



## Research report

Effects of thought suppression on eating behaviour in restrained and non-restrained eaters<sup>☆</sup>James A.K. Erskine<sup>a,\*</sup>, George J. Georgiou<sup>b</sup><sup>a</sup> Division of Mental Health, St George's University of London, 6th Floor, Hunter Wing, Cranmer Terrace, London SW17 0RE, UK<sup>b</sup> School of Psychology, University of Hertfordshire, UK

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## ABSTRACT

Recent research has shown that suppressing food related thoughts can cause a subsequent increase in consumption relative to groups not suppressing, or thinking about food. The present study examined whether the effects of thought suppression on subsequent eating behaviour would interact with participants restrained eating status. One hundred and sixteen female participants were split into three groups. One third suppressed thoughts of chocolate, one third thought about chocolate and the final third thought about anything they wished. Following this, participants took part in a task where they rated two brands of chocolate on several taste characteristics. Participants were unaware that the dependent variable was the amount of chocolate consumed and not taste preference. Participants also completed measures of dietary restraint, craving, guilt and thought suppression. Results indicated that restrained eaters in the suppression condition consumed significantly more chocolate than restrained eaters in the expression or control condition. Participants low on restraint ate statistically equivalent amounts in all three groups. In addition, participants reporting frequent use of thought suppression (assessed by the White Bear Suppression Inventory) reported greater chocolate cravings.

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The use of thought suppression has long been known to result in an intensification of intrusive thoughts rather than reduction (Wegner, Schneider, Carter, & White, 1987). This is supported by meta-analytic findings showing that thought suppression does indeed cause subsequent thought rebound (Abramowitz, Tolin, & Street, 2001). Therefore it is generally accepted that suppressed thoughts will often subsequently return more strongly, and that thought suppression represents a poor method of achieving control over the mind (Wegner & Pennebaker, 1993). In further support of the relationship between thought suppression and uncontrollability, studies commonly report associations between greater use of thought suppression and psychopathology (Erskine, Kvavilashvili, & Kornbrot, 2007; Wegner & Zanakos, 1994). Importantly, recent work suggests that thought suppression can also result in behavioural consequences that mirror its effects on thought. Thus, studies have demonstrated that avoiding thoughts about a skinhead can result in one keeping a greater social distance from a skinhead in later interactions, and that suppressing thoughts of alcohol can result in one subsequently smoking more intensively (Macrae, Bodenhausen, Milne, & Jetten, 1994; Palfai, Colby, Monti, & Rohsenow, 1997).

More recently, Erskine (2008) demonstrated that suppressing thoughts of chocolate resulted in greater subsequent chocolate consumption, relative to groups that thought about anything or thought about chocolate. The present study will also investigate the effects of suppressing thoughts of food on later consumption. However, it will seek to address an unanswered question from the previous study of Erskine (2008). Thus, the previous study of Erskine (2008) recruited all non-dieting participants and did not measure dietary restraint, and was therefore unable to investigate the effects of dietary restraint on participants' consumption. This last point needs to be taken into consideration as there is evidence to suggest that dietary restraint is linked to both a tendency to restrict food intake but also to overeat (Herman & Polivy, 1993; Polivy & Herman, 1985). Dietary restraint is often viewed as commensurate with a chronic tendency to diet (Polivy, 1996). Furthermore, recent laboratory work has indicated that the effects of behavioural dietary restriction often interact with restrained eating status, causing subsequent overeating in restrained but not unrestrained eaters (Polivy, Coleman, & Herman, 2005). Thus, Polivy et al. (2005) divided 103 participants into three groups that were either deprived of chocolate, vanilla or non-deprived for 1-week. After this, participants were presented with a laboratory task involving tasting and rating foods. Results indicated that restrained eaters deprived of chocolate, ate more chocolate in the food comparison task and experienced more cravings. Polivy et al. (2005) conclude that deprivation can cause craving and overeating

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in restrained eaters. In addition, there is also evidence linking increased craving to dietary restraint (Fedoroff, Polivy, & Herman, 2003).

The previous work of Soetens and colleagues also directly relates to the current study. Thus, Soetens and Braet (2006) had clinically obese and non-obese boys and girls (12–18 years old) suppress thoughts of food or merely monitor them. Soetens and Braet (2006) then examined subsequent levels of thinking about food. The results indicated no overall rebound effect (increased food thoughts after suppression). However, restrained eaters who were also obese did show a thought rebound, again demonstrating an interaction between restrained eating and an experimental manipulation involving suppression. In a further study, Soetens, Braet, Van Vlierberghe, and Roets (2008) examined the effects of prohibition and restrained eating on laboratory consumption. Specifically, half of the participants were prohibited from eating a favourite food for 24 h, while simultaneously being exposed to it, the remaining participants were not prohibited. All participants then attended a laboratory eating session. Participants were also not only classified as restrainers versus non-restrainers but also as high or low in disinhibition. Disinhibition is taken to indicate a predisposition to overeating (Westenhofer, Broeckmann, Munch, & Pudel, 1994). Results indicated that participants consumed more in the laboratory following prohibition and exposure. However a significant interaction between experimental group (prohibition vs. no prohibition) and high restraint/high disinhibition was also reported such that the results were strongest in this sub-group. Therefore, restrained eaters who were also disinhibited showed particular sensitivity to the effects of prohibition.

The present study will examine eating behaviour in the laboratory, but will take measures of dietary restraint, guilt and cravings to examine how these factors impact upon the previously demonstrated effects of thought suppression (Erskine, 2008). This is important as previous research has not yet examined the effects of thought suppression of food thoughts on subsequent consumption in restrained and non-restrained eaters. Polivy et al. (2005) examined the effects of behavioural restraint on subsequent consumption and Soetens, Braet, and Moens (2008); Soetens, Braet, Van Vlierberghe, et al. (2008) examined a combination of thought suppression and behavioural restriction on subsequent consumption. In addition, both studies divided their participants into restrainers and non-restrainers. Thus, the study reported here is the first to examine subsequent consumption in participants only using thought suppression. In addition, we also wanted to investigate previously reported correlates of overeating such as guilt and cravings. Therefore, participants will be asked to either suppress, express or monitor their thoughts about chocolate for 5 min. They will then be introduced to an ostensibly unrelated task where they will have the opportunity to try two brands of chocolate and answer a questionnaire about their preference. Participants will be unaware that the real variable of interest is the amount consumed. It is anticipated that the results will show an interaction between experimental group (suppression vs. expression vs. control) and participants' restraint status (restrained vs. non-restrained), such that a clear behavioural rebound will be evident in the restrained eaters with the suppression group consuming significantly more chocolate than the expression and control conditions. It is anticipated that non-restrainers will show a similar effect but of weaker magnitude.

It is anticipated that restraint, cravings and body mass index will be significantly and positively related. If cravings are predictive of consumption then one would anticipate that participants reporting greater chocolate cravings would have higher BMIs. Furthermore, if restraint is related to overeating again one would anticipate a positive relationship between restraint and participants BMI scores. Importantly there is previous

support for positive relationships between cravings and BMI (Burton, Smit, & Lightowler, 2007; Rodin, Mancuso, Granger, & Nelbach, 1991) and between dietary restraint and cravings (Hill, Weaver, & Blundell, 1991). One final aim was to examine participants' use of thought suppression in everyday life and how this relates to guilt, cravings and body mass index. It is anticipated that participants using thought suppression frequently would report greater guilt and cravings, and would have higher body mass index scores.

## Method

### Participants

One hundred and twenty seven female undergraduates took part from the University of Hertfordshire. However, the final sample consisted of 116 participants (mean age 22.57 years; SD = 6.38) as five failed to follow the experimental instructions, and six were outliers on the body mass index. There were 41, 39 and 36 participants in the suppression, expression and control groups respectively.

### Materials

Restraint scale (Herman & Polivy, 1980). This 10-item questionnaire assesses people's dietary habits and weight fluctuations. Scores range from 0 to 35. Statements include 'Do you have feelings of guilt after overeating?' or 'In a typical week, how much does your weight fluctuate?' Higher scores indicate greater weight fluctuation and concern over dieting.

Attitudes towards chocolate scale (ACQ-Benton, Greenfield, & Morgan, 1998). This 24-item questionnaire contains subscales assessing craving, guilt and a functional use of chocolate. Ten items measure craving, ten measure guilt and four index functional approach. The scores combine to give a total attitude to chocolate score. Items include "Chocolate often preys on my mind" and "I feel depressed and dissatisfied with life after eating chocolate". Answers are made on 5-point Likert scales where 1 = strongly disagree and 5 = strongly agree. Higher scores indicate greater craving, guilt and functional use of chocolate.

The White Bear Suppression Inventory (WBSI-Wegner & Zanakos, 1994) is a 15-item questionnaire measuring people's use of thought suppression. It contains statements such as 'There are things I prefer not to think about' or 'There are images that come to mind that I cannot erase'. Ratings are made on a 5-point scale from "strongly disagree" to "strongly agree". Scores range from 15 to 75. Higher scores indicate greater use of thought suppression.

Participants were also asked to indicate how hungry they were and how much they liked chocolate on a 10-point scale (0 = strongly dislike/not at all hungry; 10 = strongly like/very hungry). They were also asked to report whether they were currently on a diet. Currently being on a diet was defined as deliberately trying to control food intake for the purpose of losing weight or maintaining their current weight. Finally participants were weighed in kg's on a standard scale and their height was measured using a wall mounted height scale in cm's to calculate their body mass index.

### Procedure

Participants completed the study individually. All participants were asked to refrain from eating or drinking in the hour prior to the start of the study. On arrival they were introduced to a study on thinking and taste preference. Participants were informed that there would be two periods of thought verbalisation during which they would be asked to think aloud while alone. It was made clear

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