

Spoiling the Pleasure of Success: Emotional Reactions to the Experience of Self-Control Conflict in the Eating Domain

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People often experience self-control conflicts (i.e., feel tempted to indulge while motivated to resist). But, how do people feel after making such conflicted self-control choices? Whereas previous research has focused almost exclusively on the influence of choice outcomes (healthy vs. unhealthy) on emotional reactions (e.g., pride vs. guilt), we propose that the experience of conflict during decision making could have a unique influence, possibly fueling negative emotions (i.e., regret) regardless of people's choice outcomes. To test this, we studied immediate consequences of people's experience of conflict during self-control decision making (healthy vs. unhealthy food choice) on self-conscious emotions (i.e., guilt, regret, or pride), choice satisfaction and future behavior. Across 5 studies (vignette, field, and experience sampling), we found a link between self-control conflict and negativity: the more difficulty (proxy of conflict, Studies 1 and 2) or conflict (Studies 3 and 5) participants experienced during self-control decision making, the more negative they felt about their choice afterward. This was the case for unhealthy as well as healthy choices. Specifically, self-control conflict strength was associated with increased levels of guilt and regret (but not pride), with lower satisfaction and with lowered odds of making a similar choice in the future (Studies 1 to 3). Studies 4 and 5 suggested that conflict strength can boost pride after healthy choices, but only if participants first appraised their choice as acts of self-control. Our findings, therefore, highlight the costs as well as the potential benefits of experiencing conflict during self-control decision making.

Keywords: self-control conflict, temptations, self-conscious emotions, pride, eating behavior

Over the past years there has been an increasing emphasis on the importance of making healthy choices, especially in the context of eating. This is understandable given that healthy food choices are the basis of a healthy lifestyle, which in turn promotes physical and emotional well-being (World Health Organization, 2015). However, the fact that healthy choices have to be continuously encouraged also suggests that they are not always easy to make. In fact, healthy choices are notoriously difficult (Baumeister, 2002) because they often require solving a conflict between a hedonic goal (i.e., desire), and a higher-order (e.g., health) goal (e.g., Hofmann,

Baumeister, Förster, & Vohs, 2012). For example, imagine being in a restaurant, browsing through the menu. You feel the desire to take a pizza, but you also had planned to be more careful with your calorie intake and, therefore, think you should rather take a salad. You go back and forth between pizza and salad, you feel conflicted, but you need to make a choice.

How do people feel after making such difficult self-control choices? Previous research on emotional reactions to self-control dilemmas primarily focused on how different choice outcomes (e.g., salad vs. pizza) predict specific emotions (e.g., pride vs. guilt; Giner-Sorolla, 2001; Hofmann et al., 2012; Hofmann, Kotabe, & Luhmann, 2013; Tracy & Robins, 2004). However, not all healthy choices are alike. For some people they are more difficult and, thus, require more self-control than for others. Considering that conflicts are generally experienced as negative affective states that can vary in strength (e.g., Dreisbach & Fischer, 2012; Festinger, 1964), and considering that in decision contexts conflicts can alter appraisal patterns (e.g., focus on the nonchosen alternative; Carmon, Wertenbroch, & Zeelenberg, 2003), we propose that the experience of conflict may have a significant negative effect on people's emotional reactions to their self-control choices. If so, including conflict strength in the prediction of emotions would be crucial, given that emotional reactions are known to influence

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future behavior, and are important for understanding and predicting goal pursuit more generally (Baumeister, Stillwell, & Heatherton, 1994). Before we present five studies investigating this effect, we will review previous research on emotional reactions to self-control choices, and elaborate on how self-control conflict may influence emotional reactions.

The Effect of Self-Control Choice Outcomes on Emotions

Self-control is initiated when an immediate desire, or a hedonic goal, is in conflict with an important higher-order goal (Baumeister, 2002; Hofmann et al., 2012; Myrseth & Fishbach, 2009). This goal-conflict turns the desire into a temptation (e.g., the pizza you want but should not have). Whether or not one eventually resists or gives in to a temptation has emotional consequences. According to self-conscious emotion theory, guilt, pride, and regret are most likely to occur, because they signal whether or not one's action was consistent or inconsistent with a self-relevant, higher-order goal and, thus, provide internal feedback about goal progress (Tracy & Robins, 2004). Such emotional feedback is also an important guide for future behavior: In the case of inconsistent behavior it motivates to restore, in the case of consistent behavior it motivates to maintain successful goal pursuit (Baumeister et al., 1994).

Accordingly, many studies have shown that people experience elevated levels of guilt when their actions are inconsistent with their higher-order goals (i.e., giving in to temptation; Dhar & Wertenbroch, 2012; Hofmann & Fisher, 2012; Hofmann et al., 2013; Macdiarmid & Hetherington, 1995; Macht & Dettmer, 2006). Such guilt reactions can lead to more self-control behavior in the future, but only if they boost the importance of the higher-order goal (Hofmann & Fisher, 2012). There is also some support for the complementary hypothesis that people experience elevated levels of pride when their actions are consistent with their higher-order goals (i.e., resisting temptation; Hofmann & Fisher, 2012; Hofmann et al., 2013). Research in the decision-making domain also shows that people are more satisfied and assess the utility of a choice as higher (i.e., they are prepared to pay more) when it was associated with resisting a temptation (Dhar & Wertenbroch, 2012). Moreover, pride after having resisted temptations facilitates self-control in a subsequent situation through increasing the importance of the implied higher-order goal, and the general readiness to use self-control (Hofmann & Fisher, 2012). This suggests that resisting temptations can boost feelings of pride and the overall value of a choice outcome, which in turn increases the likelihood of making a similar choice again in the future, thereby supporting long-term self-control.

Besides guilt and pride, a third emotion that is relevant in the context of self-control decision making is regret. Regret has been described as a comparison-based emotion that arises from a focus on the foregone, or, more specifically, when people ponder on how a past choice could have resulted in a better outcome (Zeelenberg & Pieters, 2007). The literature distinguishes between two types of regret: Regret about a specific action taken (commission) and regret about a specific action not taken (omission; Gilovich & Medvec, 1995). Accordingly, there is evidence that both giving in as well as resisting temptations can lead to enhanced feelings of regret (Hofmann et al., 2013; Kivetz & Keinan, 2006). More

important, there is converging evidence suggesting that regret has a significant influence on future behavior, provided a future situation allows compensating for the lost choice. Several studies have shown that postdecisional regret motivates behavioral switching (Carmon et al., 2003; Roese & Summerville, 2005). Finally, regret should be especially likely when two choices are equally attractive, which is the case when self-control conflict is strong.

The Effect of Self-Control Conflict Strength on Emotions

The experience of conflict is a core aspect of the self-control process, because in the absence of conflict there is no need to engage in self-control (Baumeister, 2002; Botvinick, Braver, Barch, Carter, & Cohen, 2001; Hofmann et al., 2012; Inzlicht, Bartholow, & Hirsh, 2015; Metcalfe & Mischel, 1999; Myrseth & Fishbach, 2009). Although the self-control literature has always emphasized the centrality of conflict, most previous research on the emotional consequences of self-control choices has merely assumed that there was a conflict (i.e., a temptation), rather than acknowledging that conflict can vary in strength (for exceptions see Hofmann et al., 2012; Milyavskaya & Inzlicht, 2017). Accordingly, previous research has only rarely measured the amount of conflict participants actually experienced during decision making. Therefore, it is difficult to say (a) whether and to what extent participants actually exercised self-control during decision making, and (b) whether the emotional reactions observed in previous studies stem from the *outcome* (i.e., whether the unhealthy vs. healthy option is chosen) or from the self-control *process* (i.e., dealing with conflict; Inzlicht et al., 2015), or from both. The present line of studies addresses those shortcomings by measuring the amount of conflict people experience during self-control decision making, and by using those variations in conflict strength to predict emotional reactions. Interestingly, different bodies of literature make different and even contradictory predictions about what effect conflict strength could have.

Outcome-Dependent Approach

Previous research has predominantly focused on how self-control outcomes shape emotional reactions (e.g., Giner-Sorolla, 2001). Though variations of conflict strength were not systematically taken into account when predicting emotional reactions, the general notion is that conflict is a necessary prerequisite for self-conscious emotions to arise. That is because self-conscious emotions are only triggered when one's actions are perceived to be consistent or inconsistent with an important standard or higher-order goal (Tracy & Robins, 2004). Such (in)consistency appraisals become salient when people experience conflict, and should increase the stronger the conflict gets. Based on that theoretical perspective, higher levels of conflict should, therefore, result in more intense emotional reactions. Specifically, the more difficult a healthy (vs. unhealthy) choice is the stronger should be the sense of accomplishment and feelings of pride (vs. sense of failure and feelings of guilt and regret). This prediction is further corroborated by the literature on goal pursuit that has shown that goal achievement feels more rewarding and enhances self-efficacy when difficulty had to be overcome in the process (Higgins, 2006; for a similar point see Schoupe et al., 2015). However, failing to obtain

a goal after having invested resources and effort in the hope to overcome the difficulty should feel especially frustrating. Together, the outcome-dependent approach argues that emotional reactions are determined by what people have chosen, and that those emotional reactions get more intense with higher levels of conflict. This final prediction has, however, never been thoroughly tested.

Outcome-Independent Approach

The effect of conflict strength on emotional reactions to people's self-control choices may not be as straightforward as previously assumed. Specifically, we question whether conflict strength merely amplifies the outcome-dependent emotion, and argue that its effects may actually be more complex. Our argument is based on work across many disciplines, which shows that conflict—be it attitudinal conflict, response conflict, decisional conflict, or other forms of cognitive inconsistency—is generally associated with negative affect and a sense of discomfort that can persist even after a choice has been made (Dreisbach & Fischer, 2012; Emmons & King, 1988; Festinger, 1964; Gawronski, 2012; Grund, Schmid, & Fries, 2015; Kleiman & Hassin, 2011; Tversky & Shafir, 1992; van Harreveld, Rutjens, Rotteveel, Nordgren, & van der Pligt, 2009). In the context of decision making, this postchoice negativity is maintained by a shift in appraisal processes. Studies have shown that conflicted choices take longer and feel more difficult than nonconflicting ones (Kleiman & Hassin, 2011). People infer from such high decision difficulty that all available options are equally attractive (Lieberman & Förster, 2006). Choosing one alternative over another can, therefore, leave the decision maker with the feeling of having made the wrong choice, as he or she remains occupied with the nonchosen alternative (Zeigarnik, 1927). As a result, increasing levels of difficulty can reduce choice satisfaction (Carmon et al., 2003), because the nonchosen alternatives are more likely to remain attractive even after a choice has been made. As a consequence, a conflicted healthy choice should be associated with elevated feelings of regret and lower satisfaction, marking a hedonic loss. A conflicted unhealthy choice should be associated with elevated feelings of guilt, regret, and lower satisfaction, marking a higher-order goal loss. In other words, higher levels of self-control conflict may “spoil the pleasure” of resisting as well as of giving in to temptation. Such an outcome-independent overall negative reaction might, in turn, have significant implications for future behavior and goal pursuit (Baumeister et al., 1994).

Reconciling the Two Approaches

Taken together, the two approaches generate different predictions about the effects of conflict strength during self-control decision making on emotional reactions to self-control choices (see Figure 1). On the one hand, conflict strength could intensify the outcome-dependent emotion (outcome-dependent hypothesis; Tracy & Robins, 2004). That is, higher levels of self-control conflict should be related to elevated feelings of guilt and regret after acting inconsistently with the higher-order goal, and to elevated feelings of pride when the action is consistent with the higher-order goal. On the other hand, conflict strength could be linked to more negative emotions independent of people's choice outcome (outcome-independent hypothesis; Carmon et al., 2003).

That is, higher levels of self-control conflict should be related to elevated negative emotions, especially regret, independent of people's choice outcome, because people will be more likely to consider their choice as inconsistent with the nonchosen, alternative goal. Comparing the two approaches shows that their predictions are indistinguishable regarding the emotion of guilt (after unhealthy choices), but that they can be distinguished in their different predictions regarding the occurrence of pride (after healthy choices), and in comparing differences in regret and satisfaction between healthy and unhealthy choices. Specifically, whereas the outcome-dependent account predicts such differences (i.e., a moderation by choice), the outcome-independent does not.

Despite their differences, the theoretical backgrounds of the two predictions suggest a possible reconciliation, namely, the significant role of which of the two goals dominates the postchoice appraisal process. Both approaches share the general assumption that emotional reactions arise when people evaluate their choice outcome in relation to one of the goals that led to their decision. The approaches differ, however, in their assumption about which of the goals is used as primary appraisal standard. In the outcome-dependent approach, the higher-order goal represents the primary appraisal standard (Tracy & Robins, 2004), which means that people appraise their choice outcomes as either consistent or inconsistent with their higher-order goal. This corresponds to the general assumption and findings in the self-control literature, suggesting that people evaluate their self-control choices in relation to their higher-order self-control goals (see Inzlicht et al., 2015). In the outcome-independent approach not only a higher-order but also a hedonic goal can serve as an appraisal standard. The general idea is that the more conflict people experience during decision-making, the more likely they are to use the outcome-inconsistent goal as appraisal standard. This implies that, in the domain of eating behavior, conflicted healthy choices should be evaluated with the rejected hedonic goal, whereas conflicted unhealthy choices should be evaluated with the rejected self-control goal. The outcome-independent approach, in other words, is open to the possibility that decision-inherent (i.e., conflict) or further situational factors may shift the relative salience of the appraisal standard that in turn affect postchoice affective experiences.

Taken together, this distinction between choice outcome and choice process might not only contribute to our conceptual understanding of self-control dynamics, it could also help explain the inconsistencies between and even within studies showing that healthy choices can lead to more pride as well as more regret (Hofmann et al., 2013; Kivetz & Keinan, 2006). Moreover, given that emotional reactions guide future behavior and goal pursuit more generally (Baumeister et al., 1994), it is important to find out whether or under which circumstances people feel particularly good or bad about overcoming high levels of conflict to resist temptations. And finally, which of the two predictions will be confirmed has significant implications for health communication. If the outcome-independent prediction will be empirically supported, the general emphasis on choice outcomes, especially healthy choices, may be insufficient to promote physical and emotional well-being.

The Present Studies

The present series of studies investigates how people's self-control choices together with the degree of experienced self-control conflict

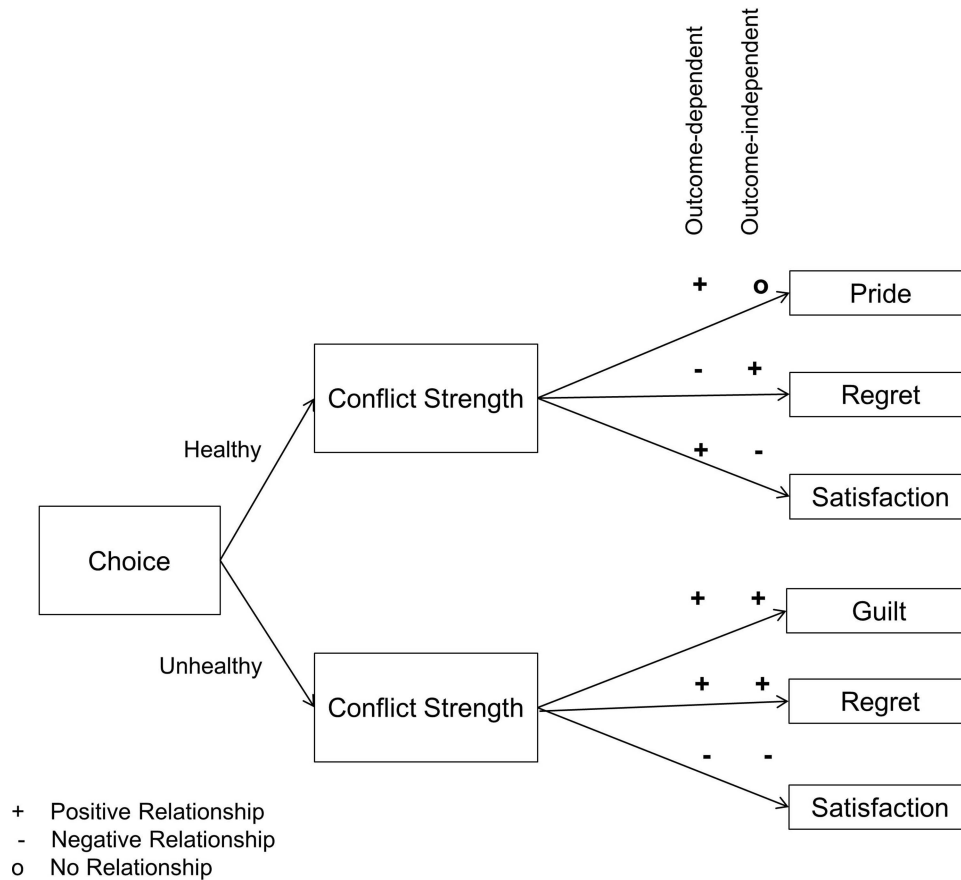


Figure 1. Overview of predicted pattern of results under the two different hypotheses (outcome-dependent vs. outcome-independent).

shape subsequent emotional reactions. We also assess people's post-choice satisfaction to get a more global impression of people's affective evaluation regarding their choice outcome. To test that, we combine data from vignette, field and experience sampling studies. We focus on eating-related self-control choices because many people experience them as conflicting, they are quite frequent in every-day life (Hofmann et al., 2012), and they are for a great deal responsible for lifestyle-related health problems (World Health Organization, 2015).¹ Study 1 is a first exploratory attempt to map those relations.² All subsequent studies are replications of the initial finding and test additional hypotheses. In Study 2 we investigate changes in evaluations as a function of choice outcome and choice difficulty. In Study 3 we investigate the joint effect of choice outcome and conflict strength on future self-control. In Study 4, we reanalyze an existing experience sampling data set (Hofmann et al., 2012) to provide an independent test of our hypotheses. Study 5 illustrates the role of appraisal standards in determining emotional reactions and offers a possible explanation for the observed discrepancies between Study 1 to 3 and Study 4.

In all studies, we conduct four multiple regressions to estimate the effect of choice outcome (healthy vs. unhealthy food) and self-control conflict strength (or difficulty, a proxy; see Kleiman & Hassin, 2011) on self-conscious emotions (i.e., guilt, regret, and pride) and choice satisfaction (3-item measure: satisfaction, happiness, and unhappi-

ness).³ The original data on which the main analyses are based can be found at <https://osf.io/kr9qt/>. To ensure ecological validity and to prevent reactance, participants in all studies make their own food choices rather than being assigned to one. Self-control conflict

¹ Women might be more prone to experience self-control conflict as well as negative self-conscious emotions such as guilt in the context of food choices. Additional analyses showed that in three out of five studies women did indeed report higher difficulty/conflict levels. However, including gender in the regression analyses revealed no systematic gender effects across the studies. If gender had a main effect, all other reported effects remained stable. If gender interacted with other factors, the usual finding was that effects were stronger for women. However, the latter finding is probably because of power-differences, as all studies included more women than men.

² One earlier unreported study measuring those same variables, but also including unrelated manipulations and a different research question all together, suggested that conflict strength was related to more intense negative affect and emotions. Those incidental findings served as inspiration for the present line of studies. No additional, unreported studies existed at the moment of submission.

³ Additional correlational analyses showed that the two negative (guilt and regret) and the two positive (pride and satisfaction) emotional measures were correlated at medium to high (between $r = .472$ and $r = .644$, $M_r = .582$) and small to medium levels (between $r = .137$ and $r = .333$, $M_r = .244$; Cohen, 1988), respectively. In both cases we can, however, still speak of sufficient discriminant validity (conventional threshold $r = .85$; Brown, 2006), which is supported by the distinct pattern of observed results.

strength is measured rather than manipulated in most of our studies (see Study 2 for an attempt to manipulate conflict strength), because we are specifically interested in testing the effect of variations in conflict strength on the intensity of emotional reactions (for a similar approach see Hofmann et al., 2012). To validate the concept of difficulty and self-control conflict, we also obtain confidence ratings, participants' desire to reverse their choice, and record decision times. Some of the studies also include additional exploratory but unreported individual difference measures (see Appendix A) that are not considered in our main set of analyses.

Finally, to perform an a priori sample size calculation for each study we set the desired level of power to .8, the α level at .05, and assumed a medium effect size of $f = .25$ (main effects and interaction). For studies with two predictors (three including the interaction; Study 1–3) this resulted in a minimum of 179 participants. In Study 5 (three predictors, seven including the interactions) the minimum was 237 participants. However, because the predictor choice outcome was not manipulated but self-determined, we tested more people than required. Sample size for Study 4 could not be planned or determined since it used an already existing data-set.

Study 1

Method

Participants. We recruited 203 participants for the present laboratory study (145 women, $M_{\text{age}} = 22.05$, $SD = 3.28$, 91% students). Participation was rewarded with course credit ($n = 28$) or financially compensated (5 euro). The present study was approved by the Ethics Committee of the University of Amsterdam.

Materials and procedure. After giving informed consent, participants read a scenario in which they were having a meal in a restaurant with a good friend (see Appendix B). Two meals had caught their attention, the so-called salad-of-the-day and the pizza-of-the-day (healthy vs. unhealthy choice). A validation of their difference in health status (1 = *unhealthy*, 7 = *healthy*) was later obtained as part of Study 5 (that used the same meal options), and confirmed that the salad ($M = 5.39$, $SD = 0.94$) was indeed seen as more healthy than the pizza ($M = 2.50$, $SD = 1.00$), $t(231) = -31.27$, $p < .001$, Cohen's $d = -2.05$, 95% confidence interval, CI [-3.07, -2.71].

On the next screen, they read that the waiter arrived to take their orders. Participants then made a forced choice (i.e., pizza vs. salad). Their decision time (i.e., once they had clicked the "next" button) was recorded (in seconds). Then, participants were asked the following questions in respective order: "How confident are you about your choice?" (confidence), "How difficult was it for you to make a choice?" (difficulty), and "How much would you rather have chosen the alternative meal?" (preference for alternative). Finally, they were asked: "To what extent do you experience the following six emotional states when thinking back to the choice you just made: guilt, unhappiness, regret, pride, happiness, and satisfaction." Unhappiness (reverse scored), happiness, and satisfaction measures were combined in a general measure of choice satisfaction ($\alpha = .64$).⁴ All answers were given on 5-point scales with higher scores indicating higher endorsement (1 = *not at all* and 5 = *very much*). The study took approximately 10 min to complete.

Results

Of all participants, 150 made an unhealthy choice (i.e., pizza) and 53 a healthy choice (i.e., salad). Results from independent t tests suggested that participants who made an unhealthy choice experienced less difficulty, made their choice faster, and were more confident compared with participants who made a healthy choice. Their preference for the alternative meal did, however, not differ (for an overview of results see Table 1). We then computed correlations and found that, for both choices, difficulty was negatively related to confidence, positively related to the degree to which they would have rather chosen the alternative meal, and unrelated to decision time.

Guilt. A multiple regression with difficulty (mean centered), choice outcome ($-1 = \text{unhealthy}$, $1 = \text{healthy}$) and their interaction as predictors of guilt was conducted. The model was significant, $R^2 = .10$, $F(3, 199) = 7.25$, $p < .001$. Choice outcome and difficulty were significant predictors. Participants who had made an unhealthy choice experienced more guilt (at average levels of difficulty, see Table 2 for regression parameters), and difficulty was positively associated with levels of guilt (see Figure 2).

Regret. The regression model for regret was significant, $R^2 = .17$, $F(3, 199) = 14.00$, $p < .001$. Choice outcome significantly predicted regret, with more regret following unhealthy choices (at average levels of difficulty). Difficulty also significantly predicted increased levels of regret.

Pride. The same multiple regression model for pride was nonsignificant, $R^2 = .02$, $F(3, 199) = 1.32$, $p = .269$.

Satisfaction. Finally, the same multiple regression was conducted for choice satisfaction. The regression model was significant, $R^2 = .14$, $F(3, 199) = 10.98$, $p < .001$. Only difficulty was a significant predictor, suggesting that the more difficult the choice was the less satisfied participants were with it.

Discussion

Study 1 partly replicated earlier work showing that participants felt more guilty and more regretful after having had chosen the unhealthy (vs. healthy) meal option (e.g., Hofmann et al., 2013). There were, however, no effects on pride. More important, it provided first evidence for the significant role of conflict strength in self-control decision making. The findings on emotional reactions suggest that difficulty has predominantly negative consequences. The more difficult a healthy or unhealthy choice was perceived to be, the higher participants' feelings of guilt and regret and the lower their satisfaction. There was no relation between difficulty and feelings of pride for either choice. That suggests that making a difficult healthy choice (i.e., resisting strong temptations) was not accompanied by feelings of accomplishment but rather by a feeling of hedonic loss. Further, we found that choice difficulty (as a proxy of conflict strength) was related to reduced levels of choice confidence, and to a stronger desire to have rather chosen the alternative. Together, these findings are in line with previous research arguing that choice difficulty reduces choice satisfaction, because the alternative remains unfulfilled and attractive (Carmon et al., 2003; Liberman & Förster, 2006). They also support the

⁴ Results across all studies remain the same when only using the single satisfaction item.

Table 1
Mean (SDs) Ratings Compared Between Participants' Food Choice (Study 1), Correlations With Difficulty

Measure	Unhealthy ($n = 150$)		Healthy ($n = 53$)	
	M (SD)	Difficulty r	M (SD)	Difficulty r
Difficulty	2.04 ^a (1.15)	—	2.58 ^a (1.26)	—
Decision time (s)	7.01 ^a (2.96)	.09	8.54 ^a (3.78)	.15
Confidence	4.39 ^a (.71)	-.49 ^{***}	4.00 ^a (.83)	-.48 ^{***}
Preference alternative	1.84 ^a (.84)	.53 ^{***}	1.94 ^b (.80)	.59 ^{***}

Note. Means with the same superscript in the same row are significantly different from each other at $p < .05$. Correlation significance levels: *** $p < .001$.

outcome-independent hypothesis, as difficulty had a profound negative influence on emotional reactions independent of participants' preceding food choice.

Study 2

Study 2 addressed some of the weaknesses of Study 1. First, we made the two choice options more idiosyncratic so that difficulty ratings were less likely caused by alternative reasons (e.g., not liking either of the two food options). Second, we manipulated conflict strength through a specific choice-matching procedure: In the difficult (vs. easy) healthy choice condition, an attractive unhealthy meal was matched with a relatively less (vs. more) attractive healthy meal.⁵ Finally, we let participants evaluate both options before and after their choice to be able to track shifts in evaluations as a function of conflict strength. Participants who had just experienced high levels of conflict and still had the nonchosen option on their mind should engage less in cognitive dissonance reduction (i.e., lower evaluation of nonchosen and higher evaluation of chosen option; Festinger, 1964).

Method

Participants. There were 326 students who completed an online study in exchange for course credit. The study was approved by the Ethics Committee of the University of Amsterdam. Half of the participants were randomly assigned to the easy versus difficult healthy choice condition, respectively.

Materials and procedure. After giving informed consent, participants were asked to first evaluate 20 meals on a visual analogue scale ranging from 0 (negative) to 100 (positive). Half of the meals were healthy (e.g., couscous with vegetable tagine; 50% vegetarian) and half of the meals were relatively unhealthy (e.g., hamburger with bacon and fries; 50% vegetarian). The 20 meals were selected on the basis of a pretest in an independent but comparable student sample ($N = 28$) so that on average all 10 healthy meals ($M = 3.86$, $SD = 0.36$; measured on a 5-point Likert scale, 1 = *unhealthy*, 5 = *healthy*) were perceived as relatively more healthy compared with all 10 unhealthy meals ($M = 1.89$, $SD = 0.41$, $p < .001$). There was no difference in general liking between healthy ($M = 3.67$, $SD = 0.52$) and unhealthy meals ($M = 3.80$, $SD = 0.59$, $p = .349$).

Then, they were asked to rank the list of 10 healthy meals and the list of 10 unhealthy meals through dragging and dropping them in their order of preference (position 1 = *most desirable* to

position 10 = *least desirable*). Participants repeated that procedure for 20 filler items which were two lists of 10 different holiday locations (e.g., city trip to New York).

After filling in a filler questionnaire, participants allegedly started a new experiment which asked them to read and vividly imagine the same scenario as used in Study 1 (see Appendix B). The two meals were taken from the earlier ranking phase. In the *easy healthy choice condition* participants had a choice between their most favorable healthy meal (position 1) and a medium favorable unhealthy meal (position 5). In the *difficult healthy choice condition* participants chose between a medium favorable healthy meal (position 5) and their most favorable unhealthy meal (position 1). Participants indicated their choice and the elapsed decision time was recorded (in seconds). Then the same dependent measures were assessed as in Study 1 (i.e., confidence, difficulty, preference for the alternative meal, three emotions, choice satisfaction $\alpha = .70$; all answers were given on 5-point Likert scales, 1 = *not at all confident/very easy*. . . and 5 = *very confident/very difficult*. . .). Additionally, we also asked participants to evaluate their chosen and nonchosen alternative (1 = *negative* and 5 = *positive*, which were later transformed to match the 100-point pre-evaluation scale).

Finally, we asked them to indicate their height and weight, their gender, age, and whether they were following a vegetarian or a special diet (e.g., vegan, allergies). The study took about 20 min to complete.

Results

We excluded three participants who followed a special diet, three participants who chose both the healthy and the unhealthy meal option, and four participants who had participated several times in the same study (none of their data was included). The final sample consisted of 316 participants (236 female, $M_{\text{age}} = 21.41$, $SD = 6.38$, 85% student, 6% vegetarian, $M_{\text{BMI}} = 21.53$, $SD = 3.07$). Most participants made an unhealthy choice ($n = 193$).

Because only few participants ($n = 17$) chose the healthy meal in the difficult healthy choice condition (vs. $n = 106$ in the in easy healthy choice condition), we decided to drop the manipulation and use participants' self-reported difficulty estimates as a continuous predictor (see Study 1). Mirroring the results from Study 1, participants who had chosen the unhealthy option experienced less difficulty, made their choice faster, and felt more confident about it. In this study they also had a lower preference for the alternative healthy meal option. Correlational analyses showed that difficulty during both choices was positively related to decision time, and the degree to which they would have rather chosen alternative meal. Difficulty was negatively related to confidence (for an overview of results see Table 3).

Guilt. A multiple regression analysis with difficulty (mean centered), choice outcome ($-1 = \textit{unhealthy}$, $1 = \textit{healthy}$) and their interaction as predictors of guilt was conducted. The model

⁵ We also added a health (vs. neutral) goal prime at the very beginning of the experiment. However, the goal manipulation neither affected participants' explicit health goal ratings (manipulation check), nor did it systematically influence the results. Therefore, we do not further report this manipulation. Interested readers may contact the first author for more information.

Table 2
Parameter Estimates of Regression Analyses of Study 1, 2, and 3

Regression model by emotion	Study 1					Study 2					Study 3				
	B	SE	95% CI	β	t	B	SE	95% CI	β	t	B	SE	95% CI	β	t
Guilt															
Constant	1.57	.08	[1.42, 1.72]		20.46***	1.35	.04	[1.26, 1.43]		30.70***	1.52	.06	[1.39, 1.64]		23.86***
Choice	-.19	.08	[-.35, -.04]	-.18	-2.52*	-.11	.04	[-.20, -.03]	-.14	-2.56*	-.15	.06	[-.27, -.02]	-.14	-2.30*
Conflict	.16	.06	[.04, .28]	.20	2.59*	.17	.04	[.10, .25]	.26	4.58***	.22	.03	[.15, .28]	.45	6.83***
Choice \times Conflict	-.11	.06	[-.23, .01]	-.14	-1.85 [†]	.04	.04	[-.03, .12]	.07	1.18	-.07	.03	[-.14, -.01]	-.15	-2.36*
Regret															
Constant	1.49	.06	[1.37, 1.60]		25.72***	1.43	.04	[1.35, 1.50]		37.28***	1.36	.05	[1.26, 1.46]		26.62***
Choice	-.12	.06	[-.23, -.01]	-.13	-2.00*	.01	.04	[-.07, .08]	.01	.07	-.08	.05	[-.18, .02]	-.10	-1.60
Conflict	.25	.05	[.16, .34]	.39	5.42***	.38	.03	[.31, .44]	.56	11.54***	.18	.03	[.13, .23]	.46	7.11***
Choice \times Conflict	-.04	.05	[-.13, .05]	-.07	-.93	.08	.03	[.01, .14]	.11	2.34*	-.08	.03	[-.13, -.03]	-.21	-3.19**
Pride															
Constant	2.52	.10	[2.32, 2.72]		25.00***	2.54	.07	[2.40, 2.68]		35.47***	2.27	.10	[2.07, 2.46]		23.06***
Choice	.16	.10	[-.04, .35]	.11	1.54	-.02	.07	[-.16, .12]	-.01	-.23	.18	.10	[-.01, .37]	.13	1.84 [†]
Conflict	-.01	.08	[-.17, .15]	-.01	-.12	-.11	.06	[-.23, .01]	-.10	-1.81 [†]	-.06	.05	[-.15, .04]	-.09	-1.18
Choice \times Conflict	.07	.08	[-.08, .23]	.07	.93	-.03	.06	[-.15, .10]	-.02	-.42	.04	.05	[-.06, .13]	.06	.77
Satisfaction															
Constant	4.26	.04	[4.17, 4.34]		95.65***	4.33	.03	[4.27, 4.40]		137.34***	4.07	.05	[3.97, 4.18]		75.91***
Choice	-.02	.04	[-.11, .07]	-.03	-.44	-.06	.03	[-.12, .01]	-.10	-1.98*	.02	.05	[-.09, .12]	.02	.30
Conflict	-.16	.04	[-.23, -.10]	-.34	-4.67***	-.24	.03	[-.29, -.18]	-.45	-8.75***	-.08	.03	[-.14, -.03]	-.22	-3.10**
Choice \times Conflict	.03	.04	[-.04, .10]	.06	.89	-.07	.03	[-.12, -.01]	-.12	-2.44*	.03	.03	[-.02, .08]	.08	1.10

Note. CI = confidence interval. In Study 1 and 2, the predictor conflict was measured as choice difficulty. Significance levels: [†] $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$.

was significant, $R^2 = .07$, $F(3, 312) = 8.12$, $p < .001$. Choice outcome and difficulty were both significant predictors: Participants who had made the unhealthy choice reported more guilt compared with participants who had made the healthy choice (at average levels of difficulty, for all parameters see Table 2). And choices perceived to be higher in difficulty were associated with increased feelings of guilt.

Regret. A similar regression model on regret was significant, $R^2 = .31$, $F(3, 312) = 45.83$, $p < .001$. Difficulty was a significant positive predictor of regret, but a significant interaction suggested that the relation between difficulty and regret was stronger for those who had made a healthy choice ($\beta = .67$, $B = 0.46$, $SE = .05$, $t(312) = 9.08$, $p < .001$, 95% CI [0.36, 0.55]) compared with an unhealthy choice ($\beta = .45$, $B = 0.30$, $SE = .04$, $t(312) = 7.13$, $p < .001$, 95% CI [0.22, 0.39]).

Pride. The overall regression model did not reach significance, $R^2 = .01$, $F(3, 312) = 1.19$, $p = .314$.⁶

Satisfaction. An analogous regression analysis was conducted for choice satisfaction. The model was significant, $R^2 = .22$, $F(3, 312) = 30.01$, $p < .001$. Choice outcome and difficulty were both significant predictors. Healthy choices were accompanied by lower levels of satisfaction (at average levels of difficulty), and increasing difficulty ratings were related to lower satisfaction. Importantly, though the overall negative relation between difficulty and satisfaction existed for both choices, it was significantly more pronounced for healthy choices ($\beta = -.57$, $B = -0.30$, $SE = .04$, $t(312) = -7.32$, $p < .001$, 95% CI [-0.38, -0.22]) compared with unhealthy choices ($\beta = -.32$, $B = -0.17$, $SE = .04$, $t(312) = -4.90$, $p < .001$, 95% CI [-0.24, -0.10]), as indicated by a significant interaction effect.

Evaluations. We conducted a 2 (time: pre vs. post) \times 2 (choice: chosen vs. nonchosen alternative) \times 2 (meal: healthy vs. unhealthy) \times (difficulty, continuous) mixed model analysis of

variance (ANOVA) to test whether participants' evaluation of their chosen and nonchosen alternative changed from pre- to postmeasure as a function of difficulty (controlling for their choice). The respective Time \times Choice \times Difficulty interaction reached significance, $F(1, 312) = 17.42$, $p < .001$, $\eta_p^2 = .05$, and was not qualified by whether they had chosen the healthy or unhealthy meal ($F < 1$). Further analyses showed that participants' preference for the chosen (vs. nonchosen) alternative was stronger after compared with before the choice, and that this "spreading of alternatives" effect ([post: choice—nonchoice] - [pre: choice—nonchoice]) was significantly less pronounced for participants who experienced higher levels of difficulty (Median split at $Mdn = 2$; $M_{high\ difficulty} = 9.12$, $SD = 24.78$; $M_{low\ difficulty} = 20.06$, $SD = 24.19$), $t(314) = 3.95$, $p < .001$, Cohen's $d = 0.45$, 95% CI [5.50, 16.39].

Discussion

In Study 2, we replicated the general negative affective connotation of difficulty: the more difficult a healthy or unhealthy choice was the higher participants' feelings of regret and the lower their satisfaction. Both relations were even more pronounced for healthy choices. Difficulty also increased feelings of guilt, but again, there were no effects on pride. Moreover, choice difficulty was associated with less choice confidence, and an increased desire to have rather taken the alternative meal. In accordance with previous research, we also found that difficult choices took longer (see Kleiman & Hassin, 2011). Finally, our findings concerning par-

⁶ Note that in the regression analysis for regret and pride the assumption of uncorrelated residuals was violated (Durbin-Watson < 1). Given the consistency of results across all studies, however, we are confident that the overall conclusions drawn from Study 2 remain warranted.

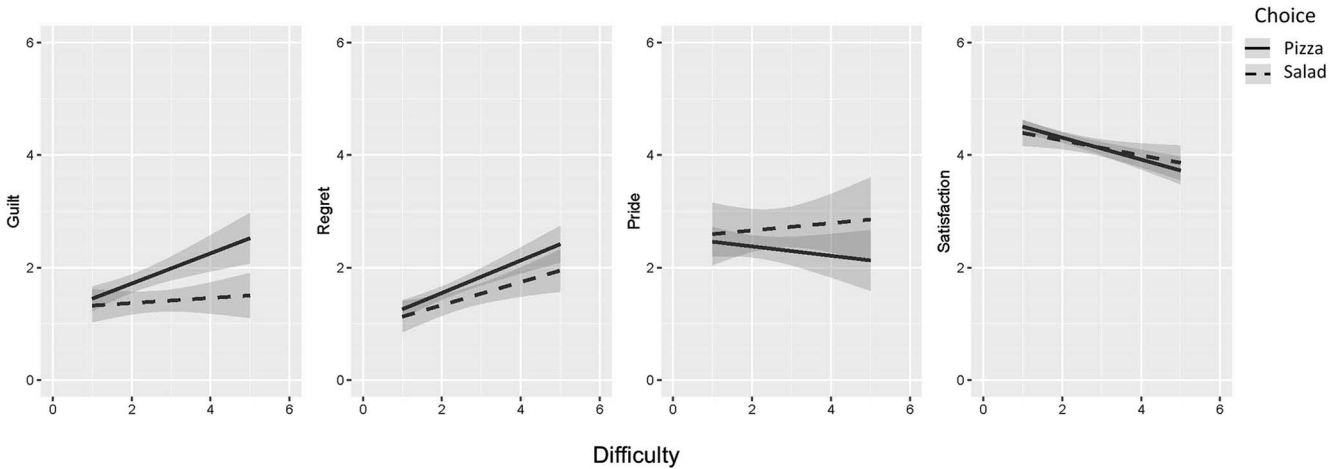


Figure 2. Visualization of regression analyses from Study 1, for each emotion rating per choice outcome. Shaded areas around the regression line represent the 95% confidence interval.

participants' changes in evaluation were also in line with the above results. The more difficult a healthy or unhealthy choice was, the less spreading of alternatives was observed, which suggests that people remained occupied with the alternative and engaged less in dissonance reduction (Festinger, 1964).

One point of discussion is the failed manipulation of choice difficulty. Only relatively few participants in the difficult healthy choice condition actually made a healthy choice ($n = 17$). In hindsight this makes sense, given that in this condition the healthy meal option was paired with participants' favorite unhealthy meal. Perhaps our manipulation would have been more successful if we had paired the healthy option with the second favorite unhealthy meal. However, even then unhealthy meals might have been chosen more frequently, especially considering that the choice context (i.e., restaurant) was more likely to trigger hedonic goals, and considering that food choices were hypothetical.

Study 3

Study 3 addressed some of those shortcomings by testing our ideas with real food choices in an everyday life setting (i.e., university canteen). Moreover, this time we measured perceived self-control conflict strength more directly to see whether it produces a similar pattern of results as perceived difficulty. In addition,

we also assessed future self-control behavior, by letting participants choose a healthy or unhealthy snack as a reward for completing the study.

Method

Participants. There were 260 participants who were recruited at a university canteen. They were approached after they had completed their purchase and were not allowed to participate when they had bought only a drink. Participation was voluntary and afterward unexpectedly rewarded with a little snack (chocolate or fruit). The study was approved by the Ethics Committee of the University of Amsterdam.

Materials and procedure. First, participants were asked to wait with eating until after they had filled in the questionnaire. Then, participants signed the informed consent and were asked several questions about what they had bought (e.g., how many items, which items exactly). If they had bought more than one item, they were asked to respond with regards to what they considered to be the main purchase. Then the same dependent measures were assessed as in Study 1 and 2 (i.e., confidence, difficulty, "How much would you like to revise your choice?"; answers were given on 7-point Likert scales, 1 = *not at all confident/difficult*. . . and 7 = *very confident/difficult*. . .). Participants' emotional reactions concerning their choice were measured on 5-point Likert scales (1 = *not at all* and 5 = *very much*; choice satisfaction $\alpha = .61$). Participants were also asked "How much was your choice in conflict with one or more of your personal goals?" (1 = *not at all in conflict* and 7 = *very much in conflict*).⁷ This latter measure of conflict strength served as the

Table 3
Mean (SDs) Ratings Compared Between Participants' Food Choice (Study 2), Correlations With Difficulty

Measure	Unhealthy ($n = 193$)		Healthy ($n = 123$)	
	M (SD)	Difficulty r	M (SD)	Difficulty r
Difficulty	1.87 ^a (1.12)	—	2.24 ^a (1.18)	—
Decision time (s)	8.21 ^a (4.18)	.26***	9.21 ^a (3.86)	.33***
Confidence	4.46 ^a (.82)	-.62***	4.11 ^a (.99)	-.61***
Preference alternative	1.77 ^a (.81)	.53***	2.07 ^a (.90)	.65***

Note. Means with the same superscript in the same row are significantly different from each other at $p < .05$. Correlation significance levels: *** $p < .001$.

⁷ At the beginning of the questionnaire participants were also asked to indicate their most important consideration while making their food choice. Thirty percent of all participants, for example, indicated that besides the health aspect of their choice they also thought about the price aspect. Exploratory analyses including only those participants who explicitly stated that they thought about the health aspect of their choice ($n = 122$), however, yielded the same pattern of results in all four regression analyses.

main predictor variable (complementary results for difficulty as predictor will also be mentioned).

After the main dependent variables were assessed, participants were asked to indicate whether they had made a healthy or unhealthy choice. This self-categorization of their food choice served as the primary predictor variable, because we could neither manipulate nor unambiguously determine the health status of their choice from the items they had listed right at the beginning (responses were too general, e.g., “sandwich”). Finally, participants reported their demographic information, height and weight, and, as a reward, they were given the choice between several different snacks that were either relatively healthy (i.e., fruits) or unhealthy (i.e., small chocolate bars). The study took approximately 10 min to complete.

Results

Twenty-nine participants were excluded because they were eating during filling out the questionnaire (inclusion of participants did not influence the pattern of results for the emotion ratings, but the behavioral effect turned nonsignificant). The final sample consisted of 231 participants (111 female, $M_{\text{age}} = 25.13$, $SD = 9.50$, 97% with higher education background, $M_{\text{BMI}} = 22.32$, $SD = 2.63$), 172 (50) of which indicated to have made a healthy (unhealthy) choice (9 missing values).

Independent *t* tests showed that participants who reported to have made a healthy choice experienced less conflict. They did, however, not differ in the degree of difficulty, confidence, or desire to revise their choice. Supporting the notion that difficulty serves as a proxy of self-control conflict, conflict strength was, for both choices, moderately positively related to difficulty and participants' desire to revise their choice. It was also negatively related to confidence (see Table 4).

Guilt. A multiple regression with conflict (mean centered), choice outcome ($-1 = \text{unhealthy}$, $1 = \text{healthy}$) and their interaction as predictors of guilt was conducted. The model was significant, $R^2 = .23$, $F(3, 216) = 21.18$, $p < .001$. Choice outcome and conflict both had a significant main effect. Participants who indicated having made an unhealthy choice reported more guilt (at average levels of conflict, for all parameters see Table 2). Also, the higher their level of conflict the more guilt participants reported. The positive relation between conflict and guilt was, however, significantly stronger for unhealthy choices ($\beta = .60$, $B = 0.29$, $SE = .05$, $t(216) = 5.57$, $p < .001$, 95% CI [0.19, 0.39]) compared

with healthy choices ($\beta = .29$, $B = 0.14$, $SE = .04$, $t(216) = 3.95$, $p < .001$, 95% CI [0.07, 0.21]), as indicated by a significant interaction term.

Regret. A similar regression analysis revealed that the overall model was significant, $R^2 = .23$, $F(3, 216) = 21.21$, $p < .001$. Conflict was a significant predictor and was positively related to regret. This relation between conflict and regret was significant for both choices, but significantly stronger for unhealthy choices ($\beta = .67$, $B = 0.26$, $SE = .04$, $t(216) = 6.34$, $p < .001$, 95% CI [0.18, 0.34]) compared with healthy choices ($\beta = .26$, $B = 0.10$, $SE = .03$, $t(216) = 3.47$, $p = .001$, 95% CI [0.04, 0.16]), as indicated by a significant interaction between choice outcome and conflict.

Pride. The regression model for pride was nonsignificant, $R^2 = .03$, $F(3, 216) = 2.22$, $p = .087$.

Satisfaction. Finally, the same regression model for choice satisfaction was significant, $R^2 = .05$, $F(3, 218) = 3.60$, $p = .014$. Conflict strength was the only significant predictor, such that the more conflict was experienced the less satisfied participants were with their choice.

Behavioral measure. Finally, we tested whether experienced conflict together with choice outcome influenced participants' snack choice. For this purpose we recoded participants' snack choice as consistent or inconsistent (in terms of health status, 0 consistent; 1 inconsistent) with their previous choice outcome. Of all Participants 187 chose a snack (114 consistent). We conducted a logistic regression with choice outcome ($-1 = \text{unhealthy}$, $1 = \text{healthy}$), conflict, and their interaction as predictors. The model was significant, $\chi^2(3) = 28.79$, $p < .001$. Choice outcome ($B = -1.66$, $SE = .42$, $\text{Exp}(B) = 0.19$, $\text{Wald}(1) = 16.03$, $p < .001$, 95% CI for $\text{Exp}(B)$ [0.08, 0.43]) and conflict strength ($B = 0.20$, $SE = .10$, $\text{Exp}(B) = 1.23$, $\text{Wald}(1) = 3.86$, $p = .049$, 95% CI for $\text{Exp}(B)$ [1.01, 1.50]) were significant predictors. The interaction did not reach significance ($p = .302$). The odds of making an inconsistent second choice were lower when participants first had made a healthy choice, and they were higher when participants had experienced higher levels of conflict. Additional analyses indicated that the relation between conflict strength and behavior was not mediated by emotional reactions.

Difficulty as predictor. We were also interested in whether difficulty as predictor would have similar effects. Regression analyses for guilt as well as pride produced exactly the same pattern of results. With regard to regret, almost the same pattern of results was obtained, except that difficulty increased regret similarly for both choices (interaction $\beta = -.11$, $B = -0.05$, $SE = .03$, $t(216)$, $p = .152$, 95% CI [-0.11, 0.02]). A regression analysis for satisfaction showed that the effects go into in the same direction, but the main effect of difficulty did not reach significance ($\beta = -.11$, $B = -0.05$, $SE = .03$, $t(218) = -1.44$, $p = .151$, 95% CI [-0.12, 0.02]). Finally, the effect of difficulty on the behavioral measure went into the same direction as for conflict but did not reach significance, $B = .08$, $SE = .13$, $\text{Exp}(B) = 1.08$, $\text{Wald}(1) = 0.37$, $p = .541$, 95% CI for $\text{Exp}(B)$ [0.84, 1.39].

Table 4
Mean (SDs) Ratings Compared Between Participants' Food Choice (Study 3), Correlations With Conflict

Measure	Unhealthy ($n = 50$)		Healthy ($n = 172$)	
	M (SD)	Conflict r	M (SD)	Conflict r
Conflict	3.24 ^a (2.09)	—	2.46 ^a (1.64)	—
Difficulty	2.33 ^a (1.57)	.33*	2.40 ^b (1.52)	.41***
Confidence	5.98 ^a (1.25)	-.39**	6.10 ^b (1.00)	-.28***
Revise choice	2.46 ^a (1.80)	.33*	2.23 ^b (1.48)	.22**

Note. Means with the same superscript in the same row are significantly different to each other at $p < .05$. Correlation significance levels: * $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

The present study extended the evidence for negative emotional consequences of self-control conflict to real life food choices. The more an unhealthy or healthy choice was accompanied by self-control conflict, the stronger participants' feelings of guilt and

regret and the lower their satisfaction. The latter two relations were weaker, but still significant, for healthy choices. Again, pride was not affected by conflict strength. Moreover, we found that higher levels of conflict were related to a lower likelihood of repeating one's choice, which is especially detrimental for participants who first had managed to resist temptation. This finding is in line with the notion that with high conflict strength people remain occupied with the forgone, which can lead to subsequent behavioral switching (Carmon et al., 2003). Interestingly, our interpretation of this finding might also be relevant for research on moral licensing, which shows that especially in situations in which multiple, possibly conflicting, goals are active, satisfying one goal at time one increases the likelihood of pursuing the alternative goal at time two (e.g., Fishbach & Dhar, 2005).

One point of discussion is the comparability of self-control conflict and difficulty as predictors. Conflict strength was related to elevated feelings of difficulty, and, like difficulty in Studies 1 and 2, it was related to a reduction in confidence and an increased desire to revise the choice. Though the overall pattern of results was similar, the effects of self-control conflict tended to be stronger (for similar results see Study 5). This makes sense given that, as we already argued above, choice difficulty is a less specific estimate of the concept of interest, capturing more than only self-control conflict (in the present field study, e.g., peer pressure, impression management). That suggests that even though both concepts are related, the more direct conflict measure might be more appropriate in the current research setting.

Study 4

Studies 1 to 3 suggest that the experience of self-control conflict is related to negative emotions. In Study 4 we reanalyzed an already existing experience sampling data set from the *Everyday Temptations Study* (Hofmann et al., 2012) to gain additional evidence for the relation between self-control conflict and negativity. The present analyses relating continuous variation in self-control conflict and in-the-moment emotional experiences of guilt, pride, and regret in the context of food desires are distinct from the previously published analyses and have not been reported before.

Method

Participants. There were 208 participants who were initially included in the present experience sampling study. Three participants were excluded because of technical problems, one participant did not experience a desire in the food context, reducing the final sample to 204 (68% female, $M_{\text{age}} = 25.27$, $SD = 6.35$, 73% students). Participants were recruited via a large participant pool mailing list and through ads in local newspapers. Participation was financially compensated (20 euro) and further incentives were offered for responding to more than 80% of all measurement signals (e.g., movie pass). The study was conducted in compliance with ethical principles of the American Psychological Association and the German Psychological Society (DGP).

Materials and procedure. All participants carried a Pocket Personal Data Assistant (PDA, Blackberry) for a sampling period of seven consecutive days. Participants' responses were randomly sampled seven times a day throughout a time-window of 14 h. The full experience sampling procedure and protocol have been de-

scribed in the original publication (see Hofmann et al., 2012). For the present purpose, we will restrict the description to the variables of interest.

The experience sampling protocol consisted of two parts. The first part was about aspects of the desire episode and the second part about the emotional consequences. At the beginning of each measurement participants were asked whether they currently (or in the last 30 min) experienced a desire. In case they did not experience a desire, the measurement was terminated. Next, participants were asked about the content of the desire (options were provided, e.g., food, alcohol, and tobacco), how strong it was (0 = *no desire at all* and 7 = *irresistible*), the degree to which the desire conflicted with one or more personal goal(s); 0 = *no conflict at all* and 4 = *very high conflict*), whether they had attempted to resist the desire (yes vs. no), and whether they enacted the desire (yes vs. no). As choice satisfaction was not explicitly measured, we used a measure of participants' general affective state as a proxy ("How do you feel at the moment?" 1 = *very bad* and 7 = *very good*).

The second part of the protocol was randomly activated at 60% of all desire episodes and assessed participants' level of guilt, regret and pride concerning the enactment or nonenactment of their desire (e.g., "How proud do you feel about not having enacted the desire?"; 0 = *not at all* and 4 = *very much*).

Analytic procedure and strategy. Because experience sampling data are nested (observations within persons), multilevel analyses were used to estimate the effect of conflict (person-mean centered) and enactment ($-1 = \textit{enactment}$, $1 = \textit{nonenactment}$) on emotions and general affect (left in original metric). For consistency across all five studies, we only focused on eating-related desires ($N = 2,214$, 28% of all reported desires).⁸ All of those desire episodes (1,051 of which were enacted) contained affect (satisfaction) measures, but only 1,346 episodes (638 of which were enacted) also contained measurements of guilt, regret, and pride. Each model was built in a similar way: the standard model always included conflict, choice outcome, and their interaction as fixed effects, and the intercept as random effect. To improve model fit, we also added all significant random effects (nonsignificant random effects were omitted). Results will focus on the interaction terms (see Table 5 for an overview of main effects).

Results

Guilt. The standard multilevel regression model of guilt also included a random effect of choice outcome ($p < .001$), and a random interaction term ($p = .002$). The interaction between choice outcome and conflict was significant ($B = -0.24$, $SE = .02$, $t(144.34) = -10.59$, $p < .001$, 95% CI $[-0.29, -0.20]$). Whereas conflict positively predicted guilt in situations in which desires were enacted ($B = 0.48$, $SE = .03$, $t(1257.42) = 17.56$, $p < .001$, 95% CI $[0.42, 0.53]$), the same relation was nonsignificant for situations in which desires were not enacted ($B = -0.02$, $SE = .02$, $t(1111.69) = -0.98$, $p = .328$, 95% CI $[-0.06, 0.02]$).

Regret. The standard multiple regression model for regret also included a random effect of choice outcome ($p < .001$), and a

⁸ Complimentary analyses showed that the pattern of results was similar for eating- and noneating- related desires. More specifically, in each of the four models, the focal interaction between choice outcome and conflict was significant for eating as well as noneating-related desires ($ps < .001$).

Table 5
Output of the Multilevel Regression Analysis in Study 4

Emotion	Overall model				Choice specific parameters			
	Intercept	Conflict <i>B</i>	Choice <i>B</i>	Conflict × Choice <i>B</i>	Conflict <i>Enact B</i>	Conflict <i>N-enact B</i>	Choice <i>Enact M (SE)</i>	Choice <i>N-enact M (SE)</i>
Guilt	.43	.24***	-.18***	-.24***	.48***	-.02	.61(.03)	.24(.03)
Regret	.57	.22***	-.01	-.21***	.43***	-.01	.58(.04)	.57(.04)
Pride	.66	.09***	.10*	.16***	-.07*	.25***	.56(.06)	.77(.06)
Affect	4.77	-.17***	-.26***	.15***	-.31***	-.02	5.03(.06)	4.52(.05)

Note. All parameter estimates represent fixed effects from the best fitting model (including all significant random effects). Each main effect is estimated at the average of the other variable. Correlation significance levels: * $p < .05$. *** $p < .001$.

random interaction effect ($p = .004$). Again, we found a significant interaction between choice outcome and conflict ($B = -0.21$, $SE = .03$, $t(140.00) = -7.43$, $p < .001$, 95% CI [-0.26, -0.15]). Only when desires were enacted did conflict predict increased levels of regret ($B = 0.43$, $SE = .03$, $t(1095.11) = 13.56$, $p < .001$, 95% CI [0.37, 0.50]). For nonenacted desires the relation was nonsignificant ($B = -0.01$, $SE = .03$, $t(1165.35) = -0.35$, $p = .726$, 95% CI [-0.06, 0.04]).

Pride. The standard multilevel regression model for pride was extended with a random effect of choice outcome ($p < .001$), and a random interaction effect ($p = .003$). Here, the interaction between choice outcome and conflict also reached significance ($B = 0.16$, $SE = .03$, $t(143.94) = 5.06$, $p < .001$, 95% CI [0.10, 0.22]). In situations in which desires were not enacted conflict was positively associated with feelings of pride ($B = 0.25$, $SE = .03$, $t(1181.19) = 8.39$, $p < .001$, 95% CI [0.19, 0.31]). For situations in which the desire was enacted the relation was negative ($B = -0.07$, $SE = .04$, $t(1116.06) = -1.99$, $p = .047$, 95% CI [-0.14, -0.01]).

Affect. Finally, we conducted a multilevel regression model of general affect. The standard model was extended with a random effect of choice ($p = .003$). A significant interaction ($B = 0.14$, $SE = .02$, $t(2043.70) = 5.91$, $p < .001$, 95% CI [0.10, 0.19]) indicated that in situations in which desires were enacted there was a negative relation between conflict and affect ($B = -0.31$, $SE = .04$, $t(2164.39) = -8.25$, $p < .001$, 95% CI [-0.39, -0.24]). For nonenacted desires the relation was nonsignificant ($B = -0.02$, $SE = .03$, $t(2100.13) = -0.72$, $p = .475$, 95% CI [-0.08, 0.04]).

Discussion

Consistent with both an outcome-dependent or independent account, for participants who did enact their desire (i.e., gave in to temptation) self-control conflict increased guilt, regret, and reduced their general affect. In contrast to the previous studies, however, Study 4 yielded some distinctive support for the outcome-dependent hypothesis, particularly with regard to pride. Specifically, for those participants who did not enact the desire (i.e., resisted temptation in the service of a self-control goal), conflict strength was positively related to feelings of pride. Moreover, for those participants conflict did not seem to leave any negative shadow on emotional and affective reactions in terms of increased regret or decreased satisfaction. This raises the important question why participants who had made the healthy choice in the present study were able to generate positive emotions, whereas participants in the previous studies were not.

Based on self-conscious emotion theory (Tracy & Robins, 2004), experiencing higher levels of conflict could increase feelings of pride after healthy choices when they increased consistency appraisals regarding their higher-order goal. That should be more likely in situations in which the higher-order (e.g., self-control) goal is more salient, as was probably the case in Study 4, because there participants rated their affective and emotional reactions after they had answered several questions about the self-control process leading to their behavior. Besides rating the extent to which their desire was in conflict with other important goals, they were also asked to indicate the specific goals their desire conflicted with. Moreover, the questions emphasized the process of resisting the desire which possibly highlighted the overall value of exerting self-control. As a consequence, it is likely that (in)consistency appraisals regarding their choice and their higher-order self-control goal guided affective and emotional reactions. More important, Studies 1 to 3 suggest that when higher-order goals are not made salient, inconsistency appraisals seem to serve as standards.

Study 5

In the last study, we tested the role of self-control goal appraisals by creating two different conditions. One condition resembled the experience sampling study analyzed as Study 4.⁹ Participants first elaborated on their choice as an act of self-control before they reported their emotional reactions. The other condition resembled our first three studies, such that participants first reported their emotions and then elaborated on their choice as an act of self-control. Whereas participants should use the higher-order goal as primary appraisal standard in the former condition, they should use the choice-inconsistent goal as primary appraisal standard in the latter condition. Accordingly, we expected to replicate the global pattern of results of Study 4 in the former condition: the negative effect of conflict strength should only be present after unhealthy (vs. healthy) choices (moderation by choice outcome, see Figure 1). And the results of Studies 1 to 3 in the latter condition: a similar negative effect of conflict strength on emotional reactions for both choice outcomes (no moderation). In other words, we expected to obtain three-way interactions for all emotional states and planned to conduct condition specific follow-up analyses. Note, however, that this three-way interaction might be weaker or not show for guilt, because guilt is most relevant after unhealthy choices and in

⁹ With the exception of the field vs. laboratory setting and the fact that Study 4 assessed self-reported behavioral outcomes whereas Study 5 directly assessed choice behavior between two available options.

both conditions participants should be similarly likely to use the rejected higher-order goal as the primary appraisal standard.

Method

Participants. In total 252 participants completed the study that was distributed online and approved by the Ethics Committee of the University of Amsterdam. Each participant was randomly assigned to one of two conditions (self-control appraisal first vs. last).

Materials and procedure. All participants gave informed consent before they were asked to read and vividly imagine the same scenario as used in Study 1 (see Appendix B). To increase the vividness of the scenario, participants were asked to give the initials of the imagined friend, and to briefly describe their favorite pizza and salad. They then had to choose between pizza and salad (decision time was recorded, in seconds). Directly after that, participants indicated on 7-point Likert scales how difficult it was to make the choice and how confident they were in their choice (1 = *very easy/not at all confident* and 7 = *very difficult/confident*). Following the experimental protocol of Study 4, conflict strength was measured in the context of the appraisal questionnaire (see below).

The next part of the experiment depended on the condition participants were assigned to. In the *appraisal first* condition, participants first answered several questions that were supposed to make their self-control goal more salient and, thus, self-control appraisals more likely (adapted from the first part the protocol of Study 4, see Appendix C). Then they rated their emotional reactions to the choice. Participants in the *appraisal last* condition first answered the emotion questions, and then proceeded to the appraisal questionnaire. The order in which they completed the appraisal and emotion questionnaire was the only difference between the conditions.

The appraisal questions were adapted from the first part of the experience sampling study by Hofmann and colleagues (2012, and see Study 4). Part of the appraisal questionnaire was to indicate whether participants' desire for a pizza was in conflict with a goal, and how successful they were at resisting their desire. We provided several goal options (e.g., healthy eating, fitness), but participants could also generate their own goal, or could indicate that they did not have a desire for a pizza or that their desire did not conflict with a goal. Participants who reported a conflicting goal continued with two more questions on the strength of the conflict, and the importance of the goal, both measured on 7-point Likert scales (1 = *no conflict at all/very unimportant* and 7 = *a lot of conflict/very important*). Participants who did not report a conflicting goal skipped those two questions and were redirected to the next part of the experiment. However, to retain power for the main analyses, those participants were assigned the lowest scale point of the conflict strength scale (i.e., '1', $n = 83$). In total, the appraisal questionnaire comprised eight questions (or 10 questions if there was a conflict, see Appendix C).

In the emotion questionnaire, participants were asked to indicate the extent to which they felt the following emotions when thinking back to the food choice they just had made (see Study 1): guilt, regret, pride, and unhappiness (reverse scored), happiness, and satisfaction (choice satisfaction, $\alpha = .74$). Emotions were mea-

sured on 7-point Likert scales (1 = *not at all* and 7 = *very much*), with higher scores representing higher endorsement.

Finally, we asked participants to rate the healthiness of the pizza and the salad (for validation analyses of the health status see Study 1). Before participants reported demographic information, their height and weight, we asked an instructional manipulation check question (Oppenheimer, Meyvis, & Davidenko, 2009) that allowed us to determine (and exclude) participants who had not properly read the instructions or questions ("This is a special question: We do not want you to give the correct response, but to respond by choosing the option 'grandma'. We ask this question to get an impression of how well instructions are being read. What is a different term for 'your father's brother'? (a) uncle (b) grandpa (c) aunt (d) grandma"). Then, participants were debriefed and continued with an unrelated experiment. The experiment took about 15 min to complete.

Results

We excluded all participants who responded incorrectly to the check question ($n = 20$). The final sample consisted of 232 participants (199 female, $M_{\text{age}} = 23.15$, $SD = 9.10$, $M_{\text{BMI}} = 22.29$, $SD = 4.51$). Of all participants 162 had made the unhealthy choice (i.e., pizza, $n = 80$ condition appraisal first), and 70 the healthy choice (i.e., salad, $n = 32$ condition appraisal first). First, we confirmed that conflict strength did not differ between conditions ($M_{\text{first}} = 3.43$, $SD = 2.12$; $M_{\text{last}} = 3.29$, $SD = 2.30$, $t(230) = 0.63$, $p = .631$, 95% CI [-0.43, 0.71]). Comparing the two choices, we found that making the healthy choice was accompanied by higher levels of difficulty and reduced confidence. Conflict and decision time did not differ. For both choice outcomes, conflict strength was positively related to difficulty, negatively related to confidence, and unrelated to decision time (see Table 6). For the sake of clarity results will focus on the predicted effects (i.e., three-way interaction and follow-up analyses).

Guilt. We conducted a full factorial multiple regression with conflict (mean centered), choice outcome ($-1 = \text{unhealthy}$, $1 = \text{healthy}$), condition ($-1 = \text{appraisal last}$, $1 = \text{appraisal first}$), and their interactions as predictors. The full model was significant, $R^2 = .38$, $F(7, 224) = 19.63$, $p < .001$. We obtained an interaction between choice outcome and conflict ($\beta = -.27$, $B = -0.21$, $SE = .04$, $t(224) = -4.64$, $p < .001$, 95% CI [-0.29, -0.12]). Follow-up analyses showed a positive relation between conflict and guilt for unhealthy choices ($\beta = .63$, $B = 0.48$, $SE = .05$,

Table 6
Mean (SDs) Ratings Compared Between Participants' Food Choice (Study 5), Correlations With Conflict

Measure	Unhealthy ($n = 162$)		Healthy ($n = 70$)	
	M (SD)	Conflict r	M (SD)	Conflict r
Conflict	3.19 ^a (2.20)	—	3.74 ^b (2.18)	—
Difficulty	2.73 ^a (1.55)	.18*	3.40 ^a (1.76)	.36**
Decision time	6.62 ^a (3.40)	.10	7.65 ^b (5.01)	-.10
Confidence	5.36 ^a (1.67)	-.29***	4.86 ^a (1.62)	-.32**

Note. Means with the same superscript in the same row are significantly different to each other at $p < .05$. Correlation significance levels: * $p < .05$. ** $p < .01$. *** $p < .001$.

$t(224) = 9.88, p < .001, 95\% \text{ CI } [0.38, 0.57]$), but not for healthy choices ($\beta = .09, B = 0.06, SE = .08, t(224) = 0.87, p = .387, 95\% \text{ CI } [-0.08, 0.21]$). This pattern was similar in both appraisal conditions, as indicated by a lack of a three-way interaction ($\beta = -.01, B = -0.02, SE = .09, t(224) = -0.17, p = .863, 95\% \text{ CI } [-0.19, 0.16]$).

Regret. The same multiple regression as for guilt was conducted, and the overall model was significant, $R^2 = .30, F(7, 224) = 13.52, p < .001$. The results revealed the predicted overall three-way interaction ($\beta = -.15, B = -0.10, SE = .04, t(224) = -2.45, p = .015, 95\% \text{ CI } [-0.19, -0.02]$). In the appraisal last condition, there was a main effect of conflict ($\beta = .40, B = 0.27, SE = .06, t(224) = 4.64, p < .001, 95\% \text{ CI } [0.16, 0.39]$) which was not qualified by choice outcome ($\beta = -.02, B = -0.01, SE = .06, t(224) = -0.20, p = .846, 95\% \text{ CI } [-0.13, 0.11]$). Conflict increased feelings of regret independent of one's choice. In the appraisal first condition, however, there was an interaction between choice outcome and conflict ($\beta = -.32, B = -0.22, SE = .06, t(224) = -3.62, p < .001, 95\% \text{ CI } [-0.34, -0.10]$). Simple slope analyses showed that only for unhealthy choices was there a significant positive relation between conflict and regret ($\beta = .68, B = 0.46, SE = .06, t(224) = 7.53, p < .001, 95\% \text{ CI } [0.34, 0.58]$), but not for healthy choices ($\beta = .04, B = 0.02, SE = .10, t(224) = 0.24, p = .815, 95\% \text{ CI } [-0.18, 0.23]$).

Pride. The next regression analysis was performed for pride. The overall model was significant, $R^2 = .16, F(7, 224) = 6.24, p < .001$. In this full-factorial model we found an interaction between choice outcome and conflict ($\beta = .19, B = 0.15, SE = .05, t(224) = 2.80, p = .006, 95\% \text{ CI } [0.05, 0.26]$). Simple slope analyses showed that conflict only increased pride for those who made a healthy choice ($\beta = .33, B = 0.26, SE = .09, t(224) = 2.87, p = .004, 95\% \text{ CI } [0.08, 0.44]$), but not for those who made the unhealthy choice ($\beta = -.05, B = -0.04, SE = .06, t(224) = -0.71, p = .478, 95\% \text{ CI } [-0.16, 0.07]$). Despite the lack of an overall three-way interaction ($\beta = .11, B = 0.08, SE = .05, t(224) = 1.56, p = .121, 95\% \text{ CI } [-0.02, 0.19]$), we still explored the pattern of results for both conditions separately because of our condition specific hypotheses. In the appraisal last condition, there was only an effect of choice ($\beta = .27, B = 0.51, SE = .16, t(224) = 3.10, p = .002, 95\% \text{ CI } [0.19, 0.83]$). However, mirroring the effects on regret, in the appraisal first condition there was a significant interaction between choice outcome and conflict ($\beta = .29, B = 0.24, SE = .08, t(224) = 3.05, p = .003, 95\% \text{ CI } [0.08, 0.39]$). Following up on this interaction with simple slopes, there was no relation between conflict and pride for unhealthy choices ($\beta = -.03, B = -0.03, SE = .08, t(224) = -0.34, p = .737, 95\% \text{ CI } [-0.18, 0.13]$). There was, however, a significant positive relation between conflict and pride for healthy choices ($\beta = .56, B = 0.44, SE = .13, t(224) = 3.34, p = .001, 95\% \text{ CI } [0.18, 0.71]$).

Satisfaction. The overall model was significant, $R^2 = .15, F(7, 224) = 5.76, p < .001$. The predicted three-way interaction was not significant ($\beta = .13, B = 0.06, SE = .03, t(224) = 1.95, p = .052, 95\% \text{ CI } [-0.01, 0.12]$). More specific analyses in the two experimental conditions revealed that in the appraisal last condition there was a significant negative relation between conflict and satisfaction, ($\beta = -.28, B = -0.13, SE = .04, t(224) = -2.98, p = .003, 95\% \text{ CI } [-0.22, -0.04]$), which was not qualified by choice outcome ($\beta = -.01, B = -0.01, SE = .04, t(224) = -0.08, p = .938, 95\% \text{ CI } [-0.09, 0.08]$). However, in the appraisal first condition, there

was an interaction between choice outcome and conflict ($\beta = .26, B = 0.12, SE = .05, t(224) = 2.65, p = .009, 95\% \text{ CI } [0.03, 0.21]$). For participants who had made an unhealthy choice, there was a significant negative relation between conflict and satisfaction ($\beta = -.42, B = -0.19, SE = .05, t(224) = -4.28, p < .001, 95\% \text{ CI } [-0.28, -0.11]$), but there was no relation between conflict and satisfaction for participants who had made a healthy choice ($\beta = .09, B = 0.04, SE = .08, t(224) = 0.56, p = .576, 95\% \text{ CI } [-0.11, 0.19]$); see Figure 3).

Difficulty as predictor. Although conflict was our main predictor of interest, in a last set of analyses we explored how difficulty, instead of conflict, influenced the above relations. Regression analyses showed that difficulty was related to increased guilt ($\beta = .26, B = 0.26, t(224) = 3.93, p < .001, 95\% \text{ CI } [0.13, 0.39]$) and regret ($\beta = .38, B = 0.34, t(224) = 5.80, p < .001, 95\% \text{ CI } [0.23, 0.46]$), and to decreased satisfaction ($\beta = -.26, B = -0.16, t(224) = -3.84, p < .001, 95\% \text{ CI } [-0.24, -0.08]$). Appraisal condition did, however, not have the same systematic influence as above: only the relation between difficulty and regret was significantly stronger in the appraisal last condition (interaction $\beta = -.14, B = -0.13, t(224) = -2.18, p = .031, 95\% \text{ CI } [-0.24, -0.01]$). This overall pattern of results is in line with our findings and conclusions in Study 3 in which conflict (vs. difficulty) was also the stronger and more consistent predictor.

Discussion

This final study suggests that self-control conflict can have positive as well as negative consequences, depending on what appraisal standard is more salient at a given moment. Replicating Studies 1 to 3, the appraisal last condition of the present study showed that in the absence of an appraisal manipulation, conflict has predominantly negative emotional consequences independent of which choice was made (except for guilt, where conflict effects occurred only after unhealthy choices). This is in line with the outcome-independent hypothesis (see Figure 1) and suggests the dominance of inconsistent goal appraisals. However, mirroring the findings from Study 4, in the condition in which participants appraised their choice from the perspective of their higher-order self-control goal, experiencing conflict during a healthy food choice was related to feelings of pride (based on simple slope analyses) and not to negative emotions. Feelings of guilt following unhealthy food choices were similar in both conditions, suggesting that in both conditions participants appraised their choice with the self-control goal. Interestingly, this pattern of results only partly corresponds to the outcome-dependent hypothesis, according to which conflict strength should not only be associated with increased levels of pride after healthy choices, but also with more satisfaction and less regret. However, even though the effects for regret and satisfaction were not entirely as predicted (i.e., no relation with conflict strength), we can still conclude that our appraisal manipulation reduced some of the negative aftertaste of a conflicting healthy food choice.

General Discussion

Five studies using a variety of experimental methods (vignette, field, and experience sampling) investigated the joint influence of self-control choices and self-control conflict strength on people's emotional reactions in the eating domain. Across all studies, we

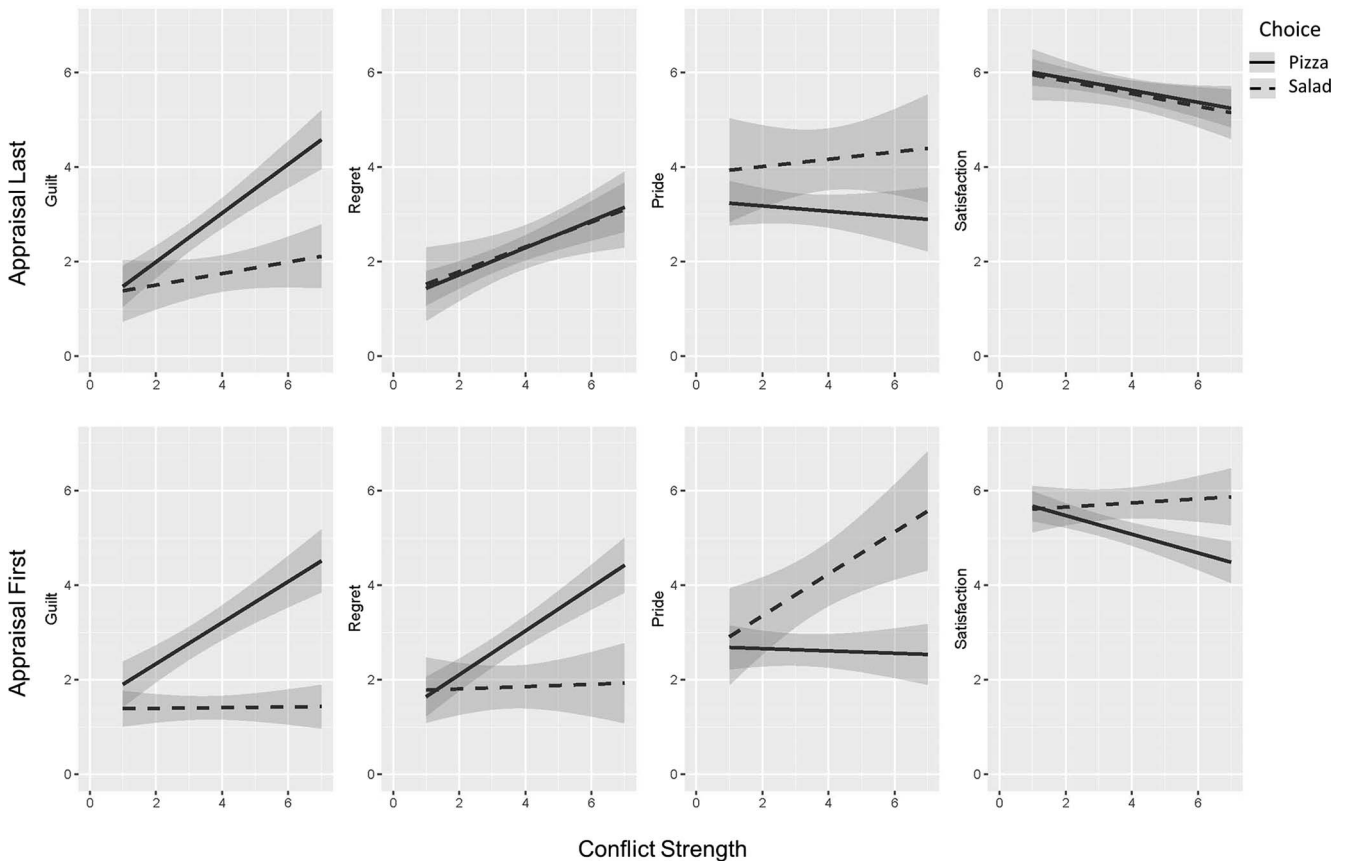


Figure 3. Visualization of regression analyses from Study 5, for each emotion rating per choice outcome and per condition. Shaded areas around the regression line represent the 95% confidence interval.

found that conflict strength had a significant relation to how participants felt about their preceding food choice. Specifically, in Study 1 to 3 we found that conflict strength was consistently related to more intense negative emotions (i.e., guilt, regret) and lower choice satisfaction. Those relations were largely independent of whether participants had made a healthy or unhealthy food choice, though guilt effects were usually stronger for unhealthy choices. That implies that the stronger the temptation or conflict, the more negative participants felt about both resisting as well as giving in.

Study 4, a reanalysis of an existing experience sampling study (Hofmann et al., 2012), revealed a different pattern, however. Conflict strength was related to increased levels of guilt and regret only when participants had chosen an unhealthy outcome. By contrast, after healthy outcomes conflict strength was related to increased levels of pride. We reasoned that these pride effects could be because of the order and content of questions in Study 4, which tapped into the process of resisting desire in the service of self-control before asking about self-conscious emotions. This combination may have made participants appraise their choices in relation to the higher-order self-control goal. To test this possibility in Study 5, we used these self-control related questions and manipulated whether participants answered them before or after their emotional reactions were assessed. Although the overarching three-way interaction did not reach significance, simple slope

analyses supported our predictions. Mirroring the effects of Study 4, being exposed to those self-control questions before emotions were assessed established a positive relation between conflict strength and pride after healthy choices. Among participants who reported their emotions before answering the questions, however, conflict strength was related to negative emotions such as increased regret and lowered satisfaction irrespective of which choice was made, which replicates the findings of Study 1 to 3.

The overall pattern of results supports the outcome-independent hypothesis, which states that self-control conflict has a predominantly negative effect on emotions, regardless of choice outcomes. We propose that this is because conflict is characterized by a negative affective state, which, in decision contexts, is marked by a tendency to remain occupied with the nonchosen alternative (Carmon et al., 2003). This idea is corroborated not only by participants' emotional reactions but also by the level of postdecisional firmness: Conflict strength was consistently related to lowered choice confidence and a stronger postdecisional preference for the alternative meal option (Study 1–3, and 5). Moreover, in Study 2 we found that choice difficulty undermined postdecisional cognitive dissonance reduction. Finally, in Study 3, conflict strength was related to behavioral switching: The stronger the conflict the less likely participants were to make the same choice again. This is especially alarming in the case of conflicted healthy choices because it can put people at the brink of future self-control

failure. Taken together, these findings suggest that making a highly conflicted food choice may not only spoil hedonic pleasure (Hofmann et al., 2013), but also feelings of self-control success. However, our studies also suggest that such negative reactions are not inevitable. Even when the resisted unhealthy option is highly attractive, people can experience pride about having made the healthy decision. We have identified one possible condition under which this may occur, namely when the decision is framed as an act of self-control. Then, emotional reactions become dependent on choice outcome.

The present findings challenge the assumption underlying self-conscious emotion theory (Tracy & Robins, 2004) and most of self-control research that resisting temptations is by default experienced as self-control success. They might even explain why healthy choices have in the past been found to also trigger regret (Hofmann et al., 2013; Kivetz & Keinan, 2006), and why there is relatively few empirical evidence for a relation between healthy choices and pride. Our findings also extend our understanding of how self-control conflict influences the self-control process. It has been proposed that the negative affective tone of self-control conflict increases the likelihood of making a ‘healthy’ choice through motivating cognitive control processes (Inzlicht et al., 2015). Whereas it has indeed been demonstrated that conflict strength increases the likelihood of exerting control (Botvinick et al., 2001; Hofmann et al., 2012), our studies show that when being presented with a choice conflict involving two competing alternatives acting in accordance with the higher-order goal does not automatically trigger the respective appraisal process. On the contrary, our findings are more in line with research on decision making, arguing that the outcome-inconsistent goal gains relatively more weight in the appraisal process, so that the overall conflict experience remains high (Carmon et al., 2003). On a broader theoretical level our studies thus emphasize the benefits of seeing self-control as an act of value-based decision-making (Berkman, Hutcherson, Livingston, Kahn, & Inzlicht, 2017).

Limitations and Future Directions

Our research is preliminary and leaves several questions open for further investigation. One important question concerns the effectiveness of our appraisal manipulation. We predicted that completing a questionnaire which framed the preceding food choice as an act of self-control would make participants adopt the higher-order goal as primary appraisal standard. This in turn should lead to more positive emotional reactions after difficult healthy and more negative emotional reactions after difficult unhealthy choices (see outcome-dependent hypotheses, Figure 1). The pattern of results in the Study 5, however, suggests that although our manipulation helped to alleviate the negative consequences of making a difficult healthy choice, it is not (yet) a reliable means to make people feel entirely positive about it. Perhaps a more effective way of increasing positive emotions after resisting strong temptations is to give participants explicit positive feedback about their self-control success. More research is needed to, first, replicate our findings as not all predicted higher-order interactions were significant, and second, to identify additional and more effective ways of letting people benefit from resisting strong temptations.

On a related note, our findings question whether healthy choices should better be easy and effortless (e.g., nudging; Gillebaart & De Ridder, 2015; Thaler & Sunstein, 2008). Of course, our studies clearly show that in situations in which self-control appraisals are unlikely (e.g., in a restaurant, busy canteen) healthy choices should be easy choices. However, in the long run, people might benefit more from repeatedly mastering instances of self-control conflict (Baumeister, Vohs, & Tice, 2007)—provided they are perceived as successes. One interesting avenue for future research is, therefore, to investigate how experiences of self-control conflict are related to improvements in self-control over time, and what role appraisals and emotions play in directing those effects. Based on our work, we predict that overcoming self-control conflict could be beneficial to the consolidation of self-control, but only when the respective self-control choices are appraised as acts of self-control.

Another question refers to the temporal dynamics of our observed effects. On the one hand, it is possible that the negative effects of experiencing decisional conflict become less intense over time. On the other hand, regret stemming from omissions (vs. commissions) increases over time (Gilovich & Medvec, 1995). Although our data do not allow firm conclusions about which type of regret was triggered, the notion that highly conflicted people remained focused on the nonchosen alternative suggests that choices were most likely experienced as omissions (i.e., choosing salad feels mostly like not having chosen pizza). If that was the case, another possibility of reducing negative emotions after resisting strong temptations could be to target appraisals of omission so that people do not feel like having missed out on the unhealthy option. As that temporal perspective is important for understanding the effects of conflict strength on future behavior and goal pursuit in general, future studies are needed to determine which of the two routes applies in the case of conflicted self-control choices.

We have argued that people do not experience pride after conflicted healthy choices because they remain focused on the nonchosen alternative, which fuels feelings of regret (Carmon et al., 2003). There are, however, also alternative explanations for the observed “pride neglect”. First, the experience and communication of pride is not unequivocally desirable, as it can be misinterpreted as hubris (Tracy & Robins, 2007). This could explain why the pride (compared with guilt and regret) effects in our studies are relatively weak. Second, pride as a reaction to goal-consistent behavior might be less strong compared with feelings of guilt and regret about goal-inconsistent behavior because our self-regulatory system is particularly sensitive to monitoring and detecting inconsistencies rather than consistencies (e.g., Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Botvinick et al., 2001). However, even though it is important to consider those two alternative explanations when interpreting our results, they cannot fully account for our findings because our regret as well as our satisfaction measure showed that resisting strong temptations left people with negative rather than positive feelings.

A final point of discussion concerns the way we assessed our main predictor variables. First, in most of our studies participants were asked to make an explicit choice between two alternative meal options (except Study 4). Even though self-control situations often require a choice between two (or more) tangible competing alternatives, sometimes making a healthy choice simply means to resist an unhealthy choice without being compensated by a concrete healthy alternative (Study 4 did not differentiate between

those two types of self-control behavior). For example, people might refuse a dessert instead of ordering the healthiest one on the menu. On the one hand, it is possible that resisting a tempting option without the tangible consummatory benefits of an available alternative may be more conducive to triggering feelings of pride, because pride may act as an affective compensator for foregone hedonic pleasure. On the other hand, resisting a temptation in those situations could even be more likely experienced as an omission, which could lead to even higher and sustained levels of regret (Gilovich & Medvec, 1995). An interesting avenue of future research is, therefore, to test whether our findings generalize across different types of self-control behaviors. However, given that the type of self-control choices studied here are exemplary, in both self-control research and real life, we conclude that our findings apply to at least a large part of our daily self-control behavior.

And second, choice difficulty and/or conflict were always measured first, which inevitably increased participants' conflict awareness and possibly influenced their emotional reactions. It is, however, unlikely that this awareness can explain the negativity bias we observed. That is because increased conflict awareness is a central factor in both the outcome-dependent as well as the -independent approach, and should not influence which appraisal standard is used for subsequent evaluations. In support of this notion, the relation between conflict strength and emotional reactions differed across studies despite difficulty/conflict being measured first (e.g., Study 1–3 vs. Study 4 and Study 5 condition appraisal first). The more critical aspect of our methodological choice concerns the external validity of our findings, as we cannot be sure whether people would still show the found pattern of emotional responses when conflict is not made salient through explicitly asking about it. Nevertheless, it remains safe to say that once conflict does reach awareness, the observed pattern of emotional reactions is likely to emerge.

Concluding Remarks

Past research on emotional reactions to self-control choices has almost exclusively focused on how people's choice, to resist or give in to a temptation, influences how they feel about their choice afterward. Accordingly, giving in to temptations (e.g., making an unhealthy food choice) has been associated with increased feelings of guilt, resisting temptations (e.g., making a healthy food choice) with increased feelings of pride. The present series of studies challenged the idea that emotional reactions are solely determined by what people choose. We showed that the experience of self-control conflict has an additional and profound negative influence, irrespective of the outcome. Not only does it spoil the hedonic pleasure of an unhealthy choice, it also spoils feelings of self-control success following a healthy choice. The present findings are of considerable practical value because they highlight the potential benefits as well as the costs of making healthy choices. More important, our studies further suggest that the costs might be prevented by framing the healthy choice as an act of self-control. Taken together, the present research qualifies the ever growing emphasis in science and society on choice outcome and shows that awareness for conflict strength and framing is necessary to help people benefit from making healthy choices.

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(Appendices follow)

Appendix A

Additional Individual Difference Measures

Overview of additional individual difference measures administered in Study 2, 4, and 5. In Studies 1 and 3 participants also completed some individual difference measures, but this data is not informative as only half the sample completed each measure (scales were added for educational reasons). All additional measures were administered after the main dependent variables were assessed (with one exception in Study 3, but including this counterbalancing factor as an additional factor in the regression analyses does not influence the reported pattern of results).

For more detailed information, please contact the first author.

Study 2

1. Action State Orientation (subscales AOD and AOF; Kuhl & Beckmann, 1994).
2. Concern for dieting (subscale of Restrained Eating Scale; Herman & Polivy, 1980).

3. Success of dieting (Meule, Papies, & Kübler, 2012).

Study 4

See Hofmann, Baumeister, Förster, and Vohs (2012).

Study 5

1. Action State Orientation (subscale AOD; Kuhl & Beckmann, 1994).
2. Concern for dieting (subscale of Restrained Eating Scale; Herman & Polivy, 1980).
3. Maximization scale (short version; Nenkov, Morrin, Schwartz, Ward, & Hulland, 2008).
4. Success of dieting (Meule et al., 2012).

Appendix B

Scenario

Scenario text as used in Study 1, 2, and 5.

Study 1 (translated from Dutch):

“Now, take your time to imagine, as vividly as possible, the situation below:

If you read ‘your best friend,’ please imagine that person as vividly as possible (What is her/his name? Where does she/he live?). If you read ‘your favorite restaurant’, please imagine the exact restaurant (What is it called? Where is it?)

Your best friend gives you a call and asks whether you want to go out for dinner tonight. You have not seen your friend in a while

and you would love to meet up, so you agree to meet at your favorite restaurant. You two go there often and the food is always good.

After the two of you have caught up a little, the waiter comes by to take the order. You are thinking of either taking the ‘Pizza of the Day’ or the ‘Salad of the day,’—both sound delicious!”

Study 2: same scenario but meal options were based on their own preferences (see method section Study 2).

Study 5: same scenario but participants were additionally asked to provide the initials of the friend, and to describe their favorite pizza and salad.

(Appendices continue)

Appendix C

Self-Control Appraisal Questionnaire

Self-control appraisal questionnaire as used in Study 5.
(translated from Dutch)

1. To what degree did you feel a desire for the pizza while making your choice (even if you in the end chose the salad)? (not at all—very strongly)

The following questions refer to your desire for the pizza:

2. To what extent did you try to resist the desire? (not at all—very much so)
3. How difficult was it to resist the desire? (very easy—very difficult)
4. How successful were you at resisting the desire? (not very successful—very successful)
5. How do you feel at the moment? (positive—negative)
6. How likely is it that you will actually make the same choice (for the salad or pizza) in the near future? (very unlikely—very likely)

7. Was your desire for the pizza in conflict with any of the below goals (if your desire was in conflict with more than one goals, please choose the most important goal). If yes, with which one? (response options: healthy eating; losing weight; outer appearance; fitness; something else: ____; I did not have a desire for the pizza; my desire for the pizza did not conflict with a goal)
8. How strong was the conflict between the desire for the pizza and the goal (you just ticked)? (very little conflict—a lot of conflict)
9. How important is that goal to you? (very unimportant—very important)
10. To what degree do you think you are in control of your desires? (no control—a lot of control)

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Correction to Lebowitz and Dovidio (2015)

In the article “Implications of Emotion Regulation Strategies for Empathic Concern, Social Attitudes, and Helping Behavior,” by Matthew S. Lebowitz and John F. Dovidio (*Emotion*, 2015, Vol. 15, No. 2, pp. 187–194, <http://dx.doi.org/10.1037/a0038820>), minor errors, which do not change the interpretation of the findings, were detected in the reports of the statistical analyses. In the third paragraph of the “Results and Discussion” section for Study 1, containing the findings of the regression analysis predicting empathic concern as the dependent variable, the standardized regression coefficients and *p* values reported for the effect of the suppress condition and for the effect of habitual reliance upon suppression (as measured by the Emotion Regulation Questionnaire) were erroneously reversed. Additionally, due to a rounding error, the mean empathic concern value for participants in the suppress condition was reported as 3.83 instead of 3.84. The text should read, “participants in the suppress condition ($M = 3.84$) reported less empathic concern ($\beta = -.18, p = .02$),” and “use of suppression, as measured by the ERQ, was negatively associated with empathic concern ($\beta = -.13, p = .04$).” Because both regression coefficients were negative and significant, this error does not alter the overall pattern of findings or its interpretation.

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