

Food temptations spontaneously elicit compensatory beliefs in dieters

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Abstract

Through various self-regulatory strategies, individuals attempt to strike a balance between the satisfaction of immediate desires and fulfillment of long term goals. One such strategy is described by the compensatory beliefs model, which suggests that individuals rationalize their surrender to an immediate desire or temptation. This model is indirectly supported by earlier studies where compensatory beliefs were induced by the experimental context. The current pilot study examines whether compensatory beliefs can be self-initiated i.e. are spontaneously generated as a response to temptation. We recruited ten female McGill students currently on a weight loss diet and assigned them randomly to a temptation and a control group. We presented all participants with a choice between two identical cookies, differently described for the temptation and control groups: for the temptation condition one cookie was labeled as high in fat and sugar and the other as low in fat and sugar while for the control condition both cookies were labeled as low in fat and sugar. Participants listed compensatory thoughts in both a closed and an open response format. Our pilot data show that dieters indeed spontaneously generate compensatory beliefs in response to temptation. Compensatory beliefs should be considered a factor in unsuccessful self-regulation and more specifically in failed dieting attempts.

Keywords

Compensatory beliefs, self-regulation, weight-loss, diet.

Introduction

When personal goals conflict with natural desires and tendencies, goal-adherence is undeniably challenging (Baumeister, Heatherton & Tice, 1994; Rabiau, Knäuper & Miquelon, 2006). Individuals continuously face temptations which are situations where one is pulled in the direction of a particularly alluring choice that satisfies an immediate desire but conflicts with another goal. For example, many people hold goals of achieving and maintaining a healthy, active life and thin figure, but also enjoy unhealthy, sweet, and fatty foods (Rabiau et al., 2006). As a result, an internal conflict arises because individuals know they must resist the temptation if they want to attain their long-term goal. Successful self-regulatory efforts to resist a temptation are those that successfully transcend immediate pleasure for the purpose of adhering to long-term goals (Vohs & Baumeister, 2004). In contrast, compensatory beliefs (CBs) are rationales that are used as justifications for giving in to immediate pleasures (Knäuper et al., 2004; Rabiau et al., 2006), thereby interfering with the attainment of a long-term goal.

The compensatory beliefs model (Rabiau et al., 2006) builds on existing theories of self-regulation, and extends them by describing a cognitive strategy that individuals may use to deal with temptations. Specifically, when individuals are faced with temptations, an internal conflict arises between their desire to satisfy immediate goals (partake in unhealthy behaviours) and fulfill explicit long-term goals (staying healthy). This internal conflict and discomfort may arise while contemplating giving in to the temptation or after having given in to it (cf. Festinger, 1957; cf. Giner-Sorolla, 2001). The internal conflict activates compensatory beliefs by catalyzing the conviction that the negative effects of a desired behaviour can be compensated for, or "neutralized", by the positive effects of another behaviour.

A compensatory belief requires the creation of an intention to perform the compensatory behaviour needed to reduce the internal conflict. In the compensatory beliefs model, intention is equivalent to Gollwitzer's concept of goal intention (Gollwitzer, 1999; Gollwitzer & Brandstätter, 1997), which

is described as a feeling of commitment to achieve the goal. Additionally, for a compensatory behaviour to be achieved, individuals must make a concrete, detailed plan of how they will compensate for the unfavourable or unhealthy behaviour in question, and must have a certain amount of self-regulatory capacity to implement the plan (Baumeister et al., 1994; Webb & Sheeran, 2003). The less self-regulatory strength the individual has in a given tempting situation, the greater is the likelihood that compensatory beliefs will be generated, and the less likely he or she is to act upon them by engaging in compensatory behaviours. (Rabiau et al., 2006).

There are two main sources of self-regulation failure: under-regulation and misregulation (Baumeister et al., 1994, 2004). Under-regulation refers to a failure to exert control over oneself, often due to depleted self-regulatory capacity (Baumeister et al., 1994). Misregulation occurs when people monitor and control their behaviour, but in a counterproductive way; for example when their behaviours have different effects on goals than they originally intended. Using compensatory beliefs to regulate temptations can result in both under-regulation and misregulation (Rabiau et al., 2006). Under-regulation typically occurs when compensatory beliefs are activated (because a temptation cannot be resisted), but then the compensatory behaviour itself is not implemented. Misregulation occurs when people successfully manage to implement the compensatory behaviour but the behaviour does not effectively compensate for the unfavourable effects of the tempting behavior. For example, individuals may never make it to the gym to burn off "extra" calories, or even if they do, they may believe that the exercise fully compensates for the extra calories, when in fact they do not. Evidently, compensatory beliefs and behaviours may be unhealthy components of a self-regulatory strategy.

Earlier research on eating behaviours by Lowe (1982) and Urbaszat et al. (Urbaszat, Herman & Polivy, 2002) can be interpreted as supporting the recently proposed compensatory beliefs model. These authors' findings suggest that individuals strategically use anticipated compensation to regulate temptations. In specific, their experiments demonstrated that restrained eaters (individuals who chronically restrict food intake for the purpose of weight control), actually increased food consumption when anticipating future food depriva-

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tion (Herman & Polivy, 1980). This effect has been called the "last supper effect" (Eldredge, Agras & Arnow, 1994), and has been interpreted to mean that dieters feel justified to overeat in anticipation of a compensating diet (Lowe, 1982; Urbaszat, Herman & Polivy, 2002). However, the compensatory belief that future food deprivation will compensate for the present food consumption in these experiments was not self-initiated, but rather created by the experimental context, in that participants were instructed to go on a diet the following day. As such, the studies did not provide direct evidence that people self-initiate compensatory beliefs as a strategy for dealing with temptations.

The objective of the present pilot study thus was to provide initial evidence that compensatory beliefs are indeed elicited as a reaction to temptations, by directly examining dieters' cognitive processes in a situation where they were tempted to consume high calorie food.

Method

Overview

We presented participants with two cookies. Though identical in appearance and content, one was described as vanilla-flavoured and the other as almond-flavoured. In the temptation condition, one cookie was labeled as low in fat and sugar, the other as high in fat and sugar. In the control condition, both cookies were labeled as low in fat and sugar. Which flavor was assigned to which cookie was randomly determined for each session. Participants were asked to describe in writing their thoughts while deciding which of the two cookies they would like to taste and eat. It was hypothesized that the temptation to eat the high calorie cookie would create an internal conflict to the extent that dieters would have compensatory thoughts that "allow" them to eat the high calorie cookie, even though doing so would interfere with their weight loss goals. An example of such a thought is, "It's okay to eat this cookie now because I will not eat dinner later."

Participants

Participants in this pilot study were female students from McGill University (N=10) from 18 to 22 years of age, who were currently dieting to lose five pounds or more, and who were recruited individually by the researchers through acquaintances. All of the people approached for the study were able to participate after the screening process. Recruitment was under the guise of a "Food palatability study for dieters: A study examining the effects of weight loss dieting on food palatability."

Procedure

The aim of this research was to investigate compensatory beliefs in a non-clinical population. As such, researchers screened participants, via phone, for any possible eating disorders using the Eating Disorder Examination Self-Report Questionnaire (EDE-Q; Fairburn & Beglin, 1994). Participants were asked to refrain from eating 2.5 hours prior to the experiment to ensure that they were sufficiently hungry to be tempted by a cookie. After arriving at the assigned room, individual participants were asked to sign a consent form, which detailed that participants would be asked to choose one of two cookies and fully consume it during the course of the study. In truth, this section of the study was not performed, and none of the participants were asked to eat either cookie (i.e. deception was used). Individuals were then told

that they were participating in a "Food Evaluation Study", to assess how weight loss dieting affects food palatability. Participants were randomly assigned to either a temptation condition or a control condition prior to testing (n=5 for each of the two conditions). Once the experiment began, participants in both conditions were presented with two identical cookies. Participants were told that the researchers wanted to know what goes through an individual's mind while deciding between two cookies, which would shortly be brought to market. They were then asked to report their thoughts while deciding on which of the two cookies to taste and eat.

Participants in the temptation condition were presented with what were labeled as one high calorie, high sugar cookie (Cookie A) and one low calorie, low sugar cookie (Cookie B). The exact calorie and sugar contents of the respective cookies were not written on tags in front of the respective cookies as participants might interpret these numbers differently based on their personal weight-loss goals. For example, a 150 calorie cookie might appeal more to someone on a 2500 calories per day diet than to someone on a 1200 calories per day diet. The experimenter verbally described one cookie as vanilla flavoured and the other as almond flavoured. These flavours were chosen because of their equally perceived sweetness, as determined in pre-tests. To control for the possibility that one flavor was favored over another, the tags labeling the cookies were switched, so the almond cookie was high calorie for half of the participants and low calorie for the rest of the participants. The experimenter explained that in previous sessions, participants had mostly found that the low calorie, low sugar cookie was not very good, and tasted quite flat, leaving a bitter after-taste compared to the high calorie, high sugar cookie, which everyone had found to be rich, chewy and "very yummy". This discrepancy between the cookies was emphasized to increase the temptation to eat the high calorie cookie and thereby increase the chances that participants would generate compensatory beliefs.

Participants in the control group were presented with the same cookies, except that both were now labeled as low calorie, low sugar cookies, differing only in the two flavours. Again, the flavour descriptions were only mentioned verbally by the experimenter.

Participants in both groups were then asked to evaluate the two cookies, knowing that they would have to eventually consume the chosen cookie. While considering their choices, participants were asked to describe any thoughts they were having about eating one of the cookies. This portion of the experiment was done in an open response format, i.e. neither priming nor examples were provided, and participants were free to write down any thoughts they had on a lined paper section. Participants were asked to alert the researcher upon finishing the free-write portion.

Participants were then asked to complete a questionnaire about the thoughts they had while deciding which cookie to eat, i.e. to report compensatory beliefs in a closed response format. After completing the questionnaire, participants were asked to once again alert the researcher, who presented an open-ended comments card on which individuals could comment on the experimental procedure and any aspects that they might have found confusing. Finally, a debriefing sheet was distributed to participants with a complete outline of the purpose and experimental manipulations of the study.

Measures

Eating Disorder Examination Self-Report Questionnaire (EDE-Q). The EDE-Q (Fairburn & Beglin, 1994) is a 41-item measure adapted from the Eating Disorder Examination (EDE) by Fairburn and Beglin (1994). The EDE is a structured clinical interview assessing the key behavioural features and associated psychopathology of eating disorders (Cooper & Fairburn, 1993). The EDE-Q has been adapted for self-reportability. The EDE-Q was ideal for our screening purposes, as it was condensed and required no clinical training. Diagnoses of probable eating disorders were based on a 28-day time period and the participants' responses to the main diagnostic questions. Participants were identified as probable for eating disorders if they appeared to have the necessary criteria for bulimia nervosa, anorexia nervosa, or eating disorder not otherwise specified, as described in the DSM-IV (American Psychological Association, 1994). None of the ten women screened were diagnosed with an eating disorder, and therefore all participated in the pilot study.

Open response format questionnaire.

On a blank sheet of paper, participants were asked to indicate their thoughts from when they were deciding which cookie to eat. Specifically, participants were asked: "While you are thinking about which cookie you want to eat, we would like you to tell us any thoughts you are having about eating one of the cookies." Each of the participants' answers was later coded for frequency of compensatory beliefs.

Food Palatability Questionnaire.

Participants completed the Food Palatability Questionnaire, a self-developed 20-item questionnaire that included eight compensatory belief items ("I'll eat it but I'll only have salad for dinner") embedded within 12 filler items. Participants were asked to indicate to what extent such a thought was currently on their mind while they were deciding which cookie to eat, which was reported on Likert-type rating scales, ranging from 1 (a little bit on my mind) to 4 (very much on my mind). The mean endorsement of compensatory beliefs across the eight compensatory beliefs was calculated for each participant.

Results

Sample description.

Participants were on average 19.8 years old ($Mdn = 19.5$, $SD = 1.47$). Regarding weight loss goals, participants on average intended to lose 7 pounds ($Mdn = 5$ pounds, $SD = 4.22$ pounds). The average amount of time since the last meal eaten was 2.85 hours before participating in the experiment ($Mdn = 2.5$, $SD = 0.78$).

Compensatory beliefs in the open response format questionnaire. Responses to the open response format questionnaire were reviewed for the occurrence of compensatory beliefs. As expected, more participants in the experimental condition reported a compensatory belief than in the control condition. Specifically, two of the five participants in the experimental condition wrote down a compensatory belief and none of the participants in the control condition wrote down a compensatory belief. These two respondents wrote: "... I can always abstain from eating cookies for the time following the eating of said cookie" and "I would rather eat a high calorie cookie, and overall less food, than eat a low calorie cookie". In the control group, no participant mentioned any compen-

satory beliefs, with all comments pertaining only to flavour preferences between the two choices presented. Common responses to the open-ended question in the control group indicated the existence of a conflict between choosing among two equally appetizing flavours, similar to the following: "I like vanilla and almond flavors equally, but sometimes find almond too intense... I am leaning towards eating vanilla". The difference in the frequency with which compensatory beliefs were generated between groups (two vs. none) was not statistically significant ($\chi^2 = 2.50$, $df = 1$, $p = .11$), likely due to the small sample size in this pilot study.

Compensatory beliefs in the Food Palatability Questionnaire.

Participants endorsed more compensatory beliefs on the Food Palatability Questionnaire in the experimental condition ($M = 2.7$; $SD = 0.69$) than in the control condition ($M = 1.6$; $SD = 0.61$). Indeed, a significant difference in means between groups was found, $t(8) = 2.67$, $p < .029$, with a higher average endorsement of compensatory beliefs in the experimental condition than in the control condition. These findings lend initial support to our hypothesis that compensatory beliefs are indeed elicited as a reaction to temptations. Both participants who had reported compensatory beliefs in the open response format also endorsed compensatory beliefs in the Food Palatability Questionnaire (i.e. gave a rating of 2, 3, or 4). All five of the experimental condition participants endorsed a minimum of 4 to a maximum of all 8 compensatory beliefs on the Food Palatability Questionnaire, with a rating of 2, 3 or 4. In the control condition, only three of the participants endorsed a minimum of 5 compensatory beliefs and a maximum of 7 compensatory beliefs, with, at most, a rating of 3. None of the participants in the control condition endorsed compensatory beliefs with a rating of 4 ("very much on my mind").

Discussion

In an attempt to provide initial support for the hypothesis that compensatory beliefs are elicited in tempting situations, we created a setting in which compensatory beliefs could naturally occur as a form of justification for making a goal-inconsistent choice. We assessed compensatory beliefs in an open and a closed response format, and found evidence with both assessment strategies that compensatory beliefs were mentioned and endorsed more often when dieters were tempted to consume high calorie food. That more participants in the experimental condition than in the control condition spontaneously listed compensatory beliefs in an unprompted open response format is encouraging because it suggests that compensatory belief endorsements in the closed response format are not just a result of having "planted" beliefs in the minds of participants who otherwise may not have spontaneously generated such thoughts. This is further supported by the fact that both participants who indicated compensatory beliefs in the open response format also endorsed compensatory beliefs on the Food Palatability Questionnaire.

Limitations

In order to avoid any bias caused by differences in the appearance of the food, identical looking cookies were used for both the experimental and control group throughout the entire study. This attempt to avoid bias towards one cookie over another might, however, have influenced results. Indeed, some participants stated that they believed the

cookies might taste the same, even after it was explained that they were quite different. The similarities between the two cookie choices were noted on multiple occasions during both the experimental condition and the control condition. One comment made during the experimental condition was "Both cookies look the same, so I question whether it is worth it to take the higher calorie cookie", while control condition yielded comments such as "They look the same so, other than flavor, I have no reason to pick one over the other". Thus our attempt to create a temptation situation in the experimental condition might not have been successful in all cases. Therefore, the number and degree of compensatory belief endorsements in the experimental condition might have been higher if the cookies actually appeared to be different (i.e. if the high calorie cookie would have looked more appealing or better tasting than the lower calorie cookie).

The purpose of a pilot study is exploratory. One clear limitation of the pilot study sample is that it was homogeneous in gender and age; moreover, all participants were McGill undergraduate students.

Implications and Future Research Directions

A chronic pattern of unsuccessful dieting may partly be due to holding compensatory beliefs and not acting upon them, or acting upon ineffective compensatory beliefs. This pilot study is a stepping stone towards better understanding these beliefs. It will be followed up with an experiment in a large, heterogeneous sample of dieters from the community to investigate the generation of compensatory beliefs in dieters systematically.

Compensatory beliefs research may provide directions for helping individuals achieve a healthier body weight by showing that weight-loss recommendations should target erroneous compensatory beliefs and make individuals aware that they use them to deal with temptations, as well as help individuals implement effective compensatory behaviours by creating specific plans that state when, where, and how they will implement them (Gollwitzer & Brandstätter, 1997). Insight gained from this research may be used in the future to plan interventions aimed at preventing individuals from using compensatory beliefs, or to help them to implement effective compensatory behaviours.

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