



## Research report

# The effect of suppressing negative emotions on eating behavior in binge eating disorder

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## ABSTRACT

Overeating may be a consequence of the suppression of negative emotions, by depleting self-control resources. This experiment investigated whether (a) there is a causal relationship between the suppression of negative emotions, negative mood, and overeating in people with binge eating disorder (BED) and whether (b) this relationship is increased in depressed people with BED. Sixty-six women with (full and sub-threshold) BED were shown an upsetting movie and then asked either to suppress their emotions or to react naturally. Subsequently, everyone participated in a taste task. After a decline, initial mood before watching the movie was restored after eating. Depressive symptomatology was positively correlated with caloric intake. Within the clinically depressed (Beck Depression Inventory-score > 19) BED group, those who were most affected by the negative mood induction consumed the most calories. No differences were found between the two conditions with regard to caloric intake. No interaction effect was found between depressive symptoms and mood suppression. The hypothesis that suppression of negative emotion leads to overeating in (depressed) binge eaters was not born out. Overeating may serve as a means to (temporary) repair negative mood.

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## Introduction

The most prevalent comorbid lifetime diagnosis for individuals with binge eating disorder (BED) is depressive disorder (Dingemans, Spinhoven, & Van Furth, 2007). Moreover, ample evidence exists that the severity of binge eating is positively related to more severe degrees of depression (Telch & Agras, 1994). Apart from the findings that BED individuals are relatively more depressed than non-BED individuals, mood states seem especially poor immediately before a binge eating episode (Grilo & Shiffman, 1994). Binge eater mood states prior to binge eating episodes have also been shown to be more negative than prior to eating events triggered by hunger (Waters, Hill, & Waller, 2001). Furthermore, binge eating-disordered women experience the hassles of daily life as more stressful than non-BED controls and the greater the stress experienced, the higher the food intake during a binge (Crowther, Shepherd, Sanftner, & Bonifazi, 2001). In sum, several studies provide evidence that depressive symptoms (trait), acute negative mood (state), and binge eating behavior are related but do not explain the causal relationship between negative affect and binge eating in patients with BED.

Only a few studies have attempted to unravel the causal relationship between depression and binge eating. Chua, Touyz, and Hill (2004) experimentally manipulated the mood of obese persons with binge eating episodes and found that participants ate more after watching a sad film (negative mood induction) than after watching a neutral film. However, in a similar mood induction experiment that compared BED-diagnosed participants with a weight-matched non-eating-disordered control group, Telch and Agras (1996) observed that while BED participants consumed significantly more calories at a multi-item buffet than control participants, food intake quantity was not affected by mood. However, acute negative mood did influence how BED participants perceived and labeled their eating episode. After a sad movie, BED participants were more likely to label their eating episode as excessive and to report more loss of control over their eating than control participants. In a later experiment the researchers (Agras & Telch, 1998) replicated their finding that acute negative mood significantly increased the perception of loss of control over eating. Agras and Telch (1998) argued that a negative mood state lessens the sense of control over eating and therefore makes the labeling of an eating episode as a binge more likely. No differences were found in stable depressive symptoms between those who binge ate at the buffet and those who did not. Agras and Telch suggested that acute negative affect rather than a stable negative mood leads to binge eating.

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Thus to date, findings on the causal relationship between depressive symptoms, acute negative mood, and excessive eating are inconclusive. The pervasiveness however of the link between emotional distress and binge eating suggests that the question is not whether but how negative affect produces these effects (Tice, Bratslavsky, & Baumeister, 2001).

In a previous randomized controlled trial in which the effectiveness of cognitive behavioral therapy in patients with BED was investigated (Dingemans et al., 2007), we found that less worrying about weight fully mediated abstinence of binge eating at post treatment and less worrying about shape and eating, depressive symptoms, and more general psychopathological symptoms marginally mediated abstinence. In other words, worrying was positively correlated with binge eating. It is likely that worrying and ruminating about one's weight and appearance are unpleasant experiences. Binge eating may be used as a mean to escape from these negative thoughts and worries and may in this way help to alleviate emotional stress (Heatherton & Baumeister, 1991).

To control the urge to binge eat or to regulate negative emotions, people need to exert self-control. Self-control involves regulating or inhibiting competing urges, behaviors, and desires. Muraven and Baumeister (2000) proposed 'that people have a limited quantity of resources available for self-control and that various acts of self-control draw on this limited stock' (p. 247). Automatic processes are efficient whereas controlled ones are costly in terms of effortful consumption of resources (Muraven & Baumeister, 2000). Controlling one's behavior requires the expenditure and depletion of a limited inner resource (Baumeister, Tice, Bratslavsky, & Muraven, 1998). When a situation demands two consecutive acts of self-control, performance on the second (unrelated) act is frequently impaired because of energy depletion. After depletion, the resources need to be restored by means of rest and relaxation. In a study by Muraven, Tice, and Baumeister (1998), for example, participants shown an upsetting movie either received instruction to regulate their emotions (by either exaggerating or suppressing their emotional response) or received no emotion regulation instructions. Afterwards the participants had to squeeze a handgrip as long as possible, an exercise that is almost entirely a measure of self-control. Participants who had to actively regulate their emotions (exaggeration or suppression) performed worse on the subsequent handgrip-squeezing task than participants who received no such instructions. In other words, active emotion regulation undermined persistence on a next self-control task because of a lack of energy.

In a similar study, Vohs and Heatherton (2001) instructed chronic female dieters either to regulate their emotional reactions by suppressing them while watching an upsetting movie or to show their natural reactions. Directly after, participants took part in an ice cream tasting task. The participants who were instructed to suppress their emotional reactions ate significantly more ice cream during the taste task than the participants who were asked to act naturally. Together these results suggest that a first exercise of self-control impairs people's performance on a subsequent, unrelated self-control task. Important to note is that in the experiments of Muraven et al. (1998) and of Vohs and Heatherton (2001), there were no differences in the extent to which participants' mood was affected by the upsetting movie fragments. As intended, all participants reported a more negative mood after watching the movie, regardless of the instructions received to suppress or exaggerate their emotions or to act naturally. Thus, participants who did or did not regulate their emotions differed only with respect to the amount of self-control exerted while watching the upsetting movie and not with respect to the extent they were emotionally affected by the movie. A well-known

researcher in the field of thought and emotion suppression and who studied this in a laboratory setting, is Daniel Wegner (Wegner, 1994; Wegner, White, Schneider, & Carter, 1987; Wenzlaff & Wegner, 2000). His group investigated and reported on what they called the ironic effects of mental control such as thought or emotion suppression (i.e. the famous white bear studies). Studies on mental control in general and emotion suppression in particular have showed frequently and consistently that people fail when they try to suppress an emotion or negative mood. Because people engage in a suppression-induced search for target-thoughts, suppression leads to a counterproductive result in the form of intrusions of the thought one wanted to ban. Thought suppression seems to have the opposite effect and makes people fixate on it. Ample evidence exists that this is especially true for affective states (Martijn, Tenbult, Merckelbach, Dreezens, & de Vries, 2002; Wegner, Erber, & Zanakos, 1994). The suppression of emotionally loaded stimuli is even more difficult than neutral stimuli. When people want to stop a worry, escape bad moods or to stop thinking about food when on a diet, they fail again and again. More specifically, studies on emotion regulation and self-control ability showed that it is more likely that the *regulation* of emotional reactions causes loss of control (i.e. overeating) than the mere *experience* of negative emotions.

However, Tice et al. (2001) have suggested that emotional distress might shift priorities to the immediate present. When people feel acutely bad, they generally wish to feel better and this wish is often urgent. Certain impulses or self-indulgent behaviors are not always simply a sign of reduced control; rather, they may be strategic efforts at affect regulation. It could be argued that people with BED choose to binge on high calorie foods because it gives them immediate relief and pleasure, rather than that binge eating is a consequence of energy depletion.

The aim of the present experimental study is to investigate the causal relation between the regulation of negative emotions, negative mood, and binge eating. Participants were randomly assigned to either a condition in which they were instructed to suppress their emotional reactions during a sad film fragment or to a condition in which they had to show their natural reactions. Afterwards they were all subjected to a taste task. We hypothesized that overeating is a consequence of an attempt to regulate negative emotions because the limited store of self-control resources has been depleted by a prior act of self-control (suppression of emotional reactions). Secondly, we hypothesized that the negative mood induction would evoke a specifically increased caloric intake in depressed BED patients. Depressed individuals have lower levels of energy and hence, less resources available for self-control purposes than non-depressed individuals as pointed out by Baumeister and Exline (2000) (p. 35) or an increased caloric intake in depressed BED patients might be caused by a direct affect regulation as has been proposed by Tice et al. (2001).

## Method

### Participants

The participants included in this study had a primary diagnosis of (sub)threshold binge eating disorder according to DSM-IV criteria (American Psychiatric Association, 1994). To be included in the study, a participant had to report an average of one binge-eating episode a week over the previous 24 weeks. Women with a sub-threshold BED (an average of one binge eating episode a week) were included in the study because they do not seem to differ significantly from full-syndrome BED (an average of two or more binge eating episodes a week) (Striegel-Moore et al., 2000). Participants had to be female and between 18 and 60 years old.

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