

Research report

## How visual images of chocolate affect the craving and guilt of female dieters

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### Abstract

This study asks whether exposure to images of chocolate induces cravings and guilty feelings in females. A further aim was to examine whether these effects are heightened in the case of dieters. The participants, 85 females, saw a series of enticing media images, either of chocolate or of non-food products. Two thirds of the sample were dieting or had dieted in the past; 15% had been on seven or more diets. After viewing the images all participants completed the Attitudes to Chocolate Questionnaire (ACQ) [Benton, Greenfield, & Morgan (1998). The development of the attitudes to chocolate questionnaire. *Personality and Individual Differences*, 24(4), 513–520]. The different conditions affected only those who dieted. Dieters had significantly higher ACQ scores after viewing the chocolate images than the non-dieters. It is suggested that dietary restriction increases desire for forbidden foods, in the form of craving, and may induce negative affect such as guilt, anxiety and depression.

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### Introduction

At a time when health and diet are under increasing scrutiny, obesity is on the increase. As the media continue to present the thin figure as the ideal (Stice, Schupack-Neuberg, Shaw, & Stein, 1994; Tiggemann & Slater, 2004), the actuality is that over 1 billion adults in the world are overweight, and at least 300 million of those are obese (WHO, 2003). With the adverse effect on health caused by obesity, it is crucial to identify any factors that may contribute to poor dietary habits. Whilst physiological factors, e.g. hormonal changes, may play a role (e.g. Rozin, Levine, & Stoess, 1991) clearly not enough is known about the cognitive and affective basis of food cravings (Harvey, Kemp, & Tiggemann, 2005) and yet this could lead to a better understanding of how unhealthy eating habits develop. Furthermore it has been suggested that some individuals show increased sensitivity and craving in response to external food cues (Schacter, 1971) and this

could be as a consequence of dieting (Herman & Polivy, 1975). In this paper we consider whether dieting may increase the craving for food and, paradoxically, lead to over-eating. The study described shows that exposure to visual images of food provokes food cravings and negative affect and that this effect is greater for dieters than non-dieters.

An ideal target food for such research is chocolate, since chocolate is often the subject of a love-hate relationship. Whilst it is loved for its pleasurable taste, scent and texture, it is also disliked by some for its perceived high calorific and sugar content and, as a result, some people make a conscious effort to restrict their consumption of it. Nonetheless chocolate is consistently identified as one of the most craved foodstuffs (Hill & Heaton-Brown, 1994; Rogers & Smit, 2000). Indeed, comparisons have been made with cravings for alcohol, even though chocolate lacks the addictive properties of alcohol (Baumeister, Heatherton, & Tice, 1994; Rogers & Smit, 2000). Previous research suggests that simply having chocolate within sight can increase desire for it (Painter, Wansink, & Hieggelke, 2002) and that this is associated with feelings of both craving and guilt (Rogers & Smit, 2000). In view of the

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prevalence of visual images of chocolate and chocolate related food products in women's food and dieting magazines, in the form of advertisements and recipe related photographs, can such images alone induce these feelings? Thus the focus of this paper is the dynamic relationship between affect and environmental cues on food related behaviour.

Once considered a luxury item, chocolate is now frequently cited as comfort food perhaps because, as Wansink, Cheney, and Chan (2003) suggest, there is a combination of its "favourable sensory qualities with connotations of gift giving and reward developed from childhood" (p. 740). However, chocolate has been found to be a more preferable choice of comfort food to women than to men, and women are more accepting of chocolate as a comfort food than men (Wansink et al., 2003). Weingarten and Elston (1991) found that 97% of women and 68% of men experience food cravings, with chocolate being the food craved most often (Hill & Heaton-Brown, 1994; Rozin et al., 1991). Moreover, in the Wansink et al. study women reported feeling less healthy after eating comfort foods and after eating chocolate, with 51% women citing a feeling of guilt compared to only 35% of men. So, although chocolate is eaten more for comfort by women, feelings of guilt present an unpleasant side effect for some women. Equally, Lafay et al. (2001) found that the negative emotions commonly experienced after satisfying a food craving, such as depression, were more frequently reported in women than in men, whilst men more frequently associated cravings with positive emotions, such as relaxation and happiness. Hence, this study will investigate the effects on women only.

As food cravings have been found to be strongly associated with negative emotions in women, including stress and boredom (e.g. Rogers & Smit, 2000), it is not surprising that chocolate is widely accepted as a comfort food, as its "consumption evokes a psychologically comfortable and pleasurable state for the person" (Wansink et al., 2003, p. 739). However, the two emotional responses particularly associated with chocolate are craving and, as mentioned, guilt (Rogers & Smit, 2000). It is the dynamic relationship between negative emotions, including guilt, and food cravings which appears to be important. For example, in terms of healthy eating, chocolate's high sugar and fat content have earned it the title of a 'forbidden' food (Knight & Boland, 1989). It is these 'forbidden' foods which dieters try to avoid when losing weight. However, avoidance in itself appears to have an undesired effect as Rogers and Smit (2000) suggest that attempts to resist eating a particular food can, paradoxically, result in cravings. If these cravings are met then negative emotions, such as guilt, can arise. As negative emotions can lead to further craving, so a vicious circle begins. Interestingly, King, Herman, and Polivy (1987) found that chocolate was the only food that both dieters and non dieters felt guilty about eating. Further evidence of the emotional background to food cravings comes from the

Lafay et al. study. Only 40% of their sample associated cravings with hunger, suggesting that cravings arise less from food deprivation than from negative affect.

Research into the emotional aspects of cravings has taken diverse routes. For example, studies undertaken by Baumeister, Bratslavsky, Muraven, and Tice (1998) led to their proposal that ego-depletion may be implicated in the emotional element of food cravings. Ego depletion is the notion that 'active volition', i.e. willpower, has a limited resource of strength. This could explain how, for example, if a person has a frustrating job or stressful lifestyle that consumes a lot of their active volition, they will be less capable of resisting emotional cravings when they arise. On the other hand, cravings and feelings of guilt form the basis of a questionnaire devised by Benton, Greenfield, and Morgan (1998) in an effort to better understand relationships between people's beliefs and feelings about chocolate. In their Attitude to Chocolate Questionnaire (ACQ) factor analysis of the original attitude data suggested that attitudes to chocolate comprise three factors: craving, guilt and function. Benton et al. (1998) found that females had significantly higher craving and guilt scores than males, although there was no gender difference between the function scores. They also found that craving strongly influenced the consumption of chocolate, and often, the people who felt most guilty were more likely to report symptoms of bingeing and vomiting.

However, it is not only attitudes towards chocolate and emotional influences on consumption and craving that interest researchers. Studies have examined the effect of external cues with other foodstuffs and found that simple descriptive manipulations can prove influential. For example, the inclusion of terms such as 'healthy', 'natural' or 'diet' on restaurant menus or product labels has been shown to exert a positive influence on taste perception (Parker & Penfield, 2005; Wansink, van Ittersum, & Painter, 2004). Even the addition of two positive adjectives before 'salmon fillet' on a menu was found to result in a more favourable product evaluation (Wansink, Van Ittersum, & Painter, 2005). Insofar as chocolate is concerned, Painter et al. (2002) found that visibility and convenience of location prompted an increase in consumption. This suggests that environmental or external cues may also influence cravings and chocolate consumption; therefore a visual image may trigger cravings. However, crucially, responses to visual images appear to differ for women according to satisfaction with their body image. For example, in a study by Posavac, Posavac, and Posavac (1998), only women who were dissatisfied with their body image had greater weight concerns if they were exposed to beauty pictures rather than neutral pictures. If beauty images provoke a particular reaction only in women with body image dissatisfaction this suggests that there may be cognitive differences between dieters and non-dieters, and that dieters and restrained eaters may differ in their responses to visual images of food when compared to non-dieters.

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