



BEfree: a new psychological program for binge eating that integrates psychoeducation, mindfulness and compassion.

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Abstract

Background: Binge Eating Disorder (BED) is associated with several psychological and medical problems, such as obesity. Approximately 30% of individuals seeking weight loss treatments present BE symptomatology. Moreover, current treatments for BED lack efficacy at follow-up assessments. Developing mindfulness and self-compassion seem to be beneficial in treating BED, although there is still room for improvement, which may include integrating these different but complimentary approaches. BEfree is the first program integrating psychoeducation, mindfulness and compassion-based components for treating women with BE and obesity.

Objective: to test the acceptability and efficacy up to 6-months post-intervention of a psychological program based on psychoeducation, mindfulness and self-compassion for obese or overweight women with BED.

Design: a controlled longitudinal design was followed in order to compare results between BEfree ($n = 19$) and WL ($n = 17$) from pre- to post-intervention. Results from BEfree were compared from pre-intervention to 3-month and 6-month follow-up.

Results: BEfree was effective in eliminating BED, diminishing eating psychopathology, depression, shame and self-criticism, body-image psychological inflexibility and body-image cognitive fusion, as well as in improving obesity-related quality of life and self-compassion when compared to a WL control group. Results were maintained at 3-month and 6-month follow-up. Finally, participants rated BEfree helpful for dealing with impulses and negative internal experiences.

Conclusions: These results seem to suggest the efficacy of BEfree and the benefit of integrating different components such as psychoeducation, mindfulness and self-compassion when treating BED in obese or overweight women.

Keywords: Binge eating; BEfree; Mindfulness; Compassion; Efficacy study; Obesity.

Key Practitioner Message

- The current study provides evidence of the acceptability of a psychoeducation, mindfulness and compassion program for binge eating in obesity (BEfree);
- Developing mindfulness and self-compassionate skills is an effective way of diminishing binge eating, eating psychopathology and depression, as well as of increasing quality of life in women with obesity;
- Integrating psychoeducation, mindfulness and compassion seems to be effective in diminishing binge eating, with results maintained up to 6-months post-intervention.

For Peer Review

INTRODUCTION

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3 Binge Eating Disorder (BED) has an overall prevalence of 3-5% in community
4 samples, is twice as common in females (Hudson, Hiripi, Pope, & Kessler, 2007; Kessler et
5 al., 2013) and is comorbid with psychological distress, psychiatric (e.g., depression),
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Binge Eating Disorder (BED) has an overall prevalence of 3-5% in community samples, is twice as common in females (Hudson, Hiripi, Pope, & Kessler, 2007; Kessler et al., 2013) and is comorbid with psychological distress, psychiatric (e.g., depression), overweight and obesity (Hudson et al., 2007). Research shows that BED is associated with an early onset of obesity (Mussel et al., 1996), its maintenance and greater severity (Bruce & Agras, 1992; Picot & Lilenfeld, 2003). Also, individuals with eating disorders have high levels of shame and self-criticism (Gilbert, 2002; Goss & Allan, 2009; Goss & Gilbert, 2002), particularly binge eaters (Duarte, Pinto-Gouveia, & Ferreira, 2014, 2015).

Although research suggests that CBT is a well established treatment for BED (Grilo, Masheb, Wilson, Gueorguieva, & White, 2011; Wilson, Wilfrey, Agras & Bryson, 2010), studies show that its remission rates are 40% to 60% (e.g. Wilson, Grilo, Vitousek, 2007), with 26% still meeting criteria for BED (e.g. Agras, Telch, Arnow, Eldredge, Marnell, 1997).

In recent years, new and innovative approaches to BED have emerged, such as mindfulness-based treatments. These approaches promote the capacity to bring focused awareness to internal experiences, with a non-judgemental, self-accepting attitude, interrupting conditioned patterns, and decreasing reactive automatic responses to negative affect (Kabat-Zinn, 1993). In a recent meta-analysis, Godfrey, Gallo and Afari (2015) found nine mindfulness-based interventions for BED, showing large or medium effects, even though with high statistical heterogeneity between these studies. One of these mindfulness-based studies is Mindfulness-Based Eating Awareness Training (MB-EAT; (Kristeller & Wolever, 2010), which has been found to improve control over eating and decrease anxiety and depressive symptoms in patients with BED.

Additionally, Compassion Focused Therapy (Gilbert, 1998, 2005; Gilbert, Price, & Allan, 1995; Gilbert & Procter, 2006) is a therapeutic approach that was developed to help individuals with high levels of shame and self-criticism. Helping patients develop self-compassion, while promoting one's responsibility to adopt more adaptive ways of coping with these complex emotional processes, seems specially suitable to reduce binge eating (Kelly, Vimalakanthan, & Miller, 2014; Kelly & Carter, 2015).

Moreover, there is growing evidence for acceptance and values-based programmes for difficulties in managing weight and eating (Juarascio, Forman, & Herbert, 2010; Lillis & Kendra, 2014) and specifically BED (Masuda, Hill, Melcher, Morgan & Twohig, 2014). These approaches promote psychological flexibility, which seems to be a key mechanism operating in eating psychopathology (Ferreira, Palmeira, & Trindade, 2014; Hill, Masuda, & Latzman, 2013; Moore, Hill, & Goodnight, 2014; Trindade & Ferreira, 2014; Wendell,

Masuda, & Le, 2012), namely in binge eating (Duarte & Pinto-Gouveia, 2014; Duarte et al., 2015).

Although the aforementioned approaches are different, some have called for its integration. In fact, it is suggested the efficacy of integrating different approaches, such as ACT and CBT (Heffner, Sperry, Eifert & Detweiler, 2002) and compassion-based components and ACT interventions in medical conditions (Skinta, Lezama, Wells & Dilley 2015).

The current study aims to test the efficacy and acceptability of BEfree in a sample of women with binge eating and obesity or overweight. Our main hypothesis is that participants in BEfree group present a decrease in binge eating severity and eating psychopathology at the end of the intervention, and at the same time develop adaptive psychological processes such as psychological flexibility, mindfulness and self-compassion.

METHOD

Participants

Inclusion criteria: a) female, b) age between 18 and 55 years old and c) with binge eating disorder, assessed by EDE interview (conducted by clinical psychologists from the research team) and scores on Binge Eating Scale [assuming BES > 17 as the threshold for binge eating (Duarte, Pinto-Gouveia & Ferreira, 2015; Marcus, Wing & Lamparski, 1985)] and with overweight or obesity (Body Mass Index ≥ 25).

Procedure

Participants were recruited directly from the endocrinology department of Coimbra's University Hospital Centre (CHUC) and through flyers and advertisements in national newspapers. Exclusion criteria: a) medical conditions that affect weight; b) Severe psychiatric problems (severe depressive episode, Bipolar, substance abuse and Borderline Personality Disorder) assessed through SCID-I and SCID-II; c) cognitive impairment and low level of education that significantly compromised the comprehension of the contents and questionnaires; d) taking medication that can cause significant weight or appetite changes; e) unavailability to attend weekly sessions (see figure 1).

Study design

Participants (N=59) were distributed into two conditions: intervention (BEfree) and waiting list group (WL), according to their availability to readily attend the sessions. Figure 1 depicts participants' allocation and drop-outs.

----- *Insert Figure 1* -----

Measures

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3 *Eating Disorders Examination 16.0D* (EDE 16.0D; Fairburn, Cooper, & O'Connor,
4 1999; Ferreira, 2012) is a semi-structured clinical interview that assesses the frequency and
5 intensity of disordered eating behaviours and attitudes and showed good internal consistency
6 in the Portuguese population ($\alpha = .98$). EDE has consistently demonstrated good
7 psychometric properties (e.g., Fairburn, 2008). In the present study, EDE presented an
8 internal consistency of $\alpha = .79$.

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13 *Binge Eating Scale* (BES; Gormally et al., 1982; Duarte, Pinto-Gouveia & Ferreira,
14 2015) is a 16 item self-report questionnaire that measures binge eating symptomatology. Both
15 the original and Portuguese versions revealed good internal consistencies. Likewise, the
16 current study presented a good internal consistency ($\alpha = .88$).

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21 *Beck Depression Inventory-I* (BDI-I; Beck, Ward, Mendelson, Mock, & Erbaugh,
22 1961; Portuguese version by Vaz Serra & Pio – Abreu, 1973) is a well-known 21-items
23 questionnaire that measures current depressive symptoms. The Portuguese version shows
24 similar psychometric properties. In the current study, BDI-I presented an internal consistency
25 of $\alpha = .92$.

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30 *Other as Shamer Scale* (OAS; Goss, Gilbert, & Allan, 1994; Matos, Pinto-Gouveia,
31 Gilbert, Duarte, & Figueiredo, 2015) is an 18 items scale designed to assess individual's
32 perception of being negatively evaluated by others. OAS has been consistently showing high
33 internal consistency, both in clinical and non-clinical samples ($\alpha = .96$ and $.92$, respectively)
34 (Goss et al., 1994). In the current study, the scale' internal consistency was $\alpha = .94$.

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38 *Obesity Related Well-Being Questionnaire* (ORWELL-97; Mannucci, et al., 1999;
39 Silva, Pais-Ribeiro & Cardoso, 2008) is a self-report questionnaire that assesses obesity-
40 related quality-of-life (QoL), in which higher scores indicate diminished obesity-related QoL.
41 ORWELL-97 presents good internal consistencies both the original and the Portuguese
42 versions ($\alpha = .83$ and $\alpha = .85$ respectively). This study found an $\alpha = .86$.

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47 *Body Image-Acceptance and Action Questionnaire* (BI-AAQ; Sandoz, Wilson, &
48 Merwin, 2009, Portuguese version by Ferreira, Pinto-Gouveia, & Duarte, 2011) is a 12 item
49 questionnaire that assesses the ability to accept and experience body image-related internal
50 experiences without attempting to avoid or change them (Sandoz et al., 2009). Both the
51 original ($\alpha = .93$) and the Portuguese version ($\alpha = .95$) revealed good psychometric properties.
52 The current study found an internal consistency of $\alpha = .95$.

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57 *Cognitive Fusion Questionnaire-Body Image* (CFQ-BI; Ferreira, Trindade, Duarte &
58 Pinto-Gouveia, 2015) is a 10-items self-reported questionnaire based on the original
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3 Cognitive Fusion Questionnaire (Gillanders et al., 2014). The original study presented good
4 internal consistency, retest reliability, discriminant, convergent and divergent validities
5 (Trindade, et al., 2015). The current study found an internal consistency of $\alpha = .95$.
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8 *The Engage Living Scale* (ELS; Trompetter et al., 2013) is a self-report measure
9 developed to assess engagement with values-driven behaviour. Recently, a 9-items version of
10 ELS has been used, showing good internal consistency ($\alpha = .88$) (Trindade, Ferreira, Pinto-
11 Gouveia & Nooren, 2015). The current study found similar internal consistency ($\alpha = .82$).
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14 *Self-Compassion Scale* (SCS; Neff, 2003; Portuguese version by Castilho, Pinto-
15 Gouveia, & Duarte, 2015) comprises 26 items instrument. SCS may be used as a two-factor
16 structure: one factor that assess *self-compassion* attitude and one factor of a *self-criticism*
17 attitude. Previous studies found adequate model fit and good internal consistency ($\alpha = .91$ for
18 self-compassion and $\alpha = .89$ for self-criticism) (Costa, Marôco, Pinto-Gouveia, Ferreira &
19 Castilho, 2015). The current study presented good internal consistencies for both the self-
20 compassion factor ($\alpha = .93$) and the self-criticism factor ($\alpha = .91$).
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23 *Five Facet Mindfulness Questionnaire - 15* (FFMQ-15, Baer, Smith, Hopkins,
24 Krietemeyer, & Toney, 2006, Portuguese version by Gregório, 2015) is the shorter version of
25 the original 39 items questionnaire that measures the dispositional and multifaceted
26 mindfulness characteristics. FFMQ-15 presents the same 5-factor structure as the original
27 version, as well as good internal consistency (ranging from .65 to .86). In the current study,
28 the internal consistencies of the subscales were: Observing ($\alpha = .51$), Describing ($\alpha = .79$),
29 Act with awareness ($\alpha = .50$), Nonjudgement ($\alpha = .68$), Non-Reacting ($\alpha = .21$). The total
30 scale presented an acceptable internal consistency ($\alpha = .70$).
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33 Finally, participants who attended BEfree completed an after-intervention
34 questionnaire designed to assess the practice between sessions and acceptability of the
35 program.
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38 **BEfree Intervention**

39 BEfree has 12 sessions, 2h30 each, run in small groups (10-15 participants). Sessions
40 were carried out by three cognitive-behavioural clinical psychologists with previous training
41 in contextual-behavioural therapies (see Table 1).
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44 ----- insert Table 1. here -----
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46 **Analytic Plan**

47 Baseline differences between BEfree and WL were examined for demographics and
48 for variables in study. For the continuous variables, non-parametric Mann-Whitney U tests
49 were conducted and for the categorical variables chi-square tests were performed.
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3 A series of 2 (condition) x 2 (time) Repeated Measures Analysis of Variance
4 (ANOVA) were performed to test the hypothesis that differences between pre- and post-
5 measurements differ between conditions. Additionally, in order to examine the differences
6 within each group, a series of non-parametric Wilcoxon Signed Rank tests were conducted. A
7 significant time-group interaction effect suggests that the differences found between pre and
8 post scores vary according to the condition to which the participants belong to.
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11 To test whether the intervention effects were maintained at 3- and 6-month follow-up,
12 a Repeated Measures ANOVA was carried out. Post-Hoc analyses using Fisher's Least
13 Significant Difference (LSD) test was further computed to explore pairwise differences (pre-
14 to-3 months; pre-to-6 months).
15

16 Effect sizes for the ANOVAs were calculated using partial eta squares (η^2) with .01
17 indicating a small effect size, .06 a medium effect and .14 a large effect size (Tabashnick &
18 Fidell, 2013). The effect sizes for the Wilcoxon Signed Rank and Fisher's LSD tests were
19 calculated using Cohen's *d*, with 0.2 indicating a small effect, 0.5 a medium effect and 0.8 a
20 large effect (Cohen, 1988).
21

22 Descriptive statistics were calculated for the post-intervention feedback data, which
23 included questions regarding amount of practice, usefulness of sessions' components and
24 benefits of participating in the intervention.
25

26 The alpha level was set at .05 for all analyses conducted in this study. All statistical
27 procedures were computed with IBM SPSS (v.23).
28

29 RESULTS

30 Samples' characteristics

31 Participants in the intervention condition ($n = 19$) were 42.72 years old ($SD=9.94$),
32 and had a mean of 14.50 ($SD = 2.90$) years of schooling. Concerning marital status, 61.1%
33 of participants were married and the majority had a medium socio-economic status (36.8%).
34 Participants had a mean BMI (Kg/h^2) of 34.49 ($SD= 5.73$).
35

36 Participants in the control condition ($n = 17$) were 41 years old ($SD=9.56$), and had a
37 mean of 15.92 ($SD = .86$) years of schooling. Concerning marital status, 60% of participants
38 were married and the majority had a medium socio-economic status (56.3%). Participants had
39 a mean BMI (Kg/h^2) of 35.06 ($SD= 4.93$).
40

41 There were no significant differences between the groups regarding age ($Z = -.525$; p
42 = .600), years of schooling ($Z = -1.42$; $p = .155$), BMI ($Z = -.397$; $p = .691$), socio-economic
43 status ($\chi^2= 1.89$; $p = .864$) and marital status ($\chi^2= 1.38$; $p = .709$).
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45 Differences between groups in changes from preintervention to postintervention

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3 Regarding outcome variables, there was a significant medium-to-large effect of the
4 intervention on eating psychopathology, binge eating, external shame, depression and quality
5 of life. Additionally, it decreased body-image psychological inflexibility, body-image
6 cognitive fusion, and self-criticism. Unexpectedly, mindfulness did not significantly change
7 as a result of the intervention. Also, differences in self-compassion did not reach statistical
8 significance at post-intervention. No significant change was found for BMI (see Table 2).

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10 ----- insert Table 2 here -----

11 **Differences within groups from preintervention to postintervention**

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13 In line with the results from ANOVA, participants in BEfree showed significant
14 decreases in eating psychopathology, binge eating, depression, body-image psychological
15 inflexibility, body-image cognitive fusion, external shame and self-criticism, and increases in
16 quality of life, with medium to large effect sizes. No significant differences were found in the
17 control group in the same time periods, with the exception of external shame, which
18 increased from pre to post-test (see Table 3).

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20 ----- insert Table 3 here -----

21 **Follow-up at 3- and 6-months after the intervention**

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23 Results presented in Table 4 suggest that the efficacy of BEfree was maintained at 3-
24 month and 6-month follow-up for eating psychopathology, binge eating, depression, quality
25 of life, body-image psychological inflexibility, body-image cognitive fusion, external shame,
26 self-criticism and self-compassion. Unexpectedly, there was a significant decrease in
27 observing from preintervention to 3-month follow-up, but not from preintervention to 6-
28 month follow-up.

29
30 ----- insert Table 4 -----

31 **Postintervention feedback from BEfree participants**

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33 Results from the feedback questionnaire indicated that, on average, participants found
34 that BEfree: was important for them ($M = 3.44$; $SD = .51$), improved their quality of life (M
35 $= 3.19$; $SD = .75$), how they deal with their impulses ($M = 3.06$; $SD = .57$), helped them deal
36 with difficulties ($M = 3.06$; $SD = .77$), improved how they deal with negative or difficult
37 thoughts ($M = 2.94$; $SD = .57$) and how they deal with negative or difficult emotions ($M =$
38 2.88 ; $SD = .62$).

39
40 Regarding the usefulness of the program content, participants rated “the workings of
41 the human mind” ($M = 3.56$; $SD = .51$), “non-reacting to thoughts and emotions” ($M = 3.44$;
42 $SD = .73$); “cognitive fusion” ($M = 3.31$; $SD = .60$) and “acceptance of internal experiences”
43 ($M = 3.25$; $SD = .45$) as very important.

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3 Most participants reported they practiced the recorded meditation and compassion-
4 focused exercises once (37.5%) to twice (25.0%) a week.
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6 DISCUSSION

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8 The current study explored the efficacy of BEfree, i.e., a psychological intervention
9 for binge eating in obesity that integrates psychoeducation, mindfulness, compassion and
10 values-congruent action.
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13 Results suggest that participants in BEfree presented lower levels of binge eating
14 severity, of eating psychopathology, had less external shame, were less depressed and had
15 more quality of life when compared to women in the WL condition, and these results
16 presented medium to large effect sizes. Additionally, participants decreased in psychological
17 inflexibility related to body image, decreased in body-image cognitive fusion and were less
18 self-critical. In fact, previous research seems to point out for the pervasive role of self-
19 criticism in eating psychopathology (Gilbert, 2002; Goss & Allan, 2009; Goss & Gilbert,
20 2002), particularly in binge eating (e.g. Duarte, et al., 2014). Moreover, psychological
21 inflexibility (e.g. Masuda, Boone, & Timko, 2011) and cognitive fusion (e.g. Duarte, et al.,
22 2015) seem to have a detrimental role in the maintenance of binge eating, which seems to
23 echo the relevance of designing interventions that focus on these processes. No differences
24 were found in mindfulness at post-intervention. This was an unexpected result, even though
25 there seems to be an ongoing discussion on the limitations of measuring mindfulness (see
26 Grossman, 2011). Also unexpectedly, no differences were found in engagement with valued
27 living. Although the promotion of values-based action was an inherent feature in BEfree,
28 only one session was explicitly dedicated to values clarification and promotion of values-
29 based action, which might explain this result. Finally, differences in self-compassion between
30 the two conditions were not found. It is important to have in mind that self-compassion was
31 explicitly promoted only latter in intervention (session 10 and 11) and post-intervention
32 assessment were carried out immediately after. In fact, we also conducted 3-month and 6-
33 month follow-up analyses, which seem to suggest that self-compassion needs more time to be
34 developed.
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38 When considering each group separately, results were similar. Importantly, no
39 differences were found in WL, except on external shame, which increased. Indeed, the
40 detrimental role of shame in eating psychopathology and binge eating has been soundly
41 suggested in previous studies (e.g. Duarte, et al., 2014, 2015; Gilbert, 2002; Goss & Allan,
42 2009). An interesting result is that although no differences were found in self-compassion at
43 post-intervention, results show that participants present significantly higher levels of self-
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3 compassion at both 3-months and 6-months after intervention, which seem to suggest that
4 self-compassion might need more time to reflect the benefits of compassion exercises.

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6 After the intervention, participants reported that BEfree improved their quality of life,
7 helped them deal with difficulties and improved how they deal with negative or difficult
8 emotions. Additionally, participants chose as the most important contents in BEfree “the
9 workings of the human mind”, “non-reacting to thoughts and emotions”, “cognitive fusion”
10 and “acceptance of internal experiences”, which seems to be in line with the psychological
11 processes that yielded greater results.

12
13 Some limitations should be considered when interpreting these results. This study was
14 conducted in a small sample, which prevents us from drawing definite conclusions.
15 Nevertheless, it is worth mentioning the observed attrition are proportionately in line with
16 previous intervention studies with BED samples (e.g. Wilfley et al., 2002; Wilson, Wilfley,
17 Agras & Bryson, 2010). Replication of these results in a larger sample is needed.
18 Additionally, BEfree was designed to be implemented in a sample of women, which
19 compromises the extrapolation of these results to a population of men who binge eat.
20 Furthermore, this is a non-randomized control study, in which selection of participants to
21 each condition took “availability to readily attend sessions” as the criteria for distribution into
22 the two condition. It should also be considered that the control condition was a WL, which
23 does not allow us to determine if BEfree is more effective than another active intervention.

24
25 Overall, the current study suggests the efficacy and feasibility of integrating different
26 approaches such as psychoeducation, mindfulness, compassion and promotion of values-
27 based action in treating binge eating.

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40
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55 Table 1
56 BEfree sessions

Session	Theme	Goals
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1	Introduction	To present the foundation of BEfree and the structure of the intervention;
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5	Creative	To kindly confront the agenda of control and promote acknowledgement
6	Hopelessness	of the unworkability of the control strategies
7		
8	2, 3, 4	Psychoeducation
9		To provide information on the evolutionary basis of emotions and
10		discuss binge eating as a strategy to regulate negative affect and
11		unwanted internal experiences, such as body shame, self-critical thoughts
12		and overall painful emotions.
13		
14	5	Values clarification
15		Introduction of values as life direction and how we want our lives to be;
16		Clarification of health-related values and reflection on obstacles that
17		have prevented living in accordance to those values.
18	6,7	Experiential
19		distancing
20		Discuss language-related abilities as a source of psychological
21		difficulties (the ubiquitous nature of suffering) and the difference
22		between “describing” and “evaluating”.
23		
24		Acceptance and
25		Willingness
26		To promote distancing from and acceptance of unwanted internal
27		experiences.
28		To promote willingness to have difficult internal experiences.
29	8,9	Mindfulness
30		To promote specific mindfulness skills (e.g., <i>mindfulness breathing</i>
31		<i>meditation, body-scan, mindfulness of thoughts</i>).
32	10,11	Compassion
33		Cultivating self-compassion as an alternative to shame and self-criticism
34		(e.g. <i>loving-kindness, safe-place and compassionate image</i>)
35	12	Committed action
36		To promote commitment to action by establishing new goals; anticipate
37		potential setbacks and how to deal with them.

Note. Each session followed the same structure: 1) an initial moment of sharing personal experience; 2) a 5-minute mindfulness exercise; 3) the session theme; 4) an eating mindfulness exercise; 5) summary of the session content and homework assignments.

Table 2

Means, SDs at Time 1 (Pretest) and Time 2 (Posttest), Time Main Effect, and Time-Group Interaction Effect.

Variable	Time	Experimental		Control		Time			Time X Group		
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>F</i>	<i>p</i>	Partial η^2
BMI	1	34.49	5.73	35.10	4.65	.60	.444	.02	.92	.350	.03
	2	33.89	6.01	35.16	5.70						
Eating psychopathology	1	3.91	.94	3.60	.71	29.90	.000	.49	12.81	.001	.29
	2	2.40	.84	3.29	1.10						
Binge eating	1	29.94	10.98	28.65	7.85	40.61	.000	.55	23.68	.000	.42
	2	12.83	6.65	26.35	8.93						
Depression	1	23.00	8.85	17.71	12.81	12.94	.001	.29	14.99	.001	.32
	2	11.82	8.92	18.12	13.04						
External shame	1	34.67	7.96	30.59	16.09	.12	.730	.00	9.19	.005	.22
	2	29.56	13.11	34.65	18.20						
Quality of life	1	75.05	9.62	70.18	16.31	16.21	.000	.32	7.41	.010	.18
	2	61.05	13.71	67.47	17.98						
Psychological inflexibility–body image	1	63.00	12.96	59.71	16.11	21.03	.000	.38	6.64	.014	.16
	2	46.00	16.18	54.94	19.03						
Cognitive fusion-body image	1	42.95	14.68	39.53	14.82	4.47	.042	.12	6.97	.012	.17
	2	33.37	11.59	40.59	18.29						
Engaged with valued-living	1	26.26	4.60	30.06	6.12	2.33	.136	.06	3.59	.067	.10
	2	29.00	5.50	29.76	6.00						
Self-compassion (SCS)	1	7.60	1.63	8.46	2.45	2.15	.152	.06	2.04	.163	.06

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	2	8.47	2.48	8.47	2.24						
Self-Judgement (SCS)	1	10.64	1.91	9.77	2.47	15.11	.000	.31	18.31	.000	.36
	2	8.56	2.03	9.87	2.73						
Observing (FFMQ)	1	9.42	1.61	9.24	2.93	1.16	.288	.03	.037	.849	.00
	2	9.84	2.06	9.53	2.35						
Describing (FFMQ)	1	8.05	2.07	9.71	3.62	.25	.622	.01	.25	.622	.01
	2	8.47	2.82	9.71	3.04						
Act with awareness (FFMQ)	1	8.63	2.03	9.53	2.12	.02	.901	.00	.40	.530	.01
	2	8.89	1.56	9.35	2.06						
Non judging (FFMQ)	1	8.89	1.56	9.65	3.04	4.40	.044	.11	1.25	.272	.04
	2	10.05	1.78	10.00	2.45						
Non reacting (FFMQ)	1	8.26	1.19	8.41	2.03	.11	.743	.00	2.80	.103	.08
	2	9.05	1.96	7.88	2.03						
Total (FFMQ)	1	43.26	4.69	46.53	8.31	1.72	.198	.05	1.86	.182	.05
	2	46.31	6.51	46.47	6.09						

Note. Time 1 = Pretest; Time 2 = Posttest; SCS = Self-Compassion Scale; FFMQ = Five Facets of Mindfulness Questionnaire; Partial $\eta^2 = .01$ small effect size, = .06 medium effect size, = .14 large effect size.

Table 3.

Median for Control ($n = 17$) and Experimental Groups ($n = 19$) at Preintervention and Postintervention, Z -test and Effect Size.

Variables	Groups	Preintervention	Postintervention	Z	p	d
		Median	Median			
BMI	Control	34.28	34.20	-.863	.388	.28
	Experimental	34.00	34.20	-2.616	.009	.94
Eating psychopathology	Control	3.39	3.06	-1.758	.079	.65
	Experimental	4.24	2.32	-3.527	.000	1.52
Binge eating	Control	28.00	27.00	-1.594	.111	.57
	Experimental	28.00	12.00	-3.725	.000	1.58
Depression	Control	14.00	15.00	-.130	.897	.04
	Experimental	24.00	12.50	-3.197	.001	1.31
External shame	Control	34.00	43.00	-2.265	.024	.84
	Experimental	36.00	25.50	-2.157	.031	.77
Quality of life	Control	69.00	63.00	-1.045	.296	.36
	Experimental	75.00	63.00	-3.099	.002	1.16
Psychological inflexibility–body image	Control	62.00	60.00	-1.232	.218	.43
	Experimental	64.00	47.00	-3.361	.001	1.30
Cognitive fusion-body image	Control	42.00	41.00	-.699	.484	.24
	Experimental	45.00	30.00	-2.496	.013	.89
Engaged with valued-living	Control	29.00	30.00	-.286	.775	.10
	Experimental	27.00	30.00	-1.814	.070	.62
Self-compassion (SCS)	Control	8.30	7.75	-.237	.813	.08
	Experimental	7.05	8.90	-1.764	.078	.60
Self-judgement (SCS)	Control	10.15	10.60	-.517	.605	.18
	Experimental	10.85	8.55	-3.398	.001	1.37
Observing (FFMQ)	Control	10.00	10.00	-.414	.679	.14
	Experimental	9.00	9.00	-.991	.322	.33
Describing (FFMQ)	Control	9.00	9.00	-.576	.564	.20
	Experimental	8.00	9.00	-.782	.434	.26
Act with awareness (FFMQ)	Control	9.00	9.00	-.064	.949	.02
	Experimental	8.00	9.00	-.608	.543	.20
Non judging (FFMQ)	Control	9.00	10.00	-.891	.373	.31
	Experimental	9.00	10.00	-1.927	.054	.66
Non reacting (FFMQ)	Control	8.00	8.00	-1.151	.250	.40
	Experimental	8.00	9.00	-1.551	.121	.52
Total (FFMQ)	Control	46.00	46.00	-.311	.756	.11
	Experimental	43.00	45.00	-1.876	.061	.64

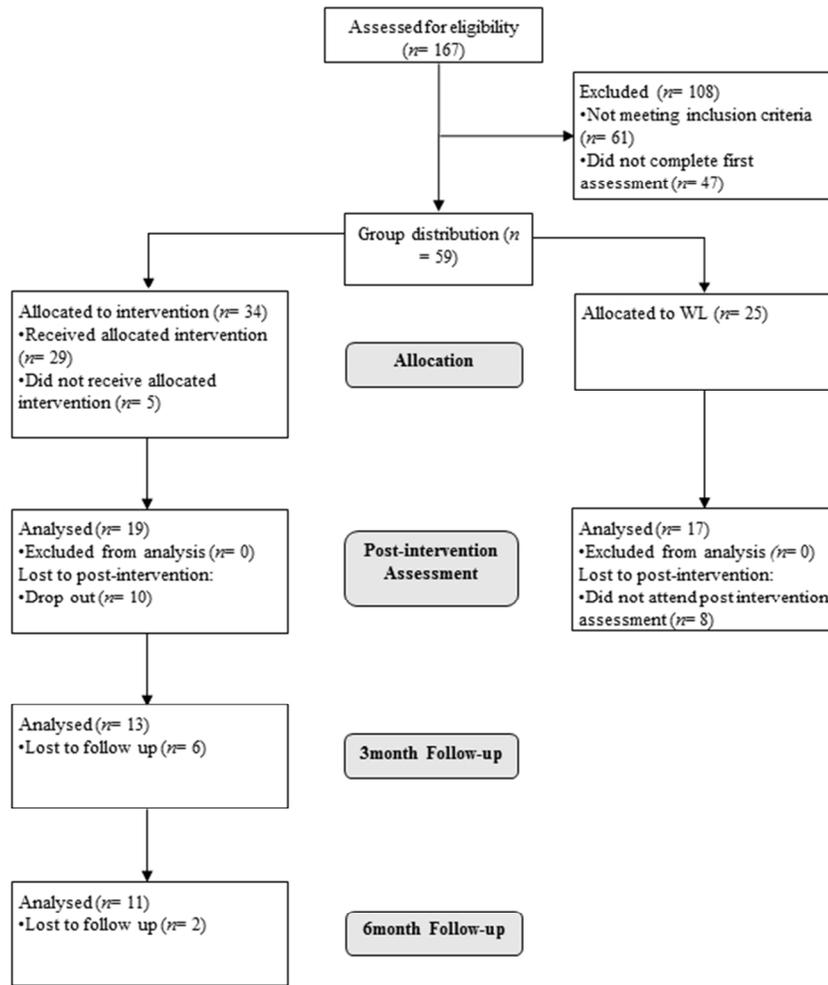
Note. SCS = Self-Compassion Scale; FFMQ = Five Facets of Mindfulness Questionnaire.

Table 4.

Means, SDs at 3-Month and 6-Month Follow-Up, and Differences from Pre-intervention to 3-Month and to 6-Month Follow-Up.

Variable	3-month		6-month		<i>F</i>	<i>p</i>	Partial η^2	Pre vs 3-month		Pre vs 6-month	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				<i>p</i>	<i>d</i>	<i>p</i>	<i>d</i>
BMI	32.79	4.38	33.63	4.15	8.05	.005	.54	n.s.	.59	n.s.	.45
Eating psychopathology	1.95	.87	2.25	1.09	20.50	<.001	.72	.001	1.39	<.001	1.38
Binge eating	12.00	5.39	13.56	9.44	15.89	<.001	.67	.001	1.33	.006	1.16
Depression	10.10	6.98	11.40	6.36	16.01	<.001	.64	<.001	1.21	.002	1.23
External Shame	23.90	13.05	23.80	12.68	7.99	.003	.47	.010	.87	.003	1.16
Quality of life	57.50	15.22	58.40	14.14	17.86	<.001	.67	.001	.98	.001	1.27
Psychological inflexibility–body image	43.50	15.33	47.90	14.21	20.43	<.001	.69	.001	1.12	.001	1.28
Cognitive fusion-body image	29.40	13.01	31.90	15.33	11.32	.001	.56	.004	.43	.006	1.07
Engaged with valued-living	26.10	5.02	26.90	4.82	.26	n.s.	.03	n.s.	.19	n.s.	.41
Self-compassion (SCS)	8.69	1.77	8.02	2.04	6.05	.011	.43	.009	.87	.015	.80
Self-judgement (SCS)	8.59	2.00	8.63	2.13	7.72	.004	.49	.003	1.23	.017	1.07
Observing (FFMQ)	8.50	1.27	9.20	1.55	4.48	.026	.33	.012	.73	n.s.	.22
Describing (FFMQ)	8.60	2.12	8.10	2.13	.39	n.s.	.04	n.s.	.57	n.s.	.32
Act with awareness (FFMQ)	8.60	2.27	8.40	2.22	.18	n.s.	.02	n.s.	.45	n.s.	.36
Non judging (FFMQ)	9.30	1.95	9.70	1.25	.57	n.s.	.06	n.s.	.53	n.s.	.68
Non reacting (FFMQ)	8.50	1.78	8.20	1.69	.80	n.s.	.08	n.s.	.79	n.s.	.56
Total (FFMQ)	43.50	5.21	43.60	4.48	.12	n.s.	.01	n.s.	.57	n.s.	.82

Note. SCS = Self-Compassion Scale; FFMQ = Five Facets of Mindfulness Questionnaire.



Summary of participants flow

185x194mm (96 x 96 DPI)