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Dialectical Behavior Therapy for Binge Eating Disorder

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This study evaluated the use of dialectical behavior therapy (DBT) adapted for binge eating disorder (BED). Women with BED (N = 44) were randomly assigned to group DBT or to a wait-list control condition and were administered the Eating Disorder Examination in addition to measures of weight, mood, and affect regulation at baseline and posttreatment. Treated women evidenced significant improvement on measures of binge eating and eating pathology compared with controls, and 89% of the women receiving DBT had stopped binge eating by the end of treatment. Abstinence rates were reduced to 56% at the 6-month follow-up. Overall, the findings on the measures of weight, mood, and affect regulation were not significant. These results support further research into DBT as a treatment for BED.

Binge eating disorder (BED) involves persistent and frequent episodes of uncontrollable binge eating in the absence of regular compensatory behaviors, according to *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM–IV*; American Psychiatric Association, 1994). Research has documented that BED has a chronic and persistent course, is associated with the serious health problem of obesity, and is frequently associated with psychiatric comorbidity. Moreover, BED is more common in males than are the other eating disorders (Marcus et al., 1990; Spitzer et al., 1992, 1993; Telch & Stice, 1998; Yanovski, Nelson, Dubbert, & Spitzer, 1993).

Because binge eating is central to both bulimia nervosa and BED, treatment outcome research for BED has paralleled that of bulimia nervosa. Specifically, cognitive–behavioral treatment (CBT), interpersonal psychotherapy (IPT), and pharmacotherapy have been applied and tested in the treatment of BED (see Castonguay, Eldredge, & Agras, 1995; Marcus, 1997; Wilfley & Cohen, 1997 for reviews). Generally, treatments tested to date have shown promise, but they do not appear to be effective for as many as half of individuals seeking treatment. CBT has received the most research attention and is based on the theoretical model that chronic dieting in an effort to control weight promotes and maintains binge eating. Therefore, CBT focuses on decreasing dietary restraint and establishing regular, healthy eating patterns in addition to combating maladaptive beliefs regarding eating and weight.

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An alternative model of binge eating postulates that binge eating serves to regulate affect (Heatherton & Baumeister, 1991; Polivy & Herman, 1993). The primary hypothesis is that individuals who binge eat have difficulty regulating negative emotions and try to cope with their emotional distress by binge eating. The binge eating temporarily relieves the aversive negative emotional states, thereby reinforcing binge eating. There exists a considerable amount of research evidence in support of the affect regulation model of binge eating (see Polivy & Herman, 1993, for a review of this literature). For example, two separate laboratory experiments demonstrated that inducing a negative mood in women with BED led to binge eating and that the binge eating led to a reduction in negative emotional arousal (Agras & Telch, 1998; Telch & Agras, 1996).

Dialectical behavior therapy (DBT; Linehan, 1993a, 1993b), a treatment found to be effective for borderline personality disorder (Linehan, Armstrong, Suarez, Allmond, & Heard, 1991), specifically targets emotion regulation by teaching adaptive skills to enhance patients' emotion regulation capabilities. We adapted DBT skills training for use with BED in an uncontrolled treatment trial (Telch, Agras, & Linehan, 2000) to provide preliminary data on the value of this treatment for BED. Eleven women with BED received group DBT skills training that consisted of a 20-session manualized treatment adapted from Linehan's (1993a, 1993b) treatment manuals. There were no dropouts from treatment, and 82% of the women were abstinent from binge eating at end of treatment. Improvement in binge eating was maintained at the 3-month and 6-month posttreatment follow-up.

These results supported continuing to the next phase of treatment research and conducting the present efficacy study, a randomized controlled trial comparing DBT adapted for BED versus a wait-list control group.

Method

Participants were recruited through newspaper advertisements that offered free treatment for binge eating through a Stanford University research study. Inclusion criteria were that participants had to be female, between the ages of 18 and 65 years, and that they met full *DSM–IV* research diagnostic criteria for BED. Exclusion criteria were (a) current involve-

ment in psychotherapy, weight loss treatment, or use of psychotropic medications; (b) current substance abuse or dependence; (c) current suicidality or psychosis; and (d) pregnancy (because weight was an outcome measure). We screened 465 individuals by telephone, and 377 were excluded primarily because they did not meet full *DSM–IV* research diagnostic criteria for BED or because they were not interested in, or available for, the study. The remaining 88 women were scheduled for a clinical interview to further assess eligibility for study participation, and 11 women did not attend this appointment. The study was described in detail and we obtained written informed consent to participate, prior to conducting the clinical interviews. Of the 77 interviews conducted, 17 women did not meet BED diagnostic criteria and 16 women decided they were not interested in, or not available to continue in, the study. Forty-four participants met study entry criteria and were randomly assigned to either DBT skills-training treatment (n = 22) or a wait-list control condition (n = 22). Ten participants dropped from the study following randomization (4 in the treatment group and 6 in the wait-list condition). Two of the women assigned to treatment dropped before treatment began, and 2 women dropped before the third treatment session.

Assessments

The participants in this study were assessed at baseline and after completing 20 weeks of treatment. Those assigned to treatment also completed an abbreviated assessment at 3 and 6 months following treatment. The follow-up interview assessed binge frequency with the appropriate section of the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993), and recorded skills usage during the follow-up period. The structured clinical interviews were conducted by experienced assessors trained specifically in the administration of the interview. We attempted to keep assessors unaware of group assignment; however, the blind was often broken by the patient.

Structured interviews. We interviewed participants at pretreatment using the SCID I and II (Spitzer, Williams, Gibbon, & First, 1990a, 1990b) to assess both the diagnosis of BED and of comorbid psychopathology. We also assessed participants before and after treatment with the EDE, which yields eating disorder diagnoses and provides a measure of both the number of days and episodes of binge eating that occurred over the past 28 days. Only episodes that met the EDE definition of an objective binge were used in this study. The EDE also yields subscales that measure the severity of dietary restraint, concern about eating, concern about weight, and concern about shape. The reliability of the EDE assessment was based on a second assessor's scoring a 15% sample of audiotaped interviews. Interrater reliability for all the above measures exceeded .90.

Questionnaires. Questionnaires used in this study included the Binge Eating Scale (Gormally, Black, Daston, & Rardin, 1982), a measure of severity of binge eating problems; the Emotional Eating Scale (EES; Arnow, Kenardy, & Agras, 1995), which assesses the extent to which specific negative emotional states (anger, anxiety, and depression) prompt an individual to feel an urge to eat; and the Rosenberg Self-Esteem Scale (Rosenberg, 1979), a measure of beliefs and attitudes regarding general self-worth. Three measures of affect and affect regulation were used also: the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), a measure of depressed mood; the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), providing relatively pure markers of either positive affect or negative affect; and the Negative Mood Regulation Scale (Catanzaro & Mearns, 1990), which measures the expectancy that a behavior or cognition will alleviate a negative mood state.

Height and weight. Height was measured before treatment with a stadiometer, and weight was assessed with the participant in lightweight clothing with shoes removed, on a balance beam scale.

Treatment

Treatment was delivered by two female psychologists (Christy F. Telch and a postdoctoral fellow) over a 20-week course, with each weekly session lasting 2 hr, using a manual adapted from Linehan's DBT for borderline personality disorder treatment manuals (Linehan 1993a, 1993b). A detailed description of the treatment can be found in Wiser and Telch (1999) and in Telch et al. (2000).[1] The first two treatment sessions provided a rationale for the treatment and the goals of treatment during which the therapist elicited verbal and written commitment to these goals. Adaptive emotional regulation skills were taught in three modules: mindfulness skills (Sessions 3–6), emotion regulation skills (Sessions 7–12), and distress tolerance skills (Sessions 13–18). The last two sessions concentrated on a review of the skills taught, and each group member developed an individualized plan for continued practice of the skills and for using the skills to regulate emotions instead of binge eating. Mindfulness skills provided participants with the capability to nonjudgmentally observe and describe their moment-to-moment emotional experiences, thoughts, and action urges. Emotion regulation skills taught participants to understand their emotions and to decrease vulnerability to negative emotions, as well as to increase positive emotions and change specific emotional states (e.g., fear and anxiety). Distress tolerance skills taught adaptive and effective means for contending with the inevitable stresses and pain of life and included skills for facilitating the acceptance of reality. All treatment sessions were audiotaped, and if a participant missed a session she was expected to listen to the tape of the missed session before the next group.

Data Analysis

Because the frequency of binge days and binge episodes were not normally distributed, a square root transformation was used for these measures. We compared baseline measures by using a t-test or chi-square analysis to determine whether there were any biases that occurred during randomization. Similarly, participants who dropped from treatment were compared with those who completed treatment. Treatment outcome was analyzed by using a one-way analysis of covariance, with the baseline measure as the covariate and the treatment condition as the independent variable. The alpha level for all statistical tests was set at .05. Effect sizes were calculated as the difference in the posttest means divided by the pooled standard deviation (Cohen, 1988).

Results

Sample

The mean age of participants was 50 years (SD = 9.1); 94% were Caucasian, 47% were married, 35% were divorced, and 18% had never married. Over 70% had completed college, and all had graduated from high school. The mean body mass index was 36.4 (SD = 6.6), indicating an obese sample. The reported onset of binge eating was at 20.9 years of age (SD = 11.7), and the mean duration of binge eating was 29.2 years (SD = 11.7). Lifetime psychopathology included major depression (38%), anxiety disorder (35%), psychotic disorder not otherwise specified (3%), bulimia nervosa (6%), and substance abuse or dependence (27%). Current psychopathology included major depression (9%), anxiety disorder (18%), and personality disorder (27%). Over three quarters of the sample had received psychological treatment in the past.

[1] The DBT for BED treatment manual used in this study is available from W. Stewart Agras.

Effects of Treatment

Ten participants (4 in the treatment group, and 6 in the wait-list condition) did not complete the study. Dropouts were significantly younger than nondropouts (41.0 ± 10.5 years vs. 50.0 ± 9.2 years), t (42) = 2.4, $p < .04$. Because this was an initial study of a new treatment, the analyses were restricted to those who completed treatment (see Table 1 and Table 2). There were no significant differences between groups on any of the baseline measures. Significant effects were found at the end of treatment for both binge days, $F(1, 31) = 41.3$, $p < .001$; and episodes, $F(1, 31) = 39.9$, $p < .001$. Of the DBT group, 89% were abstinent (i.e., no binge eating in the past 4 weeks), compared with 12.5% of controls, $\chi^2(1, N = 30) = 19.8$, $p < .001$.

Those receiving treatment had significantly lower scores on the following EDE subscales: Weight Concerns, $F(1, 31) = 5.9$, $p < .02$; Shape Concerns, $F(1, 31) = 4.9$, $p < .03$; Eating Concerns, $F(1, 31) = 20.9$, $p < .001$. There were no significant differences between groups on dietary restraint. Participants receiving treatment reported lower scores on the Anger subscale of the EES, compared with controls, $F(1, 30) = 4.2$, $p < .05$, indicating less urge to eat when experiencing anger.

Follow-Up

All 18 women who completed treatment were assessed at the 3- and 6-month follow-ups. At 3 months, 67% were abstinent, and at 6 months 56% were abstinent. At the 6-month follow-up, the majority of participants (89%) continued to practice skills taught during treatment, practicing an average of 3.6 different skills per week on an average of 4 days week. Three participants were treated with either psychotherapy or medication for a major depressive episode during the follow-up period, and 1 enrolled in a very-low-calorie diet program.

Treatment of Wait-List Participants

Fourteen individuals on the wait list accepted the invitation to participate in treatment. Of these, 4 dropped out of treatment (29%). For those completing treatment, 90% were abstinent at the end of treatment, 80% at the 3-month follow-up, and 67% at the 6-month follow-up.

Discussion

The present study was a controlled evaluation of DBT modified for the treatment of BED. The treatment was based on the hypothesis that binge eating serves to regulate affect. The new skills taught were aimed at enhancing adaptive affect regulation, thus reducing the need to binge eat.

The present findings demonstrate that the group DBT skills training was better than no treatment in eliminating binge eating. Of participants in the DBT group, 89% (16 of 18) had stopped binge eating for at least 4 weeks prior to the end of treatment, compared with just 12.5% (2 of 16) of controls. Confidence in our findings and in the efficacy of DBT skills training for BED is enhanced by the fact that a similar abstinence rate of 82% occurred in our uncontrolled trial (Telch et al., 2000). However, abstinence rates were reduced to 56% at the 6-month follow-up.

It is unclear how DBT worked to reduce binge eating. The results on the PANAS and BDI offer no support for the hypothesis that the treatment worked by reducing negative affect or by improving treated patients' expectancies for negative mood regulation. Because there was not a comparison with an active treatment in this study, it is possible that the effects on eating pathology were due to nonspecific therapeutic elements rather than to the specific elements of DBT. This may explain the lack of support for the primary hypothesis concerning mechanisms of action.

However, treated women reported significantly lower scores on the EES Anger subscale compared with controls at posttest. The p values for the EES Anxiety and Depression subscales were not statistically significant. These findings suggest that treatment may work by reducing the urge or impulse to eat when experiencing negative emotions rather than by working directly on the affect.

The modified DBT used in this study appears to have been an acceptable treatment on the basis of the dropout rate of 18% (2 of the 4 dropouts withdrew before treatment began). In addition,

Table 1
Pre- and Posttreatment Values for Measures of Eating Behaviors

	Pretreatment				Posttreatment							
	Treatment		Wait list		Treatment		Wait list					
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	Effect size	*F*	*dfs*	*p*
Binge days[a]	10.5	9.0	14.0	5.0	0	0	8.5	10	1.51	41.3	1, 31	.000
Binge episodes[a]	11.5	10.8	14.5	7.5	0	0	10	14	1.50	39.0	1, 31	.000
Weight (in pounds)	214.7	49.8	223.4	37.1	209.2	49.0	223.8	37.6	0.33	2.4	1, 31	.130
EDE												
Weight Concerns	3.4	1.1	3.6	0.6	2.2	0.9	3.1	1.0	0.82	5.9	1, 31	.020
Shape Concerns	3.7	0.7	4.0	0.8	2.3	0.9	3.1	1.0	0.80	4.9	1, 31	.030
Eating Concerns	1.6	1.1	1.8	1.0	0.4	0.4	1.4	0.9	1.11	20.9	1, 31	.000
Restraint	1.6	1.0	1.9	1.1	1.4	1.0	1.8	1.3	0.33	1.0	1, 31	.330
BES	28.8	6.1	31.8	6.0	15.7	9.4	28.2	8.3	1.16	14.0	1, 29	.001

Note. Medians and interquartile ranges reported and square root transformation used in analysis. EDE = Eating Disorder Examination; BES = Binge Eating Scale.
[a] Per 28 days.

Table 2
Pre- and Posttreatment Values for Measures of Emotional States

	Pretreatment				Posttreatment							
	Treatment		Wait list		Treatment		Wait list					
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	Effect size	*F*	*dfs*	*p*
NMR	99.8	15.2	101.4	15.7	110.1	16.8	104.1	17.0	−.36	3.0	1, 30	.09
EES												
Anger	2.5	0.8	2.8	0.6	1.8	1.0	2.6	0.9	.80	4.2	1, 30	.05
Anxiety	2.3	0.9	2.7	0.6	1.5	0.9	2.4	1.0	.90	3.9	1, 30	.06
Depression	3.0	0.7	3.3	0.7	2.4	1.0	3.0	0.8	.67	2.8	1, 30	.10
PANAS												
Positive	25.8	7.5	31.9	8.2	30.0	10.8	31.2	7.8	.13	2.7	1, 30	.11
Negative	23.6	8.8	22.8	7.3	17.9	6.7	20.6	8.7	.35	2.1	1, 30	.16
BDI	12.8	7.4	13.8	9.1	9.9	10.0	12.8	8.3	.31	0.57	1, 27	.46
RSE	26.0	6.8	28.9	5.0	29.4	6.1	29.2	4.5	.04	3.5	1, 30	.07

Note. NMR = Negative Mood Regulation Scale; EES = Emotional Eating Scale; PANAS = Positive and Negative Affect Schedule; BDI = Beck Depression Inventory; RSE = Rosenberg Self-Esteem Scale.

attendance at group sessions was reasonably good, with all but 1 woman attending 70% or more of the 20 group sessions.

Several limitations of the current study warrant mention. Because of the treatment versus wait list design, we can conclude only that the DBT skills treatment is better than no treatment. Hence, it is possible that the results obtained were due to nonspecific factors rather than to the specific treatment components of DBT. This study included only women, and the mean age of the sample was 50 years old, perhaps limiting generalizability of findings. Additionally, our sample size was relatively small. Finally, the follow-up period of 6 months was brief given the chronicity of binge eating problems.

From a clinical viewpoint, it appears that DBT as used in this study may be at least as effective and acceptable as CBT for individuals with BED. The results also underline the utility of a treatment for BED that does not focus directly on eating behaviors, similar to the findings for IPT. Given the marked procedural differences between CBT and DBT, it seems likely that differential predictors of outcome might be identified, which would allow more precise triage of individuals into one or the other treatment. For example, DBT may be particularly useful in individuals with higher levels of negative affect, and CBT may be more useful for those with high levels of dietary restraint. These questions should be addressed in a larger scale trial comparing DBT and CBT. It also appears that more attention needs to be given to relapse prevention, perhaps by extending the last few sessions of treatment over a longer time period.

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