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A Comparison Between a Cognitive and a Behavioral Treatment for Obese Binge Eaters and Obese Non–Binge Eaters

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The purpose of this study was to evaluate the effectiveness of a cognitive and a behavioral treatment for obese binge eaters and obese non–binge eaters. Seventy-four participants, 37 binge eaters and 37 non–binge eaters, were randomly assigned to one of the two treatment conditions taking binge status into account. Both treatments took place in groups and all groups met for 15 weekly sessions of 150 minutes each. Participants in the cognitive treatment learned to change dysfunctional cognitions and participants in the behavior treatment learned a regular eating pattern. The cognitive treatment was more effective in reducing concerns about shape, weight, and eating, as well as restraint and in improving self-esteem. These results were maintained at 6-month follow-up. The behavioral treatment was more effective in reducing weight, but at 6-month follow-up participants in the behavioral treatment regained weight. Binge eating was reduced in both treatments equally effectively, but at 6 months, participants who received cognitive treatment were more abstinent from binge eating.

For more than 30 years behavioral methods have been systematically applied to the treatment of obesity. Controlled evaluation outcome research has demonstrated that the short-term effects of behavior therapy are encouraging. The average weight loss is approximately 0.5 kilogram (kg) per week (Wadden & Bartlett, 1992). Despite encouraging results in the short term, there remains a continuing failure to achieve long-term maintenance of weight: After 1 year almost all participants return to their baseline weights, regardless of the length or method of the initial treatment (Perri, Nezu, Patti, & McCann, 1989; Wilson, 1994).

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Besides the fact that behavioral treatment for obesity seems not to be very effective in producing lasting weight loss, several researchers have found that dieting itself has negative effects as well. Dieting might be associated with increased cardiovascular and all-cause mortality (Blair, Shaten, Brownell, Collins, & Lissner, 1993; Lissner et al., 1991) and may result in pathological changes in cognition and affect (Brownell & Rodin, 1994; Foreyt et al., 1995; Friedman & Brownell, 1995; Polivy & Herman, 1992). Moreover, there is evidence that strict dieting might be harmful and contributes to binge eating (Telch & Agras, 1993). The cultural pressure to be thin is particularly intense for women (Horm & Anderson, 1993), leading them to become overconcerned with their body shape and weight and to a low self-esteem (Friedman & Brownell; Miller & Downey, 1999; Stunkard & Wadden, 1992). Obese individuals presenting for treatment of obesity do display a higher prevalence of psychological problems than obese individuals not seeking treatment (Friedman & Brownell; Miller & Downey). An important development in the study of obesity is the recognition that between 20% and 46% of obese patients seeking treatment report moderate to severe problems with binge eating (Bruce & Wilfley, 1996; Gormally, Black, Daston, & Rardin, 1982; Marcus, Wing, & Lamparski, 1985; Spitzer et al., 1992; Telch, Agras, & Rossiter, 1988). This subgroup of obese persons displays even more severe psychological problems than obese non-binge eaters. Obese binge eaters show more concerns about shape, weight, and eating than obese non-binge eaters (Eldredge & Agras, 1996; Telch & Stice, 1998; Wilson, Nonas, & Rosenblum, 1993) at levels that are comparable to those mentioned by bulimia nervosa patients (Marcus, Smith, Santelli, & Kaye, 1992). The level of restraint is not elevated and is comparable to obese non-binge eaters (Wilson et al., 1993). Furthermore, persons with binge eating disorder are more vulnerable to depression (Hudson, et al., 1988; Kuehnel & Wadden, 1994; Marcus, Wing, & Hopkins, 1988; Mussell, et al., 1996; Spitzer et al.; Telch & Agras, 1994; Telch & Stice; Wadden, Foster, & Letizia, 1992; Yanovski, Nelson, Dubbert, & Spitzer, 1993) and have a lower self-esteem (de Zwaan et al., 1994; Telch & Agras; Telch & Stice) than obese non-binge eaters.

For the most part, behavioral programs have not focused on psychological problems among obese participants. Critics of behavioral treatments focusing on dieting for obese persons assert that the impact is typically devastating, sabotaging self-esteem and other psychological sequelae (Wooley & Garner, 1991). Moreover, obese binge eaters perform less well in behavioral programs than do obese non-binge eaters. Obese binge eaters lose significantly less weight or rapidly regain it (Keefe, Wyshogrod, Weinberger, & Agras, 1984; Marcus et al., 1988; Yanovski, Gormally, Leser, Gwirtzman, & Yanovski, 1994) and more frequently drop out of treatment (Keefe et al., 1984; Marcus et al.; Yanovski et al.). However, other studies found no significant differences between these two groups in weight loss or attrition in conventional behavioral treatments (Gladis et al., 1998; Porzelius, Houston, Smith, Arfken, & Fisher, 1995).

Cognitive behavioral treatment (CBT) is a broader form of therapy and

consists of two major components: behavioral techniques and cognitive restructuring. In the behavioral part, normalizing of the eating pattern is established and persons are encouraged to moderate overall intake. In the cognitive part, maladaptive thoughts about dieting, shape, and weight and more generic concerns about one's self-worth are challenged. At short term there is evidence that obese binge eaters respond well to CBT analogous to the results from CBT among bulimia nervosa patients, at least as far as their binge eating is concerned, but there is no effect for weight (Agras et al., 1994; Marcus, Wing, & Fairburn, 1995; Marcus et al., 1988; Porzelius et al., 1995; Smith, Marcus, & Kaye, 1992; Telch, Agras, Rossiter, Wilfley, & Kenardy, 1990; Wilfley et al., 1993). Until now, one study has included more psychological outcome measures like shape, weight, and eating concerns and found significant decreases on all concerns from pre- to posttreatment (Smith et al.). Furthermore, the effects of a pure cognitive treatment had never been evaluated.

The purpose of this study was to compare the efficacy of a cognitive group intervention with a group behavioral intervention for obese binge eaters and obese non-binge eaters. The outcome measures of interest were concerns about shape, weight and eating, restraint, weight, binge eating, self-esteem, and depression. We hypothesized that obese women, and especially obese binge eaters in the cognitive condition, would show greater improvements on all outcome measures, with an exception for weight, than in the behavior condition.

Method

Participants

Selected participants were 74 obese women. They were recruited from a group of respondents answering local newspaper advertisements that offered two university-based treatments for eating problems. In order to be included in the study, participants had to be between 18 and 50 years of age, with a Body Mass Index (BMI) of 27 or higher. Exclusion criteria included participation in a weight-loss program at the time of selection, current physical dependence on alcohol or drugs, psychosis, or pregnancy.

Obese women who responded to the advertisements were screened in a telephone interview for the inclusion and exclusion criteria. Interested and potentially eligible individuals ($N = 451$) received the Questionnaire on Eating and Weight Patterns—revised (QEWP-r; Yanovski, 1993). This self-report questionnaire contains 28 items and also items that specifically test for the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV*; American Psychiatric Association, 1994) criteria for binge-eating disorder (BED). Furthermore, questions on inclusion and exclusion criteria were added. After completion at home, the questionnaires were returned to the university ($N = 265$).

If respondents met the BED criteria or did not have any binge episodes at all, they ($N = 145$) were invited for a structured diagnostic interview which

lasted about 1 hour and was conducted by a psychologist experienced in the assessment of eating disorders and obesity. The interviewer clarified and checked the *DSM-IV* items, especially those regarding quantity of food and extent of loss of control and the exclusion criteria were checked again. After the diagnostic interview, participants were weighed and their height was measured. The purpose of the study was explained, and written informed consent for the treatment study was obtained.

Respondents were categorized as non-binge eaters if they fulfilled none of the *DSM-IV* criteria for BED. The BED diagnosis was made if respondents met strict *DSM-IV* criteria for the disorder. We anticipated that comparisons of two extreme groups would most likely reveal relevant differences. Therefore, the major reason for exclusion was if respondents met some of the *DSM-IV* criteria, but not all. Other individuals canceled the interview appointment, did not appear at the interview, or decided not to participate in the program primarily because of practical reasons. Finally, 37 women who met the proposed *DSM-IV* criteria for BED and 37 non-binge eaters comprised the definitive sample.

Participants were between 21 and 49 years ($M = 38.3$, $SD = 7.1$). Their mean BMI was 33.1 ($SD = 4.3$) and their mean weight was 93.5 ($SD = 13.5$). Fifty-nine participants (80%) were medically obese ($BMI > 30$). Participants reported a mean duration of obesity of 21.1 years ($SD = 8.5$; range: 6 to 37). BED patients reported binge eating on an average of 4 days per week ($SD = 1.7$). The mean duration of their binge eating was 12.5 years ($SD = 6.4$; range: 3 to 27).

Study Design

An experimental design consisted of a pre- and a postmeasurement and a follow-up measurement 6 months after treatment. Participants were recruited in two equal phases and were randomly assigned to one of the two treatment conditions, taking binge status into account. Thus, this procedure resulted in four distinct groups: non-binge eaters who received behavior treatment, binge eaters who received behavior treatment, non-binge eaters who received cognitive treatment, and binge eaters who received cognitive treatment.

Selected participants were asked to complete pretest questionnaires at home and were invited for a semistructured face-to-face interview 1 week before entering treatment. This interview lasted between 30 and 45 minutes. The purpose of the interview was to detect three dysfunctional thoughts regarding eating, weight, and shape and to check that all items of the questionnaires were filled out, to obtain weight, and that frequency of overeating was measured with the help of a 28-day calendar method (Fairburn & Cooper, 1993). At postmeasurement and follow-up measurement, participants were asked again to complete the questionnaires at home and were again invited for an interview.

Treatment

General aspects. Both treatments were given in groups and all groups met for 15 weekly sessions of 150 minutes each. Ten groups, each consisting of seven or eight participants, were assisted by one therapist. Eight therapists,

experienced in the behavioral and cognitive treatment of eating disorders and/or obesity, participated in this study, each facilitating the treatment of at least one group. For both conditions, detailed treatment protocols were developed. All therapists received an intensive training in the protocol. Weekly consultation sessions of approximately 1 hour with each therapist were held to ensure therapists' compliance with treatment protocols. Most of the consultation sessions relied on therapists' reports alone. A few sessions were videotaped and relevant parts were used in the supervision sessions. Absence or presence of participants was recorded every session and homework assignments were checked and reviewed.

The two treatments shared the following features: Both were semistructured and problem oriented, provided a coherent treatment rationale, were self-monitoring, and set homework assignments.

Cognitive treatment (CT). The aim of this treatment was to change dysfunctional cognitions regarding shape, weight, eating, dieting, and underlying self-schemas with help of the cognitive techniques outlined by Beck (1976). In the first session, the therapists explained the rationale of cognitive therapy. A binge/overeating circle was described as beginning with dysfunctional cognitions about shape, weight, eating, dieting, or negative self-schemas.

Participants were instructed to self-monitor situations that trigger binge eating or overeating, and participants were asked to describe their thoughts. Examination of this monitoring was an important focus of therapy. During the first half of the therapy session, homework assignments were discussed. In the second half, participants practiced identifying and challenging dysfunctional cognitions and setting up behavioral experiments.

The first stage of the therapy (six sessions) focused on identifying and altering dysfunctional cognitions regarding shape, weight, and eating. Furthermore, participants were encouraged to engage in behavioral experiments designed to challenge their dysfunctional cognitions.

In the second stage (six sessions), cognitive techniques directed at identifying and challenging negative self-schemas that perpetuate disordered eating were emphasized. Negative self-schemas (i.e., "If I go to the swimming pool, people will reject me") were identified and challenged and behavioral experiments were used.

The final stage (three sessions) largely concerned the maintenance of progress following the end of treatment. Marlatt and Gordon (1985) have proposed that the Abstinence Violation Effect (AVE) accounts for some of the variability regarding relapse. Participants were informed that lapses were normal and to be expected. The purpose of the cognitive restructuring procedure in the last phase was to reframe maladaptive attributions of causality regarding lapses to make it easier to regain control.

Behavioral treatment (BT). The aim of the BT was to learn a healthy eating pattern by having three meals each day and three planned snacks, decreasing fat intake, eating between 1,500 to 1,800 kcal a day, increasing exercise habits, and recognizing and anticipating high-risk situations.

In the first session, the therapists explained the rationale of behavioral ther-

apy: To regain control over eating, it is important to learn a healthy eating pattern, without excessive, restrictive dieting. Participants were told that treatment needed first to eliminate binge eating and overeating patterns by establishing regular, healthy eating patterns and that weight control needed to be a secondary concern.

Participants were instructed to self-monitor their food intake and eating patterns, binge episodes, or episodes of overeating and the circumstances under which they occurred (i.e., time or mood). Examination of the self-monitoring formed an important focus of therapy. In the first half of the session, homework assignments were discussed, and in the second half, nutritional information was given. Furthermore, participants were advised to make gradual changes in eating habits and exercise level. The basic behavioral strategies were self-monitoring, goal-setting, and stimulus control techniques. Three forms of stimulus control techniques were used. First, participants learned stimulus control techniques whereby stimuli that resulted in eating were avoided (e.g., not going to a shop when hungry). Second, they learned techniques to anticipate high-risk situations and to outline strategies to prevent eating, such as walking or taking a shower. Third, participants learned self-reinforcement techniques, such as buying a magazine, and were positively reinforced by the therapist if they were not overeating. No attention was paid to dysfunctional cognitions.

Measures

Expectations of treatment were measured after Session 1 with three statements on 0-100-mm Visual Analogue Scales (VASs) ranging from 0 (*totally disbelieved in*) to 100 (*totally believed in*). The statements measured whether participants believed in the treatment rationale, whether they thought treatment would successfully eliminate their eating problem, and whether they could confidently recommend the treatment to their best friends.

The manipulation check consisted of a cognitive and a behavioral checklist, given to all participants at Session 1, Session 8, and Session 15. The cognitive checklist contained each participant's three dysfunctional cognitions concerning shape, weight, and eating that were identified in the semistructured face-to-face interview before treatment. The cognitive checklist also contained seven general cognitions concerning shape, weight, and eating. These seven cognitions were based on the most frequently mentioned cognitions collected earlier in our samples from obese populations seeking treatment for eating problems. Participants had to rate the degree of belief in these cognitions on 0-100mm VASs. The VAS rating has face validity. The eating checklist measured regularity of eating (having breakfast, having lunch, having dinner) during the previous 7 days. The number of meals was divided by 7 to get the mean number of meals a day during the last week before Session 1, 8, and 15.

Eating pathology was measured with the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994). The EDE-Q is designed to

assess the specific core psychopathology of eating disordered individuals and focuses on the past 28 days. We used four subscales of the EDE-Q: Shape Concern, Weight Concern, Eating Concern, and Restraint. Wilfley, Schwartz, Spurrell, and Fairburn (1997) found modest to good agreement between the self-report version and the investigator-based interview on these four subscales. However, they found low agreement when assessing binge eating. It was suggested that the performance of the EDE-Q would improve by clarifying the definitions of complex features, such as binge eating, with the help of an additional interview. Therefore, binge eating was assessed with the help of the interview method. Since Rossiter, Agras, Telch, and Bruce (1992) proposed that recollecting the days with binge eating episodes is performed more accurately than recollecting the number of binge eating episodes, we measured the number of days in which an objective binge episode had occurred during the last 28 days.

Weight. Participants were weighed in clothes, without shoes, on a balance beam scale.

Depression was measured with the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI is a 21-item self-report measure of severity of depressive symptomatology.

Self-esteem was measured with the Rosenberg's Self-Esteem Scale (RSE; Rosenberg, 1965), a 10-item questionnaire measuring global self-esteem. A lower score indicates more positive self-esteem.

Statistical Procedure

The analyses were by intention-to-treat. An attempt was made to obtain posttreatment and follow-up data on those who dropped out, but if this was not possible, their last available data were used instead. *T* tests were used in order to reveal significant differences between obese binge eaters and obese non-binge eaters at pretreatment on demographic variables and outcome variables. The dependent variables were divided in eating pathology (dietary restraint and concerns about shape, weight, and eating), binge eating, weight, and generic psychopathology (depression and self-esteem). To investigate the effectiveness of both treatments, the results were analyzed with 2 (Treatment: BT versus CT) \times 2 (Binge Status: obese binge eaters versus obese non-binge eaters) \times 3 (Time: pretreatment versus posttreatment versus follow-up) repeated-measures multivariate and univariate analysis of variance. If significant effects were found, pairwise contrasts were conducted comparing pretreatment and posttreatment and between pretreatment and follow-up.

Results

Pretreatment

To test whether there were pretreatment differences on demographic or outcome measures between obese binge eaters and obese non-binge eaters, *t* tests were conducted. Obese binge eaters and obese non-binge eaters did not

differ in BMI, weight, or duration of obesity. However, obese binge eaters were significantly younger than obese non-binge eaters, $t(72) = 5.90$, $p < .001$. Furthermore, obese binge eaters and obese non-binge eaters differed significantly on all outcome measures ($p < .001$), except on restraint. Obese binge eaters were far more concerned about shape, weight, and eating, were more depressed, and showed lower self-esteem than obese non-binge eaters.

Treatment Dropouts

Ten participants (13.5%) of a total of 74 participants dropped out of treatment: 3 binge eaters and 2 non-binge eaters from the CT group and 3 binge eaters and 2 non-binge eaters from the BT group. Not losing enough weight ($n = 4$), traveling time ($n = 2$), and disrupting life-events ($n = 4$) were reasons that participants gave for dropping out. Dropout rates did not differ between cognitive and behavioral treatments or between binge eaters and non-binge eaters. *T* tests were conducted on demographic variables and outcome measures. Dropouts did not differ from those who completed treatment with regard to age, BMI, duration of obesity, duration of binge eating, eating and weight-related dependent variables, and depression. However, obese binge eaters who dropped out of treatment had a significantly lower self-esteem than obese binge eaters who did not drop out of treatment, $t(35) = 3.74$, $p < .001$. Six of the 10 treatment dropouts provided posttreatment data, 5 of the 10 treatment dropouts provided follow-up data. All treatment completers provided posttreatment and follow-up data.

Expectations of Treatment and Treatment Compliance

Credibility of the treatment rationale was high in both treatments (CT = 85.7; BT = 83.4). The rating on confidence that treatment would be successful was 84.7 in the CT group and 79.8 in the BT group. Recommending treatment to a friend scored 83.9 in the CT group and 80.2 in the BT group. *T* tests revealed no significant differences between the cognitive treatment and the behavioral treatment on any of these questions. These results suggest that the treatments were presented to participants in an equally credible fashion by the therapists and that both groups held high and equal expectations for improvement.

Treatment compliance was high. Participants in the behavioral treatment attended 13.3 treatment sessions (89%) and participants in the cognitive treatment attended 13.8 sessions (92%). A *t* test revealed no significant differences in attendance between treatments.

Manipulation Check

Table 1 shows means and standard deviations of the different manipulation checks at Session 1, 8, and 15. A 2 (Treatment: BT versus CT) by 3 (Time: Session 1 versus Session 8 versus Session 15) repeated-measures ANOVA conducted on the cognition checklist revealed a significant Time \times Treatment

TABLE 1
 MEANS AND STANDARD DEVIATIONS AT SESSION 1, SESSION 8, AND SESSION 15 FOR THE MANIPULATION CHECKS

	Cognitive Treatment						Behavioral Treatment					
	Session 1		Session 8		Session 15		Session 1		Session 8		Session 15	
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
Manipulation Check												
Individual cognitions	86.5	(7.5)	58.7	(18.5)	18.6	(13.1)	83.1	(9.9)	73.4	(14.5)	65.6	(20.3)
General cognitions	66.3	(14.3)	41.9	(15.2)	16.2	(9.3)	60.7	(14.7)	49.3	(15.1)	44.9	(9.3)
Regular eating ^a	2.7	(0.4)	2.7	(0.4)	2.7	(0.4)	2.5	(0.7)	2.9	(0.2)	3.0	(0.1)

^a Mean number of meals per day during one week.

interaction effect on the individual cognitions, $F(2, 124) = 84.16, p < .001$, and the general cognitions, $F(2, 124) = 50.67, p < .001$, showing a greater decrease in dysfunctional cognitions over time in the cognitive treatment. Further repeated pairwise contrast analyses were conducted to test whether the means were significantly different within treatment over time. For individual cognitions, significant Time \times Treatment interaction effects were found between Session 1 and Session 8, $F(1, 62) = 24.00, p < .001$, and between Session 1 and Session 15, $F(1, 62) = 150.40, p < .001$. For general cognitions, significant Time \times Treatment interaction effects were found between Session 1 and Session 8, $F(1, 62) = 12.25, p < .001$, and between Session 1 and Session 15, $F(1, 62) = 86.06, p < .001$.

A 2 (Treatment) by 3 (Time) repeated-measures ANOVA on the eating habits checklist revealed a significant Time \times Treatment interaction, $F(2, 124) = 12.13, p < .001$, indicating that participants in the behavior treatment acquired a more regular eating pattern over time, while participants in the cognitive treatment remained constant. Further repeated pairwise contrast analyses were conducted to test whether the means were significantly different within treatment over time. For eating habits, significant Time \times Treatment interaction effects were found between Session 1 and Session 8, $F(1, 62) = 11.17, p < .01$, and between Session 1 and Session 15, $F(1, 62) = 14.86, p < .001$.

Treatment Effects Between Pretreatment Versus Posttreatment and Follow-Up

Dietary restraint and concerns about shape, weight, and eating. Table 2 shows the means and standard deviations for all outcome measures at pretreatment, posttreatment, and at 6-month follow-up. The repeated-measures MANOVA performed on the pretreatment, posttreatment, and follow-up scores on the four subscales of the EDE-Q showed a significant multivariate interaction effect for Treatment \times Time, $F(8, 280) = 2.76, p < .01$. Additional univariate analyses revealed Treatment \times Time interactions between pretreatment and posttreatment for shape concern, $F(1, 71) = 19.84, p < .001$, weight concern, $F(1, 71) = 17.22, p < .001$, eating concern, $F(1, 71) = 9.18, p < .01$, and restraint, $F(1, 71) = 3.51, p = .07$. Inspection of the means revealed that the cognitive treatment was superior to the behavioral treatment for all subscales. Univariate contrast analyses comparing pretreatment and follow-up revealed significant Treatment \times Time interactions for shape concern, $F(1, 71) = 4.47, p < .05$, weight concern, $F(1, 71) = 10.34, p < .001$, and eating concern, $F(1, 71) = 5.61, p < .05$. Inspection of the means revealed that the cognitive treatment was superior to the behavioral treatment for all three subscales. No significant Treatment \times Time interaction effect was found for restraint.

Finally, there was a highly multivariate interaction effect for Binge Status \times Time, $F(8, 280) = 6.60, p < .001$. Univariate contrast analyses between pretreatment and posttreatment showed significant Binge Status \times Time effects for shape concern, $F(1, 71) = 15.02, p < .001$; weight concern, $F(1, 71) =$

TABLE 2
MEANS AND STANDARD DEVIATIONS AT PRETEST, POSTTEST, AND FOLLOW-UP FOR ALL OUTCOME MEASURES

Measure	Behavioral Treatment					
	Non-Binge Eaters (n = 21)			Binge Eaters (n = 16)		
	Pretest Mean (SD)	Posttest Mean (SD)	Follow-up Mean (SD)	Pretest Mean (SD)	Posttest Mean (SD)	Follow-up Mean (SD)
EDE-Q ^a shape concern	3.2 (0.8)	2.7 (1.1)	2.8 (1.4)	5.1 (0.5)	3.8 (1.0)	3.3 (1.7)
EDE-Q weight concern	2.8 (0.8)	2.2 (0.8)	2.3 (1.0)	3.9 (0.6)	3.1 (0.8)	3.1 (1.5)
EDE-Q eating concern	1.2 (0.7)	1.0 (0.8)	1.0 (1.0)	3.2 (0.9)	1.7 (1.0)	1.5 (1.4)
EDE-Q restraint	1.0 (0.8)	1.4 (0.7)	1.6 (1.2)	1.5 (1.1)	1.7 (1.0)	1.2 (0.9)
Weight	92.6 (9.7)	87.9 (9.9)	89.8 (9.4)	96.6 (16.4)	90.4 (15.0)	94.6 (16.8)
Binge eating (28 days)						
BDI ^b	8.4 (5.0)	7.1 (5.3)	9.2 (8.5)	16.3 (6.8)	3.9 (5.5)	4.0 (5.3)
RSE ^c	20.3 (5.4)	20.0 (5.3)	20.2 (6.8)	27.5 (5.7)	23.8 (5.5)	21.5 (5.3)

Measure	Cognitive Treatment					
	Non-Binge Eaters (n = 16)			Binge Eaters (n = 21)		
	Pretest Mean (SD)	Posttest Mean (SD)	Follow-up Mean (SD)	Pretest Mean (SD)	Posttest Mean (SD)	Follow-up Mean (SD)
EDE-Q ^a shape concern	3.3 (1.1)	1.9 (1.1)	1.9 (1.2)	5.1 (0.6)	2.8 (1.3)	2.9 (1.7)
EDE-Q weight concern	2.7 (0.9)	1.5 (1.0)	1.5 (1.0)	4.2 (0.6)	2.2 (1.1)	2.3 (1.5)
EDE-Q eating concern	1.4 (0.7)	0.7 (1.0)	0.6 (0.6)	3.6 (1.2)	1.2 (0.7)	1.2 (1.2)
EDE-Q restraint	1.1 (0.9)	1.1 (1.2)	0.9 (1.0)	1.5 (1.1)	1.2 (0.9)	1.5 (1.4)
Weight	88.8 (11.1)	88.3 (12.3)	89.1 (13.1)	95.5 (15.5)	94.2 (15.5)	95.4 (16.7)
Binge eating (28 days)						
BDI ^b	7.3 (5.1)	4.3 (4.5)	5.6 (5.4)	15.8 (6.7)	1.6 (3.8)	1.5 (4.3)
RSE ^c	20.9 (4.7)	17.4 (5.5)	17.4 (5.4)	27.8 (4.2)	21.4 (5.2)	22.7 (7.2)

Note. ^a EDE-Q = Eating Disorder Examination-Questionnaire; ^b BDI = Beck Depression Inventory; ^c RSE = Rosenberg Self-Esteem Scale.

4.98, $p < .05$; and eating concern, $F(1, 71) = 41.72, p < .001$. Obese binge eaters improved more than obese non-binge eaters between pretreatment and posttreatment. No significant Binge Status \times Time interaction effect was found for restraint. Univariate contrast analyses between pretreatment and follow-up showed significant Binge Status \times Time effects for shape concern, $F(1, 71) = 11.34, p < .01$, weight concern, $F(1, 71) = 3.24, p = .08$, and eating concern, $F(1, 71) = 33.30, p < .001$. Obese binge eaters improved more than obese non-binge eaters between pretreatment and follow-up. Again, no significant Binge Status \times Time interaction effect was found for restraint. Figure 1 shows the mean scores for obese bingers and obese nonbingers on the shape and weight subscales before and after CT and BT intervention and at follow-up.

Weight. Results of the 2 (Treatment) \times 2 (Binge Status) \times 3 (Time) repeated-measures ANOVA performed on the pretreatment, posttreatment, and follow-up scores for weight yielded a significant interaction effect for Treatment \times Time, $F(2, 142) = 10.52, p < .001$. Univariate contrast analyses showed significant Treatment \times Time interaction effects between pretreatment and posttreatment, $F(1, 71) = 47.06, p < .001$. Participants in the behavioral treatment lost 5.5 kg, while participants in the cognitive treatment lost 0.8 kg. Univariate contrast analyses also showed significant Treatment \times Time interaction effects between pretreatment and follow-up, $F(1, 71) = 4.87, p < .05$. Participants in the behavioral treatment lost 2.4 kg, while participants in the cognitive treatment gained 0.1 kg. Finally, there was no significant multivariate interaction effect for Binge Status \times Time between pretreatment, posttreatment, and follow-up. However, additional t tests showed that obese binge eaters showed a significant weight gain from posttreatment to follow-up, $t(36) = 2.82, p < .01$, while obese non-binge eaters showed no significant weight gain from posttreatment to follow-up. Figure 2 shows the mean ratings on weight before and after CT and BT intervention and at follow-up for obese binge eaters and obese non-binge eaters.

Binge eating. Results of the 2 (Treatment) \times 3 (Time) repeated-measures ANOVA performed on the pretreatment, posttreatment, and follow-up scores for objective binge episodes yielded a significant effect for Time, $F(2, 70) = 82.78, p < .001$. Univariate contrast analyses yielded highly significant Time effects between pretreatment and posttreatment, $F(1, 35) = 89.36, p < .001$, and between pretreatment and follow-up, $F(1, 35) = 101.95, p < .001$.

Results of the 2 (Treatment) \times 3 (Time) repeated measures ANOVA performed on the pretreatment, posttreatment, and follow-up scores for objective binge episodes yielded no significant effect for Treatment \times Time. At posttreatment, participants from the cognitive treatment had reduced bingeing by 90% and participants from the behavioral treatment had reduced bingeing by 76%. Sixty-seven percent of obese binge eaters abstained from binge eating after cognitive treatment compared to 44% abstinence after behavioral treatment. At the end of treatment, 4 obese binge eaters in the behavioral treatment still fulfilled all *DSM-IV* criteria of binge eating disorder, while 2 of the participants in the cognitive treatment still fulfilled all criteria. At follow-

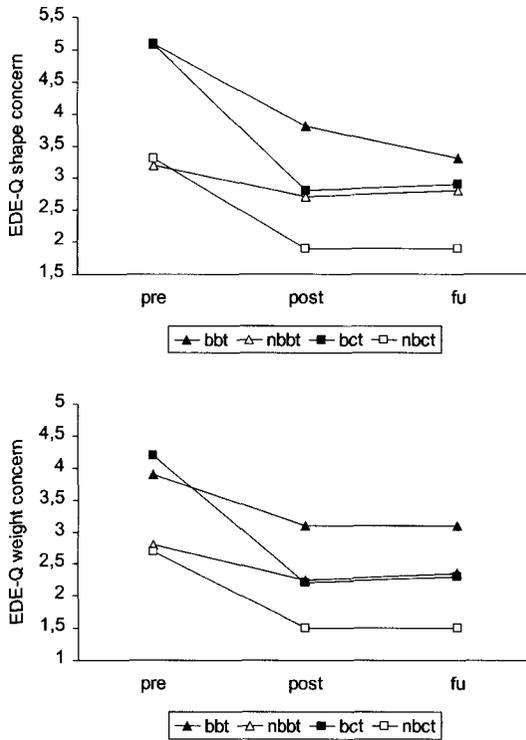


FIG. 1. Mean ratings before and after CT and BT intervention and at follow-up for obese binge eaters (B) and obese non-binge eaters (NB) on concerns about shape (top) and weight (bottom).

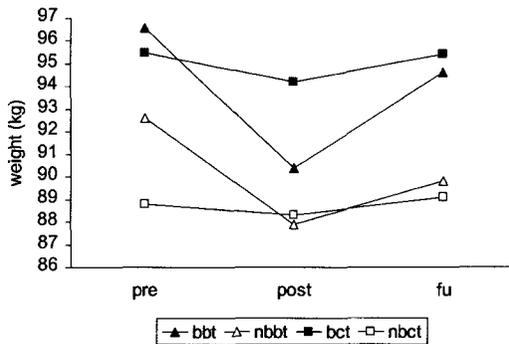


FIG. 2. Mean ratings before and after CT and BT intervention and at follow-up for obese binge eaters (B) and obese non-binge eaters (NB) on weight.

up, participants in the cognitive treatment had reduced bingeing by 91% and participants in the behavioral treatment had reduced bingeing by 75%. A greater percentage of the participants in the cognitive condition were abstinent from binge eating (86%), as compared to participants who received behavioral treatment (44%). A Fisher exact test revealed that the proportion of participants abstaining from binge eating at follow-up in the cognitive treatment was significantly higher than in the behavioral group ($p < .01$). At follow-up, 4 obese binge eaters from the behavioral treatment and 2 obese binge eaters from the cognitive treatment still fulfilled all *DSM-IV* criteria of binge eating disorder. Figure 3 shows the abstinence rates from binge eating before and after CT and BT intervention and at follow-up.

Depression and self-esteem. The repeated-measures MANOVA performed on the pretreatment, posttreatment, and follow-up scores of the BDI and RSE showed a marginally significant multivariate interaction effect for Treatment \times Time, $F(4, 284) = 2.15, p < .08$. Univariate contrast analyses comparing pretreatment with posttreatment scores showed a significant Treatment \times Time effect for self-esteem, $F(1, 71) = 13.46, p < .001$, and marginally for depression, $F(1, 71) = 2.89, p < .10$. Inspection of the means showed that the cognitive treatment was superior to the behavioral treatment in enhancing self-esteem between pretreatment and posttreatment. The comparison of pretreatment scores with follow-up scores yielded nonsignificant Treatment \times Time results for self-esteem, indicating that the initial superiority of the cognitive treatment was not present at follow-up.

Finally, there was a significant multivariate Binge Status \times Time effect, $F(4, 284) = 8.23, p < .001$. Univariate contrast analyses comparing pretreatment with posttreatment scores revealed significant Binge Status \times Time effects for self-esteem, $F(1, 71) = 15.84, p < .001$, and depression, $F(1, 71) = 22.73, p < .001$, indicating that obese binge eaters showed more improve-

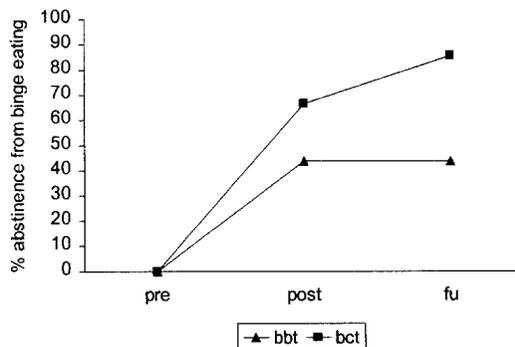


FIG. 3. Mean ratings before and after CT and BT intervention and at follow-up for obese binge eaters (B) on abstinence from binge eating.

ment than obese non-binge eaters. This was also the case at follow-up: The comparison of pretreatment scores with follow-up scores yielded significant Binge Status \times Time results for self-esteem, $F(1, 71) = 9.90, p < .01$, and depression, $F(1, 71) = 26.84, p < .001$.

Per-Protocol Analyses

At posttreatment, 13.5% of the participants had dropped out of the study. Additional analyses were repeated on all dependent variables. There were essentially no differences between the per-protocol analyses and the intent-to-treat analyses discussed earlier.

Discussion

The purpose of the present study was to investigate the effectiveness of a cognitive intervention compared to a behavioral intervention for obese women with and without binge-eating problems. The main hypothesis tested was that cognitive treatment would improve concerns about shape, weight and eating, restraint, overeating, self-esteem, and depression more than behavioral treatment. In both treatments, the scores on nearly all outcome measures were improved between pretreatment and posttreatment and pretreatment and follow-up, except for restraint. The cognitive and behavioral treatments were both very effective in reducing a broad spectrum of complaints. However, the cognitive treatment was more effective in reducing concerns about shape, weight, and eating concerns, as well as in reducing restraint and in improving self-esteem. At 6-month follow-up these results were maintained on most outcome measures. At posttreatment there were no differences in abstinence from binge eating or binge eating episodes between the behavioral and cognitive treatment. However, at 6-month follow-up, the proportion of participants abstaining from binge eating in the cognitive treatment was significantly higher than in the behavioral group. The behavioral treatment was more effective in reducing weight at posttreatment. However, at follow-up participants gained weight. Finally, the results showed that obese binge eaters benefited more from treatment than obese non-binge eaters on measures of concerns about shape, weight and eating, self-esteem, and depression. Obese binge eaters may have experienced more clinical change than obese non-binge eaters due to floor effects in the latter group. There were no differences between obese binge eaters and obese non-binge eaters on measures of restraint.

From the manipulation checks, we discovered that the cognitive treatment and the behavioral treatment specifically targeted cognitions and eating behavior, respectively. Participants in the cognitive condition reduced their degree of belief in the individual and general dysfunctional cognitions to a greater extent than participants in the behavioral condition. The eating pattern became more regular for participants in the behavioral condition than for participants in the cognitive condition. In addition, the intervention techniques

produced the greatest changes in the corresponding outcome measures. The participants judged both treatments as being equally appropriate for their eating problem and there were no differences in expectation of improvement across the treatments. Therefore, the results are likely to have arisen from differences in the techniques employed rather than from nonspecific factors. These findings underline the statement that behavioral and cognitive treatments may affect improvement through different mechanisms, as has been suggested in studies of bulimia nervosa and other disorders (Agras, Schneider, Arnow, Raeburn, & Telch, 1989). In our study, we used VAS scales to measure change in cognitions during treatment. In further research it would be better to use a more psychometrically validated measure. Although the VAS ratings have only face validity, this list of individualized cognitions has proven to be useful in exploring the diverse content of cognitions in eating disordered and obese patients (Nauta, Hospers, Jansen, & Kok, 2000).

In this study, cognitive changes were measured with the EDE-Q. According to Fairburn and colleagues (1993), a clinically significant change on the EDE can be operationalized as whether participants meet scores within one standard deviation of the scores obtained from persons who do not seek treatment. In a recent study, Telch and Stice (1998) report normative data on the EDE-Q for 60 nontreatment-seeking obese persons. In our study, the mean scores obtained from all obese binge eaters and obese non-binge eaters of the cognitive treatment as well as the behavioral treatment met at posttreatment scores within one standard deviation of the scores obtained from obese persons who did not seek treatment.

The binge abstinence rates, particularly in the cognitive intervention, were high. After treatment, 67% of obese binge eaters abstained from binge eating in the cognitive treatment, compared to 44% abstinence in the behavioral treatment. At follow-up, 86% of the participants in the cognitive condition were abstinent from binge eating and 44% of the participants in the behavioral treatment were abstinent. Data from trials administering CBT suggest abstinence rates in obese binge eaters ranging from 28% to 79% (Agras et al., 1994; Agras et al., 1995; Marcus et al., 1995; Smith et al., 1992; Telch et al., 1990; Wilfley et al., 1993), with a mean abstinence rate of approximately 50%. An explanation for the present high abstinence rates, particularly in the long term for the pure cognitive treatment, is that the cognitive component in CBT is at least briefer and may be less intensive than in a pure cognitive treatment. The learning and implementation of the cognitive strategies might require longer time intervals and extensive training. In that case, addition of more cognitive elements in the existing behavioral treatment programs shows promise as a means of enhancing maintenance.

Restraint is believed to be a critical antecedent of binge eating (e.g., Telch & Agras, 1993). In this study, restraint was measured with the Restraint subscale of the EDE-Q. The EDE-Q assesses both intent to restrict calories and actual efforts to restrain food intake. It was, however, found that obese binge eaters had the same scores on restraint as obese non-binge eaters in this

study. This result was also found in similar research in which the EDE-Restraint subscale was used (Wilson et al., 1993). After treatment the level of restraint was increased in the behavioral treatment, while binge eating was reduced. Our data support the idea of Castonguay, Eldredge, and Agras (1995) that for obese binge eaters, chaotic eating patterns may play a larger role in triggering binge eating than the intention to restrict calories and actual efforts to restrain food intake. Further investigation of the complex relationship between binge eating, chaotic eating patterns, and restraint in binge eaters seems warranted.

Furthermore, for weight loss it seems necessary that the caloric intake must be reduced and therefore the level of restraint increased. The baseline levels of restraint, as measured with the EDE-Q, were low for participants in the behavioral and the cognitive treatments. The participants in the behavioral treatment increased the level of restraint more than participants in the cognitive treatment. Participants in the behavioral treatment lost an average of 5.5 kg directly after treatment. Presumably, this might explain the superiority of BT on weight loss directly after treatment. Unfortunately, the weight loss achieved in the behavioral treatment was not maintained. At 6-month follow-up, almost all participants in the behavioral treatment gained weight. The weight gain occurred earlier than in most other studies. However, almost all studies found that weight is gradually regained over time after 1-year follow-up (e.g., Garner & Wooley, 1991; Wilson, 1994). It would be valuable to examine the optimum level for caloric intake for obese binge eaters and obese non-binge eaters in which there is no tendency to binge eat and in which weight loss is possible and could be maintained. Participants in the cognitive treatment hardly lost any weight. This is in accordance with other research that evaluated the effectiveness of CBT intervention for obese binge eaters and that also found no effects for weight after treatment (Agras et al., 1994; Marcus, et al., 1995; Marcus et al., 1988; Porzelius et al., 1995; Smith et al., 1992; Telch et al., 1990; Wilfley et al., 1993). Finally, obese binge eaters seemed to regain more weight than obese non-binge eaters between post-treatment and follow-up. It has been hypothesized that obese binge eaters tend to overeat because they have lost their sensitivity to internal cues of hunger through bingeing (Howard & Porzelius, 1999). It might be that obese binge eaters who regained weight were not sensitive to internal cues of hunger and satiety, and still had a propensity to overeat. Treatment components aimed at restoring the sensitivity might be very helpful, like the appetite awareness training (Craighead & Allen, 1995).

In interpreting the results of this study, certain potential limitations of this study should be considered. First, the generalizability of the results to all obese persons may be limited. The obese women who agreed to participate in this study were probably not a representative sample of the population of all obese women. Most were dissatisfied with dieting and wanted a different treatment for their eating problem than another dieting program. A second limitation of this study was the lack of a no-treatment control group or a pla-

cebo control condition. The positive effects of this study may be due to a placebo effect, although six controlled studies showed that behavioral treatments are superior to a no-treatment control group (Agras, et al., 1995; Eldredge, et al., 1997; Marcus et al., 1995; Peterson et al., 1998; Telch et al., 1990; Wilfley et al., 1993). Furthermore, it is very difficult to find a placebo control group that can imitate the experimental treatment in all ways, except the specific active factor (Omer & London, 1989). A third limitation was that adherence to the treatment manuals did rely mostly on therapists' reports alone. Some sessions were videotaped and relevant parts were used during supervision, but this did not occur on a regular basis.

It remains important to distinguish between controlled research studies on treatment effectiveness and their use in clinical practice. Therefore, the practical implications of this study need to be considered. The cognitive treatment was more effective, at least as far as dysfunctional cognitions toward shape, weight and eating, binge eating, and self-esteem were concerned. Inclusion of cognitive techniques could be considered in future treatment packages.

Both treatments were not very effective in producing weight loss at 6-month follow-up. This result supports the view that only focusing on weight loss is an inappropriate goal for obese persons. For obese persons, it is important to assess the full range of (eating) problems. Outcome measures may have to be broadened beyond simple weight loss in obese persons, and binge frequency and weight loss in obese binge eaters, to include a broader assessment of the range of eating pathology.

References

- Agras, W. S., Schneider, J. A., Arnow, B., Raeburn, S. D., & Telch, C. F. (1989). Cognitive behavioral and response prevention treatment for bulimia nervosa. *Journal of Consulting and Clinical Psychology, 57*, 215–221.
- Agras, W. S., Telch, C. F., Arnow, B., Eldredge, K., Henderson, J., & Marnell, M. (1995). Does interpersonal therapy help patients with binge eating disorder who fail to respond to cognitive behavioral therapy? *Journal of Consulting and Clinical Psychology, 63*, 356–360.
- Agras, W. S., Telch, C. F., Arnow, B., Eldredge, K., Wilfley, D. E., Raeburn, S. D., Henderson, J., & Marnell, M. (1994). Weight loss, cognitive behavioral, and desipramine treatments in binge eating disorder. An additive design. *Behavior Therapy, 25*, 225–238.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. New York: International Universities Press.
- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561–571.
- Blair, S. N., Shaten, J., Brownell, K., Collins, G., & Lissner, L. (1993). Body weight change, all-cause mortality, and case specific mortality in the Multiple Risk Factor Intervention Trial. *Annals of Internal Medicine, 119*, 749–757.
- Brownell, K. D., & Rodin, J. (1994). The dieting maelstrom: Is it possible and advisable to lose weight? *American Psychologists, 49*, 781–791.
- Bruce, B., & Wilfley, D. (1996). Binge eating among the overweight population: A serious and prevalent problem. *Journal of the American Dietetic Association, 96*, 58–61.

- Castonguay, K. L., Eldredge, K. L., & Agras, W. S. (1995). Binge eating disorder: Current state and future directions. *Clinical Psychology Review, 8*, 865–890.
- Craighead, L. W., & Allen, H. N. (1995). Appetite awareness training: A cognitive behavioral intervention for binge eating. *Cognitive and Behavioral Practice, 2*, 249–270.
- Davis, R., Freeman, R. J., & Garner, D. M. (1988). A naturalistic investigation of eating behavior in bulimia nervosa. *Journal of Consulting and Clinical Psychology, 56*, 273–279.
- De Zwaan, M., Mitchell, J. E., Seim, H. C., Specker, S. M., Pyle, R. L., Raymond, N. C., & Crosby, R. B. (1994). Eating related and general psychopathology in obese females with binge eating disorder. *International Journal of Eating Disorders, 15*, 43–52.
- Eldredge, K. L., & Agras, W. S. (1996). Weight and shape overconcern and emotional eating in binge eating disorder. *International Journal of Eating Disorders, 19*, 73–82.
- Eldredge, K. L., Agras, W. S., Arnow, B., Telch, C. F., Bell, S., Castonguay, L., Marnell, M. (1997). The effects of extending cognitive behavioral therapy for binge eating disorder among initial treatment nonresponders. *International Journal of Eating Disorders, 21*, 347–352.
- Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders. Interview or self-report questionnaire? *International Journal of Eating Disorders, 16*, 363–370.
- Fairburn, C. G., & Cooper, Z. (1993). The Eating Disorder Examination (12th ed.). In C. G. Fairburn & G. T. Wilson (Eds.), *Binge eating: Nature, assessment, and treatment* (pp. 317–360). New York: Guilford Press.
- Foreyt, J. P., Brunner, R. L., Goodrick, G. K., Cutter, G., Brownell, K. D., & Jeor, S. T. (1995). Psychological correlates of weight fluctuation. *International Journal of Eating Disorders, 17*, 263–275.
- Friedman, M. A., & Brownell, K. D. (1995). Psychological correlates of obesity: Moving to the next research generation. *Psychological Bulletin, 117*, 3–20.
- Garner, D. M., & Wooley, S. C. (1991). Confronting the failure of behavioral and dietary treatments for obesity. *Clinical Psychology Review, 11*, 729–780.
- Gladis, M. M., Wadden, T. A., Vogt, R., Foster, G., Kuehnel, R. H., & Bartlett, S. J. (1998). Behavioral treatment of obese binge eaters: Do they need different care? *Journal of Psychosomatic Research, 44*, 375–384.
- Gormally, J., Black, S., Daston, S., & Rardin, D. (1982). The assessment of binge eating severity among obese persons. *Addictive Behaviors, 7*, 47–55.
- Horm, J., & Anderson, K. (1993). Who in America is trying to lose weight? *Annals of Internal Medicine, 119*, 672–676.
- Howard, C. E., & Porzelsius, L. K. (1999). The role of dieting in binge eating: Etiology and treatment implications. *Clinical Psychology Review, 19*, 25–44.
- Hudson, J. I., Pope, H. G., Wurtman, J., Yurgelun-Todd, D., Mark, S., & Rosenthal, N. E. (1988). Bulimia in obese individuals: Relation to normal weight bulimia. *The Journal of Nervous and Mental Disease, 176*, 144–152.
- Keefe, P. H., Wyshogrod, D., Weinberger, E., & Agras, W. S. (1984). Binge eating and outcome of behavioral treatment of obesity: A preliminary report. *Behaviour Research and Therapy, 22*, 319–321.
- Kuehnel, R. H., & Wadden, T. A. (1994). Binge eating disorder, weight cycling, and psychopathology. *International Journal of Eating Disorders, 15*, 53–61.
- Lissner, L., Odell, P. M., D'Agostino, R. B., Stokes, J., Kregger, B. E., Belanger, A. J., & Brownell, K. D. (1991). Variability in body weight and health outcomes in the Framingham population. *New England Journal of Medicine, 324*, 1839–1844.
- Marcus, M. D., Smith, D., Santelli, R., & Kaye, W. (1992). Characterization of eating disordered behavior in obese binge eaters. *International Journal of Eating Disorders, 12*, 249–256.
- Marcus, M. D., Wing, R. R., & Fairburn, C. G. (1995). Cognitive treatment of binge eating versus behavioral weight control in the treatment of binge eating women. *Annals of Behavioral Medicine, 17*, S090.

- Marcus, M. D., Wing, R. R., & Hopkins, J. (1988). Obese binge eaters: Affect, cognitions, and response to behavioral weight control. *Journal of Consulting and Clinical Psychology, 56*, 433–439.
- Marcus, M. D., Wing, R. R., & Lamparski, D. M. (1985). Binge eating and dietary restraint in obese patients. *Addictive Behaviors, 19*, 163–168.
- Marlatt, G. A., & Gordon, J. R. (1985). *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors*. New York: Guilford Press.
- Miller, C. T., & Downey, K. T. (1999). A meta-analysis of heavyweight and self-esteem. *Personality and Social Psychology Review, 3*, 68–84.
- Mussell, M. P., Mitchell, J. E., DeZwaan, M., Crosby, R. D., Seim, H. C., Crow, S. J. (1996). Clinical characteristics associated with binge eating in obese females: A descriptive study. *International Journal of Obesity, 20*, 324–331.
- Nauta, H., Hoppers, H. J., Jansen, A., & Kok, G. (2000). Cognitions in obese binge eaters and obese non-binge eaters. *Cognitive Therapy and Research, 24*, 519–531.
- Omer, H., & London, P. (1989). Signal and noise in psychotherapy: The role and control of non-specific factors. *British Journal of Psychiatry, 155*, 239–245.
- Perri, M. G., Nezu, A. M., Patti, E. P., & McCann, K. L. (1989). Effect of length of treatment on weight loss. *Journal of Consulting and Clinical Psychology, 57*, 450–452.
- Peterson, C. B., Mitchell, J. E., Engbloom, S., Nugent, S., Mussell, M. P., & Miller, J. P. (1998). Group cognitive-behavioral treatment of binge eating disorder: A comparison of therapist-led versus self-help formats. *International Journal of Eating Disorders, 24*, 125–136.
- Polivy, J., & Herman, C. P. (1992). Undieting: A program to help people stop dieting. *International Journal of Eating Disorders, 11*, 261–268.
- Polivy, J., & Herman, C. P. (1995). Dieting and its relation to eating disorders. In K. D. Brownell & C. G. Fairburn (Eds.), *Eating disorders and obesity: A comprehensive handbook* (pp. 83–92). New York: Guilford Press.
- Porzelius, L. K., Houston, C., Smith, M., Arfken, C., & Fisher, E. (1995). Comparison of a standard behavioral weight loss treatment and a binge eating weight loss treatment. *Behavior Therapy, 26*, 119–134.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rossiter, E. M., Agras, W. S., Telch, C. F., & Bruce, B. (1992). The eating patterns of non-purging bulimics. *International Journal of Eating Disorders, 11*, 111–120.
- Smith, D. E., Marcus, M. D., & Kaye, W. (1992). Cognitive-behavioral treatment of obese binge eaters. *International Journal of Eating Disorders, 12*, 257–262.
- Spitzer, R., Devlin, M., Walsh, B. T., Hasin, D., Wing, R., Marcus, M., Stunkard, A., Wadden, T., Yanovski, S., Agras, S., Mitchell, J., & Nonas, C. (1992). Binge eating disorder: A multisite field trial of the diagnostic criteria. *International Journal of Eating Disorders, 11*, 192–203.
- Stunkard, A. J., & Wadden, T. A. (1992). Psychological aspects of severe obesity. *American Journal of Clinical Nutrition, 55*, 524–532.
- Telch, C. F., & Agras, W. S. (1993). The effects of a very low calorie diet on binge eating. *Behavior Therapy, 24*, 177–194.
- Telch, C. F., & Agras, W. S. (1994). Obesity, binge eating and psychopathology: Are they related? *International Journal of Eating Disorders, 15*, 53–61.
- Telch, C. F., Agras, W. S., & Rossiter, E. M. (1988). Binge eating increases with increasing adiposity. *International Journal of Eating Disorders, 7*, 115–119.
- Telch, C. F., Agras, W. S., Rossiter, E. M., Wilfley, D., & Kenardy, J. (1990). Group cognitive-behavioral treatment for the nonpurging bulimic: An initial evaluation. *Journal of Consulting and Clinical Psychology, 58*, 629–635.
- Telch, C. F., & Stice, E. (1998). Psychiatric comorbidity in women with binge eating disorder: Prevalence rates from a non-treatment-seeking sample. *Journal of Consulting and Clinical Psychology, 66*, 768–776.

- Wadden, T. A., & Bartlett, S. J. (1992). Very low calorie diets: An overview and appraisal. In T. A. Wadden & T. B. VanItallie (Eds.), *Treatment of the seriously obese patient* (pp. 383–410). New York: Guilford Press.
- Wadden, T. A., Foster, G. D., & Letizia, K. A. (1992). One-year behavioral treatment of obesity: Comparison of moderate and severe caloric restriction and the effects of weight maintenance therapy. *Journal of Consulting and Clinical Psychology, 62*, 165–171.
- Wilfley, D. E., Agras, W. S., Telch, C. F., Rossiter, E. M., Schneider, J. A., Cole, A. G., Sifford, L., & Raeburn, S. D. (1993). Group cognitive-behavioral therapy and group interpersonal psychotherapy for non-purging bulimic individuals: A controlled comparison. *Journal of Consulting and Clinical Psychology, 61*, 296–305.
- Wilfley, D. E., Schwartz, M. B., Spurrell, E. B., & Fairburn, C. F. (1997). Assessing the specific psychopathology of binge eating disorder patients: Interview or self-report? *Behaviour Research and Therapy, 35*, 1151–1159.
- Wilson, G. T. (1994). Behavioral treatment of obesity: Thirty years and counting. *Advances in Behaviour Research and Therapy, 16*, 31–75.
- Wilson, G. T., Nonas, C. A., & Rosenblum, G. D. (1993). Assessment of binge eating in obese patients. *International Journal of Eating Disorders, 13*, 25–33.
- Wooley, S. C., & Garner, D. M. (1991). Obesity treatment: The high cost of false hope. *American Journal of Dietetic Association, 91*, 1248–1251.
- Yanovski, S. Z. (1993). Binge eating disorder: Current knowledge and future directions. *Obesity Research, 1*, 306–324.
- Yanovski, S. Z., Gormally, J. F., Leser, M. S., Gwirtsman, H. E., & Yanovski, J. A. (1994). Binge eating disorder affects outcome of comprehensive very-low-calorie diet. *Obesity Research, 2*, 205–212.
- Yanovski, S. Z., Nelson, J. E., Dubbert, B. K., & Spitzer, R. L. (1993). Association of binge eating disorder and psychiatric comorbidity in obese subjects. *American Journal of Psychiatry, 150*, 1472–1479.

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