

Original

## Group dialectical behavior therapy adapted for obese emotional eaters; a pilot study

M. A. Roosen<sup>1</sup>, D. Safer<sup>2</sup>, S. Adler<sup>2</sup>, A. Cebolla<sup>3</sup> and T. van Strien<sup>4,5</sup>

<sup>1</sup>Outpatient clinic for eating disorders and obesity at the Mental Health Care Centre region Oost Brabant. The Netherlands.

<sup>2</sup>Stanford University School of Medicine. Department of Psychiatry & Behavioral Sciences. Stanford. California. U.S.A.

<sup>3</sup>Universitat Jaume I. Spain. <sup>4</sup>Behavioural Science Institute. Radboud University Nijmegen. The Netherlands. <sup>5</sup>Institute for Gender Studies. Radboud University Nijmegen. The Netherlands.

### Abstract

Dialectical Behavior Therapy (DBT) has been shown to effectively target binge eating disorder (BED). This study pilots the effectiveness of group DBT for obese “emotional eaters” to reduce eating psychopathology and achieve weight maintenance. Thirty-five obese male and female emotional eaters receiving 20 group psychotherapy sessions of DBT adapted for emotional eating were assessed at end-of-treatment and 6 month follow-up for reductions in eating psychopathology and weight maintenance. DBT resulted in significant reductions in emotional eating and other markers of eating psychopathology at the end-of-treatment that were maintained at follow-up. The drop-out rate was very low, with only 1 participant dropping from treatment. Thirty-three (94%) of the sample provided data at every assessment point. Of these, 80% achieved either weight reduction or weight maintenance after treatment and throughout the follow-up period. The effect size for weight reduction was small. This pilot study demonstrates group DBT targeting emotional eating in the obese to be a highly acceptable and effective intervention for reducing eating related psychopathology at both at end-of-treatment and during follow-up. The ability of DBT to limit the upward trajectory of weight gain in obese patients with high degrees of emotional eating suggests that DBT may also help limit the increase or even prevent onset of obesity related morbidity in these patients.

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Key words: *Dialectical behaviour therapy. Emotional eating. Weight maintenance. Psychopathology.*

### TERAPIA DIALECTICO-COMPARTIMENTAL GRUPAL ADAPTADA PARA EL TRATAMIENTO “COMEDORES EMOCIONALES” OBESOS; UN ESTUDIO PILOTO

### Resumen

La Terapia Dialéctico-Conductual (TDC) es una terapia eficaz para el tratamiento del trastorno por atracón (TA). Este estudio piloto pretende estudiar la eficacia de la TDC grupal para la reducción de psicopatología alimentaria y el logro el mantenimiento del peso, para obesos “comedores emocionales”. Treinta y cinco obesos “comedores emocionales” de ambos sexos fueron evaluados al final del tratamiento y en seguimiento a los seis meses en psicopatología alimentaria y reducción de peso tras recibir 20 sesiones de TDC en grupo adaptado para el tratamiento del comer emocional. La TDC dio lugar a reducciones significativas en comer emocional y otros marcadores de la psicopatología alimentaria al terminar el tratamiento, que se mantuvieron durante el seguimiento. La tasa de abandonos fue muy baja, sólo una participante abandonó el tratamiento. Treinta y tres (94%) participantes de la muestra proporcionaron datos en todos los puntos de la evaluación. De éstos, el 80% obtuvo una reducción de peso o el mantenimiento del mismo al finalizar el tratamiento y durante todo el período de seguimiento. El tamaño del efecto de la reducción de peso fue pequeño. Este estudio piloto demuestra que el uso de la TDC para el comer emocional en personas obesas es una intervención altamente aceptable y eficaz para la reducción de estilos de ingesta relacionados con psicopatología, tanto al final del tratamiento como en el seguimiento. La capacidad de la TDC para limitar la trayectoria ascendente de la ganancia de peso en pacientes obesos con alto grado de comer emocional sugiere que la TDC también puede ayudar a limitar el aumento o incluso prevenir la aparición de morbilidad relacionada con la obesidad en estos pacientes.

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**Correspondence:** Tatjana van Strien.  
Behavioural Science Institute. Radboud University Nijmegen.  
P.O.Box 9104, 6500 HE Nijmegen. The Netherlands.  
E-mail: T.vanstrien@psych.ru.nl

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## Introduction

Obesity, an increasingly prevalent disorder, is associated with severe and often life-threatening medical co-morbidities.<sup>1</sup> Reduction of body weight can have a substantial positive impact, such as reversing the development of diabetes.<sup>2</sup> However, obesity is well-known as being difficult to treat; calorie restricting diets, even when combined with behavioural techniques and exercise, seldom result in lasting weight loss.<sup>3,4,5</sup> A meta-analysis on the long-term effectiveness of calorie restricting diets showed that between one third and two thirds of the dieters regain more weight than was initially lost on their diets<sup>4</sup>. In view of this disheartening evidence, the World Health Organization (WHO<sup>6</sup>) and others suggest clinicians advise their patients to aim for weight constancy as a means of preventing further development of obesity-related morbidity.<sup>7,8</sup>

It is therefore important to investigate how weight constancy could be better achieved for people who fail to maintain weight loss. One factor may be that most current lifestyle or behavioral interventions, which tend to highly emphasize control of food stimuli within the obesogenic environment, may not be as effective for individuals whose overeating is predominantly triggered by negative emotions (emotional eating) rather than tempting food cues. Evidence is accumulating that the pathology associated with excessive external and emotional eating is essentially different.<sup>9,10,11</sup> Very high levels of emotional eating have been demonstrated in at least 40% of obese community samples<sup>12</sup> and are associated with poor interoceptive awareness, high alexithymia, depression and problems with affect regulation.<sup>9,10,13,14</sup> Research also suggests that individuals with high degrees of emotional eating are especially poor at achieving weight loss maintenance eating.<sup>15</sup>

Originally, Dialectical Behavior Therapy (DBT) was developed for borderline personality disorder,<sup>16,17</sup> and was successfully modified to target binge eating disorder (BED).<sup>18,19,20,21</sup> According to this affect regulation model, binge eating is a behavioral attempt to influence, change, or control painful emotional states<sup>22,23,24</sup>

Binge eating, particularly in obese individuals, is highly associated with emotional eating.<sup>25,26</sup> This pilot treatment included obese individuals who showed high levels of emotional eating but did not meet criteria for BED. The aim of the present study was to pilot a DBT intervention focusing on “emotional eating” rather than binge eating for obese individuals with high emotional eating scores.

In keeping with the WHO recommendations<sup>6</sup>, this study aimed to achieve weight maintenance, defined as a weight change of < 3% of baseline body weight.<sup>27</sup> It was hypothesized that DBT would successfully reduce eating psychopathology and that over time improvement in eating psychopathology would be associated with weight stabilization.

## Method

### Participants

As is standard practice in the Netherlands, all participants were directly referred from their general practitioner to the eating disorders outpatient clinic of the Mental Health Care Centre region Oost Brabant in the Netherlands. Inclusion criteria were a body mass index (BMI) > = 30 and < 40 kg/m<sup>2</sup>, age > = 18 and < = 65 years, and a score > = 2.38 on the emotional eating subscale of The Dutch Eating Behaviour Questionnaire (DEBQ),<sup>28</sup> indicating high levels of emotional eating. Exclusion criteria were meeting full clinical criteria based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (APA<sup>29</sup>) for binge eating disorder (BED). Sixty-seven applicants were screened. Of these, 32 (47%) were excluded for BED. The final pilot group consisted of 35 patients.

The Medical Ethical Committee (METiGG, Kamer Zuid) approved the design of the study, and all participants signed informed consent.

### Procedure

Participants completed questionnaires and had their body weights measured at the Centre at pre-treatment, post treatment and at the 6 month follow-up. Complete data are available at all 3 time points for all but 2 of the 35 participants (n = 33; 94%).

### Intervention

A therapist manual for treating binge eating with Dialectical Behaviour Therapy (DBT) was obtained from Stanford University (USA) and was translated into Dutch. The published treatment manual in English is now available<sup>20</sup>. The principal adaptation from the BED version was the substitution of “emotional eating” as a treatment target instead of binge eating. The highly structured treatment included an initial brief pre-treatment interview followed by 20 weekly group sessions of 2 hour group therapy. Groups were led by two trained co-therapists and included a maximum of 9 patients per group.

The pre-treatment interview oriented participants to the goals of treatment, which involved reducing eating pathology by teaching emotion regulation skills. During this session, emphasis was placed on the importance of maintaining body weight (versus a focus on weight reduction). Also highlighted was the importance of developing and maintaining a healthy eating pattern (e.g., three meals a day with healthy snacks in between) and obtaining sufficient physical exercise. Because the specifics of developing a healthy pattern

of eating are not given special attention in DBT for eating disorders, participants were given a brochure of the National Nutrition Centre (available upon request to the authors) to use as a reference.

Briefly, the focus of the twenty DBT group sessions was to teach adaptive emotion regulation skills through the use of three modules (Mindfulness, Emotion Regulation, and Distress Tolerance), with two final sessions devoted to review and relapse prevention. Mindfulness skills include the ability to observe and describe moment-to-moment emotional experiences, thoughts, and action urges and respond non-judgmentally. Emotion regulation skills encourage understanding of how emotions function, decreasing vulnerability to negative emotions, increasing positive emotions, and changing specific emotional states (e.g., fear and anxiety) by acting opposite to one's current emotion. Distress-tolerance skills teach adaptive and effective means for tolerating life's unavoidable stresses and pain without turning to emotional eating, thereby facilitating acceptance of the current moment's realities.

### Measures

The Dutch Eating Behaviour Questionnaire (DEBQ)<sup>28</sup> was used to measure Emotional, External and Restrained eating. Response categories range from 1 ("never") to 5 ("very often"). The scales display good internal consistency and factorial validity<sup>29</sup> in addition to adequate predictive validity<sup>30,31,32</sup> for food consumption. The Revised Eating Disorder Inventory (EDI-II)<sup>33</sup> was used to measure eating psychopathology. The EDI-II is a self-report measure of attitudes and behaviours concerning eating, weight and shape, and psychological traits clinically relevant to eating disorders. For the present study, 5 subscales were used: body dissatisfaction, drive for thinness, bulimia (i.e., the tendency to binge and purge), poor interoceptive awareness (i.e., difficulties adequately identifying emotions and sensations of hunger or satiety) and impulsivity (i.e., tendencies toward substance abuse, recklessness, hostility, self-destructiveness). Possible responses ranged from 1 'never' to 6 'always'. In contrast with the EDI-manual<sup>33</sup>, in which a transformation of responses into a 4-point scale is advocated, the present study utilised untransformed responses, as scale transformation was found to damage the validity of the EDI among non-clinical populations<sup>34,35</sup>. The depression subscale of the validated version of the Hopkins Symptom Checklist-90 (SCL-90)<sup>36,37</sup> was used as a measure of depressive symptoms. Body weight was assessed on a balance beam scale by a trained research assistant, with the participant being in lightweight clothing and having shoes removed. Height was measured with a stadiometer. Body Mass Index (BMI) was calculated as weight (in kilograms) divided by the square of height (in meters).

### Statistical analysis

To study the effect of the DBT intervention, a General Linear Model (GLM) with a within subject design (Time: pre-treatment versus post-treatment) was conducted. Likewise, to study whether the effects of the treatment were maintained, a GLM with a within subject design (Time: post-treatment versus follow-up) was conducted. Cohen's *d* was used to assess the size of the treatment effect ( $d = 0.20$  stands for a small;  $d = 0.50$  for a medium and  $d = 0.80$  for a large effect). Partial eta squared was also reported ( $< 0.10$  = small,  $> 0.10$  and  $< 0.20$  = median and  $> 0.20$  = large effect). Primary analyses were run using an intent to treat ( $n = 35$ ) sample.

Complete data, including objectively measured body weights, were available for 33 (94%) of the sample. Of the two with missing data, a total of 3 assessments were missing (1 post-treatment assessment and 2 follow-up assessments). Last observation carried forward was used for the 2 participants with missing data (i.e., the pre-treatment assessment was carried forward for the participant with two missing assessments and the post-treatment assessment was carried forward for the participant missing the follow-up assessment).

## Results

### Pre-treatment characteristics

The DBT group consisted of 35 patients (30 females (86%) and 5 males (4%)) with a mean age of 39.20 (SD = 11.02) years. The mean BMI was 35.42 kg/m<sup>2</sup> (SD = 2.62). The average DEBQ Emotional Eating Score was 3.85 (SD = 0.66). The other DEBQ subscales were: External Eating 3.58 (SD = 0.58), and Restrained Eating 3.02 (SD = 0.59). The 5 EDI-II subscales were reported as: Body Dissatisfaction 47.10 (SD = 7.44), Drive for Thinness 29.74 (SD = 5.94), Bulimia 23.94 (SD = 7.24), Poor Interoceptive Awareness 32.99 (SD = 7.24), and Impulsivity 25.89 (SD = 5.69). The average depression subscale score from the SCL-90 was 2.04 (SD = 0.77) (table I).

### Drop-outs from treatment and/or assessment

One patient dropped out of treatment (3%), stating that learning the mindfulness skills was sufficient for her. One patient (3%) did not provide a follow-up assessment. Complete data for all 3 assessment points were available for  $n = 33$  (94%) of the sample.

### Eating style, eating psychopathology and depressive symptoms

DBT resulted in significant post-treatment reductions in the DEBQ Emotional Eating scale ( $3.85 \pm 0.66$

**Table I**  
Results of the intention-to treat sample (n = 35) before and after treatment and at the 6 month follow-up

Measure	Pre-treatment (n = 35)		Post-treatment (n = 35)		Follow-up (n = 35)		Cohens d		Treatment effectiveness		Maintenance	
	M	SD	M	SD	M	SD	Pre-Post	Pre-Follow-up	F (1,35)	Partial éta squared	F (1,35)	Partial éta squared
BMI	35.42	2.62	34.82	3.33	34.56	3.80	0.20	0.26	6.26*	0.16	0.73	0.02
Emotional eating	3.85	0.66	2.75	0.49	2.81	0.62	1.89	1.63	82.96***	0.71	0.35	0.01
External eating	3.58	0.58	2.66	0.50	2.76	0.54	1.70	1.46	64.55***	0.65	2.32	0.06
Restrained eating	3.02	0.59	3.26	0.57	3.12	0.50	-0.41	-0.18	4.41*	0.12	4.43*	0.12
Body dissatisfaction	47.10	7.44	43.30	8.84	44.03	8.94	0.47	0.37	9.59**	0.22	0.78	0.02
Drive for thinness	29.74	5.94	24.28	6.84	24.23	6.78	0.85	0.86	28.62***	0.46	0.004	0.00
Bulimia	23.94	6.05	14.73	4.43	15.94	4.66	1.73	1.48	64.36***	0.65	4.570*	0.12
Poor interceptive awareness	32.99	7.24	26.23	6.24	25.46	5.89	1.00	1.14	19.66***	0.37	0.99	0.03
Impulsivity	25.89	5.69	23.92	5.34	23.47	4.72	0.36	0.46	3.66	0.097	0.31	0.01
Depression	2.04	0.77	1.68	0.65	1.61	0.49	0.51	0.67	8.74**	0.205	0.99	0.03

\*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001

vs.  $2.75 \pm 0.49$ ,  $F(1, 34) = 82.96$ ,  $p < 0.001$ ) and in the External Eating ( $3.58 \pm 0.58$  vs.  $2.66 \pm 0.50$ ,  $F(1, 34) = 64.55$ ,  $p < 0.001$ ). DEBQ Restraint significantly increased ( $3.02 \pm 0.59$  vs.  $3.26 \pm 0.57$ ,  $F(1, 34) = 4.41$ ,  $p = 0.043$ ). Four of the 5 EDI-II subscales of eating psychopathology as well as depressive symptoms showed significant decreases: Body Dissatisfaction ( $47.10 \pm 7.44$  vs.  $43.30 \pm 8.84$ ,  $F(1, 34) = 9.59$ ,  $p = 0.004$ ), Drive for Thinness ( $29.74 \pm 5.94$  vs.  $24.28 \pm 6.84$ ,  $F(1, 34) = 28.62$ ,  $p < 0.001$ ), Bulimia ( $23.94 \pm 6.05$  vs.  $14.73 \pm 4.43$ ,  $F(1, 34) = 64.36$ ,  $p < 0.001$ ), Poor Interoceptive Awareness ( $32.99 \pm 7.24$  vs.  $26.23 \pm 6.24$ ,  $F(1, 34) = 19.66$ ,  $p < 0.001$ ) and Depressive symptoms ( $2.04 \pm 0.77$  vs.  $1.68 \pm 0.65$ ,  $F(1, 34) = 8.74$ ,  $p = 0.006$ ). There was no significant change in Impulsivity ( $25.89 \pm 5.69$  vs.  $23.92 \pm 5.34$ ,  $F(1, 34) = 3.66$ ,  $p = 0.064$ ).

Results from the post-treatment vs follow-up GLM revealed that the effects of the treatment were maintained through the follow-up period except for the decrease in the DEBQ Restraint scale ( $p = 0.043$ ) and the increase in the EDI-II Bulimia subscale ( $p = 0.040$ ) (table I).

### Body weight

Participants lost 0.60 BMI-points (1.69%) in the short-term and 0.86 BMI points (2.42%) in the longer term. The treatment effectiveness analysis showed a significant time effect meaning that DBT resulted in a significant weight loss though its effect size was small. The maintenance analysis showed no significant time effect, meaning that post-treatment results were maintained (table I).

Additional analyses were used to further categorize the participants. Following Stevens and colleagues,<sup>27</sup> treatment completers ( $n = 33$ ) were categorized as those with a weight loss of  $> 3\%$ , weight maintenance of  $\pm 3\%$ , or weight gain of  $> 3\%$  of baseline weight. They were further categorised as non-gainers (weight loss or weight maintenance) or gainers (weight gain). At post-treatment, the percentages with weight loss, weight maintenance, and weight gain were, respectively, 31.4%, 65.7% and 2.9%. At the 6-month follow up, these percentages were, respectively, 40%, 40%, and 20%. Hence, at follow-up, 80% of were non-gainers (i.e., showed weight loss or weight maintenance), whereas 20% were weight gainers, with a mean gain of 1.90 BMI points ( $SD = 1.61$ ).

### Discussion

To our knowledge, DBT has not yet been investigated specifically for the treatment of emotional eating in people with obesity. Given very high levels of emotional eating have been demonstrated in at least 40% of obese community samples<sup>12</sup> and that those with

high emotional eating scores appear specifically poor at achieving weight loss maintenance eating,<sup>15,38</sup> emotional eating may be an especially important and under-explored target for participants in weight loss and weight maintenance interventions.

The findings from the present pilot study suggest that 20 sessions of DBT group therapy targeting emotional eating among obese individuals was successful in reducing emotional eating and other markers of eating psychopathology and was associated with constancy or even reduction of body weight at post-treatment and at the 6 month follow-up. It was expected that DBT-treatment would be successful in reducing eating psychopathology both in the short and longer term. While DBT was not expected to result in weight maintenance or a mild weight loss in the treatment intervention period, improvement in eating psychopathology did impressively result in weight stabilization in throughout the 6 month follow-up period.

Mild weight loss or weight maintenance after DBT has been observed before.<sup>18,20</sup> However, these findings were found with patients with BED. The present findings suggest that DBT may also result in weight maintenance or weight loss in a large percentage of obese people without BED who experience high degrees of emotional eating. Teaching adaptive emotion regulation skills may be a desirable missing component for this otherwise difficult to treat population of patients with obesity.

The very low drop-out rate suggests DBT is highly acceptable for most obese emotional eaters, which is of importance given typical drop-out rates of obese patients from treatment are much higher (e.g., 16-20%).<sup>39,40</sup> One contributing factor may have been the emphasis placed during the pre-treatment interview on weight maintenance as a goal.

The finding that many patients increased their dietary restraint during treatment in addition to weight loss is consistent with other findings on decreased overeating or eating binges after dieting.<sup>43</sup> Unlike the Restraint Scale literature, which links dietary restriction to overeating and eating disorders,<sup>39</sup> the DEBQ Restrained Eating scale measures “watching exactly what you eat” and/or moderation of food intake in response to occasions of overeating (e.g., “When you have eaten too much, do you eat less than usual the following day?”).<sup>28</sup> Hence, individuals with higher DEBQ Restraint scores may have been more successful in avoiding weight gain because of their tendency to compensate for occasional bouts of overconsumption by subsequently eating less.

A possible explanation for the weight gain of 20% at the 6 month follow-up may come from a recent study in which Blomquist and colleagues<sup>42</sup> assessed the weight trajectories in the year prior to commencing treatment for BED. Weight gainers, in contrast to the weight non-gainers, had been on a very steep weight gain trajectory, showing an average weight gain of more than 10

kg during the year before seeking treatment.<sup>42</sup> It is not known whether the weight gainers in the present study also were following a steep pre-treatment weight gain. However, it would be of interest to assess the pre-treatment weight trajectories of patients receiving treatment in future studies. For patients with a steep pre-treatment weight gain trajectory, a more feasible treatment goal might be to aim at a less steep weight gain trajectory rather than constancy of body weight, let alone weight loss.

A limitation of this study is the absence of a control group. A further limitation is the relatively small sample size and, given the chronicity of emotional eating and obesity, the rather brief follow-up period of 6 months. A strength of the study was that body height and body weight were obtained through by objective measurements in 94% of the participants. A further strength is that only one person dropped out of the DBT treatment.

In conclusion, DBT in this study was associated with reductions in important aspects of eating psychopathology in the short term and at the six month follow up—which took place 1 year after initiation of the study. These improvements were accompanied by weight constancy or even a reduction of body weight for the majority of the patients. The ability of DBT to limit the customary weight increases of obese patients with high degrees of emotional eating suggests DBT to be a promising strategy to inhibit the further growth of obesity-related morbidity in these difficult to treat obese patients.

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