ORIGINAL ARTICLE

A Randomized Comparison of Group Cognitive-Behavioral Therapy and Group Interpersonal Psychotherapy for the Treatment of Overweight Individuals With Binge-Eating Disorder

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Background: Cognitive-behavioral therapy (CBT) has documented efficacy for the treatment of binge-eating disorder (BED). Interpersonal psychotherapy (IPT) has been shown to reduce binge eating but its long-term impact and time course on other BED-related symptoms remain largely unknown. This study compares the effects of group CBT and group IPT across BED-related symptoms among overweight individuals with BED.

Methods: One hundred sixty-two overweight patients meeting *DSM-IV* criteria for BED were randomly assigned to 20 weekly sessions of either group CBT or group IPT. Assessments of binge eating and associated eating disorder psychopathology, general psychological functioning, and weight occurred before treatment, at posttreatment, and at 4-month intervals up to 12 months following treatment.

Results: Binge-eating recovery rates were equivalent for CBT and IPT at posttreatment (64 [79%] of 81 vs 59 [73%] of 81) and at 1-year follow-up (48 [59%] of 81 vs 50 [62%] of 81). Binge eating increased slightly through follow-up but remained significantly below pretreatment levels. Across treatments, patients had similar significant reductions in associated eating disorders and psychiatric symptoms and maintenance of gains through follow-up. Dietary restraint decreased more quickly in CBT but IPT had equivalent levels by later follow-ups. Patients' relative weight decreased significantly but only slightly, with the greatest reduction among patients sustaining recovery from binge eating from posttreatment to 1-year follow-up.

Conclusions: Group IPT is a viable alternative to group CBT for the treatment of overweight patients with BED. Although lacking a nonspecific control condition limits conclusions about treatment specificity, both treatments showed initial and long-term efficacy for the core and related symptoms of BED.

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BINGE-EATING disorder (BED) is characterized by frequent and persistent overeating episodes that are accompanied by feelings of loss of control and marked distress, in the absence of regular compensatory behaviors.[1] The prevalence of BED in the general population is 1.5% to 2.0%.[2,3] Individuals with BED typically present to treatment with the multiple problems of binge eating, eating disorder psychopathology (eg, extreme concerns about eating, shape, and weight), psychiatric symptoms, and overweight.[4,5] Accordingly, treatments for BED need to impact these multiple domains in both the short- and long-term.

Cognitive behavioral therapy (CBT) is the most well-established psychotherapeutic treatment for BED.[6-8] Interpersonal psychotherapy (IPT) has been examined as an alternative treatment to target BED by directly addressing the social and interpersonal deficits observed among these individuals.[9,10] Both CBT and IPT for BED provide greater short-term efficacy than wait-list control groups for the reduction of binge eating.[10-13] The only comparison between active psychological treatments for BED that included follow-up to 12 months after treatment cessation has been between CBT and IPT.[10] No immediate or long-term differences between IPT and CBT for binge-eating outcomes were found.

The present study evaluates whether the prior study's findings comparing CBT and IPT in the treatment of BED[10] were reliable, especially given its modest sample

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SUBJECTS AND METHODS

SUBJECTS

This study was conducted at eating disorder clinics at Yale University (New Haven, Conn) and at San Diego State University (San Diego, Calif) and approved by the institutional review board at each university. Recruitment was conducted through media publicizing "compulsive overeating" treatment. Individuals telephoning the clinics were preliminarily screened for inclusion criteria (**Table 1**). Consent was obtained at the initial clinic visit; *DSM-IV* BED diagnosis and other study eligibility criteria were confirmed via interviews. Nine hundred seventy-four individuals expressed initial interest; 320 remained eligible based on telephone screens, and 195 met criteria after being interviewed. Of these, 162 were interested, eligible, and randomized (**Figure 1**). Participants were randomly assigned within each of the 9 cohorts of 18 people to form 2 groups (IPT and CBT) of 9 participants each. Specifically, the 18 slots for a given cohort were blocked by sex and then randomly designated either IPT or CBT. Next, eligible participants were assigned to a given slot based on the order in which they were accepted into the study.

TREATMENTS

Both treatments consisted of twenty 90-minute, weekly group sessions and 3 individual sessions specifically addressing each participant's goals and progress. These standardized supplemental meetings occurred at critical time points (ie, pretreatment, midtreatment, and posttreatment) and were consistent with the stage and focus of each treatment. Patients also received weekly personalized, written feedback detailing progress. Groups were led by 2 therapists, at least one of whom was at the doctoral level (the second being either at the doctoral level or a psychology doctoral student). Therapists followed treatment manuals and were trained by Bruce Rounsaville, MD (IPT) and G. Terence Wilson, MD (CBT) (D.E.W. et al, unpublished data, 1996; D.E.W., unpublished data, 1993; and reference 15). One of us (D.E.W.) provided session-by-session supervision and feedback on each session's audiotapes to ensure manual adherence. All IPT groups and 6 of the 9 CBT groups were led by a therapist who conducted each treatment at some point.

Group CBT

Group CBT for BED is a triphasic, focal psychotherapy. In the first phase (sessions 1-6), behavioral strategies (eg, self-monitoring) help patients identify episodes of overrestriction and underrestriction and encourage normalization of eating patterns. During the second phase (sessions 7-14), patients learn cognitive skills to counter negative thoughts identified as predisposing binge eating. Cognitive restructuring helps patients challenge harsh stereotyped views of overweight and promotes acceptance of diverse body sizes. In the third phase (sessions 15-20), relapse prevention techniques, such as problem solving and coping with high-risk situations, are presented to help with maintaining changes. Patients are encouraged to identify reasonable goals and strategies for weight loss that will not promote binge eating.

Group IPT

Interpersonal psychotherapy is a brief, focused treatment[16] adapted for BED and group format.[10,15,17] Interpersonal psychotherapy focuses on problem resolution within 4 social domains: grief, interpersonal role disputes, role transitions, and interpersonal deficits. The initial phase (sessions 1-5) involves examination of a patient's interpersonal history to identify the interpersonal problem area(s) associated with BED onset and maintenance, and a detailed plan is provided for the patient to work on specified problem area(s). Interpersonal deficits was the primary problem area for many IPT patients (49 [60.5%] of 81), followed by interpersonal role disputes (24 [29.6%] of 81), grief (5 [6.2%] of 81), and role transitions (3 [3.7%] of 81). During the intermediate phase of treatment (sessions 6-15), strategies are implemented to help patients make changes in identified problem areas. In the termination phase (sessions 16-20), patients evaluate and consolidate gains, detail plans for maintaining improvements, and outline remaining work.

ASSESSMENTS AND PROCEDURES

Measures were administered at all time points, except assessment of non–eating disorder diagnostic psychiatric comorbidity, which occurred only at pretreatment. Posttreatment assessment occurred immediately following treatment cessation (median, 0.5 months), and follow-up assessments were approximately 4 (median, 4.7), 8 (median, 8.7), and 12 (median, 12.6) months after treatment cessation. Structured clinical interviews were conducted by experienced assessors trained specifically in the interviews. The assessors (bachelor level or higher) had no therapeutic relationship with any of the participants they assessed. Although we attempted to keep assessors unaware of group assignment, this was not possible in all cases. To minimize this potential problem, assessors received ongoing supervision to ensure standardized administration of the interviews and underwent extensive training from the developers of the Eating Disorder Examination (EDE) (Christopher Fairburn, MD) and the Structured Clinical Interview for the *DSM-III-R* (Michael First, MD, Columbia University, New York, NY). Dr Fairburn also provided annual calibration workshops and ongoing EDE consultation. Interviews were audiotaped and randomly selected to evaluate coding accuracy at weekly supervisions by 2 of us (D.E.W. and R.R.W).

Eating Disorder Psychopathology

The EDE, 12th edition (12.0D),[18] is an interview that assesses eating disorder psychopathology. It was adapted in accordance with *DSM-IV* research criteria to diagnose BED and was used to track changes in binge eating and eating disorder psychopathology. Binge-eating days were considered to be the number of days during the previous 28 on which at least 1 objective bulimic episode (OBE) occurred, as defined by the consumption of an unusually large amount of food given the circumstances, accompanied by loss of control over eating.[18] Eating disorder psychopathology was assessed by the EDE subscales of

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dietary restraint, eating concern, shape concern, and weight concern. Interrater reliability, assessed via 36 (18 pretreatment, 18 follow-up) randomly selected EDE interviews, revealed average interrater reliability (intraclass correlations) for subscales and number of binge-eating days from 0.83 to 0.99 (all $P<.001$). The Cohen κ for pretreatment diagnosis of BED was 1.00 ($P<.001$).

General Psychopathology

The Structured Clinical Interview for the *DSM-III-R*[19,20] is a semistructured interview designed to assess current and lifetime psychiatric disorders. The Symptom Checklist-90–Revised[21] assesses psychiatric symptoms, the mean of which was standardized based on outpatient sex-specific clinical norms.

Body Mass Index

Weight was assessed on a Detecto (Cardinal Scale Manufacturing Co, Webb City, Mo) balance-beam scale; height was measured with a stadiometer. Body mass index (BMI) was calculated as weight in kilograms divided by the square of height in meters.

Self-esteem and Social Functioning

The Rosenberg Self-Esteem Questionnaire[22] provided a measure of self-esteem. The Inventory of Interpersonal Problems[23] measured level of interpersonal problems. The Social Adjustment Scale[24] assessed current social functioning.

Suitability of Treatment

Before being informed of treatment assignment (already made at this point), participants read brief treatment descriptions and indicated their treatment preference. Using Likert-type scales from 1 to 10, participants also rated the degree to which each treatment made sense and their confidence in each treatment's success in reducing binge eating.

Integrity of Treatment

Following all treatment, 2 independent raters coded 9 CBT and 9 IPT audiotaped sessions using 30 items adapted from an integrity scale used to differentiate IPT and CBT for depression (S. D. Hollon, PhD, unpublished data, 1991). Neither rater was a therapist in this study, but both were trained in the delivery of the 2 treatments. Therapists were blind to which session was to be selected for rating treatment integrity, which was session 11 from each cohort. Raters were 100% accurate in judging actual treatment modality (ie, IPT vs CBT), and the treatment-specific indices significantly differentiated the treatments, whereas the nonspecific index did not (**Table 2**).

STATISTICAL ANALYSES

The completer sample size at posttreatment (n=78 for CBT, n=80 for IPT) provided 80% power to detect a treatment difference of greater than or equal to 0.8 binge days (d=0.45), and at 12-month follow-up (n=67 for CBT, n=71 for IPT), a difference of greater than or equal to 1.8 binge days (d=0.48).

Statistical analyses, using STATA version 6,[25] were based on the generalized estimating equation (GEE) approach,[26,27] an extension of generalized linear models. With the GEE approach, participants with missing data at some, but not all, time points remain in the analyses. The GEEs tested hypotheses about treatment effects, time course, and treatment × time interactions, with linear, quadratic, and cubic components of time as the within-subjects factors, and treatment and interactions between time components and treatment as between-subjects factors. Higher-order terms were only included in the analyses of the follow-up period because the analyses of change from pretreatment to posttreatment were based on only 2 assessment time points. All higher-order terms were tested in the presence of lower-order terms. Interactions were analyzed using tests with 1 degree of freedom per interaction, comparing the model with the interaction term with a model that had all of the same terms except the interaction. An exchangeable error variance-covariance matrix was assumed in all cases. A 2-tailed α level of .05 was used for all statistical tests. Data were considered missing if not collected by 17.5 months following treatment cessation, to avoid the effects of a possible assessment-availability bias on treatment effects and time course. This was the case for 5 participants whose 12-month data were excluded from all completer analyses.

The primary analyses included the posttreatment and follow-up time points for 3 outcomes: recovered (ie, no OBEs in the last month), improved to subclinical binge eating (ie, fewer than 4 OBE days in the last month),[28,29] and being at or below a comparative level of eating disorder attitudes and behaviors. The latter rating was made based on whether the global scale of eating disorder psychopathology was at or below the mean of the 4 EDE subscales reported for a non-BED, overweight, treatment-seeking sample of 115 participants (20% male) with a mean BMI of 36.3 kg/m^2 and age of 40.8 years.[30] Given the dichotomous nature of the variables we defined for the outcomes in these analyses (eg, recovered vs not recovered), changes over time were analyzed using GEE logistic regression models (ie, logit link function and binomial error distribution). Intent-to-treat (**Figures 2**, **3**, and **4**) and completer analyses were used to test treatment differences at each time point for each of these 3 categorical outcomes.

For each secondary outcome, 2 GEEs were conducted: 1 evaluating change from pretreatment to posttreatment and 1 evaluating change from posttreatment through 12-month follow-up. Analyses with binge eating (days/episodes) were modeled based on an identity link function and the Poisson error distribution, to accurately reflect the count nature of these outcomes, including the high proportion of zero values at posttreatment and follow-up time points. Analyses with other outcomes were modeled based on the identity link function and a standard Gaussian error distribution. Completer analyses included data from all available assessment time points for each participant, irrespective of treatment completion. Data are given as mean±SD unless otherwise indicated.

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size. Using a substantially larger sample than previously examined, we also sought to expand on prior BED research by simultaneously (1) using the most valid assessment of BED and specific eating disorder psychopathology, (2) evaluating time course repeatedly across multidimensional symptomatology through the 1-year follow-up, and (3) assessing the proposed mode specificity of these procedurally distinct treatments in reducing binge eating (ie, CBT through reducing problematic eating-, shape-, and weight-related attitudes and behaviors; IPT through improvements in interpersonal functioning, negative mood, and self-esteem).[10,14]

Table 1. Inclusion Criteria

DSM-IV research criteria for binge-eating disorder
Average of ≥2 days of binge eating per week for at least 6 months' duration
Marked distress regarding binge eating
At least 3 of 5 associated behavioral features (eg, eating when not physically hungry)
No regular use of inappropriate compensatory behaviors
Other study criteria
18-65 years old
Body mass index, 27-48 kg/m^2
Not pregnant or planning to become pregnant
Not taking weight-affecting or psychotropic medications
Absence of psychiatric conditions warranting immediate treatment (eg, psychotic symptoms, substance dependence, or suicidality)
Not currently enrolled in psychotherapy or a weight loss program

RESULTS

RANDOMIZATION AND ATTRITION

Treatment groups did not significantly differ on demographics (**Table 3**) or on pretreatment level of any outcome (all P values ≥.01) (**Table 4**). In addition, there were no significant site effects on any outcome at baseline or across time.

Therapy credibility ratings for CBT (8.8±1.7) and IPT (8.6±1.9) indicated that both treatment rationales made sense to patients, with no significant differences (t_{157}=0.95, P=.34) between the 2 treatments. In addition, there were no significant differences (t_{157}=0.97, P=.34) in how confident patients felt that CBT (7.0±2.3) or IPT (6.8±2.2) would be successful. Ratings of treatment preference indicated that 46.5% of participants preferred CBT, while 53.5% preferred IPT.

Sixteen patients (9.9%) dropped out of treatment: 9 (11.1%) from the CBT group and 7 (8.6%) from the IPT group, a nonsignificant difference (χ^2_1=0.28, P=.6). There were no significant treatment differences in compliance (t_{158}=−1.91, P=.06), with CBT participants attending 16.6±3.7 sessions (83.0%) and IPT partici-

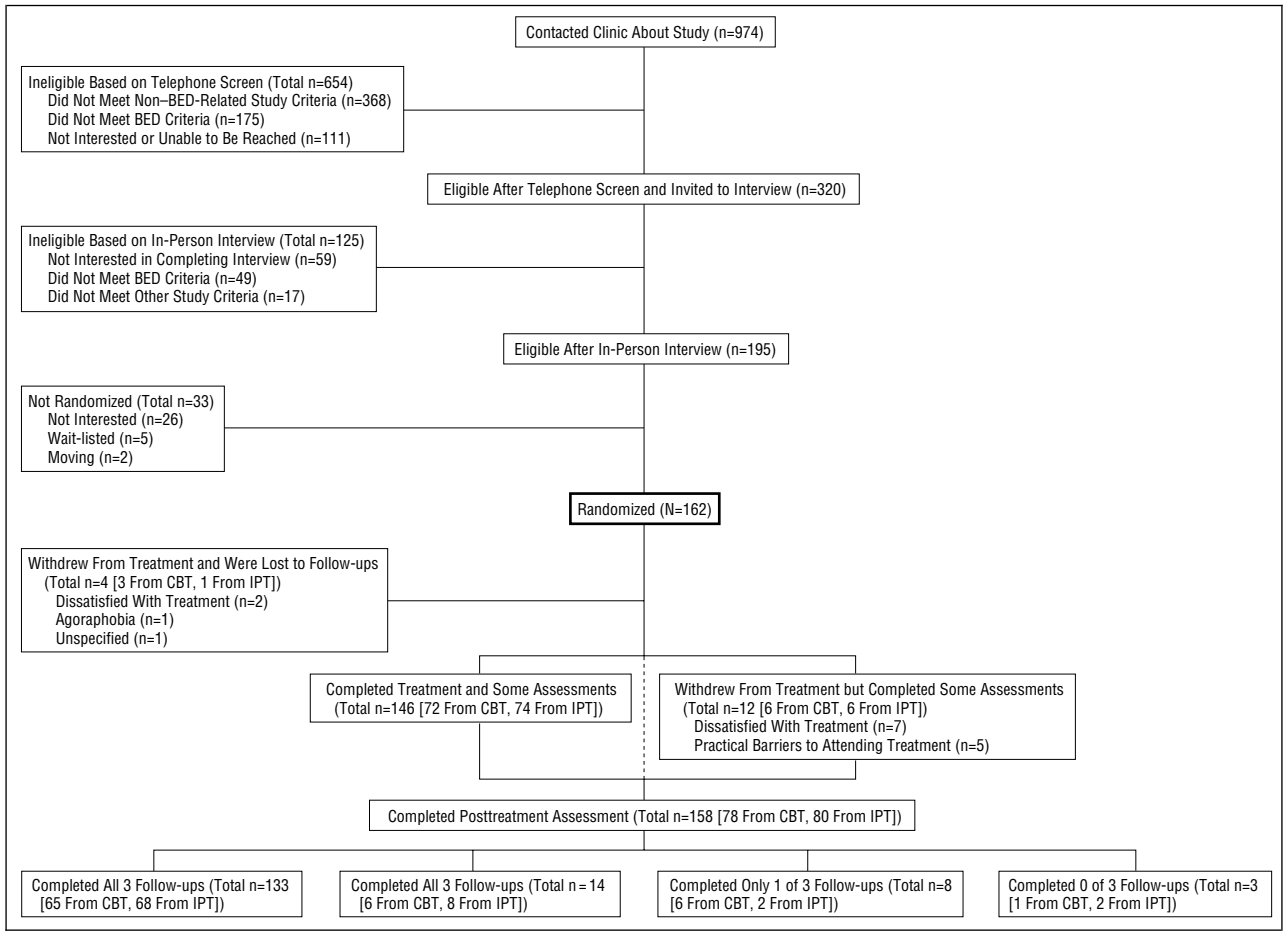

Figure 1. Summary of participant flow. BED indicates binge-eating disorder; CBT, cognitive-behavioral therapy; and IPT, interpersonal psychotherapy.

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Table 2. Treatment Integrity Ratings*

	IPT Sessions	CBT Sessions	*t* Test and Significance	Interrater Reliability Intraclass Correlations†
IPT	49.1 ± 5.5	12.4 ± 5.2	t_{16} = 14.47, *P*<.001	0.92
CBT	17.0 ± 3.2	49.7 ± 6.5	t_{16} = 13.57, *P*<.001	0.98
Nonspecific index	60.7 ± 3.8	57.1 ± 6.3	t_{16} = 1.46, *P* = .16	0.67

*Data are given as mean ± SD unless otherwise indicated. IPT indicates interpersonal psychotherapy; CBT, cognitive-behavioral therapy.
†For all intraclass correlations, *P*<.001.

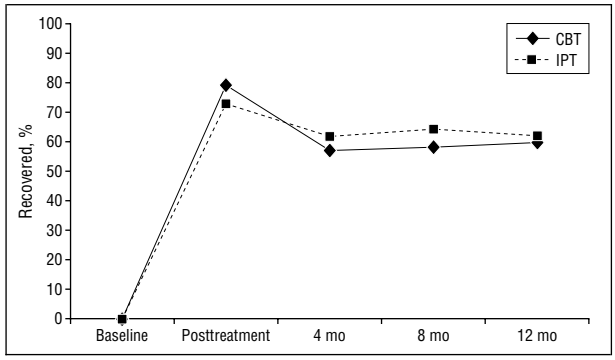

Figure 2. Intent-to-treat recovery rates (ie, percentage of participants with no objective bulimic episodes in the past month). n=81 with all missing data, including 1-year data collected after 17.5 months following treatment cessation, coded as not recovered, for each treatment at each time point. Intent-to-treat analyses indicate no significant treatment differences at any time point (all $\chi^2_1 \leq 0.85$; all *P* values ≥.36). CBT indicates cognitive-behavioral therapy; IPT, interpersonal psychotherapy.

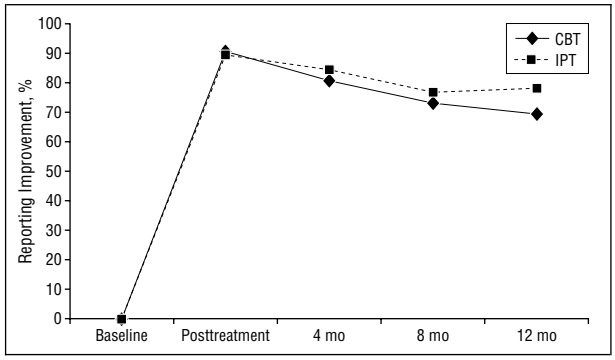

Figure 3. Intent-to-treat recovery rates of clinically significant improvement (ie, percentage of participants with <4 days with objective bulimic episodes in the past month). n=81 with all missing data, including 1-year data collected after 17.5 months following treatment cessation, coded as not showing clinically significant improvement, for each treatment at each time point. Intent-to-treat analyses indicate no significant treatment differences at any time point (all $\chi^2_1 \leq 1.56$; all *P* values ≥.21). CBT indicates cognitive-behavioral therapy; IPT, interpersonal psychotherapy.

pants attending 17.7±3.7 sessions (88.5%). Posttreatment interviews were conducted with 158 (97.5%) of the 162 participants. For the 4- through 12-month follow-ups, 155 participants (95.7%) were available for at least 1 follow-up interview, 147 (90.7%) for at least 2 follow-ups, and 133 (82.1%) completed all 3 follow-ups. The number of follow-up assessments completed (2.7±0.8 of 3) did not differ by treatment (t_{160}=−0.93, *P*=.35).

TREATMENT OUTCOME

Primary Outcomes

Generalized estimating equation analyses revealed that there were no significant treatment × time interactions for any of the 3 categorical outcomes (all *P* values ≥.15). The predicted probability of being recovered decreased from approximately 78% to 65% from posttreatment to about 9 months following treatment cessation, remaining stable through 12 months following treatment cessation. For recovery, there was a significant quadratic time effect (*P*=.03) for the follow-up period, reflecting a slight decline in the probability of being recovered toward the end of the 12-month follow-up assessments. The probability of binge eating at less than a clinically significant level decreased from approximately 91% to 84% from posttreatment to 12 months following treatment cessation. For this outcome, there was a significant linear time effect (*P*=.007) for the follow-up period, reflecting a slight decrease in the probability of bingeing at or below the subclinical level. The probability of being at or below the normative level of global eating disorder psychopathology remained stable from posttreatment across the follow-up period (all *P* values ≥.73).

Intent-to-treat (Figures 2-4) and completer rates for these 3 outcomes did not differ by treatment at any time point (all *P* values ≥.100); intent-to-treat rates are reported in Figures 2 through 4. Completer rates indicated that 64 (82%) of 78 CBT patients and 59 (74%) of 80 IPT patients were abstinent from binge eating at posttreatment; 48 (72%) of 67 and 50 (70%) of 71, respectively, were abstinent at the 12-month follow-up. In addition, at posttreatment, 73 (94%) of 78 CBT and 72 (90%) of 80 IPT patients were binge eating at less than a clinically-significant level of 4 days per month; 56 (84%) of 67 and 63 (89%) of 71, respectively, were so improved at 12-month follow-up. Finally, 66 (85%) of 78 CBT and 60 (75%) of 80 IPT patients were found at posttreatment to have global eating disorder psychopathology at or below a sample of patients who were obese and not bingeing, thus substantially improved from baseline rates of 23 (28%) of 81 for CBT and 22 (27%) of 81 for IPT. At 12-month follow-up, these rates were 54 (82%) of 66 and 56 (79%) of 71, respectively.

Secondary Outcomes

For completers, binge eating decreased by 96% from pretreatment to posttreatment for CBT and by 94% for IPT. At the 12-month follow-up, binge eating was reduced by 90% and 93% for CBT and IPT patients, respectively, from pretreatment levels. Cognitive-behavioral therapy and IPT

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were both effective in reducing number of binge days during treatment ($\beta = -.27$; SE = 0.007; $z = -11.68$, $P < .001$), with no significant treatment-by-time interaction ($z = 0.11$, $P = .91$). Significant quadratic ($\beta = -.02$; SE = 0.004; $z = -4.82$, $P < .001$) and cubic ($\beta = .002$; SE = 0.007; $z = 3.11$, $P = .002$) time effects occurred through follow-up, with no significant linear or higher-order treatment-by-time interactions (all P values $\geq .2$). The pattern of results indicated an increase during the first 6 months of follow-up from about 0.5 to 2.0 binge days per month across treatments, a maintained level of binge eating 6 through 12 months following treatment cessation, and a slight upward trajectory toward the end of 12-month follow-up assessments (similar pattern detected for binge episodes).

Table 3. Sample Characteristics at Baseline*

	CBT (n = 81)	IPT (n = 81)	Test Statistic and Significance
Age, mean ± SD, y	45.6 ± 9.6	44.9 ± 9.6	$t_{160} = 0.48$, $P = .63$
Age at onset of disorder, mean ± SD, y	24.1 ± 13.5	25.7 ± 12.9	$t_{160} = -0.73$, $P = .46$
Female	67 (82.7)	67 (82.7)	$\chi^2_1 = 0.00$, $P > .99$
Ethnicity			$\chi^2_3 = 3.34$, $P = .34$
White	76 (93.9)	74 (91.4)	
African American	3 (3.7)	3 (3.7)	
Hispanic	1 (1.2)	4 (4.9)	
Native American	1 (1.2)	0	
DSM-III-R diagnoses†			
Mood disorders overall, current	21 (25.9)	15 (18.5)	$\chi^2_1 = 1.29$, $P = .26$
Anxiety disorders overall, current	10 (12.3)	11 (13.6)	$\chi^2_1 = 0.06$, $P = .82$
Substance use disorders overall, current	5 (6.2)	1 (1.2)	$\chi^2_1 = 3.01$, $P = .08$
Any Axis I disorder, current	30 (37.0)	24 (29.6)	$\chi^2_1 = 1.00$, $P = .32$
Any Axis I disorder, lifetime	63 (77.8)	62 (76.5)	$\chi^2_1 = 0.04$, $P = .85$
Any Axis II disorder	30 (37.0)	31 (38.3)	$\chi^2_1 = 0.03$, $P = .87$

*Data are given as number (percentage) of patients unless otherwise indicated. CBT indicates cognitive-behavioral therapy; IPT, interpersonal psychotherapy.

†Because some participants met criteria for more than 1 current comorbid disorder, the sum of the percentages of the sample meeting criteria for each category of disorders exceeds the overall percentage meeting criteria for any current Axis I disorder.

Table 4. Treatment Outcomes by Time Point and Treatment*

	Pretreatment		Posttreatment		4 mo	
Variable	CBT (n = 81)	IPT (n = 81)	CBT (n = 78)	IPT (n = 80)	CBT (n = 75)	IPT (n = 76)
Binge days†‡ (range)	17.3 ± 6.9 (4-28)	16.3 ± 7.2 (5-28)	0.6 ± 1.6 (0-8)	0.9 ± 2.0 (0-10)	2.0 ± 4.6 (0-26)	1.5 ± 3.9 (0-23)
Eating disorder psychopathology (EDE Subscales)						
Restraint§	1.8 ± 1.2	2.1 ± 1.3	0.9 ± 0.9	1.5 ± 1.1	0.9 ± 0.9	1.3 ± 1.2
Shape Concern†‖	3.8 ± 1.0	3.8 ± 0.9	2.3 ± 1.4	2.4 ± 1.1	2.3 ± 1.2	2.4 ± 1.2
Weight Concern†‖	3.3 ± 1.1	3.2 ± 1.1	2.0 ± 1.2	2.1 ± 1.2	2.0 ± 1.1	2.2 ± 1.3
Eating Concern†‖	2.4 ± 1.2	2.3 ± 1.5	0.6 ± 0.8	0.7 ± 0.8	0.6 ± 0.8	0.8 ± 1.0
General psychological distress						
Total GSI†‖	43.3 ± 7.8	42.0 ± 8.9	32.8 ± 8.8	32.3 ± 8.5	33.0 ± 8.4	33.2 ± 10.9
Total RSE†‖	26.8 ± 5.6	27.3 ± 5.9	31.1 ± 6.0	30.3 ± 5.5	29.9 ± 5.8	30.6 ± 5.7
SCL Depression†‖	44.3 ± 8.3	42.4 ± 9.6	34.8 ± 7.9	33.6 ± 8.6	34.2 ± 8.3	34.6 ± 10.6
Interpersonal functioning						
Total IIP†¶	1.2 ± 0.6	1.2 ± 0.6	1.0 ± 0.6	1.0 ± 0.6	0.9 ± 0.5	1.0 ± 0.6
Total SAS†‖	2.1 ± 0.5	2.1 ± 0.6	1.8 ± 0.5	1.9 ± 0.5	1.8 ± 0.5	1.9 ± 0.5
BMI#	37.4 ± 5.3	37.4 ± 5.1	37.5 ± 5.3	37.2 ± 5.2	37.4 ± 5.3	36.6 ± 5.3

*Our statistical tests relied on generalized estimating equation (GEE) analyses, which do not correspond directly to the means and fixed time points presented in the table. All values are expressed as mean ± SD, except where otherwise noted. CBT indicates cognitive-behavioral therapy; IPT, interpersonal psychotherapy; EDE, Eating Disorder Examination; GSI, global symptom index; RSE, Rosenberg Self-Esteem; SCL Depression, Symptom Checklist-90–Revised Depression Subscale; IIP, Inventory of Interpersonal Problems; SAS, Social Adjustment Scale; and BMI, body mass index, calculated as weight in kilograms divided by height in meters.

†The GEE main effect of time ($P < .001$) indicating improvement from pretreatment to posttreatment.

‡The GEE quadratic ($P < .001$) and cubic ($P = .002$) main effects of time from posttreatment through the follow-up period, indicating a slight increase, then remaining stable, with a slight tendency for further increase within later 1-year assessments.

§The GEE treatment main effect ($P = .001$) in analyses of pretreatment and posttreatment and the follow-up period; time linear main effect ($P < .001$) in pretreatment and posttreatment analyses, and interaction between treatment and linear time ($P = .04$) for the follow-up period. Post hoc analyses, covarying out baseline levels, indicate a differential time course wherein CBT is stable during the follow-up period; IPT is higher than CBT at posttreatment ($P < .001$) and 4-month follow-up ($P = .04$), but indistinguishable at 8-month ($P = .08$) and 12-month ($P = .4$) follow-ups.

‖No significant GEE main effects of time or treatment and no significant interaction across follow-up (ie, stable during the follow-up period).

¶The GEE linear main effect of time ($P < .001$) indicates further improvement during the follow-up period.

#No significant GEE main effects of time ($P = .19$) or treatment ($P = .98$) and no significant interaction ($P = .97$) for pretreatment to posttreatment (ie, stable during the course of treatment). The GEE linear main effect of time ($P = .008$) indicates a decrease during the follow-up period.

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Observed mean numbers of binge days are presented along with SDs (Table 4), but the medians of 16 at pretreatment and zero at all posttreatment and follow-up time points are a better measure of central tendency than the mean because of high skewedness.

All other secondary outcomes showed a significant improvement from pretreatment to posttreatment (linear time effects, all P values $<.001$) except for BMI, which remained stable during the course of treatment. Results indicated that both CBT and IPT participants significantly reduced their levels of dietary restraint during treatment but had a different time course from posttreatment through the follow-up period. Specifically, CBT was stable during the follow-up period, while IPT was significantly greater than that of CBT at posttreatment and 4-month follow-up; however, the treatment groups were indistinguishable on this outcome thereafter. All other outcomes showed no treatment main or interaction effects from pretreatment to posttreatment or posttreatment through follow-up. In addition, all of these outcomes remained stable across follow-up, except interpersonal problems, which continued to improve, and BMI, which decreased (Table 4). The number of patients who received additional treatment for binge eating (CBT, n=3; IPT, n=8) was not significantly different ($\chi^2_1=2.52$, $P=.11$). These patients received individual psychotherapy, except one IPT patient, who received pharmacotherapy. In post hoc analyses of binge eating, removing those patients who received additional treatment did not change results.

Binge-eating abstinence was significantly related to BMI change, as those participants who were abstinent at posttreatment had reduced their BMI by 0.5 ± 1.5 kg/m^2 during the course of treatment, while those who were nonabstinent at posttreatment had increased their BMI by 0.4 ± 2.0 kg/m^2 ($t_{151}=-2.33$, $P=.02$). Similarly, of the participants who were abstinent at posttreatment, those who were abstinent at 12-month follow-up (n=77) had further decreased their BMI by 1.0 ± 3.0 kg/m^2, whereas those who were no longer abstinent at 12-month follow-up (n=26) had increased their BMI by 0.7 ± 2.9 kg/m^2 ($t_{104}=-2.61$, $P=.01$).

8 mo		12 mo	
CBT (n = 71)	IPT (n = 75)	CBT (n = 67)	IPT (n = 71)
2.1 ± 5.0 (0-28)	1.9 ± 4.5 (0-28)	1.7 ± 4.3 (0-25)	1.2 ± 2.6 (0-11)
0.8 ± 0.8	1.2 ± 1.2	1.0 ± 1.1	1.3 ± 1.3
2.3 ± 1.3	2.2 ± 1.2	2.2 ± 1.3	2.2 ± 1.3
2.1 ± 1.2	1.9 ± 1.1	1.9 ± 1.3	1.9 ± 1.3
0.6 ± 0.7	0.7 ± 0.9	0.6 ± 0.8	0.6 ± 0.9
31.9 ± 9.7	32.7 ± 10.6	32.0 ± 8.9	30.7 ± 10.6
30.5 ± 6.1	30.9 ± 5.6	30.4 ± 5.7	31.4 ± 5.6
33.3 ± 8.6	34.4 ± 10.7	33.1 ± 8.2	32.2 ± 10.3
0.8 ± 0.6	0.9 ± 0.6	0.8 ± 0.6	0.9 ± 0.6
1.8 ± 0.5	1.9 ± 0.5	1.8 ± 0.4	1.8 ± 0.5
37.5 ± 5.1	36.4 ± 5.5	37.2 ± 5.1	36.3 ± 5.4

COMMENT

Interpersonal psychotherapy and CBT demonstrated equivalent, substantial improvements in the short- and long-term across the core symptomatology and associated problematic psychosocial functioning that characterizes BED. Treatment efficacy for binge eating was best at posttreatment, with slight increases in binge eating across both treatments during follow-up. At 12 months' posttreatment, intent-to-treat rates of recovery from binge eating (98 [61%] of 162), and the percentage of participants who had reduced binge eating to less than once weekly (123 [76%] of 162), did not differ significantly by treatment modality. Interpersonal psychotherapy took longer to achieve its full effects on dietary restraint than did CBT; but by the last 2 follow-up assessments, IPT had reached parity with CBT on this outcome. The equivalence of IPT and CBT on binge-eating replicates an earlier IPT and CBT BED treatment comparison study.[10]

The lack of differences in binge-eating change or time course between groups IPT and CBT for BED likely reflects a true similarity in their efficacy. The relatively large BED treatment sample and high retention allowed power to detect clinically meaningful treatment differences. In addition, outcome concordance occurred despite marked differences in the focus and delivery of CBT and IPT, as monitored throughout treatment and confirmed by blind independent ratings of treatment integrity.

Results extend prior findings by documenting similarity between CBT and IPT in the degree of and time course for decreases in most of the BED-related eating- and weight/shape-related attitudinal disturbances. The exception to treatment similarity—CBT's faster action on dietary restraint—is consistent with CBT's direct focus on reducing behaviors and cognitions that constitute excessive restriction of intake. This time course difference suggests that these distinct treatment modalities may be operating differently, although it is interesting to note that both treatments achieved high efficacy for multiple problems, even those not directly targeted by the intervention. For example, CBT resulted in changes in interpersonal functioning, as did IPT, despite this area being addressed only in IPT. In the same way, IPT resulted in sustained decreases in cognitive disturbances about eating, shape, and weight even though the intervention did not directly address these attitudinal problems. Moreover, both treatments incurred equivalent short- and long-term improvements in general psychological functioning.

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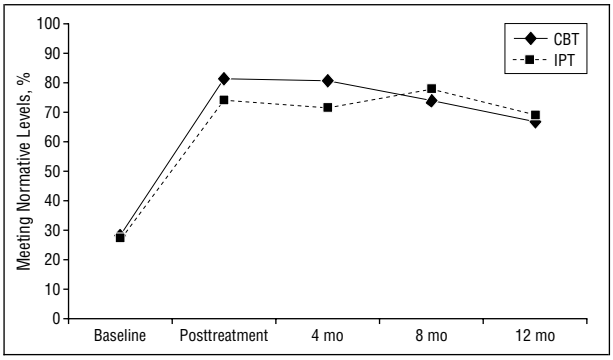

Figure 4. Intent-to-treat rates with normative levels of eating disorder psychopathology (ie, percentage of participants at or below nonbingeing obese sample). n=81 with all missing data, including 1-year data collected after 17.5 months following treatment cessation, coded as not showing normative levels of eating disorder psychopathology, for each treatment at each time point. Intent-to-treat analyses indicate no significant treatment differences at any time point (all $\chi^2_1 \leq 0.85$; all *P* values $\geq .36$). CBT indicates cognitive-behavioral therapy; IPT, interpersonal psychotherapy.

During follow-up, CBT and IPT resulted in statistically, but not clinically,[31] significant decreases in BMI on average across the entire sample. Nevertheless, weight maintenance is itself a positive outcome since individuals with BED likely experience a trajectory of weight gain.[32] Furthermore, approximately one fourth of treated individuals lost more than 5% of their body weight, which has been associated with health benefits.[31] Our findings and those of others[33] also suggest that patients with BED who cease binge eating tend to lose the most weight. For instance, among individuals recovered from binge eating at posttreatment, those who remained recovered at the 12-month follow-up had lost weight during the course of follow-up (–5.3 lb [2.4 kg]), whereas those who were no longer recovered at the end of follow-up had gained weight (+4.6 lb [2.1 kg]).

A comparative design testing active treatments (CBT, IPT) for BED was selected for this study because both treatments have demonstrated superiority to wait-listed control conditions, which are marked by persistent levels of binge eating and BED-related symptoms.[10-13,34,35] However, the comparative design prevents determining whether CBT and IPT had specific effects for the treatment of BED. Unlike wait-listed conditions, a nonspecific treatment condition would control not only for assessments and the passage of time but also for patient expectation effects and other nonspecific therapeutic influences. The issue of treatment specificity has become increasingly relevant to BED treatment since some[36-38] (but not all[39]) pharmacological studies of BED have evidenced short-term placebo response. Also, a recent natural-course study suggests relatively low long-term stability of BED among young, and partly subthreshold, individuals with *DSM-IV* BED.[32]

Some recent specificity findings for the treatment of BED do exist. Among obese patients with BED, cognitive therapy has been found to result in higher binge-eating abstinence than behavioral therapy 6 months following treatment.[40] In addition, CBT was significantly more effective than a credible nonspecific psychotherapy treatment in a pilot study of recurrent binge eaters (most of whom met *DSM-IV* BED criteria) (J. Kenardy, PhD, et al, unpublished data, 2000). Nonetheless, larger specificity studies are still needed as are those examining the specificity of IPT. Also unknown are the characteristics of individuals with BED who may be more or less responsive to nonspecific intervention or require a specific treatment approach. Further, BED treatment research needs to examine generalizability across different samples since most studies to date have enrolled samples that are predominantly well educated and white.[41]

More information is clearly needed about the mechanisms by which CBT and IPT treat the multiple problems inherent in BED. The remarkable similarity in effectiveness and time course of CBT and IPT raises the possibility that they operate through shared mechanisms in the treatment of BED but does not necessarily indicate a similarity in treatment processes between them. In this study, we examined the mode-specific effects of each treatment at posttreatment and across follow-up; it may be that specificity occurred earlier, as recent research on bulimia nervosa has demonstrated.[42] Clearly, future studies are required to assess potential mediators throughout the course of treatment.

The present reductions in binge eating and abstinence rates posttreatment and through the follow-up period are among the highest reported in the treatment research literature for BED.[8] There were no long-term treatment differences in binge eating, dietary restraint, or other associated psychopathology. While both IPT and CBT facilitated slight average decreases in relative weight, abstinence from binge eating resulted in the most substantial weight loss. Binge-eating disorder was shown among earlier studies to be highly responsive to CBT,[10,12,13] and our study indicates that IPT is an equivalent treatment alternative. Group CBT and group IPT have positive effects across the multiple domains of problematic functioning that characterize this disabling disorder.

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REFERENCES

1. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.* Washington, DC: American Psychiatric Association; 1994.
2. Bruce B, Agras WS. Binge eating in females: a population-based investigation. *Int J Eat Disord.* 1992;12:365-373.
3. Gotestam KG, Agras WS. General population-based epidemiological study of eating disorders in Norway. *Int J Eat Disord.* 1995;18:119-126.
4. Wilfley DE, Schwartz MB, Spurrell EB, Fairburn CG. Using the Eating Disorder Examination to identify the specific psychopathology of binge eating disorder. *Int J Eat Disord.* 2000;27:259-269.
5. Yanovski SZ, Nelson JE, Dubbert BK, Spitzer RL. Association of binge eating disorder and psychiatric comorbidity in obese subjects. *Am J Psychiatry.* 1993; 150:1472-1479.
6. Chambless DL, Ollendick TH. Empirically supported psychological interventions: controversies and evidence. *Ann Rev Psychol.* 2001;52:685-716.
7. Wilfley DE, Cohen LR. Psychological treatment of bulimia nervosa and binge eating disorder. *Psychopharmacol Bull.* 1997;33:437-454.
8. Wilson GT, Fairburn CG. Eating disorders. In: Nathan PE, Gorman JM, eds. *Treatments That Work.* New York, NY: Oxford University Press; 2001.
9. Telch CF, Agras WS. Obesity, binge eating and psychopathology: are they related? *Int J Eat Disord.* 1994;15:53-61.
10. Wilfley DE, Agras WS, Telch CF, Rossiter EM, Schneider JA, Golomb Cole AG, Sifford L, Raeburn SD. Group cognitive-behavioral therapy and group interpersonal psychotherapy for the nonpurging bulimic individual: a controlled comparison. *J Consult Clin Psychol.* 1993;61:296-305.
11. Agras WS, Telch CF, Arnow B, Eldredge K, Detzer MJ, Henderson J, Marnell M. Does interpersonal therapy help patients with binge eating disorder who fail to respond to cognitive-behavioral therapy? *J Consult Clin Psychol.* 1995;63:356-360.
12. Marcus MD, Wing RR, Fairburn CG. Cognitive behavioral treatment of binge eating vs behavioral weight control on the treatment of binge eating disorder. *Ann Behav Med.* 1995;17(suppl):S090.
13. Telch CF, Agras WS, Rossiter EM, Wilfley D, Kenardy J. Group cognitive-behavioral treatment for the nonpurging bulimic: an initial evaluation. *J Consult Clin Psychol.* 1990;58:629-635.
14. Agras WS. Nonpharmacologic treatments of bulimia nervosa. *J Clin Psychol.* 1991; 52:29-33.
15. Wilfley DE, MacKenzie KR, Welch RR, Ayres VE, Weissman MM. *Interpersonal Psychotherapy for Group.* New York, NY: Basic Books; 2000.
16. Klerman GL, Weissman MM, Rounsaville BJ, Chevron ES. *Interpersonal Psychotherapy of Depression.* New York, NY: Basic Books; 1984.
17. Wilfley DE, Frank MA, Welch R, Spurrell EB, Rounsaville BJ. Adapting interpersonal psychotherapy to a group format (IPT-G) for binge eating disorder: toward a model for adapting empirically supported treatments. *Psychotherapy Res.* 1998;8:379-391.
18. Fairburn CG, Cooper Z. The Eating Disorder Examination: 12th ed. In: Fairburn CG, Wilson GT, eds. *Binge Eating: Nature, Assessment, and Treatment.* New York, NY: The Guilford Press; 1993:317-360.
19. Spitzer RL, Williams JB, Gibbon M, First MB. The Structured Clinical Interview for *DSM-III-R* (SCID), I. *Arch Gen Psych.* 1992;49:624-629.
20. Spitzer RL, Williams JBW, Gibbon M, First MB. *User's Guide for the Structured Clinical Interview for DSM-III-R: SCID.* Washington, DC: American Psychiatric Press; 1990:iv.
21. Derogatis LR. *The SCL-90 Manual I: Scoring, Administration and Procedures for the SCL-90.* Baltimore, Md: Clinical Psychometric Research; 1977.
22. Rosenberg M. *Conceiving the Self.* New York, NY: Basic Books; 1979.
23. Horowitz LM, Rosenberg SE, Baer BA, Ureno G, Villasenor VS. Inventory of interpersonal problems: psychometric properties and clinical applications. *J Consult Clin Psychol.* 1988;56:885-892.
24. Weissman MM, Bothwell S. Assessment of Social Adjustment by Patient Self-Report. *Arch Gen Psych.* 1976;33:1111-1115.
25. StataCorp. *Stata Statistical Software: Release 6.0.* College Station, Tex: Stata Corp; 1999.
26. Zeger SL, Liang KY. Longitudinal data analysis for discrete and continous outcomes. *Biometrics.* 1986;42:121-130.
27. Zeger SL, Liang KY. Models for longitudinal data: a generalized estimating equation approach [published erratum appears in *Biometrics.* 1989;45:347]. *Biometrics.* 1988;44:1049-1060.
28. Striegel-Moore RH, Wilson GT, Wilfley DE, Elder KA, Brownell KD. Binge eating in an obese community sample. *Int J Eat Disord.* 1998;23:27-37.
29. Striegel-Moore RH, Dohm FA, Solomon EE, Fairburn CG, Pike KM, Wilfley DE. Subthreshold binge eating disorder. *Int J Eat Disord.* 2000;27:270-278.
30. Mannucci E, Ricca V, Di Bernardo M, Moretti S, Cabras PL, Rotella CM. Psychometric properties of EDE 12.0D in obese adult patients without binge eating disorder. *Eat Weight Disord.* 1997;2:144-149.
31. National Heart, Lung, and Blood Institute. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults—the evidence report. *Obes Res.* 1998;6(suppl 2):51S-209S.
32. Fairburn CG, Cooper Z, Doll HA, Norman P, O'Connor M. The natural course of bulimia nervosa and binge eating disorder in young women. *Arch Gen Psych.* 2000;57:659-665.
33. Agras WS, Telch CF, Arnow B, Eldredge K, Marnell M. One-year follow-up of cognitive-behavioral therapy for obese individuals with binge eating disorder. *J Consult Clin Psychol.* 1997;65:343-347.
34. Eldredge KL, Agras WS, Arnow B, Telch CF, Bell S, Castonguay L, Marnell M. The effects of extending cognitive-behavioral therapy for binge eating disorder among initial treatment nonresponders. *Int J Eat Disord.* 1997;21:347-352.
35. Peterson CB, Mitchell JE, Engbloom S, Nugent S, Mussell MP, Miller JP. Group cognitive-behavioral treatment of binge eating disorder: a comparison of therapist-led vs self-help formats. *Int J Eat Disord.* 1998;24:125-136.
36. Stunkard AJ, Berkowitz R, Tanrikut C, Reiss E, Young L. d-Fenfluramine treatment of binge eating disorder. *Am J Psychiatry.* 1996;153:1455-1459.
37. Alger SA, Schwalberg MD, Bigaouette JM, Michalek AV, Howard LJ. Effect of a tricyclic antidepressant and opiate antagonist on binge-eating behavior in normal weight bulimic and obese, binge-eating subjects. *Am J Clin Nutr.* 1991;53:865-871.
38. McElroy SL, Casuto LS, Nelson EB, Lake KA, Soutullo CA, Keck PE Jr, Hudson JI. Placebo-controlled trial of sertraline in the treatment of binge eating disorder. *Am J Psychiatry.* 2000;157:1004-1006.
39. McCann UD, Agras WS. Successful treatment of nonpurging bulimia nervosa with desipramine: a double-blind, placebo-controlled study. *Am J Psychiatry.* 1990; 147:1509-1513.
40. Nauta H, Hospers H, Kok G, Jansen A. A comparison between a cognitive and a behavioral treatment for obese binge eaters and obese non-binge eaters. *Behav Ther.* 2000;31:441-461.
41. Stein RI, Saelens BE, Dounchis JZ, Lewczyk CM, Swenson AK, Wilfley DE. Treatment of eating disorders in women. *Couns Psychol.* 2001;29:695-732.
42. Wilson GT, Loeb KL, Walsh BT, Labouvie E, Petkova E, Liu X, Waternaux C. Psychological vs pharmacological treatments of bulimia nervosa: predictors and processes of change. *J Consult Clin Psychol.* 1999;67:451-459.

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