



Self-affirmation improves self-control over snacking among participants low in eating self-efficacy

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ABSTRACT

Objective: Individuals low in eating self-efficacy are at particular risk of engaging in unhealthy eating behaviours, including the consumption of high calorie snacks. The elevated levels of snacking displayed by these individuals can largely be attributed to their experiencing low self-control over the avoidance of such foods (Hankonen, Kinnunen, Absetz, & Jallinoja, 2014). Interventions are thus required to boost self-control over snacking among those low in eating self-efficacy. Self-affirmation has been shown to boost self-control among individuals with depleted resources in other domains (Schmeichel & Vohs, 2009). The purpose of the current study was to test the hypothesis that a self-affirmation manipulation would similarly increase self-control over snacking for individuals low in eating self-efficacy.

Methods: At baseline, participants ($N = 70$) completed measures of dietary restraint and eating self-efficacy. In the main study, participants completed either a self-affirmation or a control task immediately before undertaking a joystick category judgment task that assessed self-control over snacking.

Results: Hierarchical multiple regression analysis revealed the predicted significant interaction between eating self-efficacy and self-affirmation, demonstrating that self-affirmation moderated the association between eating self-efficacy and self-control over snacking. Johnson-Neyman regions of significance confirmed that for participants low in eating self-efficacy the self-affirmation manipulation resulted in higher levels of self-control. Unexpectedly, however, for participants high in eating self-efficacy the self-affirmation manipulation was found to be associated with lower levels of self-control.

Conclusions: Findings supported the hypothesis that a self-affirmation manipulation would boost self-control over snacking among individuals low in eating self-efficacy. Self-affirmation may thus provide a useful technique for strengthening self-control in relation to the avoidance of unhealthy foods among individuals who find it difficult to manage challenging dietary situations.

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1. Introduction

Eating self-efficacy, defined as an individual's belief in his/her ability to successfully manage healthy eating during challenging situations (Ames, Heckman, Grothe, & Clark, 2012), is an important predictor of diet and weight management behavior (Nezami et al., 2016). Those low in eating self-efficacy are at increased risk of engaging in unhealthy eating behaviors, including the consumption of high-calorie snacks (e.g., Masalu & Åström, 2001), which has been identified as an important contributor to obesity (Duffey &

Popkin, 2011; WHO, 2016). Therefore, interventions are required to reduce the consumption of high-calorie snacks among those low in eating self-efficacy.

Low levels of self-control have been identified as a risk factor for snacking (Adriaanse, Kroese, Gillebaart, De, & Ridder, 2014). Indeed, the elevated levels of snacking displayed by individuals low in eating self-efficacy is considered by some to be largely due to low self-control over the avoidance of tempting foods (Hankonen et al., 2014). Therefore, one potentially profitable approach to reducing snacking among these individuals would be to strengthen their self-control in relation to avoiding high-calorie snacks.

An intervention that has been shown in some studies to improve individuals' self-control is self-affirmation. Self-affirmation theory contends that people are motivated to uphold a sense of self-integrity, which has been defined as being 'adaptively and

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morally adequate, that is, competent, good, coherent, unitary, stable, capable of free choice, capable of controlling important outcomes ...' (Steele, 1988, p. 262). People's self-integrity can be affirmed by acting or reflecting upon important domains of personal worth (Cohen & Sherman, 2014), and self-affirmation interventions frequently involve participants writing about a personally important value (see McQueen & Klein, 2006). There is evidence that engaging in such self-affirmation activities can counteract reductions in self-regulatory resources. For example, Schmeichel and Vohs (2009) demonstrated that a self-affirmation manipulation increased self-control amongst those experiencing depleted resources, apparently via its capacity to focus people on higher values (e.g., long-term goals) rather than immediate impulses and urges (see also Storr & Sparks, 2016). By extension, it seems plausible that self-affirmation may strengthen self-control in relation to the avoidance of snacks among those lacking confidence in their ability to eat healthily in challenging situations (i.e., those low in eating self-efficacy). If so, this could provide practitioners with a potentially cost-effective and minimal intervention to promote healthy eating.

Drawing on the research outlined above, we hypothesized that a self-affirmation manipulation would increase self-control over snacking for individuals low in eating self-efficacy. Specifically, we predicted that self-affirmed participants low in eating self-efficacy would display greater levels of self-control over snacking compared to their non-affirmed counterparts.

2. Materials and methods

2.1. Participants

Eighty-two undergraduate students of psychology completed the baseline questionnaire; 79 of whom took part in the main study. Participants who made 25% or more errors in the joystick category judgment task used to assess self-control over snacking ($n = 9$) were excluded from analysis. Accordingly, our analyses were conducted on 70 participants (83.00% female). Participants' ages ranged from 18 to 49 years (M [mean] = 22.61; SD [standard deviation] = 7.30); body mass indices (BMIs) ranged from 17.58 to 36.26 ($M = 22.59$; $SD = 3.91$).

2.2. Design and procedure

Undergraduate students were recruited to take part in an online study about snacking. At baseline, participants were provided with information about the study, informed of their right to withdraw, and completed a consent form. Those who included their e-mail addresses at baseline were contacted 7 days after completion of the baseline measures and invited to attend a laboratory appointment to take part in the main study. Upon arrival at the laboratory, participants were allocated alternately to either the self-affirmation ($n = 31$) or the control ($n = 39$) condition.¹ Participants completed a joystick category judgment task to assess self-control over snacking immediately after the self-affirmation manipulation. We utilized a non-self-report measure of self-control over snacking in the present study in order to overcome the shortcomings associated with self-report measures (Chan, 2009). The study was approved by the Ethics Committee at the hosting university. This research did not receive any specific grant from funding agencies in

the public, commercial, or not-for-profit sectors.

2.3. Measures and manipulations

At baseline, participants indicated their age, sex, weight, and height; BMI (weight [kg]/height [m]²) was calculated for each participant. Eating self-efficacy was assessed using the 8 item short-form of the Weight Efficacy Lifestyle Questionnaire (Ames et al., 2012), $\alpha = 0.87$. Example items from this scale are "I can resist eating when I am anxious (or nervous)" and "I can resist eating even when others are pressuring me to eat". Responses are given on 10-point scales ranging from 1 (*not at all confident*) to 10 (*very confident*). Mean scores were calculated for each participant (possible range of scores 1–10), with higher scores indicating higher levels of eating self-efficacy. Dietary restraint was measured with the 20-item dietary restraint subscale of the Three Factor Eating Questionnaire (Stunkard & Messick, 1985), $\alpha = 0.90$. Responses to 8 items were given on 4 point scales (e.g., "How conscious are you of what you are eating" [*not at all conscious* (1) to *extremely conscious* (4)] and "How often are you dieting in a conscious effort to control your weight" [*rarely* (1) to *always* (4)]). Responses to the remaining 12 items (e.g., "I consciously hold back at meals in order not to gain weight" and "I count calories as a conscious means of controlling my weight") were given on ten-point scales ranging from *not at all confident* (1) to *very confident* (10); A mean score was calculated for each participant (possible range of scores 1.00–7.60), with higher scores indicating greater dietary restraint.

At the start of the main study, participants' snacking frequency was assessed by asking them to rate how often they had eaten each of 13 high-calorie snack foods (e.g., chocolate bars, cookies), *not at all* (1) to *2 or more times a day over the last 7 days* (7). Responses were summed to form a single index (possible range of scores 13–91). Participants next completed an established self-affirmation manipulation (e.g., Harris et al., 2014). All participants were presented with the same list of values (e.g., compassion, creativity, kindness). Participants in the self-affirmation condition selected their most important value and wrote about why it was important to them; participants in the control condition selected their least important value and wrote about why it might be important to someone else. All participants rated how personally important the value they had written about was on a seven point scale ranging from *extremely unimportant* (1) to *extremely important* (7).

Self-control was assessed by a computer-based joystick category judgment task, which measures the relative speed at which participants can push a lever away from themselves in response to high-calorie snack food stimuli. This task has been used to assess self-control over snacking in previous research (Churchill & Jessop, 2011; Fishbach & Shah, 2006) and has been shown to predict the consumption of high-calorie snacks (Churchill & Jessop, 2011). Participants were presented with 20 target words (10 high-calorie snack food words [e.g., biscuit, cake, and chocolate] and 10 healthy food words [e.g., apple, salad, and banana]). In a series of 80 trials in 2 blocks, participants were asked to judge as quickly as possible whether each presented target word was part of the category of healthy food or unhealthy food. In Block A, participants were asked to pull the joystick towards them if the word presented was related to the category of healthy food and to push the joystick away from them if the word presented was related to the category of unhealthy food. In Block B, participants' responses were reversed such that participants were asked to pull the joystick towards them in response to unhealthy food words and to push the joystick away from them in response to healthy food words. Each block was preceded by six practice trials, and block order was counter-balanced across participants. The order in which the target words were presented was randomized for each participant. The speed of

¹ The unequal number of participants across conditions is a result of the fact that the number of participants making 25% or more errors in the joystick category judgement task (and hence being excluded from analysis) was not identical across conditions.

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