



Justified indulgence: self-licensing effects on caloric consumption

Sosja Prinsen, Catharine Evers & Denise T. D. de Ridder

To cite this article: Sosja Prinsen, Catharine Evers & Denise T. D. de Ridder (2019) Justified indulgence: self-licensing effects on caloric consumption, *Psychology & Health*, 34:1, 24-43, DOI: [10.1080/08870446.2018.1508683](https://doi.org/10.1080/08870446.2018.1508683)

To link to this article: <https://doi.org/10.1080/08870446.2018.1508683>



© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 13 Nov 2018.



Submit your article to this journal [↗](#)



Article views: 505



View Crossmark data [↗](#)

Justified indulgence: self-licensing effects on caloric consumption

Sosja Prinsen, Catharine Evers and Denise T. D. de Ridder

Social, Health & Organizational Psychology, Utrecht University, Utrecht, Netherlands

ABSTRACT

Objective: Research on self-licensing, i.e. employing justifications to give into temptation, largely consists of studies examining dichotomous food choices (healthy vs. unhealthy), while evidence for its effects on how much (unhealthy) food is consumed remains scarce. The present studies aimed to demonstrate self-licensing effects on caloric consumption in both lab (Study 1 & 2) and field setting (Study 3).

Design: In all studies, female student samples were recruited. They either received a justification cue (license condition) or not (control condition), after which they could eat freely from unhealthy snacks (Study 1, $N=85$ and Study 2, $N=95$) or choose a snack for direct consumption at a take-out lunch place (Study 3, $N=110$).

Main outcome measures: Caloric value of consumed snacks (Study 1 and 2) and chosen snack (Study 3).

Results: In all studies, caloric consumption was higher in the license condition compared to the control condition: Participants ate more of the provided unhealthy snacks (Study 1 and 2) and chose a snack of higher caloric value (Study 3).

Conclusions: The present research corroborates self-licensing as an important factor in the consumption of unhealthy foods by employing more ecologically valid outcomes.

ARTICLE HISTORY

Received 8 November 2017

Accepted 26 July 2018

KEYWORDS

Self-licensing; justification; temptation; food consumption; indulgence

Introduction

The current obesogenic food environment, characterized by the omnipresence and easy accessibility of attractive and energy-dense foods (Hill, Wyatt, Reed, & Peters, 2003; Swinburn, Egger, & Raza, 1999), places a great burden on the individual's capacity to deal with self-regulatory dilemmas. Considering that such dilemmas arise when there is a conflict between a current desire (eating a delicious donut) and a long-term personal goal (losing weight; e.g. Baumeister & Vohs, 2007), it is evidently hard to navigate through today's abundance of food temptations. As a response to this issue, research has predominantly focused on the ability to control one's impulses, with impulses defined as the automatic affective reaction and approach orientation towards attractive objects such as unhealthy foods (e.g. Metcalfe & Mischel, 1999;

CONTACT Sosja Prinsen  s.prinsen@uu.nl  Department of Social, Health & Organizational Psychology, Utrecht University, PO Box 80140, 3508 TC Utrecht, The Netherlands

© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

Nederkoorn, Smulders, Havermans, Roefs, & Jansen, 2006). From this perspective, self-regulation failure stems from impulsive processes taking precedence over reflective considerations (e.g. Hofmann, Friese, & Wiers, 2008). However, when our reflective reasoning abilities have the upper hand, this does not necessarily lead to successful self-regulation. In fact, our reasoning can be motivated by our current desires (i.e. motivated reasoning; Kunda, 1990) and result in self-licensing taking place. That is, in response to food temptations, our capacity to reason can be employed to justify indulgence, by coming up with reasons (i.e. justifications) that make the prospective goal-discrepant behaviour acceptable to oneself (De Witt Huberts, Evers, & de Ridder, 2014a). Accordingly, studies have demonstrated that the confrontation with food temptations increases the susceptibility to justification cues (i.e. an external cue that can function as a reason or excuse for self-gratification; Kivetz & Zheng, 2006; Okada, 2005).

Although the concept of self-licensing provides an alternative perspective on how people resolve self-regulatory dilemmas, which is relying on justifications to choose immediate gratification over goal-consistent behaviour (De Witt Huberts et al., 2014a), relatively little research has looked at its effects on eating behaviour. Also, the majority of studies that do address self-licensing effects on eating behaviour have examined food choice by providing participants with the simple choice between a healthy and unhealthy food product. Hence, more insight in how self-licensing affects people's ability to deal with the challenge of eating healthily in today's temptation-rich food environment is needed. Not only does the wide variety of foods to choose from create a conflict of what to eat (food choice), the increase in portion sizes and energy density of foods (Ello-Martin, Ledikwe, & Rolls, 2005) also demands effective regulation of how much to eat (food consumption). Moreover, considering that basically anything can serve as a justification when facing the dilemma between indulging and restraining oneself, it is important that there is a body of studies that reflects this diversity of justification cues. Theoretically, a justification is anything that is generated during a self-regulatory dilemma and is used to allow oneself to violate a long-term goal (De Witt Huberts et al., 2014a). Therefore, the present studies employed different self-licensing manipulations by using a variety of justification cues, and addressed food consumption in a lab (Study 1 and 2) as well as field setting (Study 3).

Experimental evidence for self-licensing effects on eating behaviour

As mentioned previously, most experimental studies that specifically looked into how self-licensing affects eating behaviour have focused on food choice. In these studies participants are provided with a (hypothetical) dual choice between a healthy and an unhealthy food item, for example between plain fat-free yoghurt and a large high-fat cookie (Khan & Dhar, 2007), or between a fruit salad and a piece of chocolate cake (Kivetz & Zheng, 2006). To date there are twelve of such food choice studies (reported in six papers), involving different self-licensing manipulations (Khan & Dhar, 2007, Study 3 and 4; Kivetz & Zheng, 2006, Study 1c; Mukhopadhyay & Johar, 2009, Study 2, 3 & 4; Salerno, Laran, & Janiszewski, 2015, Study 2 & 3; Weibel, Messner, & Brügger, 2014, Study 1 & 2; Wilcox, Kramer, & Sen, 2011, Study 3 & 4). Typical examples of justification cues are recalling prior restraint (resisting to buy a tempting product that is

on sale; Mukhopadhyay & Johar, 2009) or a recent accomplishment (e.g. a raise at work; Wilcox et al., 2011). In all studies it was found that participants in the license conditions were more inclined to choose the unhealthy over the healthy option than participants in the no-license control conditions. However, studies involving more complex food choices (i.e. choosing from a wider variety of products) are lacking, precluding the ecological validity of the licensing paradigm for understanding unhealthy food choices. In daily life, for example in supermarkets and cafeteria, people usually can choose from large assortments of food products. Hence, it is important to establish how self-licensing affects eating behaviour under such circumstances.

When moving from food choice to food consumption, the experimental evidence becomes scarcer. Studies on a specific type of justification, compensatory health beliefs (CHBs), have provided first empirical support for self-licensing affecting food intake. CHBs are convictions that the negative consequences of engaging in an indulgent behaviour can be neutralized by the positive effects of another behaviour (Knäuper, Rabiau, Cohen, & Patriciu, 2004; Rabiau, Knäuper, & Miquelon, 2006). It has been demonstrated that these beliefs can function as a justification, so that when faced with temptation, people form intentions to behaviourally compensate for indulgence (Kronick & Knäuper, 2010). Accordingly, holding (diet-specific) CHBs has been found to be associated with a higher body mass index (BMI; Knäuper et al., 2004), lower intention to diet (Radtke, Kaklamanou, Scholz, Hornung, & Armitage, 2014), and higher caloric intake in dieters (Kronick, Auerbach, Stich, & Knäuper, 2011). Importantly, these studies suggest that the compensatory behaviour is not performed, strengthening the notion that these beliefs serve to justify indulgence. When looking at experimental evidence, to date there are only three studies that included a justification cue and provide support for self-licensing affecting food consumption. In these studies, instead of providing participants with a choice between a healthy and an unhealthy food product, participants are provided with one or more snack types that they freely can eat from. In the first study by De Witt Huberts, Evers, and De Ridder (2012) perceived effort was manipulated, by letting participants do a boring task for either 10 minutes straight (low perceived effort) or twice for 5 minutes (high perceived effort). Participants who thought they had been doing the same boring task twice ate more of the M&M's, crisps, and other unhealthy snacks that were provided afterwards, than participants who thought they had been doing the task only once (though for the same amount of time). Second, Taylor, Webb, and Sheeran (2013) primed self-licensing by letting participants come up with reasons to justify a decision in a fictitious scenario (a university student going on Holiday with her friends instead of her boyfriend). Subsequently, these participants ate more M&M's than participants who read the same scenario, but merely had to list and rank possible holiday destinations. Lastly, Chang and Chiou (2014) showed that participants ate more nougats and preferred larger quantities of sugar in their drinks after receiving a purported weight-loss supplement, compared to participants who received an identified placebo. Altogether, these studies provide support for self-licensing encouraging unhealthy food consumption.

Although a promising beginning is made, it is vital to expand the experimental evidence to further substantiate the role of self-licensing processes in how much people

eat. Especially considering that overeating has been identified as one of the main causes of the increasing prevalence of overweight and obesity (Ferrario, 2017; Gortmaker et al., 2011), and is stimulated by the current food environment that provides ample opportunity to eat large quantities of (unhealthy) foods (Hill & Peters, 1998). Also, it is deemed important to demonstrate the pervasiveness of self-licensing by demonstrating the diversity in cues that can function as a justification for increased consumption.

The present studies

Given the need to further substantiate the extent to which self-licensing affects food consumption, we conducted three studies using different manipulations (i.e. justification cues). The first two studies were conceptual replications of earlier work, where we extend the effect of self-licensing on food choice to food consumption (Study 1), and demonstrated the effect of a previously established justification cue (i.e. perceived effort; De Witt Huberts et al., 2012) on food consumption using a different method (Study 2), to verify that effects are not restricted to a specific manipulation. For the last study we moved from the lab to the field, and exposed participants to a more ecologically valid environment where they could choose for themselves what they wanted to eat (Study 3). Specifically, after a self-licensing manipulation participants received a voucher that they could exchange for a snack at a local take-out place. Caloric value of unhealthy snack intake (Study 1 and 2) and chosen snack (Study 3) served as dependent measures. Hence, as opposed to food choice studies that sometimes provide hypothetical choices (Wilcox et al., 2011), or present pictures of food products (Mukhopadhyay & Johar, 2009; Weibel et al., 2014), our study exposes participants to a direct confrontation with tempting foods. It was hypothesized that participants in the experimental conditions, who received a justification cue, eat more of the unhealthy snacks (Study 1 and 2), and choose snacks of higher caloric quantity (Study 3), than participants in the control conditions.

All studies were conducted in the Netherlands, followed a double-blind procedure, and employed female samples. Participants were drawn from student population, because especially female students have been found to be susceptible to feeling guilty about snacking between meals (Steenhuis, 2009), and such feelings have been suggested to increase self-licensing (Kivetz & Zheng, 2006; Okada 2005). To check this assumption, all studies include measures to verify whether participants indeed experience self-regulatory conflict when confronted with tempting foods. After all, without a conflict, there is no need to justify indulgent behaviour (De Witt Huberts et al., 2014a).

Study 1 recalled success and snack intake

Previous studies have demonstrated that merely recalling an accomplishment, by letting participants describe a moment of success in detail and letting them reflect on their feelings, can function as a license to choose French fries over a salad (Wilcox et al., 2011) or M&M's over a granola bar (Salerno et al., 2015). It has been suggested

that the feelings of pride and achievement that are associated with this memory can instigate a sense of goal progress, as pride is generally experienced when people have achieved or made progress towards a goal (Wilcox et al., 2011). Perceived goal progress can in turn function as a license for goal inconsistent behaviour, like indulging in unhealthy foods while having the goal to lose weight. Importantly, it has been demonstrated that individuals can even ‘consume past progress’ (p. 371) by recalling past virtuous behaviours that signal goal progress (Fishbach & Dhar, 2005). Interestingly, the source of pride that signals goal progress (e.g. receiving a good grade) can be unrelated to the inconsistent behaviour that it justifies (e.g. indulging in unhealthy snacks; Wilcox et al., 2011). In the present study, we used the success license manipulation previously employed by Wilcox et al. (2011) and Salerno et al. (2015), but with food consumption (measured in kcal) instead of food choice as the outcome measure. It was expected that participants who recalled a moment of success would eat more than participants in the no-license control condition. In the work by Wilcox et al. (2011), positive affect (e.g. happiness) has already been ruled out as an alternative explanation for the observed self-licensing effects after recalling a moment of success, and hence will not be controlled for in the present study.

Method

Participants

Ninety-two female students participated in the present study in return for €4,- or course credit. From this sample, seven participants were excluded; six participants for procedural errors (e.g. doing tasks in the wrong order), and one participant for having a food allergy that prohibited eating the provided unhealthy snack (peanut M&M's). This resulted in a final sample of 85 participants, with a mean age of 21.67 years ($SD=3.45$; range 18 to 44) and a mean self-reported BMI of 21.93 ($SD=3.32$; range 17 to 42).^{1,2}

The final sample included 5 participants who reported wanting to gain weight and 12 participants who were satisfied with their current weight, possibly indicating that these participants do not experience self-regulatory conflict when given the opportunity to eat unhealthy snacks. Because a higher sample size is preferred for running separate analyses on these participants, and as exclusion led to similar results, all analyses were performed including these participants. For completeness, the effect of the license manipulation on caloric value of the unhealthy snack intake is also reported for the sample excluding these participants (see results).

Design and procedure

The present study employed an independent groups 1-factor design, with condition (success recall vs control) as independent variable and M&M consumption (in kcal) as dependent variable. Female students were invited to participate in a study on ‘memory and taste perception’ (cover-story), and were randomly assigned to the license ($n=41$) or control condition ($n=44$). Upon arrival in the lab, they were seated in a cubicle and told to follow the instructions on the computer screen. The study

started with the license manipulation. In the license condition, participants were asked to think back to a moment of academic success. They had to write down this memory in detail and were specifically instructed to remember how they felt at that moment of success. In the control condition, participants were asked to describe an ordinary day, by specifying their activities from the moment that they wake up till the moment that they go to sleep (Salerno et al., 2015; Wilcox et al., 2011). All of the activities were supposed to be typical of an ordinary day, to avoid any special activities that may serve as a license. After the manipulation, participants answered questions about their feelings of pride and success, which served as a manipulation check. This was followed by filler questions about their memory of M&M's, which were interspersed with control questions to assess liking of M&M's and regularity of eating M&M's. Next, participants were provided with a plastic bowl filled with 200 grams of M&M's, and asked to taste at least one of each colour, while filling out another questionnaire consisting of merely filler items. To further conceal the true purpose of this tasting session, that is assessing how much participants ate, they were asked to throw any remaining M&M's and the plastic bowl in the bin standing next to them (suggesting that these would be thrown out directly). Lastly, participants filled out a questionnaire assessing age, height and weight, goal weight, and restrained eating. After completing the study, they were thanked and reimbursed for their participation. At that point, the trash bags were unobtrusively removed and weighted.

Measures

Manipulation check

Five items were administered to assess participants' feelings of success while thinking back to a moment of academic success ($\alpha = .94$). Participants had to indicate to what degree they felt pride, success, good about themselves, positive about themselves and that they had performed well, on a scale ranging from 1 (= *not at all*) to 7 (= *very much*). A mean score was calculated to reflect overall feelings of success.

Control variables

Six items were administered to control for liking of M&M's; 'How much do you like M&M's?', 'How attractive do you find M&M's?' and one question for each of the four colours of M&M's ('How much do you like the taste of the [blue] M&M?'), with answer options on a scale ranging from 1 (= *not at all*) to 7 (= *very much*). A mean score was calculated to reflect liking of M&M's ($\alpha = .90$). Two open-ended questions were administered to control for differences in regularity of eating M&M's; 'How often do you eat M&M's?' and 'When was the last time you ate M&M's?' The answers were coded afterwards, on a scale ranging from 1 (= *I never eat M&M's*) to 7 (= *a few times per week*) for the former and 1 (= *I never eat M&M's*) to 7 (= *yesterday or today*) for the latter question.

Caloric consumption

The amount of M&M's consumed was measured in grams and converted into kcal.³

Age

Participants reported their age in years.

Self-reported BMI

Participants' BMI was calculated using their reported weight and height.

Weight loss goal

Participants' goal weight was subtracted from their actual weight, to provide an index of how much kilograms of weight participants wanted to lose. This served as an indicator for experiencing self-regulatory conflict when confronted with tempting foods.

Restrained eating

To assess dieting behaviour, the 10-item Restraint Scale was administered (Herman & Polivy, 1980; $\alpha = .80$). An example item is 'I feel guilty after I ate too much'. Answers were given on scales ranging from either zero to three or zero to four, with different labels depending on the item, where higher scores represent higher levels of restrained eating. See Herman and Polivy (1980) for the exact answer scales.

Results

Descriptives and randomization check

On average, participants who wanted to lose weight reported a mean weight loss goal of 4.19 kg ($SD = 5.40$, range 1 to 40 kg, see Note 2). With a mean of 1.50 ($SD = .57$, range .10 to 2.90) participants scored relatively high on restrained eating. They also reported a high liking for M&M's ($M = 5.02$, $SD = 1.28$). Separate ANOVAs revealed no significant differences between conditions for age ($p = .197$), control variables (e.g. liking of M&M's; all $ps > .101$), self-reported BMI ($p = .304$), weight loss goal ($p = .460$), and restrained eating ($p = .800$), indicating successful randomization.

Manipulation check

An ANOVA with condition (license vs. control) as independent variable and feelings of success as dependent variable revealed that the license manipulation was successful. Participants in the experimental condition felt more successful ($M = 6.27$, $SD = .61$) than participants in the control condition ($M = 4.90$, $SD = 1.01$), $F(1, 83) = 56.32$, $p < .001$, $\eta^2 = .40$.

Main effect of license on caloric consumption

An ANOVA with condition (license vs. control) as independent variable and caloric consumption as dependent variable revealed an effect of condition on how much participants ate. When participants were given the opportunity to use prior success as a license, they consumed 316.44 kcal ($SD = 296.42$), whereas participants who were not

provided with this opportunity consumed 197.59 kcal ($SD = 183.67$), $F(1, 83) = 5.15$, $p = .026$, $\eta^2 = .06$.

A similar analysis was performed on the sample excluding participants who wanted to gain weight or who did not have a specific weight loss goal. The condition effect remained significant: participants in the license condition ($n = 28$; $M = 344.87$, $SD = 310.39$) ate more than participants in the control condition ($n = 40$; $M = 207.36$, $SD = 198.68$), $F(1, 66) = 5.02$, $p = .028$, $\eta^2 = .07$.

Discussion

As hypothesized, when participants recalled a moment of academic success, they subsequently ate more of the provided unhealthy snack than participants who recalled an ordinary day. More specifically, there was a difference of almost 119 kcal. Thereby this study provides support for the proposition that the perception of goal progress inferred from feelings of pride can function as a license for indulgence. Whereas in this study the presence of a self-regulatory conflict was verified by looking at participants' weight loss goal, in the next study a more inclusive measure of 'eating concerns' was administered, to assess both the goal to lose weight and to eat healthily. Again, caloric consumption was examined, but this time it was preceded by a justification manipulation of perceived effort.

Study 2 perceived effort and snack intake

Hard work is identified as one of the main reasons used to justify indulgence (Kivetz & Zheng, 2006). After working hard, people find it easier to treat themselves, as it then feels like they deserved it. Accordingly, perceived effort has been found to affect both food choice (Kivetz & Zheng, 2006) as well as unhealthy food consumption (De Witt Huberts et al., 2012). The present study is a conceptual replication of this previous research, as it also manipulated perceived effort but with a different manipulation. This was done by letting participants do a rather difficult task, after which they were provided with information about relative task difficulty. Specifically, it was casually revealed that other participants received an easier (high perceived effort condition) or more difficult task (low perceived effort condition). A control condition was added in which participants did not receive any reference about how difficult the task was. After this effort manipulation, participants could eat freely from unhealthy snacks. It was expected that participants who read that they performed the difficult version of the task would eat more than participants who read that they performed the easy version, and compared to participants who did not receive any reference to task difficulty. Actual performance on the task was controlled for, by means of the number of errors that participants made.

Method

Participants

A total of 100 female students participated in return for three euro or course credit. From this sample, five participants were excluded; two participants for making too

many mistakes in the writing task (extreme outliers on error percentage >3 SD above the mean; see measures), two participants for procedural errors (e.g. snack consumption was not registered), and one participant for having a food allergy that prohibited eating the provided unhealthy snack. This resulted in a final sample of 95 participants with a mean age of 21.60 ($SD = 2.76$; range 16 to 33).

Design and procedure

The present study employed an independent groups 1-factor design, with condition (low effort vs. high effort vs. control) as independent variable and M&M and popcorn consumption (in kcal) as dependent variable. Female students were invited to participate in two supposedly unrelated studies. After giving informed consent and reporting their age, participants were seated in a cubicle and started with the 'first study' which contained the writing task. The instructions were to write a (fictional) story about an animal, but without using the letters 'A' and 'N' (adopted from Schmeichel, 2007). They had 6.5 minutes time to write their story that was supposed to be as long as possible. Then, it was examined how difficult, effortful and fun the task was (task evaluation). This was followed by the manipulation, for which participants were randomly assigned to one of three conditions. Participants read that the experimenter wanted to double-check the allocation to conditions, so they had to report what kind of instructions they received. The answer options were manipulated, so that next to the correct answer ('do not use the letters A and N') participants would either see 'do not use the letters X and Y' (others received more easy task; high effort condition; $n = 32$) or 'do not use the letters A, N, K and P' (others received more difficult task; low effort condition; $n = 34$). In the control condition ($n = 29$), participants were not provided with a reference to task difficulty, so no information about another condition was provided.⁴

The second part was presented as a study on 'sustainability'. Participants first watched an excerpt of a nature documentary. This was done in a living room setting, and they were provided with popcorn (70 grams) and M&M's (200 grams) 'to make themselves comfortable'. The true purpose was to see how much of these snacks the participants would consume. Then, participants went back to the cubicle and filled out a questionnaire on 'lifestyle and habits' in which an index of BMI and eating concerns were unobtrusively assessed. Lastly, the liking of the snacks was measured in a 'living room evaluation form'. After completing the studies, participants were thanked, debriefed and received their compensation of three euro.

Measures

Task evaluation

To verify that there were no differences in how the task was experienced before the manipulation, participants were asked how difficult, effortful and fun the task was (e.g. 'How difficult did you find the task?'). Answers were given on a 5-point scale ranging from 1 (= *Not at all*) to 5 (= *Very much*).

Error percentage

To check whether there were no differences between conditions in task performance, and to identify participants who did not follow the instructions, the times that the letters 'A' and 'N' were used (mistakenly) were counted. This number was divided by the total numbers of letters used, to calculate an error percentage.

Caloric consumption

The amount of popcorn and M&M's consumed were measured in grams and the caloric value of each snack was calculated. A sum score represented total kcal consumed (see Note 3).

Self-assessed BMI

An indirect measure of BMI was employed. Participants reported how much the statement 'I have a healthy BMI' applied to them on a 7-point scale ranging from 1 (= *Does not apply to me at all*) to 7 (= *Totally applies to me*).

Eating concerns

Four self-developed items measured eating concerns: 'I watch what I eat'; 'I find my weight important'; 'I watch my weight' and 'I find eating healthy important'. Answers were given on a 7-point scale ranging from 1 (= *Does not apply to me at all*) to 7 (= *Totally applies to me*). A mean score was computed ($\alpha = .85$).

Snack liking

To control for potential differences in liking of the presented snacks, two questions were asked: 'How much do you like M&M's?' and 'How much do you like popcorn?' Answers were given on a 7-point scale ranging from 1 (= *Not at all*) to 7 (= *Very much*).

Results

Descriptives and randomization check

Participants were quite eating concerned ($M = 5.34$, $SD = 1.12$; range 3 to 7) and judged their BMI as healthy ($M = 5.77$, $SD = 1.41$). Also, they quite liked popcorn ($M = 4.20$, $SD = 1.77$) and M&M's ($M = 5.59$, $SD = 1.61$).⁵ With respect to the writing task; they reported that it was rather difficult ($M = 4.46$, $SD = .60$), moderately effortful ($M = 3.77$, $SD = .74$) and fun to do ($M = 3.55$, $SD = 1.04$). On average, participants used 186.60 letters in their story ($SD = 81.84$). The mean error percentage was 0.7% (representing ± 1 error), and percentages ranged from 0 to 4%. Separate ANOVAs revealed no significant differences between conditions for and age ($p = .589$), self-assessed BMI ($p = .715$), eating concerns ($p = .613$), task evaluation ($p = \text{all } ps > .227$), error percentage ($p = .408$) and liking of snacks (all $ps > .456$), indicating successful randomization.

Caloric consumption

An ANOVA with condition as independent variable and caloric consumption as dependent variable revealed a significant difference: Participants in low effort condition consumed 102.73 kcal ($SD = 140.71$), participants in control condition consumed 138.89 kcal ($SD = 186.68$), and participants in the high effort condition consumed 233.11 kcal ($SD = 228.23$), $F(2, 92) = 6.38$, $p = .003$, $\eta^2 = .12$. Bonferonni's *post hoc* analysis revealed a significant difference between the high effort and low effort conditions, $p = .002$, and between the high effort and control condition, $p = .047$. There was no difference between the low effort and control condition, $p = 1.00$.

Discussion

As hypothesized, participants who read that they received the difficult version of the writing task subsequently ate more of the unhealthy snacks than participants who read that they received the easy version or who did not receive any reference about task difficulty. More specifically, differences of 130 (high effort compared to low effort condition) and 94 kcal (high effort compared to control condition) were observed. Overall, the results strengthen the notion that effort can serve as a license, by demonstrating that this effect is not restricted to the specific methods that have been used previously (De Witt Huberts et al., 2012; Kivetz & Zheng, 2006). For the next study, we moved from the lab to the field, and measured caloric value of food choice.

Study 3 Perceived goal discrepancy and snack choice

When it comes to eating behaviour, people who have the goal to lose weight often simultaneously have the opposing goal of eating enjoyment (Stroebe, Van Koningsbruggen, Papies, & Aarts, 2013). There is evidence that when people come closer to a focal goal, such as losing weight, they feel 'liberated' to pursue inconsistent goals, such as eating enjoyment (Fishbach & Dhar, 2005). Although these studies were not conducted to demonstrate self-licensing effects, the findings support the notion that prior restraint can be used as a reason for subsequent indulgence (De Witt Huberts et al., 2014a). That is, a small (perceived) distance to one's goal can function as a license to choose immediate gratification (chocolate bar) over goal-consistent behaviour, because giving priority to eating enjoyment may feel more acceptable once the attainment of one's weight loss goal is in sight. To experimentally manipulate goal discrepancy the perceived goal progress induction by Fishbach and Dhar (2005) was employed, in which participants report their current and goal weight on a scale that makes the discrepancy between the two look either small or large (see manipulation). Subsequently, participants could choose freely from a wide range of food products at a local take-out lunch place. It was expected that a small perceived discrepancy would induce a sense of being close to one's goal weight, thereby serving as a license to choose a high-caloric snack, whereas a large perceived discrepancy was expected to increase the motivation for goal-consistent behaviour (e.g. Koo & Fishbach, 2008), and hence result in snack choices of lower caloric value.

Method

Participants

A total of 116 female participants who wanted to lose weight filled out the survey and exchanged their voucher for a snack. Six participants were removed because they did not correctly follow the instructions (e.g. they exchanged their voucher a day after the manipulation). This resulted in a final sample of 110 participants, with a mean age of 21.38 ($SD = 3.58$; range 17 to 43) and a mean self-reported BMI of 22.13 ($SD = 2.26$; range 18 to 30).⁶

Because pre-screening of participants (to verify that they wanted to lose weight which was a prerequisite for the employed manipulation) was undesirable in the sense that it would undermine the cover story, an additional 53 students that did not want to lose weight participated as well. They reported that they did not have a specific goal weight ($n = 36$) or that they wanted to gain weight ($n = 17$). These data were used to verify that without the self-regulatory dilemma of losing weight versus eating enjoyment, a justification cue does not result in self-licensing (see results). Hence, for the main analyses, a subsample ($n = 110$) was used from the total sample of 169 participants.

Design and procedure

The study employed an independent group one-factor design, with condition (small vs. large discrepancy between current and goal weight) as independent variable and caloric value of snack choice as dependent variable. Female students were approached on campus between 2 and 5 p.m., so the food product that they chose can generally be considered a mid-afternoon snack. The study was presented as customer research for a local take-out lunch place. Participants were asked to fill out a short survey, for which they would receive a voucher for a snack at the respective lunch place. The survey consisted of filler items supporting the cover story and the manipulation of goal discrepancy (see manipulation). Participants were randomly assigned to either the large ($n = 54$) or small goal discrepancy condition ($n = 56$). The manipulation included an assessment of participants' current and ideal weight, and age and height were measured in separate items. After filling out the survey, participants received a (coded) voucher for a free snack. The experimenter registered the voucher code and at what time the participant finished the survey, and employees of the lunch place registered the code of the voucher, the time of exchange and the respective snack choice.

Manipulation

The perceived discrepancy between participants' current and goal weight was manipulated to look either small or large (Fishbach & Dhar, 2005). Participants were asked to report their current weight in a textbox in the centre of a scale that had either -5 kg and $+5$ kg or -20 kg and $+20$ kg as its endpoints. Then they had to indicate their goal weight, by colouring the arrow that extended outward to the left (to endpoint -5 or -20 kg) to the point that represented their goal weight. On the narrow (-5 kg) scale, a goal weight of 3 kg less than one's current weight would mean colouring 60% of

the scale. In contrast, on the wide (–20 kg) scale, wanting to lose 3 kg would result in colouring only 15% of the scale. Hence, the visual discrepancy between one's current and goal weight would appear smaller on the wide scale (small goal discrepancy condition) compared to the narrow scale (large goal discrepancy condition).

Measures

Age

Participants reported their age in years.

Self-reported BMI

Participants' self-reported BMI was calculated using their reported height and current weight.

Goal discrepancy

The coloured part of the 4.4 cm-long arrow was measured and registered in millimetres, and subsequently converted to represent the goal discrepancy in percentages as well as kilograms. For example, if the coloured part of arrow measured 15 mm, this was converted into 34.1%, and 1.7 kg (large discrepancy condition) or 6.8 kg (small discrepancy condition).

Caloric value of snack choice

Participants were free to choose any snack (including beverages) except for coffee or tea (as it could not be assessed whether participants added milk and/or sugar). The caloric value of each snack was calculated using the nutrition labels. For the snacks that came without a nutrition label, the caloric value was calculated using standard nutritional information provided online by a national governmental organization concerned with nutrition and health (Netherlands Nutrition Centre, 2016).

Time between manipulation and voucher exchange

The time (in minutes) between finishing the survey (and hence the manipulation) and the voucher exchange was calculated by subtracting the first from the latter. This was done to ensure timely exchange and to check for differences between conditions as well as its potential association with the dependent measure.

Results

Descriptives and randomization check

The mean time between the manipulation and the voucher exchange was 12.74 minutes ($SD = 22.62$) with a range from 0 to 140 minutes.⁷ There was no significant correlation between these times and caloric value of the chosen snacks, $r = .06$, $p = .549$. The chosen snacks included 74 food items (e.g. chicken sandwich, cinnamon

roll, fruit salad) and 36 beverages (e.g. coca cola, orange juice, yoghurt drink). Separate ANOVAs revealed no significant differences between conditions for age ($p = .620$), self-reported BMI ($p = .335$), and time between manipulation and voucher exchange ($p = .576$), indicating successful randomization.

Manipulation check

Participants in the large discrepancy condition on average coloured 50% of the arrow (range 2–100), representing a goal weight that is 2.5 kg (range .1–5) below their current weight. Participants in the small discrepancy condition coloured 18.1% of the arrow (range 2–52), representing a goal weight that is 3.6 kg (range .5–10.5) below their current weight. An ANOVA with condition as independent variable and the discrepancy in millimetres was performed and showed that this difference was significant, $F(1,108) = 45.41$, $p < .001$, $\eta^2 = .30$.

Caloric value of snack choice

An ANOVA with condition as independent variable and caloric value of snack choice as dependent variable revealed that participants in the small discrepancy condition chose snacks that were higher in caloric value ($M = 310.60$, $SD = 145.22$) than participants in the large discrepancy condition ($M = 256.65$, $SD = 131.34$), $F(1,108) = 4.17$, $p = .044$, $\eta^2 = .04$.

A similar analysis was performed on the participants who indicated wanting to gain weight or who had no weight loss goal ($n = 53$), to verify that without the self-regulatory dilemma of losing weight versus eating enjoyment, a justification cue does not result in self-licensing. Indeed, no difference was found between conditions for caloric value of the chosen snacks. Participants in the small discrepancy condition ($n = 25$) chose snacks that were equal in caloric value ($M = 329.17$, $SD = 162.24$) to participants in the large discrepancy condition ($n = 28$; $M = 331.32$, $SD = 151.73$), $F(1, 51) < 1$, $p = .96$, $\eta^2 < .001$.

Discussion

As hypothesized, participants who were led to believe they were closer to their goal weight chose snacks of higher caloric value than participants for whom their goal weight seemed further away. Specifically, a difference of almost 54 kcal was observed. Interestingly, participants who were in the small goal discrepancy condition and chose high-caloric snacks wanted to lose more weight than participants in the large goal discrepancy condition. This is probably due to anchoring effects (Fishbach & Dhar, 2005), as an endpoint of -20 kg on the wide scale in the small goal discrepancy condition sets a different reference point than an endpoint of -5 kg on the narrow scale in the large goal discrepancy condition. Nonetheless, this observation strengthens the findings because even though these participants wanted to lose more weight, they still chose more calorie-rich snacks than participants who wanted to lose less weight. Hence, this supports the assumption that it is not a matter of *actual* goal discrepancy, as participants in the large discrepancy condition were objectively closer to their goal

weight, but a matter of *perceived* discrepancy that drives the effect. The results further affirm that having self-regulatory dilemma is a prerequisite for self-licensing to work; self-licensing does not take place when there is no goal conflict. Accordingly, the manipulation did not affect participants who did not want to lose weight or did not have a specific weight loss goal.

General discussion

In three studies, performed in lab and field settings, it was demonstrated that justification cues increase the caloric value of both food consumption (Study 1 and 2) and a self-selected snack (Study 3). Thereby these studies do not only contribute to the currently limited experimental evidence on self-licensing affecting eating behaviour in terms of food consumption, but also expand on previous self-licensing studies that have mainly examined food choices and provided no direct confrontation with tempting foods (e.g. Wilcox et al., 2011). Importantly, the mirroring of certain characteristics of the current obesogenic food environment, specifically the easy access to large portions and assortments of energy-dense foods (Hill et al., 2003; Swinburn et al., 1999), increases the ecological validity of the present work. This also pertains to the variety of justification cues that were used in the present research, as virtually anything can count as a justification when it is employed to make a goal violation acceptable to oneself (De Witt Huberts et al., 2014a).

Practical and theoretical implications

Looking at obtained effect sizes, the observed increase in consumption resulting from self-licensing processes ranged from 54 to 130 kcal. It has been suggested that decreasing one's intake with only 100 kcal a day can prevent weight gain for most individuals (Hill et al., 2003). Hence, although the increase in caloric consumption in the present studies might seem small, when this is repeated on a daily basis, such differences can mean the difference between weight gain and weight maintenance. This also stresses the importance of looking beyond single outcomes (i.e. one eating occasion) in future studies. Mainly because also overeating in small amounts, like 100 kcal extra per day, will eventually result in weight gain when it is done repeatedly. However, it may also be possible that after overeating some form of compensation occurs, for example by eating less at a next meal. It is thus important to look at how eating patterns are affected by self-licensing. For example by examining how people pursue their weight loss goal after an instance of justified indulgence, or by tracking eating behaviour patterns and justification use (types and frequency) over longer periods of time by means of experience sampling or momentary assessments methods. Ultimately, such insights may provide directions for developing ways to improve effective handling of self-regulatory dilemmas imposed by today's obesogenic food environment.

The current work also has important theoretical implications. Besides expanding the empirical evidence for self-licensing theory by demonstrating self-licensing effects on food consumption with a diversity of justification cues, the present research can also

shed new light on previous studies that have used manipulations that can be interpreted as justification cues. These studies were designed with a different purpose, but do show effects that fit a self-licensing perspective. To illustrate, Urbszat, Herman, and Polivy (2002) showed that restrained eaters (i.e. individuals who attempt to restrict their food intake) ate more cookies after being told to start a week-long low-calorie diet directly after their participation in the 'cookie taste-rating task', compared to the restrained eaters who were not asked to diet and unrestrained eaters. A plausible explanation for this finding is that the foresight of a period of deprivation functioned as a license to indulge one last time. In addition, Mukhopadhyay, Sengupta, and Ramanathan (2008) demonstrated that participants who recalled a situation where they resisted a food temptation ate more cheeseballs (Study 2) and cookies (Study 3) than participants who recalled a moment of succumbing to temptation. Although these studies were not conducted to demonstrate self-licensing effects, the findings support the notion that prior restraint can be used as a reason for subsequent indulgence (De Witt Huberts et al., 2014a).

Limitations and recommendation for future research

There are some limitations that warrant attention. First of all, the present studies do not provide direct evidence that participants used their reasoning abilities to justify their behaviour. However, this has been established in previous work on self-licensing (De Witt Huberts, Evers, & de Ridder, 2014b). In two studies it was demonstrated that when participants were exposed to a luxurious chocolate bar, the subjective evaluation of temptation strength predicted the number of both employed (Study 1) and self-construed reasons (Study 2). This supports the proposition that temptations activate reasoning processes to justify giving into the desire. Nonetheless, additional studies are needed to further corroborate this proposition, for example by replicating the present studies and incorporating measures that are indicative of reasoning processes taking place.

Secondly, how certain justification cues affect indulgent behaviour has been illuminated in earlier studies (Salerno et al., 2015; Wilcox et al., 2011), but the present research does not provide further evidence for the proposed underlying mechanisms. Hence, another fruitful route for self-licensing research is the examination of mechanisms underlying the observed effects. This can, however, offer important insight into the conditions that shape self-licensing effects. For example, when pride promotes self-awareness ('I am a disciplined person') rather than a sense of achievement, opposite effects have been observed where participants preference for indulgent choices was decreased (Salerno et al., 2015; Wilcox et al., 2011). This is based on the notion that when people are in a state of high self-awareness, they prefer to act in line with their self-perceptions and personal goals. Accordingly, Salerno et al. (2015) verified that the effect of pride on indulgent choices was mediated by a sense of goal progress, but when pride was used to make inferences about one's self-concept, this mediated the effect of pride on increased goal-consistent behaviour. Hence, more in-depth examinations of *how* specific justification cues affect indulgent behaviour are needed to advance our understanding of self-licensing processes.

Thirdly, in the current lab studies only unhealthy foods were provided to participants. A more stringent test would be to present participants with both unhealthy as well as healthy foods. This would also be more representative of the current food environment, where healthy foods are still available, even though less ostentatiously presented as their unhealthy counterparts. A study on emotional licensing, i.e. using negative affect to justify indulgence, has provided first evidence that when both healthy and unhealthy snacks are available for consumption, only unhealthy food intake increased after a licensing manipulation (De Witt Huberts, Evers, & De Ridder, 2017). Importantly, this supports the notion that justifications are only necessary for behaviour that violates one's long-term goals (e.g. unhealthy foods when one wants to lose weight). Hence, behaviour that is in line with one's goals, such as eating healthy snacks, does not require a justification (Okada, 2005). For future research, it is recommended to extend this observation that unhealthy but not healthy food consumption is affected by self-licensing to a wider variety of justification cues.

Lastly, a few limitations concerning the employed measures and sampling method should be mentioned. In Study 2 an indirect measure of BMI was employed (participants indicated whether they had a healthy BMI). This measure fitted the cover story, but is obviously less reliable than an objective measure of height and weight to calculate BMI. As a consequence, we were not able to remove or run separate analyses on participants who were satisfied with their current weight or wanted to gain weight. In addition, in all three studies hunger was not measured and could neither be controlled for. Not surprisingly, baseline hunger is an important predictor of food intake in lab studies assessing eating behaviour (Robinson et al., 2017). Also, in Study 3 the snack choices were registered, but it was not assessed whether participants actually consumed the snack. Furthermore, additional studies with samples that are more representative of the general population are necessary, to verify that the current observations in female student samples can be generalized to a broader public. Lastly, small to medium effect sizes were obtained in Study 1 and Study 3. Therefore, for future studies it is recommended to take this into account when doing power calculations.

Conclusions

Altogether, the present findings show that when self-licensing occurs to serve our desire for immediate gratification, increased caloric consumption becomes more likely. Important next steps are improving our understanding of the mechanisms underlying self-licensing and specific justification cues, as well as to see how self-licensing affects general eating patterns, preferably by tracking eating behaviour in real-life. Especially the latter is necessary to see whether self-licensing ultimately threatens the attainment of long-term goals such as losing weight.

Notes

1. Due to a procedural error, the following variables are missing for six participants: Age, self-reported BMI, weight loss goal, and restrained eating.

2. There was one participant with a BMI of 41.52 ($> 3 SD$ above the mean), who wanted to lose 40 kg of body weight. Excluding this participant resulted in similar outcomes.
3. A square root transformation was performed to deal with the skewed distribution and outliers. For sake of clarity, untransformed results are reported.
4. A pilot test was performed to verify that the manipulation of task difficulty did not affect perceived depletion of self-control resources (i.e. impairment of the ability to self-regulate; e.g. Baumeister & Vohs, 2007). It has been demonstrated that not actual depletion, but perceived availability of mental resources predicts task performance (Clarkson, Hirt, Jia, & Alexander, 2010). Hence, it was first verified that the effort exerted on the task would be perceived as low or high depending in comparison to an alternative task, but not in terms of absolute effort. A sample of 67 participants with a mean age of 21.84 ($SD = 1.93$; range 18 to 27) were randomly assigned to one of three conditions (high effort condition, $n = 24$; low effort condition, $n = 20$; control condition; $n = 23$). After doing the writing task they filled out the 25-item State Self-Control Scale ($\alpha = .93$; Ciarocco, Twenge, Muraven, & Tice, 2010). Participants reported a mean level of self-control of 4.82 ($SD = .79$). An ANOVA with condition as independent variable and state self-control scores as dependent variable revealed no differences between conditions, $F(2, 64) = 1.02$, $p = .365$. Hence, the alternative explanation – that differences between conditions are caused by a variance in state self-control levels as a result of the manipulation – was ruled out.
5. Because of the use of paper questionnaires, there were some missing values; one for self-assessed BMI, one for eating concerns, and five for snack liking.
6. Based on $N = 94$, as sixteen participants did not report their current weight.
7. Based on $N = 103$, as for seven participants the time of the survey was not registered.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the The Netherlands Organisation for Scientific Research (NWO) under Research Talent Grant #406-13-010.

References

- Baumeister, R. F., & Vohs, K. D. (2007). Self-regulation, ego depletion, and motivation. *Social and Personality Psychology Compass*, 1, 115–128.
- Chang, Y. Y. C., & Chiou, W. B. (2014). Taking weight-loss supplements may elicit liberation from dietary control. A laboratory experiment. *Appetite*, 72, 8–12.
- Ciarocco, N. J., Twenge, J. M., Muraven, M., & Tice, D. M. (2010). Measuring state self-control: Reliability, validity, and correlations with physical and psychological stress. Monmouth, NJ: Monmouth University: unpublished.
- De Witt Huberts, J. C., Evers, C., & De Ridder, D. T. D. (2012). License to sin: Self-licensing as underlying mechanism of hedonic consumption. *European Journal of Social Psychology*, 42, 490–496.
- De Witt Huberts, J. C., Evers, C., & de Ridder, D. T. D. (2014a). “Because I am worth it”: A theoretical framework and empirical review of a justification-based account of self-regulation failure. *Personality and Social Psychology Review*, 18, 119–138.
- De Witt Huberts, J. C., Evers, C. & de Ridder, D. T. D. (2014b). Think before sinning: Reasoning processes in hedonic consumption. *Frontiers in Psychology*, 5, 1268.
- De Witt Huberts, J. C., Evers, C. & De Ridder, D. T. D. (2017). Emotional license: Negative emotions as justification for self-regulation failure. Unpublished manuscript.

- Ello-Martin, J. A., Ledikwe, J. H., & Rolls, B. J. (2005). The influence of food portion size and energy density on energy intake: Implications for weight management. *The American Journal of Clinical Nutrition*, 82, 236–241.
- Ferrario, C. R. (2017). Food addiction and obesity. *Neuropsychopharmacology*, 42, 361.
- Hill, J. O., & Peters, J. C. (1998). Environmental contributions to the obesity epidemic. *Science*, 280, 1371–1374.
- Fishbach, A., & Dhar, R. (2005). Goals as excuses or guides: The liberating effect of perceived goal progress on choice. *Journal of Consumer Research*, 32, 370–377.
- Gortmaker, S. L., Swinburn, B. A., Levy, D., Carter, R., Mabry, P. L., Finegood, ... Moodie, M. L. (2011). Changing the future of obesity: Science, policy, and action. *The Lancet*, 378, 838–847.
- Herman, C. P., & Polivy, J. (1980). Restrained eating. In A. J. Stunkard (Ed.), *Obesity* (pp. 208–225). Philadelphia: Saunders.
- Hill, J. O., Wyatt, H. R., Reed, G. W., & Peters, J. C. (2003). Obesity and the environment: Where do we go from here? *Science*, 299, 853–855.
- Hofmann, W., Friese, M., & Wiers, R. W. (2008). Impulsive versus reflective influences on health behavior: A theoretical framework and empirical review. *Health Psychology Review*, 2, 111–137.
- Khan, U., & Dhar, R. (2007). Where there is a way, is there a will? The effect of future choices on self-control. *Journal of Experimental Psychology: General*, 136, 277–288.
- Kivetz, R., & Zheng, Y. (2006). Determinants of justification and self-control. *Journal of Experimental Psychology: General*, 135, 572–587.
- Knäuper, B., Rabiau, M., Cohen, O., & Patriciu, N. (2004). Compensatory health beliefs: Scale development and psychometric properties. *Psychology & Health*, 19, 607–624.
- Koo, M., & Fishbach, A. (2008). Dynamics of self-regulation: How (un)accomplished goal actions affect motivation. *Journal of Personality and Social Psychology*, 94, 183–195.
- Kronick, I., Auerbach, R. P., Stich, C., & Knäuper, B. (2011). Compensatory beliefs and intentions contribute to the prediction of caloric intake in dieters. *Appetite*, 57, 435–438.
- Kronick, I., & Knäuper, B. (2010). Temptations elicit compensatory intentions. *Appetite*, 54, 398–401.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108, 480–498.
- Metcalfe, J., & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification: Dynamics of willpower. *Psychological Review*, 106, 3–19.
- Mukhopadhyay, A., & Johar, G. V. (2009). Indulgence as self-reward for prior shopping restraint: A justification-based mechanism. *Journal of Consumer Psychology*, 19, 334–345.
- Mukhopadhyay, A., Sengupta, J., & Ramanathan, S. (2008). Recalling past temptations: An information-processing perspective on the dynamics of self-control. *Journal of Consumer Research*, 35, 445–453.
- Nederkoorn, C., Smulders, F. T., Havermans, R. C., Roefs, A., & Jansen, A. (2006). Impulsivity in obese women. *Appetite*, 47, 253–256.
- Netherlands Nutrition Centre. (2016). Caloriechecker. Retrieved from <http://caloriechecker.nl>
- Okada, E. M. (2005). Justification effects on consumer choice of hedonic and utilitarian goods. *Journal of Marketing Research*, 42, 43–53.
- Rabiau, M., Knäuper, B., & Miquelon, P. (2006). The eternal quest for optimal balance between maximizing pleasure and minimizing harm: The compensatory health beliefs model. *British Journal of Health Psychology*, 11, 139–153.
- Radtke, T., Kallamanou, D., Scholz, U., Hornung, R., & Armitage, C. (2014). Are diet-specific compensatory health beliefs predictive of dieting intentions and behaviour? *Appetite*, 76, 36–43.
- Robinson, E., Haynes, A., Hardman, C. A., Kemp, E., Higgs, S., & Jones, A. (2017). The bogus taste test: Validity as a measure of laboratory food intake. *Appetite*, 116, 223–231.
- Salerno, A., Laran, J., & Janiszewski, C. (2015). Pride and regulatory behavior: The influence of appraisal information and self-regulatory goals. *Journal of Consumer Research*, 42, 499–514.
- Schmeichel, B. J. (2007). Attention control, memory updating, and emotion regulation temporarily reduce the capacity for executive control. *Journal of Experimental Psychology: General*, 136, 241–255.

- Steenhuis, I. (2009). Guilty or not? Feelings of guilt about food among college women. *Appetite*, 52, 531–534.
- Stroebe, W., Van Koningsbruggen, G. M., Papies, E. K., & Aarts, H. (2013). Why most dieters fail but some succeed: A goal conflict model of eating behavior. *Psychological Review*, 120, 110–138.
- Swinburn, B., Egger, G., & Raza, F. (1999). Dissecting obesogenic environments: The development and application of a framework for identifying and prioritizing environmental interventions for obesity. *Preventive Medicine*, 29, 563–570.
- Taylor, C., Webb, T. L., & Sheeran, P. (2013). 'I deserve a treat!': Justifications for indulgence undermine the translation of intentions into action. *British Journal of Social Psychology*, 53, 501–520.
- Urbszat, D., Herman, C. P., & Polivy, J. (2002). Eat, drink, and be merry, for tomorrow we diet: Effects of anticipated deprivation on food intake in restrained and unrestrained eaters. *Journal of Abnormal Psychology*, 111, 396–401.
- Weibel, C., Messner, C., & Brügger, A. (2014). Completed egoism and intended altruism boost healthy food choices. *Appetite*, 77, 38–45.
- Wilcox, K., Kramer, T., & Sen, S. (2011). Indulgence or self-control: A dual process model of the effect of incidental pride on indulgent choice. *Journal of Consumer Research*, 38, 151–163.