



## Research report

## Dietary restraint, ambivalence toward eating, and the valence and content of spontaneous associations with eating



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## ABSTRACT

In a random sample of the German-speaking population of Switzerland ( $N = 1388, 730$  women), the technique of spontaneous associations was used to examine the relationship between valence (positive, negative) and content of participants' spontaneous associations with the term "eating" and dietary restraint, ambivalence toward eating, and health consciousness. Regression analysis revealed ambivalence to be the most important and food health consciousness the second most important predictor of restrained eating. Correspondence analysis of the content of the spontaneous associations revealed high-restrained eaters to have fewer associations with eating than unrestrained eaters. High-restrained eaters most often had negative associations with diet and positive associations with health. Unrestrained eaters mentioned a variety of positive associations, such as community, comfort and well-being, preparation of food, aesthetics, and various specific foods (e.g., starchy side dishes, and sweets). Results support the notion that the conflict between weight control and eating enjoyment is rather pronounced in high-restrained eaters, resulting in ambivalence toward eating, and the inhibition of associations with palatable foods. This was less pronounced, but still present, in medium-restrained eaters. In contrast, unrestrained eaters seemed to have a balanced and conflict-free relationship with eating. However, restrained eating also seemed to be driven by health considerations.

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## Introduction

As food is easily accessible in Western countries, restrained eating may become an adaptive behavior strategy to limit weight gain (de Lauzon-Guillain et al., 2006). Dietary restraint is the intentional restriction of energy intake for the purpose of weight loss or weight control (Burger & Stice, 2011). However, most restrained eaters are not able to successfully reduce their weight or maintain their weight loss over long time periods (Mann & Ward, 2007). Researchers (Herman & Polivy, 1984; Stroebe, Mensink, Aarts, Schut, & Kruglanski, 2008) suggest that restrained eaters seem to be susceptible to psychological distress, such as feelings of conflict, ambivalence toward eating, and high levels of cognitive effort to control eating. The conflict model of eating suggests that the eating behavior of restrained eaters may be dominated by a conflict between the goal of weight control and eating enjoyment (Stroebe et al., 2008). Restrained eaters try to control and restrict intake of palatable foods, but at the same time, palatable foods have a positive effect (Fedoroff, Polivy, & Herman, 1997). As soon as the goal of enjoying palatable food is activated in restrained eaters, the conflicting goal of weight control is inhibited (Stroebe et al.,

2008). This mechanism is assumed to underlie the self-regulatory failure of restrained eaters in environments where attractive food is easily available (Papies, Stroebe, & Aarts, 2009; Stroebe et al., 2008). According to this goal-conflict model, the conflict between enjoying palatable food and controlling weight arises due to the more pronounced positive attitude and affective reaction toward palatable food of restrained eaters compared to unrestrained eaters; however, previous research has produced inconsistent results (for an overview, see Hofmann, van Koningsbruggen, Stroebe, Ramanathan, & Aarts, 2010). Therefore, in the present study we use the spontaneous word-association technique (Szalay & Deese, 1978) to examine the question of whether restrained and unrestrained eaters differ in their affective and intuitive responses toward eating palatable food and eating in general.

*Affective and ambivalent reactions to palatable food in restrained and unrestrained eaters*

Restrained eaters are quick to consider the pleasure they would enjoy in eating the presented palatable food, which could influence their subsequent behavior (Papies, Stroebe, & Aarts, 2007). There is limited evidence for the hypothesis that restrained eaters are more responsive to the reward of the intake of palatable foods (Ahern, Field, Yokum, Bohon, & Stice, 2010; Burger & Stice, 2011). Other

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studies using indirect measures to better grasp the spontaneous automatic nature of intuitive and affective reactions (Hofmann, Friese, & Strack, 2009) produced inconsistent results, ranging from more positive hedonic reactions to palatable foods in restrained eaters (Hoeftling & Strack, 2008) to no difference in the enjoyment of high-fat palatable foods between restrained and unrestrained eaters (Roefs, Herman, MacLeod, Smulders, & Jansen, 2005). Papies et al. (2009) found that restrained eaters did not evaluate palatable foods as more positive than unpalatable or neutral foods, while unrestrained eaters did. Instead, restrained eaters were found to be more ambivalent toward palatable foods (i.e., held more pronounced evaluations of the negative aspects of such foods), which in turn affected participants' scores on the implicit attitude measure (Papies et al., 2009; Stroebe et al., 2008). Attitudinal ambivalence refers to the simultaneous existence of strong positive and negative evaluations about the same attitude object (de Liver, van der Pligt, & Wigboldus, 2007; Sparks, Conner, James, Shepherd, & Povey, 2001). Instead of having more positive attitudes toward palatable foods, restrained eaters seem to experience more ambivalence, because the goal of dieting is incompatible with enjoying palatable food (Stroebe et al., 2008). A recent process-oriented study (Hofmann et al., 2010) revealed that under normal conditions, restrained eaters exert automatic implicit forms of self-control through the inhibition or devaluation of tempting stimuli. Through repeated confrontation with tempting cues, self-control seems to be impaired, and restrained eaters are drawn toward tempting food, while normal eaters show reduced hedonic responding over time (Hofmann et al., 2010). Thus, previous research indicate that it is still unclear whether restrained eaters (compared to unrestrained eaters) have stronger positive or negative, ambivalent, or inhibited affective responses to eating tempting foods, which may explain why restrained eaters have a goal conflict and unrestrained eaters do not.

#### *The spontaneous word-association technique to examine the affective and intuitive reaction toward palatable food and eating in general*

One reason for the inconsistent results or for the failure to find differences in intuitive and affective reactions between restrained and unrestrained eaters, respectively, may be that in previous research, direct (but also indirect) measures mainly focused on the valence of the affective reaction (positive versus negative) but not the content of the reaction. To examine the valence *and* the content of the affective reaction in the present study, we used the spontaneous word-association technique (Szalay & Deese, 1978). This technique assesses which spontaneous word associations come to people's minds when they think about a stimulus and individuals' affective ratings of those associations. The spontaneous word association refers to the content, while the affective rating refers to the valence of individuals' affective reactions to a stimulus.

The technique assesses individuals' intuitive and affective imagery of a stimulus, which is theorized to guide judgments, decisions, and behaviors (Slovic, Finucane, Peters, & MacGregor, 2007). It was previously used to examine spontaneous reactions to various health-related risks evoked by, for example, adolescent health-threatening behaviors (Benthin et al., 1995), blood transfusion (Finucane, Slovic, & Mertz, 2000), global warming and climate change (Leiserowitz, 2005), and various technologies (Connor & Siegrist, 2011; Dohle, Keller, & Siegrist, 2012; Keller, Visschers, & Siegrist, 2012a, 2012b). The latter studies examined not only the valence (affective rating) but also the content of the spontaneous associations by utilizing correspondence analysis (Clausen, 1988). In the field of food and dietary behavior, correspondence analysis has been used to construct a graphical display of the relationship between the frequency of eating particular food items for males

and females (Guinot et al., 2001). In the present study, we used correspondence analysis to provide a visual display of the contents of the associations with eating for different levels of restrained eating and gender.

#### *Rationale of the present study*

In the present study, we assessed the valence and the content of participants' spontaneous associations with the term "eating." The use of the spontaneous word-association technique provides a way to assess the subjective meaning of a stimulus (for a short overview, see Leiserowitz, 2005). The technique offers an indirect and open way to capture the intuitive and affective imagery toward eating, which is assumed to underlie and direct restrained eating behavior. To assess the subjective meaning of eating as a behavior, we asked participants to associate with the wider term "eating" (instead of the more concrete term "food," which may have resulted in a list of different foods).

Using regression analysis, the first goal of the present study was to examine the influence of the valence of the spontaneous associations with eating (affective evaluation of the spontaneous word associations) and ambivalence toward eating on restrained eating controlling for demographics. Further relevant psychological determinants (e.g., emotional and external eating, health consciousness, liking and consumption of healthy and unhealthy food) were also examined or controlled for, respectively. Based on previous research that revealed that restrained eaters experience more ambivalence toward eating palatable foods than unrestrained eaters (Stroebe et al., 2008), we hypothesized that the feeling of ambivalence is the most important predictor of restrained eating.

Using correspondence analysis, the second goal was to examine the relationship between the content of the spontaneous word associations and restrained eating. On the one hand, we hypothesized that the contents of the associations of restrained and unrestrained eaters would differ. In line with the goal-conflict model and previous research, we assumed restrained eaters to have associations with eating that portray the conflict between dieting and enjoying or eating palatable foods (Stroebe et al., 2008) or that illustrate the inhibition or devaluation of tempting foods, respectively (e.g., Hofmann et al., 2010; Papies et al., 2009). On the other hand, we expected unrestrained eaters to have associations with eating that indicate a conflict-free and balanced relationship with eating. In addition, we also hypothesized that the content of the associations of males and females would differ. Previous research has revealed gender differences in a various range of eating motives and attitudes (Renner, Sproesser, Strohbach, & Schupp, 2012). We therefore assumed that males and females also differ in their underlying spontaneous associations with eating. To our knowledge, the technique of spontaneous word association has not been used in the field of restrained eating behavior. The use of this technique may provide important insights into the intuitive and affective imagery underlying and directing restrained and unrestrained eating.

## **Methods**

### *Participants*

Questionnaires and accompanying letters were sent to a random sample of addresses from the telephone book of the German-speaking part of Switzerland. The person in the household who was over 18 years of age and who was next in line for his/her birthday was requested to complete the questionnaire. A reminder letter was sent out 4 weeks later. A second questionnaire was sent to persons who did not respond to the letter or reminder. In total,

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