

Effects of implementation intentions on subthreshold binge eating

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ABSTRACT

Binge eating disorder (BED) and bulimia nervosa (BN) are characterized by binge eating. Frequently related to negative affect, binge eating is considered unwanted eating behavior. It is often preceded by a shift away from the goal of a healthy eating pattern. Implementation intentions are 'if-then' plans that may prevent such shifts in goals. In a students' sample with subthreshold binge eating, two implementation intention conditions were compared to a control condition in which only goals were formed. In the behavior-focused condition, implementation intentions targeted binge eating; in the emotion-focused condition, implementation intentions targeted negative affect preceding binge eating. All participants received three sessions and kept food diaries for four weeks, followed by a post-test and a one-month, three-months, and six-months follow-up. Compared to the control condition, both implementation intention conditions showed significant and large reductions in binge eating lasting for six months. Effects did not differ between both implementation intention conditions. Three implementation intention sessions reduced subthreshold binge eating. This continued for six months after the final session. Contrary to expectations, behavior-focused and emotion-focused implementation intentions were equally effective, possibly due to other triggers than negative affect. Future research should address their usefulness in BED and BN.

Clinical implications

- Cognitive-behavioral therapy has limited effect on binge eating
- Implementation intentions are effective in changing undesirable eating behaviors
- Experiment with three sessions on implementation intentions against binge eating
- Results showed large and long-lasting reductions in subthreshold binge eating

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- Future research should replicate this study in a clinical population

Introduction

Binge eating disorder (BED) and bulimia nervosa (BN) are characterized by recurrent binge eating. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) defines binge eating as a discrete period of time (e.g., two hours) in which large amounts of food are consumed, associated with a sense of loss of control (American Psychiatric Association, 2013). In BN these are followed by inappropriate compensatory behaviors (e.g., self-induced vomiting, excessive exercise, and fasting), which is not the case in BED. In the USA, lifetime prevalence of BED is 0.42% for men and 1.25% for women, and lifetime prevalence of BN is 0.08% for men and 0.46% for women (Udo & Grilo, 2018). Treatment of choice is cognitive-behavioral therapy (CBT), which aims at restoring a healthy daily eating pattern by modifying dysfunctional beliefs, goal setting, and self-control strategies such as keeping food diaries (Hay et al., 2009). CBT is moderately effective with 40–60% of the patients still symptomatic at the end of treatment and drop-out rates of approximately 22% for BED and 26% for BN (Linardon et al., 2018; Turton et al., 2016). To improve treatment efficacy and reduce drop-out rates, additional interventions are needed. These interventions should be acceptable to patients, target motivation and goal-commitment, and should ideally be incorporated into CBT to improve treatment outcome and completion (Webb & Sheeran, 2006).

One possibility may be the addition of implementation intentions to CBT. Implementation intentions are explicit ‘if-then’ plans that create associative links between situational features and behavior to cue goal-directed responses, for example, “If I feel like snacking, then I will take an apple” to maintain focused on the healthy eating goal (Gollwitzer & Brandstätter, 1997). By directing action control to situational cues, goal attainment is enhanced. Implementation intentions have shown benefits over and above goal intentions only (e.g., “I want to eat healthy”). A meta-analysis by Gollwitzer and Sheeran (2006) of 94 studies involving more than 8,000 participants showed an effect size of $d = 0.65$ for implementation intentions on goal attainment and an effect size of $d = 0.59$ on the reduction of unhealthy behavior and promotion of healthy behavior (e.g., binge drinking, healthy eating, and physical exercise). A meta-analysis by Adriaanse et al. (2011) of 23 studies on implementation intentions and eating behavior showed them effective in promoting healthy eating ($d = 0.51$) and reducing unhealthy eating ($d = 0.29$). Those studies all concerned samples from people without (subthreshold) eating disorders. Therefore, the effects of implementation intentions on (subthreshold) binge eating are unknown. However, implementation intentions might prove a useful addition to standard treatment, as they are easy to learn and can be

formed in a single session. Because they operate on habit-forming principles, demand for self-control and continued mental effort is reduced (Gollwitzer & Sheeran, 2006).

To maximize effects of implementation intentions, goal orientation has to be clear and superordinate goals have to be self-concordant and activated (Achtziger et al., 2011; De Nooijer et al., 2006; Sheeran et al., 2005). In BED and BN, however, emotion regulation is often compromised, leading to goal ambivalence (Gollwitzer et al., 2005). Patients with BED and BN and typically report ambivalence towards treatment and change, and often experience binge eating as automatically triggered by negative affect, among other things (Munsch et al., 2012). Negative affect activates short-term goals to improve mood by snacking, thereby increasing the likelihood of binge eating (Kjelsås et al., 2004; Waters et al., 2001). Superordinate goals of refraining from binge eating are easily de-activated by activation of short-term goals of finding comfort in food (Stroebe et al., 2008). In dieters, however, implementation intentions re-activate the dieting goal in tempting situations, thereby increasing dieters' control over their eating behavior (Van Koningsbruggen et al., 2011). In BED and BN, loss of control is likely more severe. Implementation intentions effects may be insufficient to prevent goal shifts when they are targeted directly at refraining from binge eating and the urge to give in has reached its peak. To counter the loss of the superordinate goal, it might be better to intervene earlier in the chain of (cognitive) events, when the urge is probably lower (Baumeister et al., 2006). Therefore, we wondered whether implementation intentions might be more helpful when focused on the onset of the negative affect preceding binge eating (emotion-focused implementation intentions) instead of on binge eating (behavior-focused implementation intentions).

Our primary aim was to investigate the effects of implementation intentions on subthreshold binge eating. Additionally, we compared emotion-focused with behavior-focused implementation intentions. Our first hypothesis was that three implementation intentions sessions would reduce subthreshold binge eating as compared to three sessions in which only goals were set. Our second hypothesis was that implementation intentions focused on emotions preceding binge eating would show a larger reduction of binge eating than implementation intentions focused on binge eating.

Method

Participants

Participants were recruited from the university campus with posters reading “Do you sometimes find yourself snacking more than you would like to in a brief period? Then this may be your opportunity to change. We offer three

sessions aimed at reducing unwanted eating behavior. Interested? Contact us at ...”. One hundred eight people responded to the poster and completed a pre-screening questionnaire to check whether they met the inclusion and exclusion criteria. Inclusion criteria were self-reported DSM-5 defined binge eating and a binge frequency of at least once a week, in the past three months. Exclusion criteria were a body mass index (BMI) lower than 18.5 (based on self-reported height and weight); currently receiving treatment for an eating disorder; and Eating Disorder Examination-Questionnaire (EDE-Q) mean score ≥ 4.3 . In total, 97 participants (90%) were enrolled in the study. Participants were randomly assigned to the behavior-focused implementation intention condition (32 participants, 27 females), emotion-focused implementation intention condition (33 participants, 30 females), or control condition in which only goals were set (32 participants, 27 females). Two participants discontinued and six participants were lost to follow-up, leaving 89 participants (92%, 76 females) in the final sample. Eighty were undergraduate psychology students and nine were non-psychology students. See [Figure 1](#) for the flow diagram, including numbers regarding missing data and attrition.

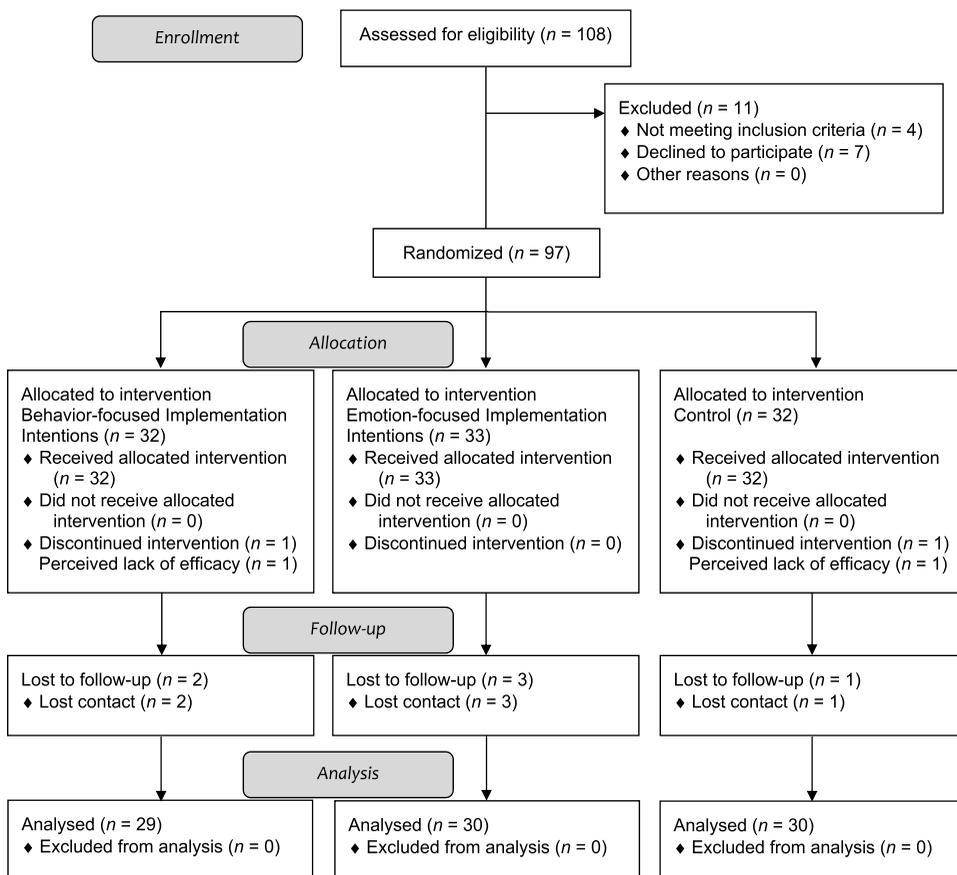


Figure 1. Flow diagram.

Ages ranged from 19 to 50 years with an average of 23 ($SD = 4.6$) years. The mean BMI (23.6) of our sample is common for people with BN (Guertin, 1999). At pre-test, EDE-Q mean scores were 3.6 ($SD = 1.4$), while they are 0.9 ($SD = 0.9$) for the general Dutch population, 3.5 ($SD = 1.0$) for people with BED, and 4.3 ($SD = 1.0$) for people with BN (Aardoom et al., 2012).

The present study was performed according to the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the Faculty of Social Sciences, Radboud University (ECSW2014-1003-209). Informed consent regarding participation and publishing their data was obtained from all participants. Participation was voluntary. Participants could quit at any time and received 15 research-participation credits.

Materials

During the active phase of the study, binge eating was measured with an online food diary. For four weeks, participants registered their food intake three times a day. As a reminder, an email was sent to them daily at 12:00 p.m., 17:00 p.m., and 22:00 p.m. There were separate entry fields for each main meal, snacks, and binges. The monitoring instructions included a description of a binge in accordance with the definition in the DSM-5. Every therapist checked daily online whether their participants had completed the food diary. If not, participants were contacted immediately.

The Dutch adaptation of the EDE-Q, consisting of 28 items, was used to assess degree of eating disorder pathology (Fairburn & Cooper, 1993; Van Furth, 2000). EDE-Q mean scores were calculated by averaging the 22 items assessing the core attitudinal features of eating disorder pathology (items 1–12 and 19–28) with 7-point Likert scales. Higher scores correspond with greater severity or higher symptom frequency. An example item reads “On how many of the past 21 days, have you had a definite fear of losing control over eating?” Instead of the usual 28 days, participants answered the items about their eating behavior regarding the previous 21 days to better fit the study design. EDE-Q answer-categories were adapted accordingly: 0 = Not one day, 1 = 1–4 Days, 2 = 5–9 Days, 3 = 10–11 Days, 4 = 12–16 Days, 5 = 17–20 Days, and 6 = Every day. Internal consistency and test re-test reliability of the EDE-Q mean scores are excellent (Aardoom et al., 2012; Rose et al., 2013). Internal consistency of the current sample’s EDE-Q mean scores was excellent (Cronbach’s $\alpha = .95$) as well (Taber, 2017). Participants completed the EDE-Q with the adapted answer-categories during the pre-test, post-test, and one-month, three-months, and six-months follow-up.

EDE-Q item 14 (“During the previous 21 days, how many times did you have a feeling of control loss concerning eating (during eating)?”) was used to measure binge eating during the active phase of the study and during the follow-up period. Compared to the food diary, responses on EDE-Q item 14

depend more on recall. It is therefore probably a suboptimal measure for binge eating with likely limited correlation with the binge registration in the food diary (Grilo et al., 2001). We used it nonetheless, because keeping the food diary for six additional months required too much time from the participants.

Intervention manuals were used to maximize standardization of the sessions. Manuals described for every condition in detail the three sessions and supplied therapists with instructions, explanations, and questions, that had to be read aloud. Protocol integrity was further enhanced by biweekly supervision by the first author.

Design

The study had a 3×5 (Condition [behavior-focused implementation intentions, emotion-focused implementation intentions, control] x Time [pre-test, post-test, one-month follow-up, three-months follow-up, six-months follow-up]) mixed factorial design with Time as a within-subjects factor.

Procedure

After providing informed consent, and one week before the first session, participants started their food diary (Day 1–28). On the seventh day, the EDE-Q was completed. Participants received three weekly sessions of 45 minutes each, which took place in suitable rooms in the lab. Sessions were provided by nine psychology students trained and supervised by the first author. Therapists were instructed to adhere to the manuals and to note any deviations in the trial file. No deviations were reported.

The first session (Day 8) started with participants describing in detail a typical, recent binge. To gain insight into the eating behavior, therapists and participants continued the session by studying the food diary of the previous week. Next, participants were instructed to form a goal regarding refraining from binge eating (e.g., “Starting today, I will eat healthy and have no more binges”). After writing the goal down twice, sessions in the control condition ended with participants being asked to concentrate, imagine carrying out the goal, and read it aloud three times. Both implementation intention conditions continued with setting up implementation intentions on how to achieve the goal.

In the behavior-focused implementation intention condition, therapists continued by guiding participants to focus on the binge eating. Participants were asked to form an implementation intention in which the ‘if-part’ consisted of a brief and concrete description of a typical binge eating situation and the ‘then-part’ explicated the behavior participants wanted to display instead of binge eating. Therapists assisted participants by prompting them to formulate implementation intentions as concrete, practical, and realistic as

possible. If necessary, therapists offered an example implementation intention (e.g., “If I return from college in the afternoon and feel like snacking, then I will take an apple”).

The emotion-focused implementation intention condition differed from the behavior-focused implementation intention condition by focusing on the negative affect which provoked the binge eating. Hence, therapists asked about emotional states preceding binge eating. Participants formed an implementation intention in which the ‘if-part’ consisted of a brief and concrete description of an emotional state that normally precedes binge eating (e.g., “If I start feeling depressed, then I will call a friend to cheer myself up”).

Next, in both experimental conditions, participants wrote down their implementation intention twice. Before concluding the meeting, participants had to concentrate, imagine performing the alternative behavior, and read their implementation intention aloud three times.

In the second (Day 15) and third (Day 22) session, therapists and participants evaluated effects of the previous session using the food diary. Again, participants were instructed to form a goal and depending on the condition an implementation intention. Participants decided whether to form the same, a modified, or new goal and (when applicable) implementation intention.

Participants completed the EDE-Q on Day 29 as a post-test measure, and one, three, and six months afterwards, as follow-ups. After the final follow-up, participants were debriefed. All measures were completed online with the password protected survey program Questback (www.questback.com).

Data analysis

All research questions were answered by repeated measures analyses of variance (ANOVAs) with pre-measurement data included as the first time-point. The data was analyzed using SPSS 26 and 27. All reported effect sizes are partial eta squared and have been interpreted as follows: $\eta^2 < .06$ small effect, $\eta^2 .06$ — $.14$ medium effect, and $\eta^2 \geq .14$ large effect (Khalilzadeh & Tasci, 2017).

Assumptions were checked on violations; relevant assumptions regarding normality, outliers, and influential points were met, except sphericity for which a Greenhouse-Geisser correction was used (Armstrong, 2017). One-way ANOVAs revealed no statistically significant different baseline measures of the three conditions regarding number of binges from the food diary, $F(2, 86) = 0.33$, $p = .719$, EDE-Q item 14, $F(2, 86) = 0.09$, $p = .919$, and EDE-Q mean scores, $F(2, 86) = 1.39$, $p = .255$ (see Table 1).

Table 1. Estimated marginal means and standard errors of number of binges from diary, EDE-Q item 14, and EDE-Q mean scores.

Condition	Behavior-focused Implementation Intentions	Emotion-focused Implementation Intentions	Control
Measure	<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>
Number of binges from diary			
Week 1	5.0 (0.6)	4.3 (0.6)	4.6 (0.6)
Week 4	0.3 (0.4)	0.6 (0.4)	3.2 (0.4)
EDE-Q Item 14			
Pre-test	5.0 (1.0)	5.6 (1.0)	5.3 (1.0)
Post-test	1.3 (0.5)	0.8 (0.4)	4.8 (0.4)
One-month follow-up	1.6 (0.6)	1.1 (0.5)	4.1 (0.5)
Three-months follow-up	0.9 (0.5)	1.5 (0.5)	4.0 (0.5)
Six-months follow-up	0.8 (0.5)	0.9 (0.5)	5.4 (0.5)
EDE-Q mean scores			
Pre-test	3.3 (0.3)	3.9 (0.3)	3.6 (0.3)
Post-test	2.9 (0.3)	3.5 (0.3)	3.2 (0.3)
One-month follow-up	2.6 (0.3)	3.0 (0.2)	3.0 (0.2)
Three-months follow-up	2.4 (0.2)	2.8 (0.2)	2.9 (0.2)
Six-months follow-up	2.3 (0.2)	2.8 (0.2)	2.9 (0.2)

EDE-Q = Eating Disorder Examination-Questionnaire.

Results

A 3×2 Condition (behavior-focused implementation intentions, emotion-focused implementation intentions, control) \times Time (number of binges from food diary in week 1 vs week 4) repeated measures ANOVA showed a significant Condition \times Time interaction effect, $F(2, 86) = 8.21$, $p = .001$, $\eta^2 = .16$, and a main effect for Time, $F(2, 86) = 87.14$, $p < .001$, $\eta^2 = .50$. A Tukey post hoc test revealed number of binges in week 4 to be significantly lower in the behavior-focused, $p = .046$, and emotion-focused implementation intention conditions, $p = .017$, compared to the control condition (see Table 1). Effects did not differ between the behavior-focused and emotion-focused implementation intention conditions, $p = .933$.

In addition to the food diary, we used EDE-Q item 14 (“During the previous 21 days, how many times did you have a feeling of control loss concerning eating (during eating)?”) as an outcome measure. A 3×2 (Condition [behavior-focused implementation intentions, emotion-focused implementation intentions, control] \times Time [pre-test, post-test]) repeated measures ANOVA showed a significant Condition \times Time interaction effect, $F(2, 86) = 4.54$, $p = .013$, $\eta^2 = .10$, and a main effect for Time, $F(2, 86) = 24.41$, $p < .001$, $\eta^2 = .22$. A Tukey post hoc test revealed EDE-Q item 14 scores at post-test to be significantly lower in the behavior-focused, $p = .039$, and emotion-focused implementation intention conditions, $p = .040$, compared to the control condition (see Table 1). EDE-Q item 14 scores at post-test did not differ between the behavior-focused and emotion-focused implementation intention conditions, $p = .999$.

Next, a 3×5 (Condition [behavior-focused implementation intentions, emotion-focused implementation intentions, control] x Time [pre-test, post-test, one-month follow-up, three-months follow-up, six-months follow-up]) repeated measures ANOVA was conducted with EDE-Q item 14. Mauchly's test of sphericity indicated that the assumption of sphericity was violated, $\chi^2 = 59.80$, $p < .001$, thus a Greenhouse-Geisser correction with $\epsilon = .70$ was used. Results showed a significant Condition x Time interaction, $F(5.63, 241.87) = 3.00$, $p = .009$, $\eta^2 = .07$, and a main effect for Time, $F(2.81, 241.87) = 15.98$, $p < .001$, $\eta^2 = .16$. Univariate within-subjects' contrasts for the Condition x Time interaction were significant for pre-test and post-test, $F(2, 86) = 4.55$, $p = .013$, $\eta^2 = .10$, and pre-test and six-months follow-up changes, $F(2, 86) = 6.49$, $p = .002$, $\eta^2 = .13$ (see Table 1).

EDE-Q mean scores were used to measure eating disorder pathology. Mauchly's test of sphericity indicated that the assumption of sphericity was violated, $\chi^2 = 45.99$, $p < .001$. Thus, a Greenhouse-Geisser correction with $\epsilon = .79$ was used. A 3×5 (Condition [behavior-focused implementation intentions, emotion-focused implementation intentions, control] x Time [pre-test, post-test, one-month follow-up, three-months follow-up, six-months follow-up]) repeated measures ANOVA showed no significant Condition x Time interaction effect, $F(6.30, 270.75) = 0.59$, $p = .743$. There was a significant main effect for Time, $F(3.15, 270.75) = 26.26$, $p < .001$, $\eta^2 = .23$, with univariate within-subjects' contrasts being significant for changes from pre-test to post-test, $F(1, 86) = 21.29$, $p < .001$, $\eta^2 = .20$, to one-month follow-up, $F(1, 86) = 42.28$, $p < .001$, $\eta^2 = .33$, to three-months follow-up, $F(1, 86) = 50.64$, $p < .001$, $\eta^2 = .37$, and to six-months follow-up, $F(1, 86) = 74.48$, $p < .001$, $\eta^2 = .37$ (see Table 1).

To compare behavior-focused with emotion-focused implementation intentions, a 2×2 (Condition [behavior-focused implementation intentions, emotion-focused implementation intentions] x Time [number of binges from food diary in week 1 vs week 4]) repeated measures ANOVA was conducted showing no significant Condition x Time interaction effect, $F(1,57) = 1.46$, $p = .232$. Finally, a 2×5 (Condition [behavior-focused implementation intentions, emotion-focused implementation intentions] x Time [pre-test, post-test, one-month follow-up, three-months follow-up, six-months follow-up]) repeated measures ANOVA was performed with EDE-Q item 14. Because Mauchly's test of sphericity indicated that the assumption of sphericity was violated, $\chi^2 = 119.86$, $p < .001$, a Greenhouse-Geisser correction with $\epsilon = .51$ was used. Results showed no significant Condition x Time interaction effect, $F(2.04, 116.34) = 0.52$, $p = .598$, indicating no difference between effects of behavior-focused and emotion-focused implementation intentions.

Discussion

Our first aim was to investigate the effects of implementation intentions on subthreshold binge eating in a students' sample. Furthermore, we wanted to investigate the possible difference between behavior-focused and emotion-focused implementation intentions.

Adding implementation intentions to the formation of goals during three sessions resulted in a larger decrease in subthreshold binge eating than in the control condition. This finding was established with food diary data and with EDE-Q item 14. The reduction remained stable over the six months follow-up. These results are in line with previous implementation intention research on changing eating behavior (Adriaanse et al., 2011).

Despite larger reductions of binge eating in the implementation intention conditions compared to the control condition, the same findings could not be established for general eating disorder pathology as measured by the EDE-Q mean score. The implementation intentions were directed towards refraining from binge eating, which is merely a part of eating disorder pathology. This could well explain why the implementation intention conditions did not show more decrease on the EDE-Q mean score than the control condition. Over time, eating disorder pathology levels did decrease equally in all conditions. Possible explanations for this main effect for Time are the effects of goal setting and the self-monitoring assignment (Feinstein et al., 2015; Thiele et al., 2002).

Our second aim was to compare behavior-focused to emotion-focused implementation intentions. We expected the latter to result in a greater reduction in binge eating due to the earlier intervention in the chain of (cognitive) events leading to shifting away from one's superordinate goals (Baumeister et al., 2006). However, both conditions were equally effective. No other patterns were discernable between both implementation intention conditions in terms of early or follow-up differences and smaller or larger standard deviations of the applied measures. Therefore, it appears that positive effects of early intervention in the chain of (cognitive) events are equal to positive effects of targeting the binge eating behavior directly.

Another explanation for not finding stronger binge reduction effects for the emotion-focused implementation intention condition may be that binge eating can also be triggered by cues other than negative affect, for example, by physical cues (e.g., being hungry), by situational cues (e.g., being in the kitchen in the evening), and by habits. Due to the research design, however, participants in the emotion-focused implementation intention condition were only asked about (negative) emotional states prior to binge eating. They were always requested to form an emotion-focused implementation intention, regardless of whether negative affect was a frequent cue. Participants whose binge eating was triggered by other cues than negative affect might therefore have benefited less from the intervention. The lack of difference in effects

between behavior-focused implementation intentions (29 participants) and emotion-focused implementation intentions (30 participants) may also be due to the small sample size. To detect a presumably small difference in effects our study was underpowered, because detecting a small effect size (e.g., $\eta^2 = .02$) with sufficient power, $1-\beta = .80$, requires a much larger sample, $N = 354$, than our sample, $N = 59$ (Cohen, 1988; Faul et al., 2009).

Our results are of clinical relevance; it is the first study to test and demonstrate that implementation intentions can be used to decrease subthreshold binge eating. As an important next step, implementation intentions should be tested as an addition to standard treatment (CBT) for BED and BN within a clinical trial. Since they are quick and easy to learn, implementation intention sessions could be offered during the waiting list period. They require relatively little continuous mental effort and little self-control (Gollwitzer & Sheeran, 2006). Therefore, a few extra sessions with implementation intentions could provide a quick first success experience, which would likely benefit motivation for the subsequent standard treatment.

A strength of the current study is demonstrating, for the first time, that implementation intentions are effective against subthreshold binge eating. Many studies previously showed the effects of implementation intentions on health behaviors, such as promoting healthy eating, but all of them in samples without symptoms of (subthreshold) mental disorders (Adriaanse et al., 2011; Gollwitzer & Sheeran, 2006).

A limitation of our study is the students' sample with subthreshold binge eating. Although there are similarities between subthreshold binge eating in a students' sample and binge eating in BED and BN, there are also important differences between both populations (e.g., distinction in symptom severity). Therefore, it remains uncertain whether implementation intention sessions also benefit patients with BED and BN. Furthermore, the present findings that behavior-focused and emotion-focused implementation intentions are equally effective do not necessarily pertain to BED and BN patients, in which the degree of loss of control is presumably more severe. Also, some participants in the present study indicated that hunger preceded their binge eating, whereas in BED and BN patients, negative affect oftentimes precedes binge eating (Goldschmidt et al., 2011; Ricca et al., 2009; Welsh & King, 2016). Future research with a clinical sample of BED and BN is therefore indicated.

Another limitation is the investigation of possible differences between behavior-focused and emotion-focused implementation intentions without even knowing whether three implementation intention sessions are suitable for reducing binge eating. Based on our results, implementation intentions indeed reduce subthreshold binge eating, but we do not know whether the same results would have been achieved with two sessions or would have been better even with four sessions or booster sessions (Ahern et al., 2018; Fairburn & Murphy, 2015; Hedman et al., 2012). Future research could experiment with

the number of sessions. Potential moderating variables could also be explored, for example, the influence of imagery during imprinting of the implementation intention.

In conclusion, three implementation intention sessions targeted at preventing binge eating successfully reduced the number of binges in a students' sample with subthreshold binge eating. Effects were the same for implementation intentions focused on binge eating behavior and for implementation intentions focused on emotions leading up to binge eating. The decrease in binges was maintained for at least six months after the last session. The knowledge of using implementation intentions on binge eating is still limited, yet promising. Therefore, as a next step, it is advised to replicate this study with a population with a clinical diagnosis of BED and BN.

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Data Availability Statement

The data supporting the findings of this study are available on request from the first author. The data are not publicly available due to their containing information that could compromise the privacy of research participants.

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