

The Feasibility and Efficacy of Emotion-Focused Therapy for Binge-Eating Disorder: A Pilot Randomised Waitlist Control Trial

Kevin Glisenti (✉ kevin.glisenti@hdr.qut.edu.au)

Queensland University of Technology <https://orcid.org/0000-0002-0906-4786>

Esben Strodl

Queensland University of Technology

Robert King

Queensland University of Technology

Leslie Greenberg

York University

Research article

Keywords: Emotion-focused therapy, Binge-eating disorder, Emotion regulation and processing, Randomized control trial

Posted Date: October 15th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-30265/v2>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Version of Record: A version of this preprint was published on January 6th, 2021. See the published version at <https://doi.org/10.1186/s40337-020-00358-5>.

Abstract

Background: Research into psychotherapy for binge-eating disorder (BED) has focused mainly on cognitive behavioural therapies, but efficacy, failure to abstain, and dropout rates continue to be problematic. The experience of negative emotions is among the most accurate predictors for the occurrence of binge eating episodes in BED, suggesting benefits to exploring psychological treatments with a more specific focus on the role of emotion. The present study aimed to explore the feasibility and efficacy of individual emotion-focused therapy (EFT) as a treatment for BED by examining the outcomes of a pilot randomised waitlist-controlled trial. **Methods:** Twenty-one participants were assessed using measures of feasibility (recruitment, credibility and expectancy, and therapy retention), and efficacy (objective binge episodes and days, and binge eating psychopathology). The treatment consisted of 12 weekly one-hour sessions of EFT for maladaptive emotions over three months. A mixed model approach was utilised with one between effect (group) using a one-way analysis of variance (ANOVA) to test the hypothesis that participants immediately receiving the EFT treatment would demonstrate a greater degree of improvement on outcomes relating to objective binge episodes and days, and binge eating psychopathology, compared to participants on the EFT waitlist; and one within effect (time) using a repeated-measures ANOVA to test the hypothesis that participation in the EFT intervention would result in significant improvements in outcome measures from pre to post-therapy and then maintained at follow-up. **Results:** Recruitment, credibility and expectancy, and therapy retention outcomes indicated EFT is a feasible treatment for BED. Participants receiving EFT demonstrated a greater degree of improvement in objective binge episodes and days, and binge eating psychopathology compared to EFT waitlist control group participants. When participants in the EFT waitlist control group then received treatment and outcomes data were combined with participants who initially received the treatment, EFT demonstrated significant improvement in objective binge episodes and days, and binge eating psychopathology for the entire sample. **Conclusions:** These findings provide further preliminary evidence for the feasibility and efficacy of individual EFT for BED and support more extensive randomised control trials.

Plain English Summary

Research into psychotherapy for binge-eating disorder (BED) has focused mainly on cognitive behavioral therapies, but efficacy, failure to abstain, and dropout rates continue to be problematic. The experience of negative emotions is among the most accurate predictors for the occurrence of binge eating episodes in BED, suggesting benefits to exploring other psychological treatments with a more specific focus on the role of emotion. This pilot study aimed to investigate if emotion-focused therapy (EFT) for BED improved binge episodes, the number of days on which binge episodes occurred, binge eating symptoms, anxiety, and depression. The treatment consisted of 12 weekly one-hour sessions of EFT over three months with 21 participants. Those receiving the EFT demonstrated a greater degree of improvement in binge episodes, the number of days on which binge episodes occurred, and binge eating symptoms compared to participants who did not receive the treatment. The EFT intervention resulted in significant improvements in binge episodes, the number of days on which binge episodes occurred, binge eating symptoms and anxiety but not depression. In conclusion, these findings provide further preliminary evidence that individual EFT may be an efficacious treatment for BED. Further controlled studies are needed.

Binge-eating disorder (BED) is the most prevalent of all the eating disorders (1). There is an estimated prevalence rate of 2.5% to 4.5% in females and 1.0% to 3.0% in males based on international data (2) and a 3-month prevalence rate of 5.58% based on Australian data (3). The core symptoms include recurrent episodes of binge eating while experiencing a sense of lack of control in the absence of compensatory strategies (4). Not surprisingly, many individuals with BED also have comorbid emotional disorders (5) including anxiety (6,7) and depression (8,9).

Spielmann et al. (10) noted that for BED, both The National Institute of Clinical Excellence (NICE) in the United Kingdom and the American Psychiatric Association guidelines suggest that cognitive behavior therapy (CBT) is the psychological treatment of choice, with interpersonal therapy (IPT) and dialectical behavior therapy (DBT) serving as second-line interventions (11,12). A subsequent meta-analysis examined direct comparisons between psychological treatments for bulimia nervosa (BN) and BED and the role of moderating variables (e.g., the degree to which psychotherapy was bona fide or not bona fide) based upon criteria published in Wampold, et al. (13). The meta-analysis included 77 comparisons reported in 53 studies and results indicated that: bona fide therapies outperformed non-bona fide treatments; bona fide CBT outperformed bona fide non-CBT interventions by a statistically significant margin (only approaching statistical significance for BN and BED when examined individually), full CBT treatments offered no benefit over their components, and the distribution of effect size differences between bona fide CBT treatments was homogeneously distributed around zero. There was little evidence supporting treatment specificity in psychotherapy for BN and BED.

A more recent meta-analysis estimated the prevalence of patients with BED who achieved binge-eating abstinence following psychological or behavioral treatments (14). The most common treatment delivered was CBT (either in a clinician-led or guided self-help format), and other interventions include behavioral weight loss, behavioral weight loss combined with CBT, IPT, DBT, behavior therapy, non-specific supportive therapy, mindfulness, psychodynamic therapy, and a combined psychotherapy approach. The total weighted percentage of treatment-completers who achieved abstinence at posttreatment was 50.9% and 50.30% at follow-up. The highest abstinence rate was observed in IPT, and clinician-led group treatments produced significantly higher posttreatment (but not follow-up) abstinence estimates than guided self-help treatments. The meta-analysis demonstrated that 50% of patients with BED do not fully respond to treatment, and there is, therefore, a need to explore other psychotherapies to improve these outcomes.

Individuals with BED often experience difficulties with deficits in emotion regulation (15) which can be defined as the "... attempt to influence which emotions we have, when we have them, and how these emotions are experienced or expressed" (16, p. 224). The emotion regulation model of binge eating postulates that binge eating occurs in response to intolerable emotional experiences in the absence of more adaptive coping mechanisms (17). Binge eating represents an effort by an individual to regulate emotion by numbing, avoiding or soothing negative or overwhelming affect (18). It occurs in the absence of effective regulation skills related to experiencing and differentiating as well as attenuating and modulating emotions (19), and individuals with BED experience more intense emotions and more significant difficulties in emotion regulation than individuals without BED (20).

Given that the experience of negative emotions is amongst the best predictors for the occurrence of binge eating episodes in BED (21), outcomes could be improved by psychological treatments with a more specific

focus on the role of emotion. Emotion-focused therapy (EFT) is a compelling treatment for eating disorders and offers a unique framework for understanding the pathogenesis of emotional difficulties (either under-regulating or over-regulating affect) in this population (22). The goal of EFT is to assist clients in processing unpleasant emotions by attending to and increasing awareness and expression of emotion; learning to tolerate and regulate experience; reflecting upon and make meaning of emotion by symbolizing emotional experience in words; and transforming maladaptive emotions by activating healthy, adaptive emotions together with their associated needs and action tendencies (23). EFT allows the therapy to move beyond the tautological trap (24) of being “not ready to change” and to move forward in recovery work.

According to the EFT model, emotion organizes experience through emotion schemes, which are constructed from lived emotional experience (25). Central mechanisms of change in EFT include the use of adaptive emotion to transform maladaptive emotion schemes that are understood to generate chronic enduring pain and maintain rigid and maladaptive modes of responding to experience (26), and a successful therapeutic relationship, in which the client feels empathically heard, understood, supported and safe (27). This, in turn, alters dysfunctional behavior patterns and decreases the likelihood of eating disorder behaviors being used as an emotional coping mechanism (28). While there is a growing body of literature exploring the use of EFT for eating disorders (e.g., 22,23,29,30,), this literature has generally included mixed samples of BED, Anorexia Nervosa (AN) and BN with limited research focusing specifically on BED

To date, only two studies have examined the efficacy of EFT specifically for BED. Compare and Tasca (31) compared the outcome of 20 weeks of emotionally focused group therapy (EFGT), aimed at helping clients change how they experienced and used their emotions, with combined therapy (CT) of EFGT plus dietary counselling, which sought to lower energy-dense food intake in 118 obese adults with BED. Binge episodes and weight significantly declined during both treatments; however, compared to EFGT CT resulted in more rapid weight loss across the weeks of therapy. The dropout rate for EFGT was only 6%. To date, our previous study has been the only study to examine the efficacy of individual EFT for BED (citation blinded for review). This study involved the use of a multiple baseline case series design in which individual EFT over 12 weeks, was applied to six female adult participants with BED, with follow-ups at 2, 4- and 8-weeks posttreatment. All cases experienced reliable recovery from binge-eating psychopathology and also a significant decrease in binge-eating frequency. There was reliable improvement or recovery for eating and shape concerns for all cases, and improvement on weight concern for the majority of cases; and all cases experienced reliable recovery or improvement in overall emotion regulation. Most cases that were in the clinical range for anxiety at pre-treatment recovered, and all cases experienced reliable improvement in, or recovery from, depression. Three of the six cases experienced reliable recovery or improvement in alexithymia. There were no treatment dropouts.

Given the preliminary evidence of the usefulness of individual EFT for BED from our previous case series study, a more extensive pilot trial to further test the efficacy and dropout rate of individual EFT for BED is required. The current study presents results from a pilot randomized waitlist-controlled trial of individual EFT for BED. This pilot study provides not only a further test of the efficacy of BED for EFT, but also a test of the acceptability of the intervention and estimation of sample sizes needed for future larger randomized control trials examining EFT for BED (32). It was hypothesized that participation in the EFT intervention would result in significant improvements in objective binge episodes and days, and binge eating psychopathology (primary

outcomes), and anxiety and depression psychopathology (secondary outcomes) compared with the wait-list control group. It was also hypothesized that EFT would result in a lower dropout rate compared to other psychological interventions for BED.

Method

Design

This study is a pilot randomized control trial (RCT) designed to support the development of a future definitive RCT and it builds upon findings from an initial multiple baseline case series design of EFT for BED (citation blinded for review). Participants were initially randomly allocated to either an EFT treatment intervention or waitlist (12-week clinical monitoring preceding treatment) using a block randomization method (33). This is a commonly used technique in clinical trial design which reduced bias and achieves sample size balance when allocating participants to treatment groups. It is particularly useful for smaller sample sizes and increases the probability that each allocation arm will contain an equal number of individuals by sequencing participant assignments by block. This project was approved by the Queensland University of Technology (QUT) University Human Research Ethics Committee (UHREC) and met the requirements of the National Statement on Ethical Conduct in Human Research (2007). The UHREC Reference number is 1700000986 and all participants provided written informed consent. Consolidated Standards of Reporting Trials (CONSORT) guidelines were fully adhered to – See Figure 1.

Participants

Participants were recruited from local General Practitioners/Primary Care Physicians. Inclusion criteria included the following: being between 18 and 65 years of age, meeting the Diagnostic and Statistical Manual of Mental Disorders: DSM-V American Psychiatric Association – DSM-5 (2013) diagnostic criteria for BED, and possessing sufficient English language skills to provide informed consent and participate in the study without translation. The exclusion criteria included current psychosis, intellectual disability, high suicide risk, drug or alcohol abuse, concurrent treatment for obesity, pregnancy, and the presence of AN or BN. The sample consisted of 21 participants, of whom 17 were female, and 4 were male. The average age was 44.52 ($SD=11.89$) years and the average age at first binge 18.23 ($SD=8.07$) years. Ten participants were married or living with someone as married, 5 separated, 3 never married, 2 divorced and 1 widowed. Six participants had graduated four-year college, 5 graduated two-year college or trade school, 4 completed grades 7-12 (without graduating high school), 3 graduated high school or high school equivalent, 2 partially completed college/trade school and 1 postgraduate/professional school. Eleven participants were employed full-time, 5 part-time employment, 2 keeping house or caregiving full time, 2 in school/training and 1 disabled.

Measures

Assessment

Pretherapy diagnostic assessment of BED was based on the Structured Clinical Interview for DSM-5-Research Version - SCID-5-RV (34). At present, there is limited reliability or validity data available for the SCID-5-RV; however, it has demonstrated internal consistency (.80) and test-retest reliability (35). Previous versions of Structured Clinical Interview for DSM-IV Axis I Disorders - SCID-I (36), however, have demonstrated a high level of inter-rater reliability ($k = .75$) for symptoms and 90% accuracy in diagnosis (37).

Objective binge episodes and days

Changes in objective binge episodes and days (occurrence over the previous 7 days) were assessed using items from the Eating Disorder Examination Questionnaire – EDE-Q-6.0 (38). The EDE-Q-6.0 is a self-report measure of eating disorder psychopathology based on the Eating Disorder Examination Interview (39). It is a widely used measure of eating disorder attitudes and behaviors in both community and clinical populations (40). The EDE-Q-6.0 also provides frequency data on the number of episodes of the eating disorder behavior and the number of days on which the behavior occurred. The items used to measure objective binge episodes (i.e., a discrete episode of overeating of an objectively large amount of food associated with a feeling of loss of control) in the current study were: “Over the past 7 days how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?” and “On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?”. The item used to measure the number of days objective binge episodes occurred was “Over the past 7 days, on how many days have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?”. The EDE-Q-6.0 has received support as a reliable and valid measure of eating-related pathology and specific disordered eating behaviors (41, 42). Test-retest reliability across studies ranges from 0.66 to 0.94 for scores on the four subscales (43). The EDEQ-Q-6.0 has demonstrated acceptable levels of internal consistency ($\alpha = .90$) for the total score in a clinical sample (44). There are no standardized clinical cut-offs (38).

Binge eating psychopathology

Changes in binge-eating psychopathology were assessed using the Binge Eating Scale – BES (45). The BES is a commonly used self-report screening tool for binge eating in clinical practice and research. A total of 16 items are rated using 3-4 separate responses assigned a numerical value. An example of an item is “(a.) I feel capable to control my eating urges when I want to; (b.) I feel like I have failed to control my eating more than the average person; (c.) I feel utterly helpless when it comes to feeling in control of my eating urges; (d.) Because I feel so helpless about controlling my eating I have become very desperate about trying to get in control.” Total scores range from 0 to 46, with higher scores indicating more severe binge-eating symptoms. The BES has demonstrated high test-retest reliability ($r = .71$) and internal consistency ($\alpha = .85$) in an obese population (46), good 2-week test-retest reliability ($r = .87$) in a behavioral weight loss sample (47), high internal consistency ($\alpha = .91$) in a BED sample (48) and good construct reliability and convergent validity (49). Standardized cut-off scores are as follows: ≤ 17 = no binge eating, 18–26 = mild to moderate binge eating, and ≥ 27 = severe binge eating (45).

Psychiatric comorbidity

Anxiety and depression were assessed using the Beck Anxiety Inventory – BAI (50) and Beck Depression Inventory-II – BDI-II (51). The BAI is one of the most used clinical self-rating scales for measuring the intensity of anxiety (52). Respondents are presented with a list of 21 common symptoms of anxiety and indicate how much they have been bothered by that symptom during the past month. Items are rated on a scale of 0 = not at all to 3 = severely. The total score is calculated by summing the ratings for the 21 items with a maximum possible score of 63. The BAI has high internal consistency (.93) and good test-retest reliability (.75) (53), in addition to robust convergent and discriminant validity (54). Standardized cut off scores are as follows: 0-21 = low anxiety, 22-35 = moderate anxiety and >36 = potentially concerning levels of anxiety.

The BDI-II is one of the most widely adopted measures of depressive symptoms (55). The BDI-II measures both cognitive-affective (negative mood or negative affect) and somatic (fatigue or loss of energy) dimensions of depressive symptoms (56). Respondents read 21 groups of statements and then choose the one statement in each group that best describes the way he/she felt in the previous two weeks. Items are rated on a scale of 0 to 3, with higher ratings indicating more severe depressive symptoms. The total score is calculated by summing the 21 items, and the maximum possible score is 63. The BDI-II has sound psychometric properties with high internal consistency ($\alpha=.89$) within the BED population. (9). It also has high test-retest reliability ($r=.73$ to $.96$) and sound concurrent, content, and structural validity across other populations (57). Standardized cut-offs are as follows: 0-13 = minimal depression, 14-19 = mild depression, 20-28 = moderate depression and 29-63 = severe depression (53).

Therapy retention

Participants who completely discontinued attendance were considered dropouts.

Procedures

Participants were initially telephone-screened for BED based on diagnostic criteria, according to DSM-5 (2013). Twenty-eight participants were telephone-screened, of which five did not meet the diagnostic criteria for BED. Twenty-three participants meeting the diagnostic criteria for BED then completed the SCID-5-RV administered by a research assistant with training in clinical psychology. All met the inclusion criteria, but 1 participant chose not to participate due to being unable to commit fully to weekly treatment sessions, and 1 participant did not respond to contact attempts. Twenty-one participants were randomly allocated to either an EFT intervention or 12-week waitlist using a block randomization method by a statistician independent to the research team.

Participants allocated to the EFT intervention initially completed the BES, EDE-Q-6.0, BDI-II and BAI at pretherapy (Week 0). The BES and EDE-Q-6.0 were completed weekly during treatment (Weeks 1-12), and the BES, EDE-Q-6.0, BDI-II and BAI were completed at follow-up (Weeks 16, 20 and 24). Participants allocated to

the waitlist control completed the BES, EDE-Q-6.0, BDI-II and BAI at pretherapy (Week 0), and then again 12 weeks later post waitlist period completion. Waitlist control participant then commenced 12 weekly treatment sessions and followed the same protocol as participants initially allocated to the treatment intervention. The therapist was blind to all assessments and randomizations of the participants.

Treatment

Treatment incorporated 12 weekly one-hour sessions of EFT for maladaptive emotion over three months. The treatment manual was initially adapted from Wnuk et al. (30) by (citation blinded for review) in a series of case studies exploring the use of individual EFT to treat BED. Phase 1 of the treatment focused on promoting awareness of emotions, welcoming and accepting emotions, putting emotions into words, and identifying primary emotions. Phase 2 focused on evaluating whether the primary emotion was adaptive or maladaptive, identifying destructive emotions, accessing other adaptive emotions and needs, and transforming maladaptive emotion schemes. Six main marker guided interventions were used in treatment in line with EFT protocol (25,27). These were: 1. Empathic attunement and validation for vulnerability and establishing the therapeutic alliance 2. Evocative unfolding for problematic reactions 3. Experiential focusing for unclear feelings 4. Two-chair dialogues for self-critical splits 5. Two-chair enactment for self-interruptive splits and 6. Empty chair work for unfinished business.

Therapist

The therapist was the first author, a Clinical Psychologist with 25 years of practice experience who had undergone Level 1, 2 and 3 training in EFT at the York University Psychology Clinic with the primary developer of this approach, Distinguished Professor

Emeritus, Leslie Greenberg. The therapist had approximately four years of EFT-specific practice experience before the study and was not involved in the initial treatment/waitlist randomization process, data collection before or during the study, or data analysis until after the study. Supervision was provided by Distinguished Professor Emeritus, Leslie Greenberg who was also a co-author of the original treatment manual used as a basis for therapy within the current study. Adherence to EFT protocol was reviewed - and rectified where necessary - during supervision based on video recordings of study treatment sessions.

Statistical Analyses Plan

Initially, a between-group examination was conducted in relation to any significant differences between the 10 participants in the EFT intervention and 10 participants in the waitlist control on demographics at baseline. A series of 2 (Group) x 2 (Time) repeated measures analyses of variance (ANOVA) were then used to test the hypothesis that those receiving the treatment would demonstrate a greater degree of improvement on primary outcomes measures relating to objective binge episodes and days, and binge eating psychopathology compared to participants on the waitlist. Following the between-group analysis, a within-group examination was then conducted in relation to any significant differences between the 20 participants who completed treatment on demographics. A series of within-groups repeated measures analyses of variance (ANOVA) was

then conducted to test the hypothesis that participation in the EFT intervention would result in significant improvements in the primary and secondary outcome measures from pre to post-therapy and then maintained at each follow-up period

Results

Demographics

Between-group differences

No significant differences were found between the intervention and waitlist control groups in relation to mean age (years), mean age at first binge (years), gender, marital status, education, and employment status. See Table 1.

Table 1
Participant demographics by treatment group at randomization.

	EFT Group (n=10)	Control group (n=10)		
Demographic	<i>M</i> (SD) or <i>f</i>	<i>M</i> (SD) or <i>f</i>	t (df) or χ^2	<i>p</i> -value
Age (years)	42.00 (13.16)	45.80 (10.73)	.67 (18)	.49
Age first binge (years)	16.10 (7.50)	18.20 (5.49)	.73 (18)	.49
Gender				
Male	2	2	.000	1.00
Female	8	8		
Marital Status				
Married/living with someone as if	4	5	1.64	.80
Widowed	1	0		
Divorced or annulled	1	1		
Separated	3	2		
Never married	1	2		
Education				
Grades 7-12 (without graduating)	1	2	1.86	.87
Graduated high school/equivalent	2	1		
Part college/trade school	1	1		
Graduated 2-year college or trade	2	3		
Graduated 4-year college	3	3		
Part graduate/professional school	1	0		
Employment Status				
Full-time job	4	6	7.20	.13

Part-time job	1	4
Keeping house or caregiving	2	0
In school/training	2	0
Disabled	1	0

Primary Outcome Measures

Between-group changes

Table 2 outlines the between-group changes.

Table 2

Mean EFT (n=10) and Control (n=10) group EDEQ and BES pretherapy and posttherapy/postwaitlist scores

Outcome	Pretherapy		Posttherapy/Postwaitlist		<i>F</i>	<i>p</i> -value	η_p^2	Cohen's <i>d</i>
	EFT Group <i>M</i> (SD)	Control Group <i>M</i> (SD)	EFT Group <i>M</i> (SD)	Control Group <i>M</i> (SD)				
EDEQ objective binge episodes	6.90 (6.33)	5.10 (3.03)	2.90 (2.88)	5.10 (2.84)	6.85	.017	.276	.98
EDEQ objective binge episode days	4.20 (2.15)	4.40 (2.41)	1.50 (1.64)	4.70 (2.31)	40.09	.001	.690	1.39
BES binge eating psychopathology	25.60 (9.65)	28.30 (6.93)	20.70 (11.77)	29.20 (7.98)	12.12	.003	.402	.62

EDEQ Eating Disorders Examination Questionnaire *BES* Binge Eating Scale

Objective binge episodes and days, and binge eating psychopathology.

Compared with the waitlist control group, the intervention group showed significantly greater reductions in objective binge episodes with a large treatment effect ($d=.98$). When compared with the waitlist control group, the intervention group experienced significantly greater reductions in objective binge episode days with a very large treatment effect ($d=1.39$). Finally, compared with the waitlist control group, the intervention group displayed significantly greater reductions in binge eating psychopathology with a moderate treatment effect ($d=.62$).

Within-group changes

Figure 2 and Table 3 outline within-group changes.

Table 3
Mean EDEQ and BES pretherapy, posttherapy and follow up scores(n=20)

	Pretherapy ¹ <i>M(SD)</i>	Posttherapy ² <i>M(SD)</i>	<i>F</i>	<i>p</i> - value	η_p^2	Cohen's <i>d</i>
Outcome						
EDEQ objective binge episodes	6.0 (4.92)	2.05 (2.39)	19.70	.001	.509	.99
EDEQ objective binge episode days	4.30 (2.23)	1.25 (1.33)	45.93	.001	.707	1.51
BES binge eating psychopathology	26.95 (8.30)	18.65 (10.45)	24.50	.001	.563	1.10
	Posttherapy ² <i>M(SD)</i>	Follow-up ³ <i>M(SD)</i>	<i>F</i>	<i>p</i> - value	η_p^2	Cohen's <i>d</i>
EDEQ objective binge episodes	2.05 (2.39)	1.45 (1.90)	1.21	.285	.060	.25
EDEQ objective binge episode days	1.25 (1.33)	1.60 (1.82)	.721	.406	.037	.19
BES binge eating psychopathology	18.65 (10.45)	17.80 (14.69)	.172	.683	.009	.09
	Pretherapy ¹ <i>M(SD)</i>	Follow-up ³ <i>M(SD)</i>	<i>F</i>	<i>p</i> - value	η_p^2	Cohen's <i>d</i>
EDEQ objective binge episodes	6.0 (4.92)	1.45 (1.90)	17.21	.001	.475	.93
EDEQ objective binge episode days	4.30 (2.23)	1.60 (1.82)	31.40	.001	.623	1.25
BES binge eating psychopathology	26.95 (8.30)	17.80 (14.69)	13.38	.002	.413	.82
BAI anxiety psychopathology	13.15 (11.84)	8.25 (9.50)	6.97	.016	.269	.59
BDI depression psychopathology	16.10 (11.81)	14.25 (14.28)	.311	.584	.016	.12
<i>EDEQ</i> Eating Disorders Examination Questionnaire <i>BES</i> Binge Eating Scale <i>BAI</i> /Beck Anxiety Inventory <i>BDI</i> Beck Depression Inventory						

Objective binge episodes.

There was a significant decrease in objective binge episode frequency within-group scores measured over sixteen-time points including baseline (Week 0), treatment sessions (Week 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12) (Weeks 1 to 12), and follow up at one month (Weeks 16), two months (Week 20) and three months (Week 24) [$F(1, 2.33)=4.43, p<.014, \eta^2 = .189$]. Mauchly's Test of Sphericity indicated that the assumption of sphericity was violated [$\chi^2(119) = 501.42, p<.001$] and therefore, the Huynh-Feldt correction was used for the ANOVA. The analyses of the changes in objective binge episodes are shown in Table 3.

Pretherapy objective binge episodes significantly decreased from 6.00 ($SD=4.92$) to 2.05 ($SD=2.39$) posttherapy with a large effect size ($d=.99$). Mean objective binge episode frequency scores significantly decreased from 6.00 ($SD=4.92$) pretherapy to 1.45 ($SD=1.90$) at 3-month follow-up with a moderate to large effect size ($d=.93$). There was no significant difference between posttherapy and 3 months offollow-up scores, suggesting that treatment gains were maintained.

Objective binge episode days.

There was a significant decrease in objective binge episode days within-group scores measured over sixteen-time points including baseline (Week 0), treatment sessions (Week 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12) (Weeks 1 to 12), and follow up at one month (Weeks 16), two month (Week 20) and three month (Week 24) [$F(1, 8.44)=8.78, p<.001, \eta^2 = .316$]. Mauchly's Test of Sphericity indicated that the assumption of sphericity was violated [$\chi^2(119) = 245.12, p<.001$] and therefore, the Huynh-Feldt correction was used for the ANOVA. The analyses of the changes in objective binge episode days are shown in Table 3. Mean objective binge episode days decreased from 4.30 ($SD=2.23$) pretherapy to 1.25 ($SD=1.33$) posttherapy with a very large effect size ($d=1.51$). Mean objective binge episode days also significantly decreased from 4.30 ($SD=2.23$) pretherapy to 1.60 ($SD=1.82$) at 3-month follow-up with a very large effect size ($d=1.25$). There was no significant difference between posttherapy and 3 months offollow-up scores, suggesting that treatment gains were maintained.

Binge eating psychopathology.

There was a significant decrease in binge eating psychopathology within-group scores measured over sixteen-time points including baseline (Week 0), treatment sessions (Week 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12) (Weeks 1 to 12), and follow up at one month (Weeks 16), two month (Week 20) and three month (Week 24) [$F(1, 4.04)=9.84, p<.001, \eta^2 = .341$]. Mauchly's Test of Sphericity indicated that the assumption of sphericity was violated [$\chi^2(119) = 314.28, p<.001$] and therefore, the Huynh-Feldt correction was used. Pretherapy mean BES scores significantly decreased from 26.95 ($SD=8.29$) to 18.65 ($SD=10.45$) posttherapy with a large effect size ($d=1.10$) [see Table 3]. Pre to posttherapy, the number of participants with severe binge eating range decreased

from 14 to 6, and the number of non-binge eating participants increased from 3 to 11. There were 3 participants with mild to moderate binge eating at pre and posttherapy. Mean BES scores significantly decreased from 26.95 ($SD=8.30$) pretherapy to 17.80 ($SD=14.69$) at 3-month follow-up with a large effect size ($d=.82$). At 3-month follow-up there were 12 participants in the non-binge eating range, 1 mild to moderate and 7 in the severe range. There was no significant difference between posttherapy and 3-month follow-up scores, indicating that treatment gains were maintained.

Secondary Outcome Measures

Within-group changes

Anxiety psychopathology.

There was a significant within-group decrease in anxiety psychopathology scores measured over four-time points including baseline (Week 0) and follow up at one month (Weeks 16), two months (Week 20) and three months (Week 24) [$\chi^2(5) = 15.53, p<.008$]. Mauchly's Test of Sphericity indicated that the assumption of sphericity was not violated. Mean BAI scores significantly decreased from 13.15 ($SD=11.84$) pretherapy to 8.25 ($SD=9.50$) at 3-month follow-up with a moderate effect size ($d=.59$) [see Table 3]. At pretherapy, there were 3 participants in the severe range, 3 moderate, 5 mild, and 9 minimal. At 3-month follow-up, there were 2 participants in the severe range, 3 moderate, 2 mild and 13 minimal.

Depression psychopathology.

There was no significant within-group decrease in depression psychopathology scores measured over four-time points including baseline (Week 0) and follow up at one month (Weeks 16), two months (Week 20) and three months (Week 24) [$F(1, 1.30) = .247, p<.686, \eta p^2 = .013$]. Mauchly's Test of Sphericity indicated that the assumption of sphericity was violated [$\chi^2(5) = 50.13, p<.001$] and therefore, the Huynh-Feldt correction was used for the ANOVA. Mean BDI scores decreased from 16.10 ($SD=11.81$) at pretherapy to 14.25 ($SD=14.27$) at 3 months follow-up, which was not significant (see Table 3). At pretherapy, there were 2 participants in the severe range, 5 moderate, 5 mild and 8 minimal. At 3-month follow-up, there were 3 in the severe range, 4 moderate, and 13 minimal.

Therapy retention.

One participant (4.76%) dropped out after Week 4 of the EFT treatment for family health reasons. All completing participants attended all sessions.

Discussion

To our knowledge this is the first pilot randomized controlled trial to test the efficacy of individual EFT for BED. Compared to participants on the waitlist, those receiving the EFT treatment demonstrated a significantly greater degree of improvement in objective binge episodes and days with large treatment effect sizes, and binge eating psychopathology with a moderate treatment effect size. An examination of the whole sample of treatment completers (20 participants) indicated that participation in the EFT intervention resulted in significant improvements in objective binge episodes and days, and binge eating psychopathology from pre to post-therapy and that these gains were maintained over follow-up. Treatment gains in relation to objective binge episodes and days, and binge eating psychopathology were maintained at 3 months follow-up. Interestingly, however, there was a consistent decrease in mean binge eating psychopathology scores from post-therapy (Week 12) through to 3 months follow-up (24 weeks), whereas objective binge episode frequency and objective binge episode days scores fluctuated. These changes, however, from posttherapy and 3 months follow-up were not statistically significant.

The number of participants classified as non-binge eating according to the BES in the current study was 11/20 (55%) at the end of treatment and 12/20 (60%) at three months follow up; and weekly mean objective binge episodes (in the previous 7 days) scores were 2.05 at the end of treatment and 1.45 at three months follow up. These findings compare favorably with results from a systematic review and network meta-analysis of the comparative effectiveness of treatments for BED (59) where abstinence rates for therapist-led, partially therapist-led and structured self-help variants of CBT ranged from 17.9% to 86.7% at the end of treatment, and 20.8% to 84.6% at twelve-month follow-up; and binge episodes (in the previous 28 days) ranged from an average of 11.9 to .04 at the end of treatment, and 16.2 and .5 at twelve-month follow up (60,61,62).

The EFT for BED 4.76% dropout rate in the current study also compares favorably with dropout rates for other psychological treatment approaches for this condition including CBT - 11.1% (63) and 21.3% (64); Guided self-help cognitive behavior therapy (CBTgsh) - 30% (60); IPT - 8.6% (59) and 7% dropout rate (65); DBT - 4% (66) and group psychodynamic interpersonal psychotherapy (GPIP) - 22.9% (64). EFT for BED yielded large posttherapy effect sizes compared with the waitlist control on primary outcomes measures relating to objective binge episodes ($d=.98$) and objective binge episode days ($d=1.39$) as measured by the EDEQ, and a moderate posttherapy effect size relating to binge eating psychopathology ($d=.62$) as measured by the BES. The current findings compare favorably with posttherapy effect sizes for pooled primary outcome measures using bona fide vs non-bona fide therapies ($d=.36$) and CBT versus non-bona fide CBT ($d=.30$) for BED (10).

In terms of changes to the secondary outcome measures, individual EFT for BED resulted in significant improvements in anxiety but not depression psychopathology. These findings, however, need to be interpreted with caution given that 14 participants were in the mild or minimal range for anxiety psychopathology and 13 participants were in the mild or minimal range for depression psychopathology at pretherapy. This indicates that most participants were not experiencing severe or moderate anxiety or depression symptoms before completion of the EFT intervention. It is also noted that anxiety and depression psychopathology were only measured at pretherapy and follow-up but not during weekly treatment sessions which resulted in a brief snapshot of participant progress rather than a more accurate picture of changes over time.

The following future sample size calculations were made using GPower 3.1.9.2 with alpha = .05, power = 0.95, 2 groups and 4-time points. Using our between-group effect size for objective binge eating frequency ($d=.98$) future studies comparing EFT to a waitlist control group will need a minimum sample size of 12. However, if comparing individual EFT with an active psychotherapy ($d=0.82$; (58)) then future studies would require a minimum sample size of 320 participants to find an effect. Using our between-group effect size for days without bingeing and loss of control ($d=1.39$) then future studies comparing EFT to a waitlist control group will need a minimum sample size of 8 participants. If comparing EFT with an active psychotherapy ($d=1.04(58)$), then future studies will need a minimum of 70 participants to find an effect.

The main limitation of the current research is the relatively small sample size which may limit the extent to which the sample is representative of people with binge eating disorder. Additionally, the majority of the sample was female and outcome measures were confined to self-report measures which limited a participant's descriptions of attitudes and behaviors to those within their awareness. Furthermore, the secondary outcomes measures associated with anxiety and depression psychopathology were administered at pretherapy and follow-up only. Post-treatment follow-up at 16, 20 and 24 weeks was also relatively short, which limited the analysis of participant trajectory and capacity to maintain gains. Finally, therapist effects cannot be ruled out given that the same therapist delivered the treatment, however, a recent investigation indicated that therapist effects account for only 5.8% of the variance in patient outcomes (e.g., 67).

The present study has several implications. Firstly, it provides further preliminary evidence that EFT may be an efficacious treatment for BED and builds upon previous findings (e.g., 31,68). It also identified changes in objective binge episodes and days, binge eating psychopathology, and anxiety psychopathology that are theoretically important to EFT including emotion and emotion regulation. The dropout rate was also relatively low compared to other psychological therapy interventions for BED which indicates acceptability of the EFT intervention.

Conclusions

In conclusion, the evidence is emerging for the benefits of EFT for BED which has a focus on assisting clients to experience and process unpleasant emotions and decreasing the reliance on an eating disorder as an emotional coping mechanism. Future research assessing EFT for BED needs to include a more extensive randomized control trial with a larger sample size to establish causal conclusions and equal gender representation to improve the generalizability of findings. Consideration could also be given to a more extended follow-up period to improve the analysis of participant trajectory and capacity to maintain gains and the use of more than one therapist to rule out therapist effects.

Abbreviations

ANOVA: Analyses of variance; BAI: Beck Anxiety Inventory; BDI-II: Beck Depression Inventory-II; BED: Binge-eating disorder; BES: Binge Eating Scale; BN: Bulimia nervosa; CBT: Cognitive behavior therapy; CBTgsh: Guided self-help cognitive behavior therapy; CONSORT: Consolidated Standards of Reporting Trials; CT: Combined therapy; DBT: Dialectical behavior therapy; DSM-5: Diagnostic and Statistical Manual of Mental Disorders: DSM-V; EDE-Q-6.0: Eating Disorder Examination Questionnaire 6.0; EFGT: Emotionally focused group

therapy;EFT: Emotion-focused therapy;GPIP: Group psychodynamic interpersonal psychotherapy;IPT: Interpersonal therapy;NICE: National Institute of Clinical Excellence;QUT: Queensland University of Technology;RCT: Randomized control trial;SCID-5-RV: Structured Clinical Interview for DSM-5-Research Version;SCID-I: Structured Clinical Interview for DSM-IV Axis I Disorders;SD: Standard deviation;UHREC: University Human Research Ethics Committee

Declarations

Acknowledgements

We gratefully acknowledge the clients who participated in the study, and Kathleen Edwards – Research Assistant for the administration of the SCID-5-RV and data entry.

Author's contributions

KG, ES and RK designed the study; KG performed the treatment and LG provided clinical supervision. KG and ES analyzed the data; and KG, ES, RK and LG drafted the manuscript. All author(s) read and approved the final manuscript.

Funding

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

This project was approved by the Queensland University of Technology University Human Research Ethics Committee (UHREC) and met the requirements of the National Statement on Ethical Conduct in Human Research (2007). Consolidated Standards of Reporting Trials (CONSORT) guidelines were fully adhered to. Written informed consent was obtained from each participant after a full explanation of the study procedure.

Consent for publication

All authors of the manuscript have read and agreed to its content and are accountable for all aspects of the accuracy and integrity of the manuscript in accordance with ICMJE criteria. The manuscript has not already been published in a journal and is not currently under consideration by another journal.

Competing interests

The authors declare that they have no competing interests.

Author details

^{1,2,3}Queensland University of Technology, Faculty of Health – School of Psychology and Counselling, Queensland, Australia. ⁴York University, Faculty of Health - Department of Psychology, Toronto, Canada

References

1. Kornstein S. Epidemiology and recognition of binge-eating disorder in psychiatry and primary care. *J Clin Psychiatry*. 2017;78(1):3-8.
2. The National Eating Disorders Collaboration. 2010. Eating disorders prevention, treatment and management: An evidence review. Sydney: NEDC.
3. Hay P, Girosi F, Mond J. Prevalence and sociodemographic correlates of DSM-5 eating disorders in the Australian population. *J Eat Disord*. 2015;3(1):19–25.
4. American Psychiatric Association. 2013. Diagnostic and statistical manual of mental disorders (5th ed.). Arlington, VA: American Psychiatric Association.
5. Dingemans A, Danner U, Parks M. Emotion regulation in binge eating disorder: A review. *Nutrients*. 2017;9(11):1274.
6. Becker, D., Jostmann, N., & Holland, R. Does approach bias modification really work in the eating domain? A commentary on Kakoschke et al. (2017). *AddBehav*. 2018;77:293–294.
7. Blomquist KK, Grilo CM. Family histories of anxiety in overweight men and women with binge eating disorder: A preliminary investigation. *Compr Psychiatry*. 2015;62:161-9.
8. Araujo DMR, Santos GFDS, Nardi AE. 2010. Binge eating disorder and depression: A systematic review. *World J Biol Psychiatry*. 2000;11(2-2):199–207.
9. Udo T, McKee SA, Grilo CM. Factor structure and clinical utility of the Beck Depression Inventory in patients with binge eating disorder and obesity. *Gen Hosp Psychiatry*. 2014;37(2):120-125.
10. Spielmans G, Benish S, Marin C, Bowman W, Menster M, Wheeler A. Specificity of psychological treatments for bulimia nervosa and binge eating disorder? A meta-analysis of direct comparisons. *Clin Psychol Rev*. 2013;33(3):460–469.
11. American Psychiatric Association. Treatment of patients with eating disorders. Third edition. *Am J Psychiatry*. 2006;163(7):4–54.
12. National Collaborating Centre for Mental Health. Eating disorders core interventions in the treatment and management of anorexia nervosa, bulimia nervosa, and related eating disorders. 2004. Place of publication not identified: British Psychological Society.
13. Wampold B, Mondin G, Moody M, Stich F, Benson K, Ahn H. A meta-analysis of outcome studies comparing bona fide psychotherapies: Empirically, 'all must have prizes'. *Psychol Bull*. 1997;122(3):203–215.

14. Linardon J. Review of Rates of abstinence following psychological or behavioural treatments for binge-eating disorder: Meta-analysis. *Int J Eat Disord.* 2018;51(8):785–797.
15. Leehr EJ, Krohmer K, Schag K, Dresler T, Zipfel S, Giel KE. Emotion regulation model in binge eating disorder and obesity - A systematic review. *Neurosci Biobehav Rev.* 2015;49:125–134.
16. Gross J. The emerging field of emotion regulation: An integrative review. *Rev Gen Psychol.* 1998;2(3):271-299.
17. Iacovino J, Gredysa D, Altman M, Wilfley D. Psychological Treatments for Binge Eating Disorder. *Curr Psychiatry Rep.* 2012;14(4):432–446.
18. Blocher-McCabe E, La Via M, Marcus MD. (2004). Dialectical behaviour therapy for eating disorders. In K. Thompson (Ed.), *Handbook of eating disorders and obesity* (pp. 232–245). Hoboken, NJ: John Wiley & Sons.
19. Brockmeyer T, Skunde M, Wu M, Bresslein E, Rudofsky G, Herzog W, Friederich H C. Difficulties in emotion regulation across the spectrum of eating disorders. *Compr Psychiatry.* 2014;55(3):565–571.
20. Kenny T, Singleton C, Carter J. Testing predictions of the emotion regulation model of binge-eating disorder. *Int J Eat Disord.* 2017;50(11):1297–1305.
21. Svaldi J, Tuschen-Caffier B, Trentowska M, Caffier D, Naumann E. Differential caloric intake in overweight females with and without binge eating: Effects of a laboratory-based emotion-regulation training. *Behav Res Ther.* 2014;56(1):39–46.
22. Dolhanty J, Greenberg LS. Emotion-focused therapy in the treatment of eating disorders. *Eur Psychother.* 2007;7:97–116.
23. Ivanova I, Watson J. Emotion-focused therapy for eating disorders: Enhancing emotional processing. *Person-Centered & Experiential Psychotherapies.* 2014;13(4):278–293.
24. Vitousek K, Watson S, Wilson G. Enhancing motivation for change in treatment-resistant eating disorders. *Clin Psychol Rev.* 1998;18(4):391–420.
25. Greenberg LS. 2010. *Emotion-focused therapy.* Washington, DC: American Psychological Association.
26. Greenberg LS. 2002. *Emotion-focused therapy: Coaching clients to work through their feelings.* Washington, DC: American Psychological Association.
27. Elliott R, Watson JC, Goldman RN, Greenberg LS. (2004). *Learning emotion-focused therapy: The process experiential approach to change.* Washington, DC: American Psychological Association.
28. Robinson AL, Dolhanty J, Greenberg L. Emotion-focused family therapy for eating disorders in children and adolescents. *Clin Psychol Psychother.* 2013;22(1):75–82.
29. Brennan MA, Emmerling ME, Whelton WJ. Emotion-focused group therapy: Addressing self-criticism in the treatment of eating disorders. *Couns Psychother Res.* 2015;15(1):67–75.
30. Wnuk SM, Greenberg L, Dolhanty J. Emotion-focused group therapy for women with symptoms of bulimia nervosa. *Eat Disord.* 2015;23(3):253–261.
31. Compare A, Tasca GA. The rate and shape of change in binge-eating episodes and weight: An effectiveness trial of emotionally focused group therapy for binge-eating disorder. *Clin Psychol Psychother.* 2016;23(1):24–34.

32. Lancaster GA, Dodd S, Williamson PR. Design and analysis of pilot studies: Recommendations for good practice. *J Eval Clin Pract.* 2004;10(2):307-312.
33. Efrid J. Blocked randomization with randomly selected block sizes. *Int J Environ Res Public Health.* 2011;;8(1):15-20.
34. First MB, Williams JBW, Karg RS, Spitzer RL. 2015. Structured Clinical Interview for DSM-5-Research Version (SCID-5 for DSM-5, Research Version; SCID-5-RV). Arlington: American Psychiatric Association.
35. Shankman S, Funkhouser C, Klein D, Davila J, Lerner D, Hee D. Reliability and validity of severity dimensions of psychopathology assessed using the Structured Clinical Interview for DSM-5 (SCID. *Int J Methods Psychiatr Res.* 2018;27(1).
36. First M, Spitzer R, Gibbon M, Williams J. 1996. Structured clinical interview for DSM-IV-TR Axis I disorders, research version, patient edition. (SCID-I/P). New York, NY: Biometrics Research, New York State Psychiatric Institute.
37. Ventura J, Liberman RP, Green MF, Shaner A, Mintz J. Training and quality assurance with the structured clinical interview for DSM-IV (SCID-I/P). *Psychiatry Research.* 1998;79(2):163–173.
38. Fairburn CG, Beglin SJ. Assessment of eating disorders: Interview or self-report questionnaire? *Int J Eat Disord.* 1994;16(4):363–370.
39. Fairburn CG, Cooper Z. 1993. The eating disorder examination. In C. G. Fairburn & G. T. Wilson (Eds.), *Binge eating: Nature, assessment and treatment* (pp. 317–360). New York, NY: Guilford Press.
40. Rose JS, Vaewsorn A, Rosselli-Navarra F, Wilson G, Weissman R. Test-retest reliability of the eating disorder examination-questionnaire (EDE-Q) in a college sample. *J Eat Disord.* 2013;1(1):43–52.
41. Mond J, Hay P, Rodgers B, Owen C, Beumont P. Validity of the Eating Disorder Examination Questionnaire (EDE-Q) in screening for eating disorders in community samples. *Behav Res Ther.* 2004;42(5):551–567.
42. Reas DL, Grilo CM, Masheb RM. Reliability of the eating disorder examination-questionnaire in patients with binge eating disorder. *Behav Res Ther.* 2006;44(1)43–51.
43. Berg KC, Peterson CB, Frazier P, Crow SJ. Psychometric evaluation of the eating disorder examination and eating disorder examination-questionnaire: A systematic review of the literature. *Int J Eat Disord.* 2012;45(3):428–438.
44. Peterson C, Crosby R, Wonderlich S, Joiner T, Crow S, Mitchell J. et al. Psychometric properties of the eating disorder examination-questionnaire: Factor structure and internal consistency. *Int J Eat Disord.* 2007;40(4):386–389.
45. Gormally J, Black S, Daston S, Rardin D. The assessment of binge eating severity among obese persons. *Add Behav.* 1982;7(1):47–55.
46. Dezhkam M, Moloodi R, Mootabi F, Omidvar N. Standardization of the binge eating scale among an Iranian obese population. *Iran J Psychiatry.* 2009;4(4):143-146.
47. Timmerman GM. Binge eating scale: Further assessment of validity and reliability. *J Appl Biobehav Res.* 1999;4(1):1–12.
48. Carano A, De Berardis D, Gambi F, Di Paolo C, Campanella D, Pelusi, L, et al. Alexithymia and body image in adult outpatients with binge eating disorder. *Int J Eat Disord.* 2006;39(4):332–340.

49. Duarte C, Pinto-Gouveia J, Ferreira C. Expanding binge eating assessment: Validity and screening value of the Binge Eating Scale in women from the general population. *Eat Behav.* 2015;18:41–47.
50. Beck AT, Epstein N, Brown G, & Steer RA. An inventory for measuring clinical anxiety: Psychometric properties. *J Consult Clin Psychol.* 1988;56(6):893–897.
51. Beck AT, Steer RA, Brown OK. (1996). *Beck depression inventory manual* (2nd ed.). San Antonio, TX: Psychological Corporation.
52. Stulz N, Crits-Christoph P. Distinguishing anxiety and depression in self-report: Purification of the beck anxiety inventory and beck depression inventory-II. *J Clin Psychol.* 2010;66(9):927–940.
53. Beck AT, Steer RA. (1993). *Beck anxiety inventory manual*. San Antonio, TX: Psychological Corporation.
54. Fydrich T, Dowdall D, Chambless, D. Reliability and validity of the Beck Anxiety Inventory. *Journal of Anxiety Disorders.* 1992;6(1):55–61.
55. Aloj, M, Rania, M, Caroleo, M, Bruni, A, Palmieri, A, Cauteruccio, MA, et al.. Decision making, central coherence and set-shifting: A comparison between binge eating disorder, anorexia nervosa and healthy controls. *BMC Psychiatry.* 2015;15(1):6–15.
56. Kapfhammer HP. Somatic symptoms in depression. *Dialogues Clin Neurosci.* 2006;8(2):227–239.
57. Wang YP, Gorenstein C. Psychometric properties of the Beck Depression Inventory-II: A comprehensive review. *Braz J Psychiatry.* 2013;35(4):416–431.
58. Vocks S, Tuschen-Caffier B, Pietrowsky R, Rustenbach SJ, Kersting A, Herpertz S. Meta-analysis of the effectiveness of psychological and pharmacological treatments for binge eating disorder. *Int J Eat Disord.* 2010;43(3):205-217.
59. Peat C, Berkman N, Lohr K, Brownley K, Bann C, Cullen K, et al Review of Comparative effectiveness of treatments for binge-eating disorder: Systematic review and network meta-analysis. *Eur Eat Disord Rev.* 2017;25(5):317–328.
60. Peterson C, Mitchell J, Engbloom S, Nugent S, Mussell M, Crow S, Thuras P. Self-help versus therapist-led group cognitive-behavioral treatment of binge eating disorder at follow-up. *Int J Eat Disord.* 2001;30(4):363–374.
61. Peterson C, Mitchell J, Engbloom S, Nugent S, Mussell M, Miller J. Group cognitive-behavioral treatment of binge eating disorder: a comparison of therapist-led versus self-help formats. *Int J Eat Disord.* 1998;24(2):125–136.
62. Peterson C, Mitchell J, Crow S, Crosby R, Wonderlich S. The Efficacy of Self-Help Group Treatment and Therapist-Led Group Treatment for Binge Eating Disorder. *Am J Psychiatry.* 2009;(12):1347–1354.
63. Wilfley DE, Welch RR, Stein RI, Spurrell EB, Cohen LR, Saelens BE, et al. A randomized comparison of group cognitive-behavioral therapy and group interpersonal psychotherapy for the treatment of overweight individuals with binge-eating disorder. *Arch Gen Psychiatry.* 2002;59(8):713–721.
64. Tasca GA, Ritchie K, Conrad G, Balfour L, Gayton J, Lybanon V, Bissada H. Attachment scales predict outcome in a randomized controlled trial of two group therapies for binge eating disorder: An aptitude by treatment interaction. *Psychotherapy Research.* 2006;16(1):106–121.
65. Wilson GT, Wilfley DE, Agras WS, Bryson SW. Psychological treatments of binge eating disorder. *Arch Gen Psychiatry.* 2010;67(1):94–101.

66. Safer DL, Robinson AH, Jo B. Outcomes from a randomized controlled trial of group therapy for binge eating disorder: Comparing dialectical behavior therapy adapted for binge eating to an active comparison group therapy. *Behav Ther.* 2010;41(1):106–120.
67. Saxon D, Firth N, Barkham M. The relationship between therapist effects and therapy delivery factors: Therapy modality, dosage, and non-completion. *Adm Policy Ment Health.* 2017;44(5):705–715.
68. Glisenti K, Strodl E, King R. Emotion-focused therapy for binge-eating disorder: A review of six cases. *Clinical Psychology and Psychotherapy.* 2018;25(6):842-855.

Figures

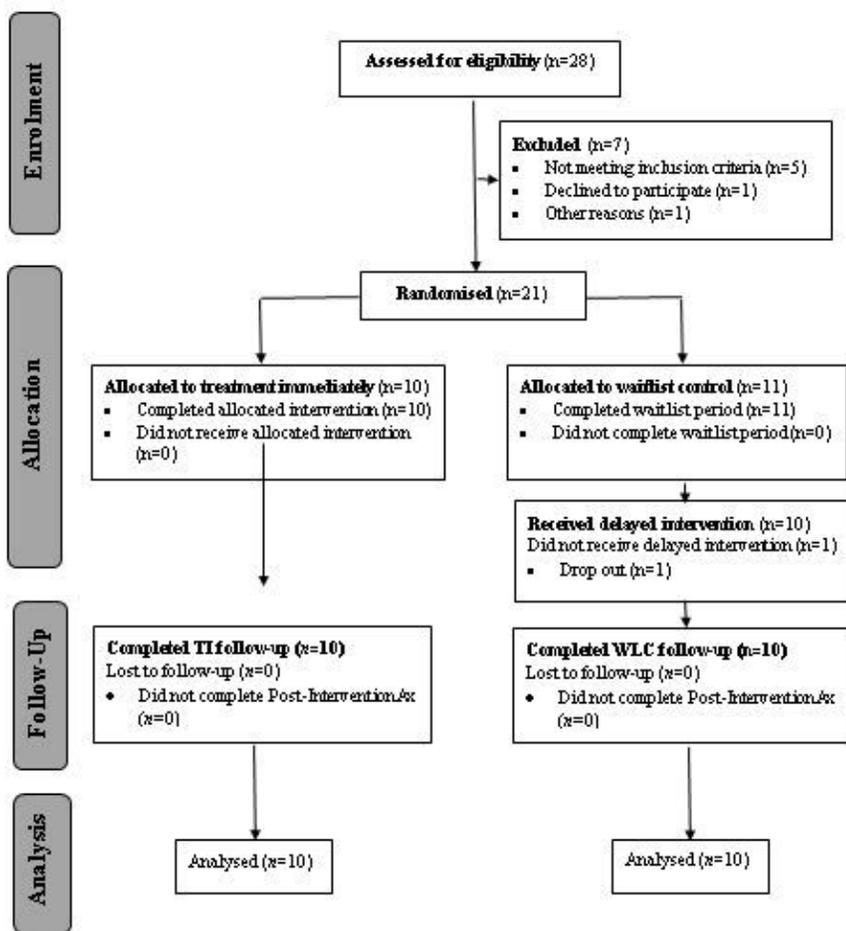


Figure 1

CONSORT flow diagram.

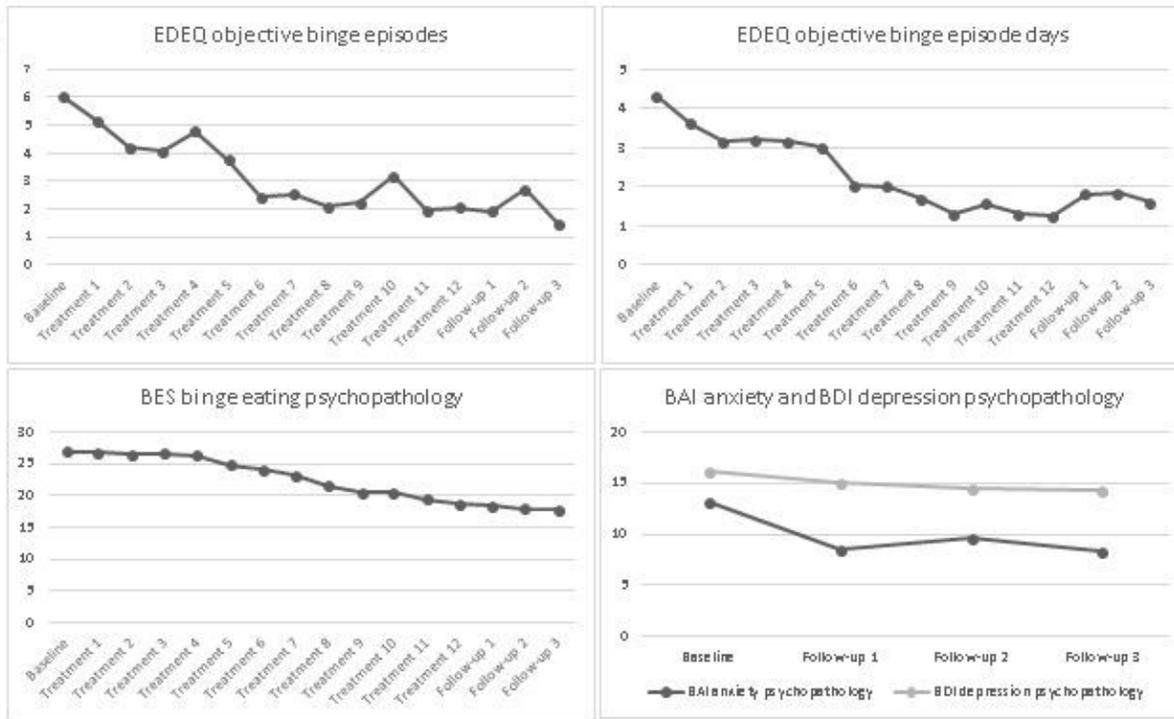


Figure 2

Mean EDEQ and BES pretherapy, treatment and follow-up scores, and mean BAI and BDI pretherapy and follow-up scores (n=20)