

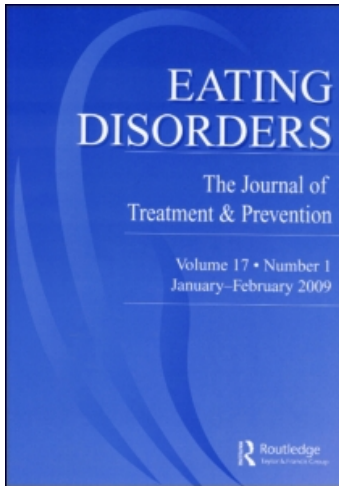
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Treatment of Emotional Dysregulation in Full Syndrome and Subthreshold Binge Eating Disorder

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*The link between negative affect and binge eating in those with binge eating disorder (BED) has been well established. The present study examined the efficacy of a treatment for BED designed to increase recognition and regulation of negative emotion, replicating and extending a previous investigation (Clyne, C., & Blampied, N.M. [2004]. Training in emotion regulation as a treatment for binge eating: A preliminary study. *Behaviour Change*, 21, 269–281) by including a control group, a larger number of participants, and formal diagnoses rather than classifying binge eating symptomatology from self-report questionnaires. Twenty-three women diagnosed with subthreshold or full syndrome BED (using the Eating Disorders Examination) participated in a treatment program that focused on increasing emotional regulation skills. Each participant completed the Eating Disorders Examination Questionnaire, the Binge Eating Scale, the Emotional Eating Scale, and completed self-monitoring records of binge episodes. Binge abstinence rates following treatment (post-treatment and 1 year follow-up were 78% and 87% respectively) were comparable to*

This study was undertaken by the first author in partial fulfillment of the requirements for her Ph.D., under the supervision of the second and third authors. David H. Gleaves also gave assistance with statistical analyses, and Neville M. Blampied assisted with the development of the psychoeducational emotion training program.

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other empirically supported treatments for BED. Other positive changes in eating and general pathology were observed. These effects were well-maintained up to 1 year later.

Stunkard first documented binge eating disorder (BED) in 1959, yet it remains in the current version of the *Diagnostic and Statistical Manual of Mental Disorders* under the category “eating disorder not otherwise specified” (American Psychiatric Association [APA]; 2000). Research has shown that BED is responsive to many treatments (Stunkard & Allison, 2003), and promising results have been demonstrated using cognitive behavioural therapy (CBT), interpersonal therapy (IPT; Agras, Telch, Arnow, Eldredge, & Marnell, 1997; Wilfley et al., 2002) and dialectical behaviour therapy (DBT; Safer, Lively, Telch, & Agras, 2002).

As a treatment for BED, CBT uses techniques to change behaviours and cognitions related to eating and lifestyle patterns; including obesity education, modification of eating and attitudes about food, introduction to exercise, and establishing balance between activities that must be done and activities that are desirable (Fairburn, Marcus, & Wilson, 1993). Studies have shown that CBT produces a binge abstinence rate as high as 80%, but these rates drop to 46% 20 weeks post-treatment and to 45% one year after treatment ends (Agras et al., 1997).

Although IPT was developed as a treatment for major depression, the interpersonal deficits documented in those with BED suggested that IPT would be a viable option for treating the eating disorder (Birchall, 1999). IPT begins with an extensive exploration of the patient’s interpersonal functioning. Based on the results of the assessment, one of four treatment targets (grief, role transitions, interpersonal role disputes, or interpersonal deficits) are chosen (Birchall, 1999). The treatment does not directly focus on binge eating or issues relating to food, but instead positively influences these indirectly (Fairburn et al., 1991). Research indicates that treatment effects of IPT are comparable to those of CBT (Wilfley et al., 1993; Wilfley et al., 2002).

Despite an established relationship between precipitating negative affect and bingeing (e.g., Arnow, Kenardy, & Agras, 1992; 1995; Fairburn et al., 2003), CBT and IPT fail to address affect regulation deficits. Various researchers have suggested that the reason for relapse in those with BED who have been treated with CBT (e.g., Fairburn, Cooper, & Shafran, 2003) or IPT (Telch, 1997; Telch, Agras, & Linehan, 2000) may be related to this omission. DBT, which was originally developed for treating borderline personality disorder (Linehan, 1993; 1998), focuses on introducing affect recognition and regulation skills to those with BED (Wiser & Telch, 1999).

DBT does not focus directly on binge episodes nor on reducing bingeing, yet a positive outcome for the intervention in treating BED has been documented, and a binge abstinence rate of up to 89% has been recorded (Telch, Agras, & Linehan, 2001). Unfortunately, approximately 28% of those have been shown to relapse (Telch et al., 2001). It is not yet known how DBT for BED works, and why it works for some and not others (Safer et al., 2002). Further, DBT, like CBT and IPT, requires a substantial time commitment from patients and professionals as the treatment lasts up to 6 months (Telch, 1997). It is important to examine whether shorter treatments that teach emotional regulation skills may prove to be just as effective.

Psychoeducational treatment (PET) for BED focuses on normalising eating patterns and reducing weight and shape concerns in those with BED, and uses the educational instruction component of CBT (Latner & Wilson, 2000; Wilson, Vitousek, & Loeb, 2000). PET has been found to produce positive treatment effects (Peterson, Mitchell, Engbloom, Nugent, Mussell & Miller, 1998), including improving alexithymic traits (the inability to identify or describe one's emotions) and reducing binge frequency. Treatment effects appear to be well maintained up to 1 year after treatment (Ciano, Rocco, Angarano, Biasin, & Balestrieri, 2002; Peterson et al., 1998; Peterson, Mitchell, Engbloom, Nugent, Mussell, Crow et al., 2001). Therapists, self-help manuals, and video tapes have also been found to be successful PET modalities (Peterson et al., 1998), making PET a likely cost-effective treatment approach for BED (Wilson et al., 2000).

Clyne and Blampied (2004) devised a brief (11 week) psychoeducational treatment for BED that focussed specifically on improving emotional recognition and management. Binge eating and related pathology was assessed using the Questionnaire on Eating and Weight Patterns (QEWP; Spitzer et al., 1993). The results were positive, with 72% binge abstinent at post-treatment, and 80% at 3-months follow-up (Clyne & Blampied, 2004). Although cost-efficacy was not systematically evaluated, given the short length of the intervention and that it can be administered by Masters-level clinicians, this programme might be more cost-effective than longer, more specialised treatments.

Although PET is a promising approach, more research is needed to examine its efficacy. In particular, incorporating an emphasis on improving emotional regulation skills into psychoeducational approaches for BED might improve treatment outcome. The current study aimed to test this hypothesis. The present investigation replicates and extends that of Clyne and Blampied (2004): by assessing participants' binge eating using a structured clinical interview to diagnose subthreshold and full BED; including a wait-list control group; and following up participants during the year after treatment ended.

METHOD

Participants

The participants were 23 women aged between 18 and 65 years who met the diagnostic criteria for subthreshold BED ($n = 19$) or full BED ($n = 4$). They were recruited from the general population in Christchurch, New Zealand. The women mostly identified themselves as New Zealand European, although one identified herself as New Zealand Māori, and another identified herself as American. Participant demographics are presented in Table 1, and showed that the participants in the treatment group (TG) and the wait-list group (WL) were of similar ages, ethnicities, and educational backgrounds.

Measurements

PARTICIPANT SCREENING

The QEWP (Spitzer et al., 1993) is a standard self-report questionnaire which measures binge eating and bulimic symptoms, and focuses on the past 6 months. It contains 28 questions scored in accordance with the proposed diagnostic criteria for BED outlined in the *DSM-IV* (APA, 1994). The language of the items was modified to fit New Zealand conventions, including using metric equivalents to measurements and weights, and using brand names of food commonly found in New Zealand, to make it easier for the participants to answer.

DIAGNOSES

Diagnoses were established using the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993); a semi-structured clinical interview that is considered the “gold standard” for diagnosing eating disorders (e.g., Fairburn &

TABLE 1 Age, Ethnicity, and Education Level of Treatment and Wait-list Control Groups

	Treatment group	Wait-list group
Mean age	34.58	40.82
Ethnicity		
NZ European/other European	10	11
NZ Māori	1	0
Other	1	0
Education level		
High school (or less)	6	5
University graduate	6	6
Mean BMI	27.03	29.65

Note. ^a $n = 12$ ^b $n = 11$

Beglin, 1994). Numerous investigations have tested the reliability and validity of the EDE, and scores produced by the measure have supported its use in research and clinical practices (e.g., Fairburn & Cooper, 1993; Wilson, 1993).

The diagnostic items of the EDE were administered to potential participants. Women who met all the criteria for BED according to the EDE and met the remaining *DSM-IV-TR* criteria (three or more of the following: eating much more rapidly than normal; eating until uncomfortably full; eating large amounts of food when not feeling physically hungry; eating alone because of being embarrassed by how much one is eating; and/or feeling disgusted with oneself, depressed, or very guilty after overeating; APA, 2000) were diagnosed with full BED. Participants were also included who met criteria for subthreshold BED. Women who met all the criteria for BED, except that they binged less than twice per week but no less than once in the past 28 days, and/or their binges were classified as subjective bulimic episodes (SBEs; Fairburn & Cooper, 1993), were diagnosed with subthreshold BED. Women with subthreshold BED were included because of prior research suggesting that they may be as impaired or nearly as impaired as those with full-criteria BED (Latner & Clyne, 2008).

THE EATING DISORDERS EXAMINATION QUESTIONNAIRE (EDE-Q; FAIRBURN & BEGLIN, 1994)

The EDE-Q is a questionnaire form of the EDE, and was used to assess levels of restraint, eating concerns, and shape and weight concerns. EDE-Q subscale scores have been shown to have excellent internal consistency (Luce & Crowther, 1999), and are significantly correlated with scores produced by the EDE (Grilo, Maheb, & Wilson, 2001). The test-retest reliability of the measure in assessing binge episodes, particularly subjective bulimic episodes, is questionable (e.g., Reas, Grilo, & Masheb, 2006). Thus, the EDE interview was used to assess binge eating and to establish diagnoses. Scores from the EDE-Q subscales tend to be higher than those of the EDE (e.g., Grilo et al., 2001; Wilfley, Schwartz, Spurrell, Fairburn, 1997). Thus, mean scores were not compared to EDE normative data, but were instead compared across assessments.

THE BINGE EATING SCALE (BES)

The Binge Eating Scale (BES; Gormally, Black, Daston, & Rardin, 1982) is a 16-item self-report measure of the presence and severity of behavioural and cognitive characteristics of binge eating. The BES has been widely used in research on BED (Gladis, Wadden, Foster, Vogt, & Wingate, 1998), and scores produced by the scale have high internal consistency (Gormally et al., 1982).

THE EMOTIONAL EATING SCALE (EES)

The Emotional Eating Scale (EES; Arnow et al., 1995) is a 25-item scale that was designed to measure the intensity of the relationship between negative affect and eating (Agras, Telch, Arnow, Eldredge, Detzer, Henderson et al., 1995). Research has demonstrated that scores generated by the EES subscales have good internal consistency (Arnow et al., 1995; Waller & Osman, 1998) temporal stability, and discriminant validity (Arnow et al., 1995).

SELF-MONITORING

Participants were asked to monitor and record all eating episodes that were accompanied by a sense of loss of control from the day they were recruited for the study. The time, type of food (including brand names), and an estimation of the amount of the food or drink consumed were recorded. Behavioural and emotional antecedents and consequences of eating were also recorded. For the purposes of eventually normalising eating patterns, participants were also asked to monitor all food intake, while continuing to record eating episodes with a sense of loss of control. Participants recorded all food consumed for 2 weeks. This began a week before treatment started and ended at the end of the first week of treatment, while monitoring of overeating episodes lasted from the time of recruitment to the end of treatment.

Procedure

This study was approved by the Human Ethics Committee at the University of Canterbury. Participants were initially invited to come to the University of Canterbury to fill in the QEWP. Those who met all of the criteria for BED as outlined by Spitzer and associates (1993) on the QEWP were asked to return for the EDE. Women who reported purging and/or compensatory behaviours to control their shape or weight in the QEWP were not included in the study, and were not assessed using the EDE. Instead, a letter was sent to them that outlined the assessment results, advised them to consult their physician regarding these findings, and that offered alternative treatment facilities to contact. Women who exhibited frequent occurrence of fasting or extreme exercise behaviours on the QEWP were also excluded from the study and were offered referrals to alternative treatment facilities.

Diagnostic status was established using EDE interviews, which were conducted by the principal investigator (CC), at that time a Masters-level student trained and supervised in the administration of the EDE by a

PhD-level psychologist (JDL). Women meeting the criteria for subthreshold or full BED were included in this study, and were assigned to either the TG or WL. The WL began treatment three months after their initial assessment and continued to monitor binge episodes from the day of recruitment.

Using the EDE and all questionnaire assessments, The TG was assessed at pre- and post-treatment, and at 3-, 6-, and 12-months follow-up. The WL group were assessed before and after a 3-month waiting period, which coincided with the TG beginning and ending treatment. Following their waiting period, the WL was treated using the same intervention programme received by the TG group. The assessment taken at the end of the 3-month waiting period also served as a pre-treatment assessment for the WL. The WL were also assessed at post-treatment, 3-, 6-, and 12-months follow-up.

Treatment Description

Within the framework of a psychoeducational approach, the treatment incorporated aspects from CBT for BED (including nutrition and meal planning guidance, self-monitoring, problem solving and treatment maintenance), IPT (assertion training), and some aspects of DBT (affect recognition: modified and developed by Clyne and Blampied [2004]). Affect recognition included training in evaluating facial expression, and noticing behavioural and physiological responses to situations as an emotional recognition guide. In response to research suggestions (see Crowther, Sanftner, Bonifazi, & Shepherd, 2001; Johnson, Carr-Nangle, Nangle, Antony, & Zayfort, 1997), relaxation training and recognising a binge were also added to the treatment programme.

In addition to continued self-monitoring, participants were given homework assignments consistent with the focus of each session. The treatment took place in 11 sessions, each lasting up to 120 minutes, over 12 weeks. Treatment sessions were led by the principal investigator for groups of two to six participants. Each treatment session consisted of a review of the previous week's homework, a presentation of the psychoeducational material for the new week, followed by the introduction of the new homework, and time was given for questions and discussion.

The data-analytic plan was to use analysis of covariance (ANCOVA) with post-treatment scores as the dependent variables and pre-treatment scores as covariates. Based on the assumption that pre and post scores would be highly correlated, power analyses (based on an alpha of .05 and power of .70) suggested that approximately 22 participants would be necessary to detect a large effect size and approximately 53 would be necessary to detect a medium effect size. We initially attempted to recruit more, knowing that some would not meet inclusion criteria and some would not complete treatment.

RESULTS

Of the 101 women who responded to advertising, a total of 80 completed the BES and the QEWP. Of these, 40 were excluded from the study (24 reported purging, laxative use, or fasting as a means of controlling their shape and weight, and 16 did not fit the study criteria for an eating disorder). Of the remaining 40 participants, 17 discontinued participation, one after being assigned to TG but before treatment began, and 16 after being assigned to the WL (12 during the waiting period and 4 after beginning treatment). Those who did not start treatment, or began treatment but discontinued part way through, cited being too busy or too stressed (for reasons unrelated to treatment) as their main reasons for dropping out. Those assigned to the WL and who chose not to continue during the waiting period, cited the cumbersome nature of self-monitoring for an extended period of time and also “not being ready” for treatment, as their main reasons for discontinuing. Thus, 23 women completed treatment: 11 women in the WL and 12 women in the TG. Examinations of all data were completed using intent-to-treat analyses using the last data collected before the participant dropped out. The intent-to-treat method of analysis is most appropriate when outcome measures are collected for analysis at several points in the treatment, as were available here. This was also a conservative approach as it discounts the natural time course of the disorder and the possibility that participant had sought treatment elsewhere. Including dropouts in the data minimizes bias due to self-selection (Flick, 1988). Demographic data are presented in Table 1.

Binge Abstinence Rates

Binge abstinence was defined as complete absence of binge eating, including SBEs and objective bulimic episodes (OBEs), in the previous 4 weeks, and was measured using the EDE repeated interview responses. One participant dropped out during the 3-month post-treatment follow-up. Her abstinence rates were calculated assuming that she was still bingeing at 6- and 12-months follow-up at the rate that she was bingeing before she dropped out. A total of 78% (18 participants out of 23) reached binge abstinence by post-treatment, and an abstinence rate of 87% (20 of 23) was found at the 12-month follow-up.

Analysis of Treatment Effects

Mean scores for pre and post treatment are presented in Table 2, along with the scores for the WL group during the corresponding time period. As can be seen, scores decreased much more in the treatment group than in the waitlist controls. To statistically test the treatment effects, the data were analysed using ANCOVAs using posttest scores as the dependent variables

TABLE 2 Changes During Treatment Period for Treatment Group and Waitlist Controls

	Treatment group Time		Waitlist group Time	
	Pre	Post	Pre	Post
EDE-Q				
Eating concerns	2.97 (1.35)	0.87 (0.63)	3.07 (1.09)	2.31 (1.20)
Shape concerns	4.56 (1.38)	1.99 (1.14)	4.62 (0.86)	4.37 (1.78)
Weight concerns	3.87 (1.63)	1.92 (1.34)	3.69 (0.72)	3.47 (0.79)
Restraint	2.55 (1.34)	1.37 (1.02)	3.42 (0.75)	2.25 (1.35)
BES	28.75 (8.83)	10.25 (6.47)	29.64 (4.92)	26.09 (6.09)
EES				
Anger	23.58 (8.90)	9.92 (8.53)	26.55 (6.04)	22.73 (4.27)
Anxiety	16.92 (6.26)	6.17 (6.74)	17.82 (6.79)	18.18 (9.26)
Depression	13.50 (4.10)	6.67 (4.36)	5.73 (4.03)	13.45 (4.41)
Total score	54.00 (14.29)	22.75 (17.65)	60.09 (11.87)	54.18 (2.72)

Note: Values are means and (standard deviations).

and baseline scores as the covariates. In the case of the TG, the baseline data were those obtained at pre-treatment. In the case of the WL, the baseline data were those obtained before the WL began their waiting period. The dependent variables were the EDE-Q subscales, the BES, and the EES. Data met the assumptions of ANCOVA: the covariate predicted the dependent variables, and there were no interactions between the covariates and the independent variable.

Results of the ANCOVAs are presented in Table 3. The analyses for all the dependent variables, except the Restraint subscale of the EDE-Q, showed statistically significant differences between the TG and the WL. All statistically significant changes were in the predicted direction (treatment had a positive effect) and were accompanied by medium to large effect sizes

TABLE 3 ANCOVAs Comparing Treatment and Wait-List Groups With Baseline Scores as Covariates

SCALE	F	<i>p</i> -Value	Effect size
EDE-Q			
Eating concerns	15.107	.001	0.43
Shape concerns	17.761	<.001	0.47
Weight concerns	15.968	.010	0.44
Restraint	2.022	.170	0.09
BES	36.560	<.001	0.65
EES			
Anger	28.900	<.001	0.59
Anxiety	18.342	<.001	0.48
Depression	11.980	.002	0.38
Total score	26.195	<.001	0.57

Note: Degrees of Freedom = (1, 20) for all analyses; and the effect size is partial eta-squared.

(η^2 range: 0.09–0.65; 0.01 = small, 0.06 = medium, and 0.14 = large.). Although changes on the Restraint subscale of the EDE-Q were not statistically significant, restraint was associated with a medium effect size, indicating that positive change had occurred.

Analysis of Maintenance of Treatment Effects

Scores at 3, 6, and 12 month follow-up (along with pre and post, for comparison's sake) for the treatment group are presented in Table 4. Repeated-Measures Analysis of Variance (ANOVA) were used to assess whether the treatment effects were maintained from post-treatment to 12 months follow-up (pre-treatment scores were not included in this analysis). Low numbers in the treatment group could have resulted in low power. Thus, the TG data were analyzed separately first, and then, to increase the participant numbers and therefore the power of the analyses, in combination with the WL post-treatment and follow-up data. Prior to the ANOVA test, the data were first checked for sphericity. Where the sphericity assumption was met, sphericity assumed results (normal univariate tests) were used. Otherwise, the sphericity-assumed results and Greenhouse-Geisser adjusted results were used. Changes over time on the four subscales of the EDE-Q, the BES, and the EES (three subscales and total score) were examined in separate ANOVAs. Effect sizes (partial η^2) were also obtained. Overall, significant changes did not occur for the majority of these variables across follow-up assessments, regardless of whether the analyses were performed with the data from the TG only, or from the TG and WL data combined. Where significant change did occur, the change was positive, indicating continued improvement rather than a tendency to relapse.

DISCUSSION

The aim of the current study was to determine whether psychoeducational treatment teaching emotional discrimination and management skills to women with full or subthreshold BED would be associated with positive and lasting change in binge eating and related symptoms. This study was a controlled investigation, and replicated and extended a previous study (Clyne & Blampied, 2004).

Analyses indicated a positive treatment effect at post-treatment, and that the effects were maintained across follow-ups. Notably, although a medium effect size indicated that the Restraint subscale of the EDE-Q changed, the change was not statistically significant. It is possible there was a disparity between assessments in the participants' subjective definitions of the construct, as indicated by EDE interview responses. Whereas pre-treatment

TABLE 4 Mean Scores, Standard Deviations, and Effect Sizes (ES) for the TG (Pre-Treatment and Post-Treatment), Then Comparing Post-Treatment and Follow-Ups

Scale	Pre	Post	3 Months	6 Months	12 Months	ES; TG only data	ES; TG and WL data combined
EDE-Q							
Eating concerns	2.97 (1.35)	0.87 (0.63)	0.72 (0.82)	0.67 (0.89)	0.56 (0.97)	0.052	0.082
Shape concerns	4.56 (1.38)	1.99 (1.14)	1.93 (1.44)	1.45 (1.58)	1.54 (1.01)	0.054	0.093
Weight concerns	3.87 (1.63)	1.92 (1.34)	1.83 (1.34)	1.20 (1.17)	1.33 (1.01)	0.116	0.040
Restraint	2.55 (1.34)	1.37 (1.02)	1.00 (1.04)	0.64 (0.71)	0.75 (1.19)	0.165	0.082
BES	28.75 (8.83)	10.25 (6.47)	11.25 (9.37)	8.36 (6.50)	6.45 (6.50)	0.131	0.093
						0.131	0.082
EES							
Anger	23.58 (8.90)	9.92 (8.53)	8.25 (8.29)	5.82 (6.24)	6.45 (6.00)	0.255	0.174
Anxiety	16.92 (6.26)	6.17 (6.74)	6.00 (6.79)	4.55 (4.66)	5.45 (4.27)	0.255	0.083
Depression	13.50 (4.10)	6.67 (4.36)	7.42 (3.58)	5.09 (2.77)	6.18 (4.12)	0.071	0.107
						0.255	0.107
Total score	54.00 (14.29)	22.75 (17.65)	21.67 (16.96)	15.45 (12.98)	18.09 (13.67)	0.210	0.138

Note: *Sphericity Assumed* effect sizes (partial eta-squared) are in plain text. *Greenhouse-Geisser Adjusted* effect sizes are in bold. Pre-test scores were not included in this analysis but are included in the table as comparisons.

restraint may have been defined by the restriction of specific foods from the diet, for instance, post-treatment restraint may have been defined by restricting eating between designated meals and snacks. This calls into question the validity of the EDE-Q Restraint subscale in measuring short-term changes in dietary restraint. In four comparison studies that examined actual and self-reported dietary restraint, Stice and colleagues (2004) tested the validity of several commonly used instruments in detecting short-term dietary restriction. They tested normal weight and overweight individuals with and without eating disorders, and examined them under different conditions (using tempting and healthy food in laboratory and naturalistic settings). The researchers found no significant correlations between the self-reports and actual caloric intake on the measures they used, including the Restraint subscale of the EDE-Q. Further research is needed to establish a valid measure of dietary restraint.

Binge abstinence rates, which can be compared across studies, indicated that the treatment used in the present study was at least as effective in producing initial positive change as CBT (e.g., Agras et al., 1995; 1997; Peterson et al., 2001; Telch, Agras, Rossiter, Wilfley, & Kenardy, 1990), IPT (Wilfley et al., 2002), and DBT for BED (e.g., Telch et al., 2000). Further, whereas other studies have reported a relapse in bingeing 3- to 12-months post-treatment after CBT (e.g., Agras et al., 1997; Grilo, Masheb, & Salant, 2005; Telch et al., 1990), IPT (Wilfley et al., 2002), and after DBT (e.g., Telch et al., 2000), the outcome of the present investigation indicated that binge abstinence continued to remain positive, and, in some cases, improved over time.

Overall, the results indicated that the treatment was successful and produced large improvements in almost all the measures of eating and related pathology assessed. Further, the treatment gains were well-maintained 1 year after treatment ended, with some variables illustrating continued improvement across follow-up assessments. In sum, the outcome of this investigation indicates that using an intervention that focuses on building affect discrimination and regulation skills may be a viable and useful option for treating women with BED.

Of note, the time taken to complete treatment was considerably shorter than DBT, IPT and CBT, all of which can take from 4 to 6 months (Birchall, 1999; Fairburn et al., 1993; Telch, 1997). It is therefore possible that emotional discrimination and regulation deficits in those with BED can be addressed without the need to complete an intervention that lasts longer than 12 weeks.

Nevertheless, the results must be taken with due consideration to the fact that the majority of participants were subthreshold BED in the current study. Thus, the binge abstinence rates in the present study may not be directly comparable to previous studies that have treated only participants with full BED (e.g., Agras et al., 1997; Telch et al., 2000; Wilfley

et al., 2002). However, considering the prevalence of eating disorders not otherwise specified (EDNOS), the lack of research on the treatment of subthreshold BED or EDNOS (Fairburn & Bohm, 2005), and the clinical impairment that often accompanies subthreshold BED (Latner & Clyne, 2008), the present study may provide novel and valuable information on the treatment of the spectrum of binge eating problems in women. Furthermore, if subthreshold BED progresses to full BED, then treating subthreshold BED with an effective program is a useful instance of secondary prevention.

Various limitations impede the conclusiveness of the present study. Due to the high level of attrition in the WL (12 of 17 participants, 71%), random assignment to groups was not possible (as more participants had to be recruited specifically for this group during the course of the study). To try to minimize attrition, participants were contacted on a regular basis, encouraged to continue in the study, and reminded that they would receive free treatment after the waiting period. Participants were also informed about the potential therapeutic value of self-monitoring, and of the helpful contribution they were making to society by remaining in the research study. In future studies, it could be helpful to use additional incentives to try to reduce attrition, such as monetary rewards, and to use treatment comparison groups rather than waitlist control groups. Participants were assigned based on investigator (schedule-based) decisions, and they did not choose groups for themselves, reducing the possibility of systematic differences between the groups at baseline due to self-selection. However, the break in random assignment to conditions is a serious methodological limitation, as it raises the possibility of bias. This potential bias may exist in both measured and unmeasured confounds and thus may not be able to be assessed. For this reason, it will be essential for future studies to maintain random assignment and minimize attrition.

Another limitation of the present study was that one participant refused further contact after 3-months follow-up, and it is possible that she discontinued her participation in the study due to a decline in the improvements evidenced at post-treatment. As a result, data for 6- and 12-months follow-up were not available for her, and the outcome of these analyses may have been affected by this. Nevertheless, as an intent-to-treat analysis was used and baseline scores were included as covariates in analyses, the potential for a bias in these results is likely to have been reduced. (However, results were nearly identical, with the same patterns of statistical significance, when intent-to-treat or completers-only analyses were used.)

Finally, only one Masters-level investigator, with limited diagnostic and therapy training, carried out the treatment programme, treatment adherence was not assessed (although diagnoses were checked by an experienced clinician), and the clinician was obviously not blind to treatment condition. However, the limited training of the treatment group leader is consistent

with research on the efficacy of guided self-help treatment, even when administered by semi-professional and layperson providers, for a substantial proportion of individuals with BED (Grilo, 2007).

The outcome of the present study indicates that treating emotional dysregulation in those with BED could lead to positive treatment effects in binge eating and related symptoms. Due to the limitations of the current investigation, a replication using the treatment programme employed in this study is warranted. Future research of this nature should utilise independent diagnosticians to assess eating disorder symptoms, and inter-rater reliability between assessors should be checked. Further, future studies testing the efficacy of the treatment programme used in the current research should employ several therapists who are trained in the treatment of eating disorders, and treatment adherence and cost-effectiveness should be formally assessed. Finally, future studies with larger sample sizes are recommended to compare the present treatment with another form of psychotherapy.

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