDE-Q-R Shape[b]	4.91 (±1.09)	4.27 (±1.18)	3.80 (±1.27)	5.33	.0069
EDE-Q-R Weight[b]	4.46 (±1.18)	3.59 (±1.21)	3.01 (±1.12)	8.61	.0004
EES[b]	49.75 (±16.83)	38.22 (±18.14)	28.58 (±16.05)	8.83	.0004
Weight related mood triggers	28.78 (±5.44)	23.58 (±7.73)	23.42 (±6.00)	4.39	.0158
Weight related problems	.61 (±.34)	.71 (±.31)	.49 (±.39)	2.90	.0619

Note. BED = Binge eating disorder; EDNOS = eating disorder not otherwise specified; EDE-Q-R = a self-report version of the Eating Disorders Examination; EES = Emotional Eating Scale.
[a]Post-hoc Scheffe test indicates that EDNOS > CONTROL.
[b]Post-hoc Scheffe test with an alpha level of .0167 indicates that BED > CONTROL.

icant impact on the scores of individuals with EDNOS. Individuals in the EDNOS high BMI group reported significantly greater difficulties with emotional eating than those in the low BMI group.

DISCUSSION

The purpose of this study was to explore two issues which might distinguish obese BEDs from nonbingers (i.e., EDNOS and non-eating disordered obese): Independent of

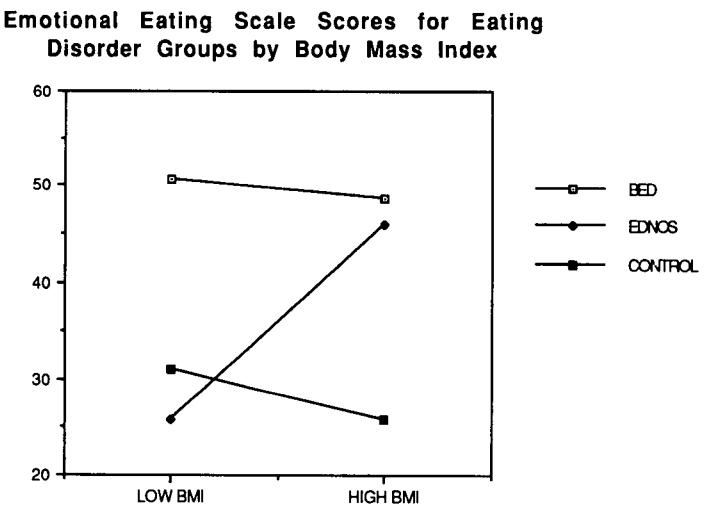

Figure 1. Emotional Eating Scale Scores for Eating Disorder Groups by Body Mass Index.

weight, whether BEDs and nonbingers demonstrate overconcern for weight and shape in their self-evaluation; and whether these groups differ in their tendency to eat in response to negative emotions (emotional eating). Prior to discussing these findings, general group differences will be noted.

Self-reported history of drug abuse and depression were not found to distinguish groups. In general, however, rates of a history of depression were quite high (45.7% of BED, 34.0% of EDNOS, 29.2% of CONTROL). Although obtained by self-report rather than formal diagnostic interview, these rates are comparable to those found by Yanovski, Nelson, Dubbert, and Spitzer 1993 in a recent comparison of obese individuals with and without BED (51% and 14%, respectively). Individuals with BED were more apt to report a history of alcohol abuse than CONTROL subjects (31.4% vs. 10.2%, respectively). These rates are somewhat higher than previously reported for BED (9%) and non-BED (6%) obese (Yanovski et al., in press), and may be due to the use of self-report in the current study.

No differences were found between groups on the age at which they first became overweight, the age at which they first lost 10 lb by dieting, the largest amount of weight ever lost, or the number of times they had lost more than 10 lb. Somewhat surprisingly, EDNOS subjects but not BEDs exceeded CONTROLs on current weight, greatest lifetime high weight, and rate of largest weight loss (lb/month). These differences may be due to the relative proportions, respectively, of low BMI vs high BMI individuals in each eating disorder group (BED: 17 vs. 18; EDNOS; 24 vs. 29; CONTROL: 37 vs. 31).

One of the primary questions posed in this study concerns the relationship between emotional eating, weight, and binge eating for obese individuals with and without an eating disorder. The relationship found was multifaceted. BED subjects reported a significantly greater tendency to eat in response to negative mood states than CONTROLs and low weight EDNOS subjects, but not high weight EDNOS subjects. Weight only appeared to influence emotional eating for individuals with EDNOS: High weight EDNOS subjects appeared comparable to BEDs in their self-reported tendency to eat in response to negative emotions, while low weight EDNOS subjects did not appear to differ from CONTROLs on this dimension. This interaction was not predicted and as such warrants replication. These results suggest that BED but not obesity per se is associated with emotional eating. Further, high weight individuals with EDNOS may be more prone to the development of BED, although this latter point is speculative at this time.

The second question posed in this study concerned the extent to which weight and shape concerns were evident for eating disordered and non-eating disordered obese. In comparison to non-eating disordered subjects, individuals with BED demonstrated significantly higher concern on both the Weight and Shape subscales of the EDE-Q-R. BEDs also reported a marginally greater tendency than individuals with EDNOS and non-eating disordered obese to think about their weight while in a variety of negative mood states. These findings support those previously reported by other researchers (Spitzer et al., 1993; Wilson et al., 1993).

It is important to note that weight category was not significant for any of the measures of concern for weight and shape. Thus among the obese, weight, per se, does not appear to influence the significance attached to weight and shape in individuals' self-evaluative scheme. Rather, the presence of BED appears to be associated with greater concern for weight and shape. This finding contradicts that of Spitzer and colleagues (1993) who used a one-item assessment, but dovetails with that of Marcus and colleagues (1992), who used the more comprehensive EDE. The current results strongly raise the question

of whether overconcern for weight and shape should be considered a diagnostic feature of BED.

In considering the implications of the results of this study, methodological limitations should be noted. The primary limitation was the use of self-report questionnaires (QEWP and EDE-Q-R) for the assessment of eating disorder status and overconcern for weight and shape. The QEWP has been used in previous large-scale research investigations to diagnose BED (Spitzer et al., 1992, 1993). Spitzer and colleagues (1993) have reported a kappa coefficient of .60 between QEWP-based diagnoses of BED and those from a structured clinical interview based on the QEWP. Nonetheless, a recent study on the reliability and validity of BED diagnoses suggests the need for corroboration of self-report diagnoses of BED with those of a structured clinical interview (Brody et al., 1994). Brody and colleagues' results suggest that the QEWP may underdiagnose BED relative to structured clinical interview. For the current study this suggests the possibility that some subset of EDNOS subjects may have more properly been diagnosed as BED. For example, a number of EDNOS subjects reported binge eating episodes unaccompanied by a sense of loss of control. Loss of control may be particularly difficult to assess via self-report among individuals who engage in "planned" binge episodes or have progressed to a severity level where they have given up hope of managing their binge eating (Smith, Marcus, & Eldredge, 1994).

The measurement of weight and shape concern in the present study was based on the EDE-Q-R and questions designed specifically for this study (SEQ), the latter of which has not been validated. The SEQ was designed as an exploratory measure to identify aspects of self-evaluation of potential clinical significance to obese bingers and nonbingers. The inclusion of this measure in the current study is intended to suggest areas for future research and aid in the development of clinically significant measures of weight and shape concern.

The findings of the current study, in light of the cited limitations, suggest the need for larger scale replication studies with validated diagnostic instruments. What is called for is a comparison of clinically diagnosed BED, EDNOS, and non-eating disordered individuals on an array of validated measures of weight and shape concern.

It could be argued that among the overweight and obese, weight and shape overconcern may be realistically founded. Prejudice against obesity does indeed exist, and as such a tendency to evaluate self-worth based on weight and shape might be considered a normative reaction to social prejudices. However, the current study does not support a relationship between weight per se and weight and shape overconcern. This is quite important clinically, for the understanding of "normative" concern for weight and shape among the obese can provide a target for interventions designed to decrease such concerns among individuals with BED.

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