



UvA-DARE (Digital Academic Repository)

Self-control conflict in the eating domain

A cognitive, affective, and behavioral perspective

Becker, D.

Publication date

2017

Document Version

Other version

License

Other

[Link to publication](#)

Citation for published version (APA):

Becker, D. (2017). *Self-control conflict in the eating domain: A cognitive, affective, and behavioral perspective*.

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

CHAPTER 3

Spoiling the Pleasure of Success: Emotional Reactions to the Experience of Self-control Conflict

This chapter is based on:

Becker, D., Jostmann, N. B., Hofmann, W., & Holland, R. W. (2016). *Spoiling the pleasure of success: Emotional reactions to the experience of self-control conflict*. Manuscript submitted for publication.

CHAPTER 3

Over the past years there has been an increasing emphasis on the importance of making healthy choices, especially in the context of eating (e.g., by policy makers, public health officials). This is understandable given that healthy (e.g., food) choices are the basis of a healthy lifestyle, which in turn promotes physical and emotional well-being (World Health Organization, 2015). However, 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 the pizza, but you also had planned to be more careful with your calorie-intake, and therefore think you should rather take the salad. You go back and forth between the pizza and the salad, you feel conflicted, but you need to make a choice.

How do people feel about making such difficult self-control choices (i.e., choices in which a hedonic and higher-order goal are in conflict)? Previous research on emotional reactions to self-control choices 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). In the current research, we aimed to investigate if and how the experience of self-control conflict contributes to that process. That is a relevant question, because such conflicts are an inherent part of the self-control process and relatively frequent in everyday life (Hofmann et al., 2012). Furthermore, conflicts are generally experienced as negative affective states (unless successfully resolved; e.g., Festinger, 1964; Schouppe et al., 2015) which can vary in strength and thus in affective intensity. We, therefore, predicted that variations in the experience of self-control conflict can have a significant influence on how people feel about their self-control choices afterwards. Before we present five studies testing this prediction, we will review previous research on emotional reactions to self-control choices, and we will elaborate on the factors that might determine whether self-control conflict has negative or positive affective and emotional consequences.

The Effect of Self-control Choice on Affect and Emotions

Self-control is initiated when an immediate desire, or hedonic goal, is in conflict with an important higher-order goal (Baumeister & Heatherton, 1996; Hofmann

et al., 2012; Myrseth & Fishbach, 2009). That 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 (e.g., chooses the salad vs. the pizza) has affective and emotional consequences. It has been argued that because self-control conflict, by definition, includes the presence of two opposing goals, affective and emotional reactions align with either, or both, of the goals (Giner-Sorolla, 2001). More specifically, Giner-Sorolla argued that people's more rudimentary affective reactions (i.e., valence and intensity, Russell, 2003) reflect the status of the hedonic goal, whereas people's more complex self-conscious emotional reactions (e.g., guilt, pride; Tracy & Robins, 2004) reflect the status of the higher-order goal. A special case might be regret, because it can align with either of the two goals (see Hofmann et al., 2013).

The evidence concerning affective reactions to different self-control outcomes is scarce and mixed. For example, Macdiarmid and Hetherington (1995) monitored chocolate consumption and mood of a group of participants, and found that whereas chocolate consumption led to an overall increase in positive affect (i.e., contentment) it was also accompanied by increased levels of guilt. This latter effect was especially pronounced amongst participants for whom chocolate represented a temptation. Contrary to the idea that affective reactions align with the status of the hedonic goal, Hofmann and colleagues (2013) found that enacting conflicting desires (i.e., giving in to temptations) was associated with relatively lower gain in positive affect (i.e., momentary happiness) compared to enacting non-conflicting desires. They also showed that enhanced levels of guilt were partly responsible for 'spoiling the pleasure'.

Both studies highlight that affective reactions to self-control choices are often overshadowed by self-conscious emotions. Emotions are more concrete affective reactions to a stimulus (e.g., choice, situation), reflecting a specific interpretation or cognitive appraisal (Ellsworth & Scherer, 2003; Lazarus & Folkman, 1984). Those appraisals can vary in degree of consciousness and complexity (see Barrett, Niedenthal, & Winkielman, 2007). Self-conscious emotions, such as guilt, pride and regret, are examples of emotions that arise from relatively more conscious and more complex appraisal processes compared to their more basic counterparts, such as anger and happiness. That is because they require relatively more self-awareness and the ability to represent the self in relation to a specific standard (e.g., goal; Tracy & Robins, 2004). Specifically, self-conscious emotions arise when a) a goal is important, b) one's action is appraised as consistent/inconsistent with the goal, and c) one attributes the action to the self (rather than an external force; Tracy, Robins, &

CHAPTER 3

Tangney, 2007). This way, self-conscious emotions provide internal feedback about goal progress (Carver & Scheier, 2001), and can therefore function as reward (vs. punishment) for either acting consistent (vs. inconsistent) with a self-relevant, higher-order goal. This in turn can have behavioral consequences, with reward increasing and punishment decreasing the likelihood of the behavior occurring again (Hofmann & Fisher, 2012; Thorndike, 1927; but see also Fishbach & Dhar, 2005).

Based on the above theorizing, giving in to temptations should lead to increased levels of guilt, because then one's action is inconsistent with one's higher-order goal. Indeed, there is an abundance of research showing that giving in to temptation triggers feelings of guilt (Dhar & Wertenbroch, 2012; Hofmann & Fisher, 2012; Hofmann et al., 2013; Macdiarmid & Hetherington, 1995; Macht & Dettmer, 2006). Moreover, one study found that guilt responses are even more pronounced when the self-control conflict is made salient during the decision process, probably due to enhanced inconsistency appraisals (Dhar & Wertenbroch, 2012). The idea that feelings of guilt motivate reparatory actions is, however, less well supported. For example, in the same study showing that giving in to temptations increases guilt, it was also found that feelings of guilt at time one could lead to reduced self-control at time two, unless people bolstered the importance of the higher-order goal (Hofmann & Fisher, 2012).

Resisting temptations, however, should lead to increased levels of pride, because then one's action is consistent with the higher-order goal. Evidence for this complementary hypothesis is scarce but generally supportive (Hofmann & Fisher, 2012; Hofmann et al., 2013). A related line of research makes a similar point by showing that people are more satisfied and estimate the utility of a choice as higher (i.e., are prepared to pay more) when it required resisting a temptation (Dhar & Wertenbroch, 2012). It was also found that pride after resisting temptations facilitates self-control in a subsequent situation through strengthening the importance of the implied higher-order goal, and the general readiness to use self-control (Hofmann & Fisher, 2012). Together, those studies suggest that resisting temptations can boost feelings of pride and the overall value of a choice. That in turn increases the likelihood of making a similar choice again in the future, thereby sustaining long-term self-control.

Another 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 (Zeelenberg & Pieters, 2007). Interestingly, 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). That is probably because a choice for one goal will always also imply a choice against the other goal. Therefore, regret can have different connotations depending on which goal was missed out on (Carmon & Ariely, 2000; Zeelenberg & Pieters, 2007). Importantly, there is converging evidence suggesting that regret has a significant influence on future behavior, given that a future situation provides the opportunity to compensate for the lost choice. Accordingly, several studies have shown that post-decisional regret motivates behavioral switching (Carmon, Wertenbroch, & Zeelenberg, 2003; Epstude & Roese, 2008; Roese & Summerville, 2005). It follows that once a choice triggers regret, there is a lower chance of making the same choice next time around.

In summary, previous research on affective and emotional reactions to self-control choices consistently shows that giving in to temptation (e.g., making an unhealthy food choice) triggers feelings of guilt, which seem to overshadow hedonic enjoyment and which may undermine future self-control. Resisting temptations (e.g., making a healthy food choice), on the other hand, mainly triggers feelings of pride, which may enhance future self-control. Both choices can, however, lead to feelings of regret, especially when both choice options are equally attractive, as might be the case when the self-control conflict is strong.

Self-control Conflict as a Negative Affective Experience

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; Stroebe, van Koningsbruggen, Papies, & Aarts, 2013). Though the self-control literature has always acknowledged the centrality of conflict, it has never studied how variations in self-control conflict strength influence the intensity of affective and emotional reactions. Instead, most previous research has treated self-control conflict as either being present or absent (i.e., temptation present vs. absent). There is, however, initial evidence that self-control conflict is not static but that it varies in strength (e.g., as a function of individual and situational differences), and that those variations predict self-control outcomes, such as increased chances of self-control success (Hofmann et al., 2012). Moreover, conflict is not merely a cognitive state involving two inconsistent behavioral responses (e.g., choice options). As several different lines of research show, conflict – be it attitudinal conflict, response conflict, decisional conflict, or

CHAPTER 3

many other forms of cognitive inconsistency – is associated with negative affect and a general sense of discomfort (Berríos, Totterdell, & Kellett, 2015; Dreisbach & Fischer, 2012a; 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). It follows that higher levels of self-control conflict might also be experienced as aversive, possibly biasing affective and emotional reactions to people's self-control choices. In fact, that people can regret resisting as well as giving in to temptations already suggests that self-control conflict could indeed be experienced as aversive, and that solving the conflict on the behavioral level (i.e., through making a choice) may not simultaneously terminate the aversive conflict experience.

The notion that conflict is experienced as an aversive state that may linger on, if unresolved, has been demonstrated across a diverse range of research areas. To illustrate, research on attitudinal ambivalence (i.e., the presence of conflicting evaluations about one issue) showed that participants reported more feelings of discomfort regarding a controversial societal issue which they were ambivalent (vs. univalent) about (Has, Katz, Rizzo, Bailey, & Moore, 1992; Newby-Clark, McGregor, & Zanna, 2002). Importantly, the negativity intensified when participants had to choose a side, and persisted even after that choice had been made (Nohlen, van Harreveld, Rotteveel, Lelieveld, & Crone, 2014; van Harreveld et al., 2009). A similar point was made by research on the affective connotation of response conflicts. Dreisbach and Fischer (2012a) found that priming participants with response conflict (i.e., incongruent Stroop stimulus) facilitated subsequent responding to negative targets in an affective priming task. Because participants were primed rather than responded to Stroop stimuli, the response conflict was left unresolved and thus free to influence further affective processing.

Conflict is not only experienced as aversive, it has also been associated with feelings of difficulty, longer decision times, and behavioral inconsistency (Kleiman & Hassin, 2011). Evidence from the decision making literature suggests that people infer from decision difficulty that all available options are equally attractive (Lieberman & Förster, 2006). As a consequence, choosing one alternative over another creates a sense of missing out, because people remain occupied with the non-chosen alternative (see also Zeigarnik, 1927). Likewise, Carmon and colleagues (2003) showed that increased deliberation during the choice process can reduce choice satisfaction. They propose that this is because deliberation generates option attachment, so that 'choosing feels like losing'.

Together, increasing levels of difficulty and deliberation can reduce choice satisfaction, because in both cases the non-chosen alternatives are more likely to remain attractive even after a choice has been made, potentially causing feelings of regret and compensatory behavior (Gilovich & Medvec, 1994; Tsiros & Mittal, 2000).

The Positive Potential of Self-control Conflict

However, the effect of (self-control) conflict is not always and exclusively negative. To the contrary, the self-control literature suggests that people do experience pride or enhanced utility in response to resisting temptation (Dhar & Wertenbroch, 2012; Hofmann et al., 2013). This suggests that resisting temptations (i.e., making healthy choices) can be perceived as a successful resolution of the self-control conflict. In fact, one of the seminal findings in psychology is that people are particularly motivated to resolve conflicts in order to reestablish a sense of consistency (Festinger, 1964; Gawronski, 2012; Heider, 1946; Inzlicht et al., 2015). Research on cognitive dissonance, for example, shows that in order to reduce the aversive state of dissonance people either adjust their action, or – more commonly – their attitudes or values. In that latter case, dissonance reduction resembles a cognitive reappraisal process, with direct effects on evaluation processes: People assign more (vs. less) value to the chosen (vs. non-chosen) alternative (i.e., spreading of alternatives; Harmon-Jones & Harmon-Jones, 2002).

The notion that conflict, or difficulty, can generate positivity once it is successfully resolved, has also been supported by other areas of research. For example, the literature on effort justification has shown that people assign higher value to an outcome that was achieved through investing high effort (e.g., from high task difficulty or overcoming personal resistance), compared to the same outcome that was achieved through investing low effort (e.g., Aronson & Mills, 1959; Harmon-Jones & Harmon-Jones, 2002; Higgins, 2006). Similarly, research in the area of goal pursuit has shown that goal achievement feels more rewarding and enhances self-efficacy when it entailed overcoming difficulty (Higgins, 2006). The typical explanation for that finding is that people adjust the value of an outcome to match the investment (e.g., through dissonance reduction; Festinger, 1964; but see also Zentall, 2010). However, another more recent explanation proposes an expectancy based account, according to which people estimate the success probabilities of a difficult (vs. easy) task as being lower. As a consequence, a successful solution is accompanied by a larger sense of accomplishment and positive affect (Schouppe et al., 2015). In all those cases,

CHAPTER 3

the increase in value following effort investment should be proportional to the aversiveness, or intensity, of the conflict experience.

The Present Studies

The positive effects of conflict in previous research were mainly observed in tasks in which the ‘correct response’ was clear, so that people could unambiguously infer whether or not they had successfully resolved the conflict. In self-control situations, however, there often is no single correct response because the choices implied by the hedonic versus higher-order goal are both attractive in their own right. Therefore, the pressing question is whether, and under which circumstances, self-control conflicts are perceived as successfully resolved and thereby evoke positive feelings. We predict that a self-control conflict will be perceived as successfully resolved if one’s choice reestablishes the sense of consistency through being appraised from the perspective of the *choice-consistent* goal. For resisting temptations, that would be the case when participants appraise their (e.g., healthy food) choice with the higher-order goal. For giving in to temptations, that would be the case when participants appraise their (e.g., unhealthy food) choice with the hedonic goal. In both cases of choice-consistent appraisal, self-control conflict strength should be related to a proportional increase in positivity, which should manifest in more pride and less regret after resisting, and more hedonic enjoyment and no guilt after giving in to temptations. If people, however, appraise their choice from the perspective of the *choice-inconsistent* goal, or do not engage in any specific appraisal process at all, conflict should be less likely perceived as successfully resolved. As a consequence, conflict strength should be related to a proportional increase in negativity, which should manifest in more regret and no pride after resisting, and more guilt and regret after giving in to temptation (see Figure 3.1).

The present series of studies tested how people’s self-control choices and the degree of experienced self-control conflict together shape subsequent affective and emotional reactions (valence and intensity) in the domain of eating behavior. To do so, we combined data from vignette, field and experience sampling studies. We focused on eating related self-control choices, because many people experience them as conflicting, they are highly frequent in everyday life (Hofmann et al., 2012), and they are for a great deal responsible for lifestyle related health problems (World Health Organization, 2015). Specifically, we were interested in how participants’ choices (unhealthy vs. healthy food) and self-reported individual differences in experienced difficulty (a proxy of self-control conflict, Study 3.1 + 3.2; see Kleiman & Hassin, 2011)

and self-control conflict strength (Study 3.3 - 3.5) influenced their subsequently self-reported general affect, and the generation of specific self-conscious emotions (i.e., guilt, regret, pride). Study 3.1 was a first attempt to map those relationships. All subsequent studies included those basic measures, but also tested additional hypotheses. In Study 3.2 we let participants evaluate the chosen and non-chosen alternative before and after the choice to investigate dissonance reduction as a function of choice and choice difficulty. In Study 3.3 we investigated the joint effect of choice and self-control conflict strength on future self-control. In Study 3.4, we reanalyzed an existing experience sampling data set (Hofmann et al., 2012) to provide an additional, independent test of our hypotheses. Study 3.5 demonstrated the pivotal role of goal appraisals, and thereby served to clarify the observed discrepancies between Study 3.1 to 3.3 and Study 3.4.

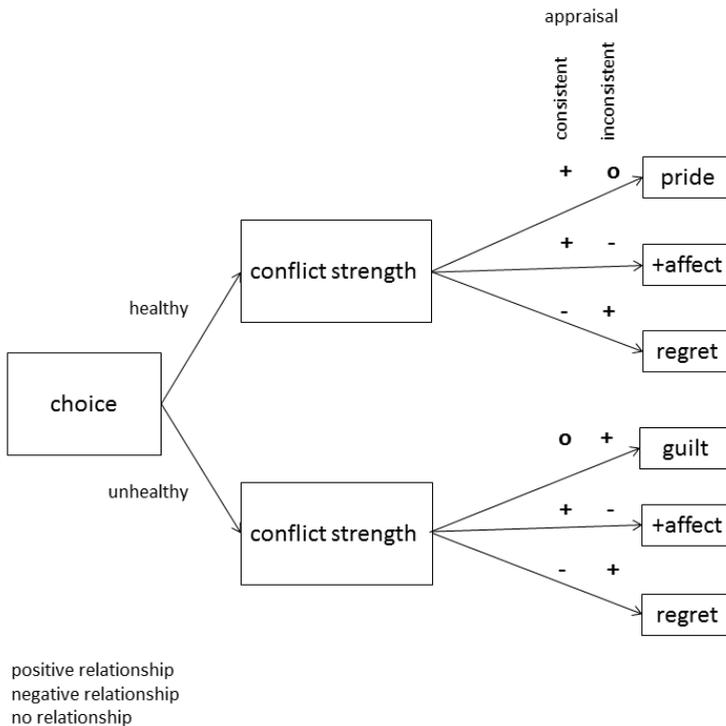


Figure 3.1. The joint effect of choice and conflict strength on affect and self-conscious emotions. The direction of relationships depends on whether one appraises the choice with the choice-consistent or -inconsistent goal.

Analytical approach. In all studies, we conducted four multiple regressions to estimate the effect of choice (healthy vs. unhealthy food) and difficulty/self-control conflict strength on general affect and self-conscious emotions (i.e., guilt, regret, and pride). The predictor choice was never manipulated. Instead we let participants make their own food choices, because we wanted to prevent reactance to a lack of choice autonomy, and because we were convinced that this allows for a more ecologically valid estimation of our effect of interest. The predictor self-control conflict strength was measured rather than manipulated in most studies (see Study 3.2 for an attempt to manipulate conflict strength), because we were specifically interested in testing the effect of variations in conflict strength on the intensity of affective and emotional reactions.

To validate the concept of difficulty and self-control conflict, we also obtained confidence ratings, participants' wish to reverse their choice, and recorded decision times. We reasoned that if participants' choice did not resolve the aversive conflict experience, conflict strength should be related to decreased confidence and to an increased wish to revise their choice. Independent of whether conflict was perceived to be successfully resolved or not, we expected conflict strength to be positively correlated with decision time (Stroop, 1935). The inter-correlations amongst those variables (for both choices separately) are always presented first. Finally, each study also included additional but unreported individual difference measures, a list of those can be found in Appendix 1.

Study 3.1

Study 3.1 was a first test of the joint effect of choice and choice difficulty (a proxy of conflict) on affect and emotions.¹⁰ We chose a restaurant as the (imaginary) choice context, because the food choices people make there are potentially accompanied by self-control conflict.

Method

Participants. Two hundred and three participants were recruited for the present study via the University of Amsterdam participant panel (145

¹⁰ 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 exploratory findings served as inspiration for the present line of studies. No additional, unreported studies exist.

women, $M_{\text{age}} = 22.05$, $SD = 3.28$, 91% students). Participation was rewarded with course credit or financially compensated (5 euro).

Materials and procedure. After giving informed consent, participants read on-screen instructions asking them to read a scenario and to imagine it as vividly as possible. In the scenario they were described as having a meal in a restaurant with a good friend. After inspecting the menu, two dishes had caught their attention, the so-called salad-of-the-day and the pizza-of-the-day (healthy vs. unhealthy choice; see Study 3.5 for validation of health status). On the next screen they read that the waiter arrived to take their orders. Participants then made a choice for either the pizza or the salad. Their decision time was recorded (in seconds). Next, participants were asked how confident they are in their choice, and how difficult it was for them to make the choice. They also indicated the degree to which they would have rather chosen the alternative. Finally, they were asked to indicate the extent to which they experienced the following six emotional states regarding their choice outcome: unhappiness (reverse scored), joy, satisfaction (these three states were combined to a measure of general affect with higher scores representing more positive affect; $\alpha = .64$), and guilt, regret, and pride (self-conscious emotions). All answers were given on 5-point scales with higher scores indicating higher endorsement.

Results

Of all participants, 150 made an unhealthy choice (i.e., pizza) and 53 a healthy choice (i.e., salad). We first tested how participants' choice influenced choice difficulty, decision time, and confidence. 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 to participants who made a healthy choice. Their preference for the alternative choice did, however, not differ (see Table 3.1 for overview of results). We then computed correlations amongst those variables for both choices separately to explore the correlates of choice difficulty. Those correlations indicated that, for both choices, difficulty was negatively related to confidence, positively related to the degree to which they would have rather chosen the alternative, and unrelated to decision time (Table 3.1).

CHAPTER 3

Table 3.1.

*Mean (SDs) Ratings Compared Between Participants' Food Choice (Study 3.1).
Correlations with Difficulty.*

	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 (0.71)	-.49 ^{***}	4.00 ^a (0.83)	-.48 ^{***}
Preferring Alternative	1.84 ^a (0.84)	.53 ^{***}	1.94 ^b (0.80)	.59 ^{***}

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

General affect. A multiple regression with difficulty (mean centered), choice (-1 = unhealthy; 1 = healthy) and their interaction as predictors of general affect was conducted. The regression model was significant, $R^2 = .14$, $F(3, 199) = 10.98$, $p < .001$. Only difficulty was a significant predictor ($\beta = -.34$, $p < .001$), suggesting that the more difficult the choice was the less positive affect participants reported (for all regression parameters see Table 3.2).

Guilt. The same regression was conducted for guilt, and the model was significant, $R^2 = .10$, $F(3, 199) = 7.25$, $p < .001$. Choice was a significant predictor ($\beta = -.18$, $p = .013$), indicating that participants who made an unhealthy choice experienced more guilt (at average levels of difficulty). Moreover, difficulty was positively associated with levels of guilt ($\beta = .20$, $p = .010$). Following up on the trend for an interaction ($\beta = -.14$, $p = .066$), simple slope analyses indicated that the positive relationship between difficulty and guilt was only significant for participants who chose the unhealthy meal option ($\beta = .33$, $p < .001$).

Regret. The regression model for regret was significant, $R^2 = .17$, $F(3, 199) = 14.00$, $p < .001$. Choice significantly predicted regret ($\beta = -.13$, $p = .047$), with more regret following unhealthy choices (at average levels of difficulty). Difficulty also significantly predicted increased levels of regret ($\beta = .39$, $p < .001$). This relationship was similar for both choices, as indicated by a non-significant interaction term.

Pride. The same multiple regression model for pride did not reach significance, $R^2 = .02$, $F(3, 199) = 1.32$, $p = .269$.

Table 3.2.

Parameter Estimates for the Full Model in Study 3.1. In Case of a (Marginally) Significant Interaction, Simple Slope Parameters are Reported for Unhealthy and Healthy Choices Separately.

	Overall Model					Simple Slopes	
	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	Unhealthy β	Healthy β
General Affect							
Constant	4.26	.04					
Choice	-.02	.04	-.03	-0.44	.664		
Difficulty	-.16	.04	-.34	-4.67	< .001		
Choice \times Difficulty	.03	.04	.06	0.89	.376		
Guilt							
Constant	1.57	.08					
Choice	-.19	.08	-.18	-2.52	.013		
Difficulty	.16	.06	.20	2.59	.010		
Choice \times Difficulty	-.11	.06	-.14	-1.85	.066	.33***	.06
Regret							
Constant	1.49	.06					
Choice	-.12	.06	-.13	-2.00	.047		
Difficulty	.25	.05	.39	5.42	< .001		
Choice \times Difficulty	-.04	.05	-.07	-0.93	.354		
Pride							
Constant	2.52	.10					
Choice	.16	.10	.11	1.54	.125		
Difficulty	-.01	.08	-.01	-0.12	.908		
Choice \times Difficulty	.07	.08	.07	0.93	.354		

* $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

Study 3.1 partly replicated earlier work showing that participants felt more guilty and more regretful, but no less proud, after having chosen the unhealthy (vs. healthy) meal option (e.g., Hofmann et al., 2013). Importantly, it also provided first evidence for the significant role of conflict strength in self-control decision making. We found that choice difficulty (as a proxy of conflict strength) was related to reduced levels of choice confidence, and to a stronger wish to have rather chosen the alternative. This is 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). The findings on affective and emotional reactions also suggest that difficulty has predominantly negative consequences. The more difficult a healthy or unhealthy choice was perceived to be, the lower participants' general affect and the higher their feelings of regret. Difficulty also increased levels of guilt, but this relationship tended to be stronger for participants who had made an unhealthy choice. There was no relationship 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 with feelings of accomplishment. Together those findings demonstrate that people do vary in the amount of difficulty they experience during self-control decision making, and that difficulty has a profound negative influence on affective and emotional reactions to self-control choices. Given that the general affective tone was negative even though the choice was made, we conclude that participants did not perceive the self-control conflict to be successfully resolved.

Study 3.2

Though Study 3.1 gave a first impression of the effects of interest, it did have some methodological weaknesses that needed to be addressed. For example, we inferred from people's difficulty ratings that they stemmed from a self-control conflict involving a hedonic and a higher-order goal. However, we cannot rule out the possibility that some participants found the choices difficult because they neither liked the pizza nor the salad, or because they had difficulty imagining a specific pizza or salad. Study 3.2 therefore aimed at making the two choice options more idiosyncratic. Moreover, we wanted to manipulate choice difficulty 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.¹¹

Method

Participants. Three hundred and twenty-six students of the University of Amsterdam completed an online study implemented using Qualtrics. Participation was voluntary in exchange for course credit. Half of the participants were randomly assigned to the easy vs. 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 more unhealthy (e.g., hamburger with bacon and fries; 50% vegetarian). The twenty 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 scale) were perceived as relatively more healthy compared to all 10 unhealthy meals ($M = 1.89$, $SD = 0.41$, $p < .001$). Importantly, 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 3.1. The two meals that caught participants' attention 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 s). Then

¹¹ 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. We therefore do not further report on this manipulation.

CHAPTER 3

the same dependent measures were assessed as in Study 3.1 (i.e., confidence, difficulty, their wish for the alternative meal, general affect $\alpha = .70$, three emotions). Additionally, we also asked participants to evaluate their chosen and non-chosen alternative (on 5-point Likert scales, which were later transformed to match the 100-point pre-evaluation scale).

Finally, we measured the importance of their health goal (7-point Likert scale), asked them to indicate their height and weight ($BMI = \text{kg}/\text{m}^2$), their gender, age and whether they were following a vegetarian or a special diet (e.g., vegan, allergies).

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 participated multiple times (none of their data was included). The final sample therefore 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 people made an unhealthy choice ($n = 193$). Importance of healthy eating was high across the sample ($M = 4.94$, $SD = 1.10$), but higher for participants who made the healthy choice ($M_{\text{healthy}} = 5.25$, $M_{\text{unhealthy}} = 4.75$, $p < .001$).

Table 3.3.

Mean (SDs) Ratings Compared Between Participants' Food Choice (Study 3.2). Correlations with Difficulty.

	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 (0.82)	-.62 ^{***}	4.11 ^a (0.99)	-.61 ^{***}
Rather Alternative	1.77 ^a (0.81)	.53 ^{***}	2.07 ^a (0.90)	.65 ^{***}

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

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 3.1). We then

tested how participants' choice was related to choice difficulty, decision time, confidence, and their wish to have rather chosen the alternative. Mirroring the results from Study 3.1, participants who had chosen the unhealthy option experienced less difficulty, made their choice faster, and felt more confident about it. This time they were also less willing to reverse it. Correlational analyses showed that difficulty during both choices was positively related to decision time, and their wish to have rather chosen the alternative. Difficulty was negatively related to confidence (see Table 3.3).

General affect. A multiple regression analysis with difficulty (mean centered), choice (-1 = unhealthy; 1 = healthy) and their interaction as predictors of general affect was conducted. The model was significant, $R^2 = .22$, $F(3, 312) = 30.01$, $p < .001$. Choice ($\beta = -.10$, $p = .049$) and difficulty ($\beta = -.45$, $p < .001$) both significantly influenced general affect ratings. Healthy choices were accompanied by lower levels of affect (at average levels of difficulty), and increasing difficulty ratings were related to decreasing affect ratings. Importantly, though the overall negative relationship between difficulty and general affect was present for both choices, it was significantly more pronounced for healthy choices, as indicated by a significant interaction effect ($\beta = -.12$, $p = .015$; for all parameters see Table 3.4).

Guilt. An analogous regression analysis was conducted for guilt. The model was significant, $R^2 = .07$, $F(3, 312) = 8.12$, $p < .001$. Choice ($\beta = -.14$, $p = .011$) and difficulty ($\beta = .26$, $p < .001$) were both significant predictors: Participants who made the unhealthy choice felt more guilt compared to participants who made the healthy choice (at average levels of difficulty). 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 ($\beta = .56$, $p < .001$), but a significant interaction ($\beta = .11$, $p = .020$) suggested that the relationship between difficulty and regret was stronger for those who had made a healthy choice.

Pride. The overall regression model did not reach significance, $R^2 = .01$, $F(3, 312) = 1.19$, $p = .314$.¹²

¹² 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 3.2 remain warranted.

CHAPTER 3

Table 3.4.

Parameter Estimates for the Full Model in Study 3.2. In Case of a Significant Interaction, Simple Slope Parameters are Reported for Unhealthy and Healthy Choices Separately.

	Overall Model					Simple Slopes	
	B	SE	β	t	p	Unhealthy β	Healthy β
General Affect							
Constant	4.33	.03					
Choice	-.06	.03	-.10	-1.98	.049		
Difficulty	-.24	.03	-.45	-8.75	< .001		
Choice \times Difficulty	-.07	.03	-.12	-2.44	.015	-.32***	-.57***
Guilt							
Constant	1.35	.04					
Choice	-.11	.04	-.14	-2.56	.011		
Difficulty	.17	.04	.26	4.58	< .001		
Choice \times Difficulty	.04	.04	.07	1.18	.241		
Regret							
Constant	1.43	.04					
Choice	.01	.04	.01	0.07	.946		
Difficulty	.38	.03	.56	11.54	< .001		
Choice \times Difficulty	.08	.03	.11	2.34	.020	.45***	.67***
Pride							
Constant	2.54	.07					
Choice	-.02	.07	-.01	-0.23	.815		
Difficulty	-.11	.06	-.10	-1.81	.072		
Choice \times Difficulty	-.03	.06	-.02	-0.42	.679		

* $p < .05$; ** $p < .01$; *** $p < .001$

Evaluations. We tested whether participants' evaluation for their chosen and non-chosen alternative changed over time as a function of the choice they made and the degree of difficulty they experienced. To do so, we conducted a 2 (time: pre vs. post) \times 2 (choice: chosen vs. non-chosen alternative) \times 2 (meal: healthy vs. unhealthy) \times (difficulty, continuous) mixed model ANOVA. We were specifically interested in whether participants' evaluation of their chosen and non-chosen alternative changed from pre to post measure as a function of difficulty. 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 chose the healthy or unhealthy meal ($F < 1$). Figure 3.2 shows the nature of the interaction using a median split to create a high and low difficulty group ($Mdn = 2$). The figure shows that participants' preference for the chosen (vs. non chosen) alternative was stronger after compared to before the choice, and that this 'spreading of alternatives' ([post: choice - non choice] - [pre: choice - non choice]) was significantly less pronounced for participants who experienced higher levels of difficulty ($M_{high\ difficulty} = 9.12, SD = 24.78; M_{low\ difficulty} = 20.06, SD = 24.19, t(314) = 3.95, p < .001, Cohen's d = 0.45$).

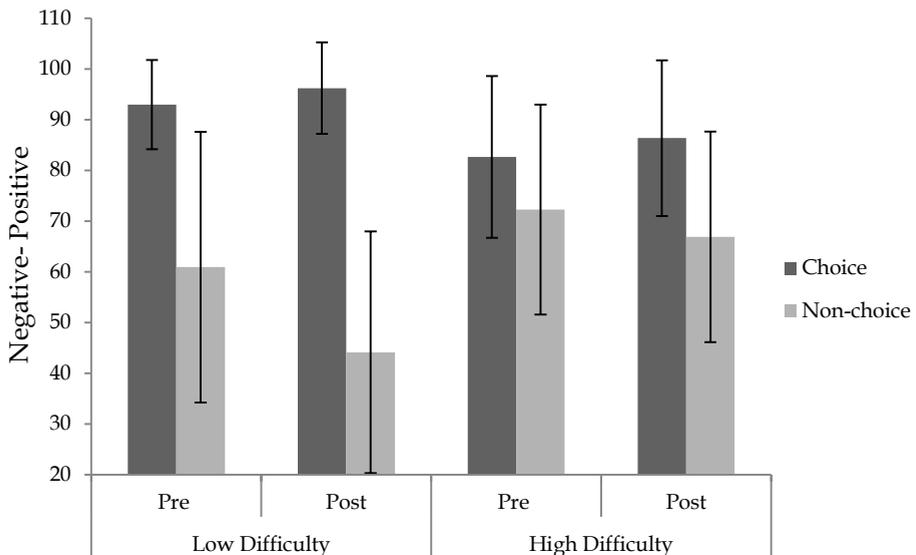


Figure 3.2. Evaluations of chosen and non-chosen alternative in Study 3.2 before (pre) and after (post) choice, for participants who experienced low vs. high levels of difficulty (left vs. right panel). Error-bars are $\pm 1 SD$.

Discussion

In Study 3.2, we replicated earlier work showing that unhealthy choices are accompanied by increased levels of positive affect as well as higher levels of guilt (see Macdiarmid & Hetherington, 1995). More importantly, we could replicate the general negative affective tone of difficulty. Choice difficulty was associated with less choice confidence, and an increased wish to have rather taken the alternative meal. In accordance with previous research, we also found that difficult choices took longer (Stroop, 1935). Moreover, the more difficult a healthy or unhealthy choice was, the lower participants' general affect and the higher their feelings of regret. Both relationships were even more pronounced for healthy choices. Difficulty also increased feelings of guilt, but here, unexpectedly, the relationship was similar for both types of choices. Again, there were no effects on pride. Finally, our findings concerning 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 suggested that people engaged less in dissonance reduction. As in Study 3.1, this overall pattern of findings suggested that participants did not perceive their choice as a successful solution to the self-control conflict, as negativity lingered.

One point of discussion concerns 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 their absolute favorite unhealthy meal. Perhaps our manipulation might have been more successful if we had paired the healthy option with the second favorite unhealthy meal. But 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 and therefore did not have real consequences. A second finding that stood out is that the affective and emotional consequences of difficulty tended to be more negative for healthy choices (i.e., resisting temptations) than for unhealthy choices. One possible explanation might be that in the present study the self-control conflict was somewhat less salient, because the meals were less stereotypically healthy or unhealthy (compared to Study 3.1). In addition, the generally hedonic setting might have further enhanced hedonic appraisal processes. Together, participants may have been less likely to use their higher-order goal as an appraisal standard, which in turn enhances the

hedonic costs associated with the healthy choice (for a similar point see Myrseth & Fishbach, 2009).

Study 3.3

Study 3.3 addressed some of those shortcomings by testing our ideas with real food choices in a more neutral choice setting (i.e., university canteen). Moreover, this time we measured perceived self-control conflict strength more directly in order 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 vs. unhealthy) snack as a reward for completing the study. The present study was part of a bigger field-research project in which, after our main variables were assessed, several other questionnaires were filled in (see Appendix 1). In the following analyses we will, however, focus on the same analyses as in Study 3.1 and 3.2.

Method

Participants. Two hundred and sixty participants were recruited in the canteen of the University of Amsterdam to fill in a short questionnaire. They were approached after they had completed their purchase and were not allowed to participate if they only bought a drink. Their participation was voluntary and unexpectedly rewarded afterwards with a little snack (chocolate or fruit).

Materials and procedure. Research assistants asked people who made a purchase at the university canteen (between 11 am and 2 pm on in total 5 days of two work weeks) to participate in the present study. If participants agreed, they were guided to a nearby table where they could sit down to fill in the questionnaire. To prevent any influence from the actual eating experience, participants were asked to first fill in the questionnaire before they consumed their purchased food.

After signing informed consent, participants were asked several questions about what they had bought (e.g., how many items; what were the items exactly). If they had bought more than one item, they were asked to indicate the main purchase and to answer the following question with regards to that main purchase. Participants indicated the difficulty and confidence with which they made their choice on 7-point Likert scales (higher scores higher endorsement). They also indicated whether they would make that choice again if they could, and to what degree their choice was in conflict with one or more

CHAPTER 3

of their personal goals (also on 7-point Likert scales).¹³ This latter measure of conflict strength served as the main predictor variable (complementary results for difficulty as predictor will also be mentioned). Then, participants' emotional reactions concerning their choice were assessed (see Study 3.1 and 3.2, affect $\alpha = .63$) on 5-point Likert scales.

Then, participants were asked to indicate whether they think they made a healthy or unhealthy choice. Since we could neither manipulate nor limit their choice, we needed to rely on their own judgment which later served as independent factor 'choice'. 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 snacks were presented intermixed in a box and their choice was recorded after participant had left. Filling in the questionnaire took approximately five minutes.

Results

Before analyses we excluded 29 participants who were eating during filling in the questionnaire. This was important in order to eliminate the possible confounding effects of need satisfaction, especially on the second behavioral measure (exclusion of participants did not influence the pattern of results for affect and emotion ratings, but the behavioral effect turned non-significant). 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).

As in previous studies, we first tested how participants' choice influenced their level of conflict, difficulty, and confidence. We were also interested in whether they would make their choice again if they could. Independent *t*-test 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 wish to revise their choice. Supporting the notion that difficulty serves as a proxy of self-control conflict, conflict strength

¹³ 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 hedonic 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.

was, for both choices, moderately positively related to difficulty and participants' wish to revise their choice. It was also negatively related to confidence (see Table 3.5).

Table 3.5.

Mean (SDs) Ratings Compared Between Participants' Food Choice (Study 3.3). Correlations with Conflict.

	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: † $p < .1$, * $p < .05$; ** $p < .01$; *** $p < .001$

General affect. A multiple regression with conflict (mean centered), choice (-1 = unhealthy; 1 = healthy) and their interaction as predictors of general affect was conducted. The regression model was significant, $R^2 = .05$, $F(3, 218) = 3.60$, $p = .014$. Conflict strength was the only significant predictor ($\beta = -.22$, $p = .002$), such that the more conflict was experienced the less positive participants felt about their choice (for all parameters see Table 3.6).

Guilt. A similar analysis was conducted for guilt. The model was significant, $R^2 = .23$, $F(3, 216) = 21.18$, $p < .001$. Choice ($\beta = -.14$, $p = .022$) and conflict ($\beta = .45$, $p < .001$) both had a significant main effect. Participants who reported having made an unhealthy choice reported more guilt (at average levels of conflict). Also, the higher their level of conflict the more guilt participants reported. The positive relationship between conflict and guilt was, however, significantly stronger for unhealthy choices, as indicated by a significant interaction term ($\beta = -.15$, $p = .019$).

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 ($\beta = .46$, $p < .001$). This relationship between conflict and regret was significant for both choices, but significantly stronger for unhealthy choices as indicated by a significant interaction between choice and conflict ($\beta = -.21$, $p = .002$).

CHAPTER 3

Table 3.6.

Parameter Estimates for the Full Model in Study 3.3. In Case of a Significant Interaction, Simple Slope Parameters are Reported for Unhealthy and Healthy Choices Separately.

	Overall Model					Simple Slopes	
	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	Unhealthy β	Healthy β
General Affect							
Constant	4.07	.05					
Choice	.02	.05	.02	0.30	.768		
Conflict	-.08	.03	-.22	-3.10	.002		
Choice \times Conflict	.03	.03	.08	1.10	.273		
Guilt							
Constant	1.52	.06					
Choice	-.15	.06	-.14	-2.30	.022		
Conflict	.22	.03	.45	6.83	< .001		
Choice \times Conflict	-.07	.03	-.15	-2.36	.019	.60***	.29***
Regret							
Constant	1.36	.05					
Choice	-.08	.05	-.10	-1.60	.111		
Conflict	.18	.03	.46	7.12	< .001		
Choice \times Conflict	-.08	.03	-.21	-3.19	.002	.67***	.26**
Pride							
Constant	2.27	.10					
Choice	.18	.10	.13	1.84	.068		
Conflict	-.06	.05	-.09	-1.18	.238		
Choice \times Conflict	.04	.05	.06	0.77	.444		

* $p < .05$; ** $p < .01$; *** $p < .001$

Pride. The regression model for pride displayed a trend, $R^2 = .03$, $F(3, 216) = 2.22$, $p = .087$. There was only a marginally significant main effect of choice ($\beta = .13$, $p = .068$), such that participants who made a healthy choice reported more pride than participants who made an unhealthy choice (at average levels of conflict).

Behavioral measure. Finally, we wanted to test whether experienced conflict together with choice influenced participants' snack choice after the experiment. For that we recoded participants' snack choice as consistent or inconsistent (in terms of health status, 0 consistent; 1 inconsistent) with their previous choice. Of all participants 187 chose a snack (114 consistent). We conducted a logistic regression with choice (-1 unhealthy; 1 healthy), conflict, and their interaction as predictors. The model was significant, $\chi^2(3) = 28.79$, $p < .001$. Choice ($B = -1.66$, $\text{Exp}(B) = 0.19$, $\text{Wald}(1) = 16.03$, $p < .001$) and conflict strength ($B = 0.20$, $\text{Exp}(B) = 1.23$, $\text{Wald}(1) = 3.86$, $p = .049$) were significant predictors. The interaction did not reach significance ($p = .302$). The odds of making an inconsistent second choice were lower when participants first made a healthy choice, and they were higher when participants experienced higher levels of conflict. That was indicated by the exponential coefficients being below and above 1, respectively.

To better understand the behavioral effect, we explored whether conflict might impact behavior through the experience of negative affect or emotions. However, neither our affect ratings nor any of the emotions were significantly related to participants' snack choice once conflict strength was controlled for. We did not proceed any further, since that relationship is a prerequisite of the mediation analysis (see Baron & Kenny, 1986).

Difficulty as predictor. We were also interested in whether difficulty as predictor would have similar effects as conflict on participants' affective, emotional and behavioral reactions. A regression analysis for general affect showed that the effects are in the same direction, but the main effect of difficulty did not reach significance ($\beta = -.11$, $p = .151$). Regression analyses for guilt as well as pride, however, produced exactly the same pattern of results. With regards to regret, almost the same pattern of results were obtained, only that difficulty increased regret similarly for both choices (interaction $\beta = -.11$, $p = .152$). Finally, the effect of difficulty on the behavioral measure were in the same direction as for conflict but did not reach significance, $B = .08$, $\text{Exp}(B) = 1.08$, $\text{Wald}(1) = 0.37$, $p = .541$.

Discussion

In line with earlier work (e.g., Hofmann et al., 2013), this field study showed that participants felt more guilty about unhealthy choices. At a descriptive level, there was also a tendency to feel more proud about healthy choices. More importantly, the present study extended the evidence for negative affective consequences of self-control conflict to real life food choices. Conflict strength was not only related to increased feelings of difficulty, we could also replicate the previous association with an increased wish to revise their choice, and a reduction in confidence. Moreover, the more an unhealthy or healthy choice was accompanied by self-control conflict, the lower participants' general affect, and the stronger the feelings of guilt and regret. The latter two relationships were weaker (but still significant) for healthy choices. Again, pride was not affected by conflict strength, which further supports the notion that overcoming conflict by making a healthy choice (i.e., resisting temptations) is not accompanied by feelings of accomplishments.

We also found that the experience of self-control conflict influenced future behavior. Specifically, the more conflict participants experienced about their first choice the less likely they were to repeat their choice in a similar future choice situation. This finding demonstrates that experiencing higher levels of self-control conflict while making a healthy choice (i.e., resisting temptations) can have a detrimental effect on future self-control. Experiencing higher levels of self-control conflict while making an unhealthy choice (i.e., giving in to temptations), on the other hand, can have beneficial effects. This finding is in line with research on moral licensing, which shows that especially in situations in which multiple, possibly conflicting, goals are active, satisfying one goal at time one motivates and 'permits' the pursuit of the alternative goal at time two (e.g., Fishbach & Dhar, 2005).

One point of discussion concerns the comparability of self-control conflict and difficulty as predictors. Though the overall pattern of results was highly similar, the effects of self-control conflict tended to be stronger. This makes sense given that, as we already argued above, choice difficulty is a more fuzzy estimation of the concept of interest, capturing more than only self-control conflict (in the present field study, for example, 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. Another point that deserves attention is that in the present study the negative consequences of conflict were more pronounced for unhealthy choices. We propose that this might be due to the difference in general choice setting:

Whereas in Study 3.1 and 3.2 the choice took place in a relatively more hedonic restaurant setting, in Study 3.3 the choice was made in a more neutral canteen setting. Making a conflicting healthy choice in the restaurant (vs. canteen) might ‘hurt more’ with respect to the foregone hedonic alternative and might therefore be less easily justified. This speculation notwithstanding, our findings suggest that conflict strength has a significant and predominantly negative effect, even for food choices that people make on a day-to-day basis.

Study 3.4

Study 3.1 to 3.3 consistently showed that making conflicted food choices (e.g., giving in vs. resisting temptations) is related to negative affective reactions and emotions. Moreover, this negativity remained high even until after the choice had been made, biasing participants’ post decisional evaluative reactions and motivating them to choose differently next time around. In Study 3.4 we re-analyzed an independent, already existing, experience sampling data set from the *Everyday Temptations Study* (Hofmann et al., 2012), to gain additional evidence for this link between self-control conflict and negativity. The goal of the original study was to map self-control in everyday life, and focused especially on the experience of desires, and on the self-control processes implied in resisting conflicting desires (i.e., temptations). 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 have not been reported elsewhere.

Method

Participants. Two hundred and five participants took part in the present experience sampling study (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 there were additional incentives for responding to more than 80% of all measurement signals (e.g., movie pass).

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 hours. On average, participants completed 46 ($SD = 2.7$) measurements during the experience sampling period. The full experience sampling procedure and protocol has been described elsewhere

CHAPTER 3

(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 are currently experiencing a desire, or whether they had been experiencing a desire within the last 30 minutes. Participants only proceeded if they indicated to experience/have experienced a desire. In case they did not experience a desire the measurement terminated. Next, participants were asked about the content of the desire (options were provided, e.g., food, alcohol, tobacco), the strength of the desire (0: *no desire at all* – 7: *irresistible*), the degree to which the desire conflicted with one or more personal goal(s) (0: *no conflict at all* – 4: *very high conflict*), whether they had attempted to resist the desire (yes vs. no), and whether they enacted the desire (yes vs. no). If they experienced conflict, they indicated the conflicting goals (options were provided, e.g., healthy eating, fitness), and their importance (0: *not important at all* – 5: *very important*). Participants' affective state was assessed on a seven point scale ("How do you feel at the moment?" 1: *negative* – 7: *positive*).

The second part of the protocol was randomly activated at 60 % of all desire episodes, and asked participants to rate the level of guilt, regret and pride concerning the enactment or non-enactment of their desire (e.g., "How proud do you feel about not having enacted the desire?"; 0: *not at all* – 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; Enders & Tofoghi, 2007) and enactment (-1 = enactment; 1 = non-enactment) on affect and emotions (left in original metric). Affect, guilt, regret, and pride were analyzed in four separate models. For consistency across all five studies, we only focused on eating-related desires ($N = 2,221$, 21% of all desires).¹⁴ Each model was built in a similar way: the standard model always included conflict, choice, and the interaction between conflict and choice as fixed effects, and the intercept as random effect. To improve model fit, we also added all significant random

¹⁴ Complimentary analyses showed that the pattern of reported results was similar for eating and non-eating related desires. More specifically, in each of the four models, the focal interaction between choice and conflict was significant for eating as well as non-eating related desires ($ps < .001$).

effects (non-significant random effects were omitted). Results will focus on the interactions terms (see Table 3.7 for an overview of main effects).

Results

Affect. We conducted a multilevel regression model of affect. The standard model was extended with a random effect of choice ($p = .003$). A significant interaction ($B = .15, p < .001$) indicated that the overall negative relationship between conflict and affect ($B = -.17, p < .001$) was significantly stronger in situations in which desires were enacted ($B = -.32, p < .001$). For non-enacted desires the relationship was non-significant (for all parameters see Table 3.7).

Guilt. There were in total 1,350 desire episodes (639 of which were enacted) that were related to eating and also contained measurements of guilt, regret and pride. The standard multilevel regression model of guilt also included a random effect of choice ($p < .001$), and a random interaction term ($p = .002$). Here, we also found a significant interaction between choice and conflict ($B = -.24, p < .001$). The overall positive relationship between conflict and guilt ($B = .24, p < .001$) was significantly more pronounced in situations in which desires were enacted ($B = .48, p < .001$). For non-enacted desires the relationship was non-significant.

Regret. The standard multiple regression model for regret also included a random effect of choice ($p < .001$), and a random interaction effect ($p = .004$). A significant interaction between choice and conflict ($B = -.21, p < .001$) implied that the overall positive relationship between conflict and regret ($B = .21, p < .001$) was significantly stronger for enacted desires ($B = .43, p < .001$). For non-enacted desires the relationship was non-significant.

Pride. The standard multilevel regression model for pride was extended with a random effect of choice ($p < .001$), and a random interaction effect ($p = .003$). Here, the interaction between choice and conflict also reached significance ($B = .16, p < .001$), indicating that the overall positive relationship between conflict and pride ($B = .09, p < .001$) was significantly more pronounced for situations in which a desire was not enacted ($B = .26, p < .001$). For situations in which the desire was enacted the relationship was not significant.

CHAPTER 3

Table 3.7.

Output of the Multilevel Regression Analysis in Study 3.4. 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.

	Overall Model				Choice Specific Parameters			
	Intercept	Conflict	Choice	Conflict× Choice	Conflict <i>Enact</i>	Conflict <i>N-enact</i>	Choice <i>Enact</i>	Choice <i>N-enact</i>
		<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>M(SE)</i>	<i>M(SE)</i>
Affect	4.77	-.17***	-.26***	.15***	-.32***	-.02	5.02(0.06)	4.51(0.05)
Guilt	0.43	.24***	-.18***	-.24***	.48***	-.02	0.61(0.03)	0.24(0.03)
Regret	0.58	.21***	-.01	-.21***	.43***	-.01	0.59(0.04)	0.58(0.04)
Pride	0.67	.09***	.10*	.16***	-.07†	.26***	0.56(0.06)	0.77(0.06)

† $p < .1$ * $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

In contrast to the previous studies, the present analyses yield evidence for the positive potential of self-control conflict. Specifically, for those participants who did not enact the desire (i.e., resisted temptation), conflict strength was positively related to feelings of pride. Moreover, for those participants conflict did not seem to leave any negative shadow on affective and emotional reactions, suggesting that their choice was able to terminate the affectively aversive conflict experience. On the other hand, and replicating our previous pattern of results, for participants who did enact their desire (i.e., gave in to temptation) self-control conflict increased negative affect, guilt and regret. For those participants, conflict seemed to have remained unsolved and lingering. This raises the important question why participants who made the ‘healthy choice’ in the present study were able to resolve the conflict and to generate positive feelings, whereas participants in the previous studies were not.

Based on our initial theorizing, we propose that this is because the methods of the present study may have been conducive to assist participants with appraising their choice from the perspective of the choice-consistent higher-order (i.e., self-control) goal. Because our first three studies suggest that people may not do this spontaneously, there may have been something in the procedure of Study 3.4 that may have rendered self-control appraisals particularly salient. When comparing the studies, one key procedural difference

stands out:¹⁵ In the experience sampling study, participants rated their affective and emotional reactions *after* they had answered several questions on the self-control process leading up to the assessment of their choice behavior. For example, after indicating the extent to which their desire was in conflict with other important goals, they were asked to indicate the specific goals their desire conflicted with. That means that their higher-order goals may have been particularly salient during that time. Also, they indicated whether they had attempted to resist a given desire (i.e., whether they had used self-control), how they had attempted to resist, and how successful they perceived that attempt to be. In sum, there may have been ample time and opportunity for participants to appraise their choice as consistent with their self-control goals. This way, the aversive conflict experience may have been resolved (accompanied by actual pride experiences) for those participants who resisted a problematic food desire, while it remained unresolved and even intensified for participants who made the ‘unhealthy choice’ (triggering feelings of guilt).

Study 3.5

In the last study, we tested our ideas about the role of self-control appraisals by creating two different conditions. One condition was designed to create a setting that highlights a self-control appraisal mindset. This condition resembled the experience sampling study analyzed as Study 3.4, in which participants first elaborated on their choice as an act of self-control and then rated affect and emotions. The other condition resembled our first three studies, such that participants first rated affect and emotions and then elaborated on their choice as an act of self-control. We expected to replicate the pattern of results of Study 3.4 in the former condition (conflict is related to negativity only for unhealthy choices), and the results of Studies 3.1 to 3.3 in the latter condition (conflict is related to negativity for both choices). The effect of conflict on emotional reactions to unhealthy choices could be more pronounced in the

¹⁵ A second possible contributing factor we did not follow up here is that, whereas Studies 3.1 to 3.3 always resulted in actual choices, the present study did not differentiate between acts of overriding a tempting unhealthy choice with a healthy choice from acts of pure inhibition/resistance to temptation in which participants simply refrained from enacting a problematic desire without obtaining a healthy alternative option. 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, in line with the argument that pride may act as an affective compensator for foregone hedonic pleasure. This is a possibility that should be addressed in future research.

CHAPTER 3

former (vs. latter) condition, but since we predicted the same direction of effects for both conditions (given self-control appraisals should be dominant in both conditions) we did not explicitly expect a statistically significant moderation by condition.

Method

Participants. In total 262 participants took part in the study. The majority of participants (73 %) was recruited via the University of Amsterdam online participant pool and rewarded with course credit. The remaining participants were recruited via online platforms and participated voluntarily. 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 read a scenario (see Study 3.1, implemented via Qualtrics) in which they went out for dinner with a good friend. To increase the vividness of the scenario, participants were asked to give the initials of the friend they imagined being with, and to briefly describe their favorite pizza and salad. They were then asked to choose between the pizza and the salad (decision time was recorded, in s). After making the choice, all participants indicated on 7-point Likert scales how difficult it was to make the choice and how confident they were in their choice. Keeping with the experimental protocol of Study 3.4, conflict strength was measured in the context of the appraisal part (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 which were supposed to trigger a self-control appraisal perspective (adapted from the first part the protocol of Study 3.4). 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 3.4). In the original study all questions were about a specific desire which they did or did not enact. Therefore, we framed the questions in the appraisal questionnaire as concerning their desire for the pizza (since this was most likely the hedonic choice). If participants did not have any desire for the pizza they could indicate that by choosing the respective extra response options. This way,

participants without a desire for pizza still underwent most of the manipulation (for the complete questionnaire see Appendix 2).

Part of the appraisal questionnaire was to indicate whether participants' desire for the pizza was in conflict with a goal. 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 the 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 (higher scores higher endorsement). Participants who did not report a conflicting goal skipped those two questions and were directly 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 ten questions if there was a conflict).

In the emotion questionnaire, participants were asked to indicate the extent to which they feel the following emotions when thinking back to the food choice they just made: guilt, regret, pride (self-conscious emotions), and unhappiness (reverse scored), joy, and satisfaction (general affect, $\alpha = .69$). Emotions were measured on 7-point Likert scales, with higher scores representing higher endorsement.

Finally, we asked participants to rate the healthiness of the pizza and the salad (7-point Likert scale). Before participants reported demographic information, their height and weight, we asked one 'check' question which allowed us to determine (and exclude) participants who did not properly read the instructions or questions. Then, participants were debriefed and continued with an unrelated experiment.

Results

We excluded all participants who responded incorrectly to the check question ($n = 20$). Another nine participants were excluded because they stopped halfway through the experiment, and one extra person was excluded because the food choice took 30 minutes. 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 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). We first confirmed that participants also considered the pizza ($M = 2.50$, $SD = 1.00$) the unhealthier meal option compared to the salad ($M = 5.39$, $SD = 0.94$), $F(1, 228) =$

CHAPTER 3

870.61, $p < .001$, $\eta_p^2 = .79$ (independent of their choice and condition). Next, we confirmed that conflict strength did not differ between conditions ($M_{\text{first}} = 3.43$, $SD = 2.12$; $M_{\text{last}} = 3.29$, $SD = 2.30$, $p = .631$). Comparing the two choices, we found that making the healthy choice was accompanied with higher levels of difficulty and reduced confidence. Conflict and decision time did not differ. For both choices, conflict strength was positively related to difficulty, negatively related to confidence, and unrelated to decision time (see Table 3.8).

General affect. We conducted a full factorial multiple regression with conflict (mean centered), choice (-1 = unhealthy and 1 = healthy), and condition (-1 = appraisal last and 1 = appraisal first, for all parameters see Table 3.9). The overall model was significant, $R^2 = .15$, $F(7, 224) = 5.76$, $p < .001$. There was a main effect of conflict indicating that conflict decreased general affect ($\beta = -.23$, $p = .001$). The interaction between choice and condition was significant ($\beta = .14$, $p = .042$), but was qualified by a marginally significant three-way interaction ($\beta = .10$, $p = .052$). Following up on this three-way interaction, in the appraisal last condition, conflict was negatively associated with affect, ($\beta = -.28$, $p = .003$), independent of choice (interaction $\beta = -.01$, $p = .938$). However, in the appraisal first condition, there was an interaction between conflict and choice ($\beta = .26$, $p = .009$). For participants who made an unhealthy choice was there a significant negative relationship between conflict and affect ($\beta = -.42$, $p < .001$), but there was no relationship between conflict and affect for participants who made a healthy choice ($\beta = .09$, $p = .576$).

Table 3.8.

Mean (SDs) Ratings Compared Between Participants' Food Choice(Study 3.5). Correlations with Conflict.

	Unhealthy ($n = 162$)		Healthy ($n = 70$)	
	$M (SD)$	Conflict r	$M (SD)$	Conflict r
Conflict	3.19 ^a (2.20)	-	3.75 ^b (2.18)	-
Difficulty	2.73 ^a (1.55)	.18*	3.40 ^a (1.76)	.36**
Decision Time	6.57 ^a (3.40)	.10	7.55 ^b (5.06)	-.09
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: † $p < .1$ * $p < .05$; ** $p < .01$; *** $p < .001$

Guilt. The full model was significant, $R^2 = .38$, $F(7, 224) = 19.63$, $p < .001$. Participants who had made the unhealthy choice experienced more guilt compared to those who had made the healthy choice (at average levels of conflict, $\beta = -.35$, $p < .001$). Also, the more conflict participants experienced, the stronger their guilt ($\beta = .36$, $p < .001$). We also obtained an interaction between conflict and choice ($\beta = -.27$, $p < .001$). Follow up analyses showed that the positive relationship between conflict and guilt was significantly stronger for unhealthy choices ($\beta = .63$, $p < .001$) compared to healthy choices ($\beta = .09$, $p = .387$). This pattern was similar in both conditions, as indicated by a lack of a three-way interaction.

Regret. The same multiple regression was conducted, and the overall model was significant, $R^2 = .30$, $F(7, 224) = 13.52$, $p < .001$. Choice ($\beta = -.13$, $p = .022$) and conflict ($\beta = .38$, $p < .001$) were significant predictors. Participants who made an unhealthy choice experienced more regret than participants who made the healthy choice (at average levels of conflict). Also, conflict was positively related to levels of regret. Moreover, besides the significant interaction between choice and conflict ($\beta = -.17$, $p = .007$), also the interaction between choice and condition reached significance ($\beta = -.16$, $p = .013$). Those were, however, qualified by an overall three-way interaction ($\beta = -.15$, $p = .015$). In the appraisal last condition, there was only a main effect of conflict ($\beta = .40$, $p < .001$), which was not qualified by choice ($\beta = -.02$, $p = .846$). Mirroring the effects for affect, conflict increased feelings of regret independent of one's choice. In the appraisal first condition there were, however, (two main effects and) an interaction between conflict and choice ($\beta = -.32$, $p < .001$). Simple slopes analyses showed that only for unhealthy choices was there a significant positive relationship between conflict and regret ($\beta = .68$, $p < .001$), but not for healthy choices ($\beta = .04$, $p = .815$).

Pride. The last 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 obtained a main effect of choice (i.e., higher levels of pride following healthy choices, at average levels of conflict, $\beta = .31$, $p < .001$), conflict (i.e., increasing conflict was related to increasing pride, $\beta = .14$, $p = .044$), and an interaction between choice and conflict ($\beta = .19$, $p = .006$). Simple effects showed that conflict only increased pride for those who made a healthy choice ($\beta = .33$, $p = .004$), but not for those who made the unhealthy choice ($\beta = -.05$, $p = .478$). Despite the lack of an overall three-way interaction ($\beta = .11$, $p = .121$), 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

CHAPTER 3

effect of choice ($\beta = .27, p = .002$), which did not interact with conflict ($\beta = .08, p = .375$). However, mirroring the effects on affect and regret, in the appraisal first condition there (were significant main effects and) was a significant interaction between choice and conflict ($\beta = .29, p = .003$). Following up on this interaction with simple slopes, there was no relationship between conflict and pride for unhealthy choices ($\beta = -.03, p = .737$). There was, however, a significant positive relationship between conflict and pride for healthy choices ($\beta = .56, p = .001$).

Table 3.9.

Parameter Estimates for the Full Model in Study 3.5.

	Choice	Conflict	Condition	Conflict× Choice	Conflict× Choice× Condition
	<i>B(SE)</i>	<i>B(SE)</i>	<i>B(SE)</i>	<i>B(SE)</i>	<i>B(SE)</i>
General Affect	.11 (.07)	-.10** (.03)	-.10 (.07)	.06† (.03)	.06† (.03)
Guilt	-.64*** (.10)	.27*** (.04)	-.01 (.10)	-.21*** (.04)	-.01 (.04)
Regret	-.21* (.09)	.26*** (.04)	.08 (.09)	-.12** (.04)	-.10* (.04)
Pride	.59*** (.12)	.11* (.05)	-.16 (.12)	.15** (.05)	.08 (.05)

† $p < .1$ * $p < .05$; ** $p < .01$; *** $p < .001$

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 relationships. Regression analyses showed that difficulty was related to decreased affect ($\beta = -.26, p < .001$), and to increased guilt ($\beta = .26, p < .001$) and regret ($\beta = .38, p < .001$). Appraisal condition did, however, not have the same systematic influence as was observed for conflict. With one exception, the relationship between difficulty and regret was significantly stronger in the appraisal last condition (interaction $\beta = -.14, p = .031$). This overall pattern of results is in line with our findings and conclusions in Study 3.3, 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 whether or not one's choice is appraised as an act of self-control. Mirroring the findings from Study 3.4, in the condition in which participants first elaborated on their healthy choice from the perspective of their higher-order (self-control) goal, conflict strength was unrelated to negative affect or emotions. Moreover, for those participants conflict strength was positively related to feelings of pride. It should be noted, however, that the effects for pride are based on simple slope analyses and that the overall three-way interaction (choice \times conflict \times condition) did not reach significance. For unhealthy choices which were first appraised as acts of self-control, conflict strength was consistently related to negative affect and emotions. In the condition in which participants underwent the self-control appraisal after reporting on their affective and emotional reactions, we replicated the pattern of Study 3.1 to 3.3: Self-control conflict increased negative affect and regret, independent of participants' choice. Interestingly, the relationship between conflict strength and guilt after unhealthy choices was comparable across both appraisal conditions, which suggests that in both conditions participants' affective and emotional reactions were similarly guided by choice-inconsistent (i.e., self-control) appraisals.

One limitation of the present study is that conflict was measured as part of the manipulation questionnaire. We did this to keep the resemblance with Study 3.4 as high as possible. But one consequence of that methodological choice was that the time interval between participants' choice and the emotion ratings was larger in the appraisal first condition. Over time, self-conscious emotions (e.g., pride) might naturally increase, because their emergence relies on more complex elaboration (Kivetz & Keinan, 2006; Tracy & Robins, 2004). A possible alternative explanation could therefore be that not the self-control appraisal produced our results regarding pride, but simply the longer time interval. We think, however, that this is unlikely to fully explain our findings, because then also regret ratings should have increased over time, which they did not (for healthy choices). Moreover, we clearly manipulated what people did during that time, namely elaborate on their choice from a self-control perspective. To further clarify this point, future studies would need to include one condition in which participants fill in an unrelated, equally long questionnaire, or simply wait, before they rate their affective and emotional reactions.

Finally, mirroring the findings in Study 3.3, we again found that the effects for difficulty were less pronounced than the effects for conflict. Whereas difficulty was still associated with more negative affect and emotions, those relationships were less susceptible to our appraisal manipulation. As mentioned before, we propose that this is because the difficulty measure encompasses more aspects of the decision situation than only the self-control conflict. Our self-control focused appraisal manipulation, therefore, only targeted one source of difficulty (i.e., the self-control conflict), which could explain why we observed weaker overall effects.

General Discussion

Five studies employing a variety of experimental methods (vignette, field, experience sampling) investigated the joint influence of self-control choices (healthy vs. unhealthy food) and self-control conflict strength on people's affective and emotional reactions. Across all studies, we found that conflict strength had a significant and unique influence on how participants felt about their preceding food choice. Specifically, in Study 3.1 to 3.3 we found that conflict strength was consistently related to more intense negative affect and emotions (i.e., guilt, regret). Those relationships were largely independent of whether participants made a healthy or unhealthy food choice (though guilt effects were usually stronger for unhealthy choices). That implies that the stronger the temptation (i.e., conflict) the participants faced, the more negative they felt about both resisting as well as giving in.

Study 3.4, a re-analysis of an existing experience sampling study (Hofmann et al., 2012), demonstrated the positive potential of self-control conflict. For participants who made a healthy choice conflict strength was related to increased levels of pride. To explain the discrepancy with the outcomes of Studies 3.1 to 3.3, we proposed that because of the general self-control framing in Study 3.4, participants were more likely to appraise their choice with the choice-consistent self-control goal. We tested this hypothesis in Study 3.5, in which half of the participants first answered questions framing their choice as an act of self-control (adapted from Study 3.4) and then rated their affective and emotional reactions, whereas for the other half the order was reversed. In line with our hypothesis, only when participants first completed the self-control questions was conflict strength related to increased feelings of pride after healthy choices, and not to negative affect or emotions (note, however, that the pride effects are based on simple slope analyses, the overarching three-way interaction was not significant). For participants who

did not first re-appraise their healthy choice, we replicated the findings from Study 3.1 to 3.3. Emotional reactions to unhealthy choices were, however, comparable (i.e., negative) across all studies, which suggests that self-control appraisals might have been present even in the absence of an explicit appraisal manipulation (Study 3.1 to 3.3). Together, we showed that resisting strong temptations can be associated with higher levels of pride, but only if one's choice is appraised as an act of self-control – which, however, does not seem to be the default appraisal.

The overall pattern of results suggests that, in the absence of a clear appraisal manipulation, increasing levels of self-control conflict not only spoil hedonic pleasure (Hofmann et al., 2013), but also self-control success. The notion that conflict-related negativity remains high even after a choice had been made was further corroborated by the following findings: First, conflict strength was consistently related to decreased choice confidence, and a stronger wish to have rather chosen the alternative meal option (Study 3.1 - 3.3, and 3.5). Second, in Study 3.2 we found that choice difficulty undermined post-decisional cognitive dissonance reduction. The more difficult the choice was, the less likely people were to boost (lower) the evaluation of their chosen (non-chosen) alternative. Third, we were able to show that conflict strength was correlated with choice difficulty, which is in line with previous research stressing that solving conflict is associated with feelings of difficulty (Kleiman & Hassin, 2011). And finally, in Study 3.3, conflict strength was not only related to increased negativity, but also to behavioral switching. Independent of which food choice one had made first (healthy vs. unhealthy), the stronger the conflict the less likely participants were to make the same choice at a next moment. These findings suggest that people do not compensate for, or justify, the negative conflict state by adjusting immediate evaluations or emotional reactions to their self-control choices, but possibly by acting according to the foregone goal when the next possibility arises.

The present studies contribute to the literature on self-control conflict, which recently experienced a renaissance (Gillebaart & De Ridder, 2015; Hofmann et al., 2012; Inzlicht et al., 2015; Kleiman & Hassin, 2013). Specifically, our studies consistently show that the experience of self-control conflict is associated with more intense negative affect and emotions, irrespective of which choice had been made. This is an important contribution given that in the past, self-control conflict has usually been conceptualized as a predominantly cognitive state involving the co-activation of two mutually exclusive goals or response tendencies. Only recently has there been more interest in the affective

properties of self-control conflict and how those could influence the self-control process. For example, it has been proposed that the negative affective tone of self-control conflict increases the likelihood of making the '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 stress that acting in accordance with the higher-order self-control goal does not automatically trigger the respective appraisal process. To the contrary, our findings suggest that the choice-inconsistent goal gains relatively more weight in the appraisal process, so that the overall conflict experience remains high (Carmon et al., 2003). That finding also challenges the notion that people are generally inclined to engage in motivated reasoning and to 'solve' conflict in order to reestablish consistency (Gawronski, 2012).

Our results suggest that making a choice may solve a self-control conflict on the behavioral but not on the affective level. In this regard, self-control conflicts seem to be more comparable to attitudinal and decisional conflicts (Carmon & Ariely, 2000; Carmon et al., 2003; van Harreveld et al., 2009), and less to response conflicts as encountered in, for example, a Stroop task (Schouppe et al., 2015). All those types of conflicts share that they are initially associated with increased negative affect. They differ, however, in the degree to which the resulting choice is perceived to be the 'successful solution' to the conflict, which in turn has a direct influence on people's affective and emotional reactions. For self-control conflicts (as well as for attitudinal and decisional conflicts) there is no single 'correct' solution, because the final choice is always a product of weighing the pros and cons of all alternatives. Response conflicts in a Stroop task, on the other hand, do have an unambiguously correct solution. As a consequence, a conflicted healthy choice (i.e., resisting temptations) might not be automatically perceived as a 'success', but instead trigger regret, because the alternative remains attractive. Correctly solving a response conflict in a Stroop task, on the other hand, is more likely to increase feelings of accomplishment, because the desired outcome has clearly been achieved (Schouppe et al., 2015). Such an analysis also suggests that self-control conflicts could still generate post-decisional positivity, provided people appraise their choice as a successful solution to the conflict.

Accordingly, we proposed that whether or not a choice is perceived as a successful solution to the conflict depends on the accompanying appraisal process (Ellsworth & Scherer, 2003). In the case of self-conscious emotions, the core appraisal is a combination of an important standard (e.g., goal) against

which one's action is evaluated as being either consistent or inconsistent with (Tracy et al., 2007). In order to perceive the conflict as successfully solved, participants would therefore have to appraise their choice with the consistent goal. Results of Study 3.1 to 3.3 suggest that under higher levels of conflict the choice-consistent goal is not the default appraisal. However, results in Study 3.5 show that a relatively simple appraisal manipulation can shift the focus to the self-control goal. Participants who made a healthy choice were therefore able to restore a sense of consistency and thus resolve the conflict also on the affective level. In their case, conflict strength was unrelated to negative affect and emotions, and predicted increased feelings of pride. Participants who made an unhealthy choice, on the other hand, were not able to restore consistency, which was evident from a strong relationship between conflict strength and increased feelings of guilt and regret. Interestingly, the pattern for unhealthy choices was similar across all studies which further supports the notion that increasing conflict strength might bias people to adopt choice-inconsistent (e.g., self-control) appraisals (see Carmon et al., 2003). At the same time, the activation of the higher-order self-control goal probably also generated a sense of goal achievement (i.e., pride) in participants who made a healthy choice, and a sense of failure (i.e., guilt) in those who made an unhealthy choice. In accordance with theories of goal pursuit, this sense of accomplishment (failure) got more intense the stronger the self-control conflict was they needed to overcome (succumbed to, e.g., Bandura & Cervone, 1983; Higgins, 2006).

In the past, the literature on self-control emotions has predominantly focused on *what* people choose (e.g., Giner-Sorolla, 2001). Through adding self-control conflict we have gained important insights into the affective and emotional dynamics implied in the self-control process. Moreover, we replicated earlier work on emotional reactions to self-control choices, by showing that making an unhealthy choice is indeed accompanied by increased levels of guilt. However, contrary to what the literature predicts, making a healthy choice was not consistently related to increased feelings of pride. Based on our own findings, we propose that this is because healthy choices tend to be in general more difficult, and because difficult healthy choices (i.e., resisting temptations) are not readily perceived as self-control successes. In fact, this might explain why healthy choices have in the past been found to also trigger regret (Hofmann et al., 2013; Kivetz & Keinan, 2006), and this might even be the reason why there is relatively less empirical evidence for the link between healthy choices and pride. Such a reasoning, however, has implications for the self-control literature, in which resisting temptations is typically framed as a

self-control success. Our studies suggest that such labeling may not necessarily correspond to the perceptions and emotional reactions of the decision maker.

Limitations and Future Directions

The present line of studies showed that self-control conflict is a negative affective experience which remains high even after the choice has been made. We have argued that this is because with increasing levels of conflict, people are more likely to appraise their choice with the choice-inconsistent goal. However, given that in most studies (except Study 3.5) we neither manipulated goal appraisals nor explicitly measured them, it is also possible that participants did not engage in any specific appraisal process at all. Instead, the negative affective tone of the conflict experience itself might have tinted participants' emotional reactions. Though possible, we deem this alternative interpretation unlikely to fully explain our findings, because we consistently found that conflict was related to a stronger wish to have rather chosen the alternative, which evidences a clear focus on the foregone. It was also related to stronger feelings of regret, which is typically described as a comparison-based emotion (Zeelenberg & Pieters, 2007). Moreover, the emotional consequences of making an unhealthy choice were comparable for participants who did and did not go through a self-control appraisal manipulation (Study 3.5), suggesting that (choice-inconsistent) self-control appraisals were spontaneously present even in the absence of a manipulation. Nevertheless, to better understand the appraisal processes people do (or do not) spontaneously engage in, follow-up studies should ideally measure the accessibility of both goals and then investigate how their relative difference changes as a function of conflict strength.

Another important conclusion is that only when participants appraised their healthy food choice as an act of self-control was the amount of 'overcome' self-control conflict accompanied by higher levels of pride (Study 3.4 and 3.5). We propose that through the activation of the self-control appraisal mindset, people were more likely to categorize their healthy (vs. unhealthy) choice as a success (vs. failure), which eventually led to higher levels of pride (vs. guilt; Tracy & Robbins, 2004). One important question concerning the application of our findings is, therefore, whether a more explicit success (vs. failure) feedback manipulation would achieve similar results. Moreover, would this feedback have to be internally generated (e.g., through reflecting on your own choice from a self-control perspective), or could it also be externally provided (e.g., somebody/something telling you 'Well done', receiving likes on social media). According to the theory on self-conscious emotions, emotional reactions will be

more intense the more people attribute the action to themselves (Tracy & Robins, 2004). This might be more easily achieved through internally generated feedback. Future research is needed to clarify the different ingredients and boundary conditions of our appraisal manipulation, and to establish the minimal conditions under which our effects can be effectively replicated and applied.

To the extent that a sense of accomplishment and the resulting feelings of pride facilitate future self-control or behavioral maintenance (Hofmann & Fisher, 2012; Rothman, 2000), and learning processes more generally (Satterthwaite et al., 2012; Schultz, 2006), our findings challenge the popular notion that healthy choices should 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 to be present (e.g., in a restaurant, busy canteen) healthy choices should be easy choices. But in the long run, people might benefit more from repeatedly mastering instances of self-control conflict (Baumeister, Vohs, & Tice, 2007; Oaten & Cheng, 2007) – provided they are perceived as such. One interesting and important avenue for future research is therefore to investigate how experiences of self-control conflict are related to improvements (vs. decline) 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. That again highlights the importance of finding an effective way of applying our appraisal manipulation to real life choice situations.

Which other factors could help extract the positive potential of self-control conflicts? First, there might be individual differences in the extent to which people engage in self-control appraisals once they encounter self-control conflicts (e.g., temptations). For example, there is evidence that for successful (but not for unsuccessful) self-controllers temptations act like alarm signals upon which higher-order goals are instantly activated, biasing behavior and possibly also appraisals towards goal-attainment (Myrseth, Fishbach, & Trope, 2009). Such temptation-goal associations develop over time, and it seems that they can also be established through the use of implementation intentions (Kroese, Adriaanse, Evers, & De Ridder, 2011). Second, instead of providing an appraisal perspective which focuses on people's self-control choices, one could also manipulate how people appraise the conflict experience. People should be more likely to experience overcoming conflict as accomplishment if they

CHAPTER 3

appraise the associated difficulty as signaling commitment to an important higher-order goal, rather than as signaling a weakness for the irresistible hedonic pull. And last, the affective and emotional consequences of self-control conflict might also depend on individual differences in people's ability to regulate their emotions more generally. For example, people who have chronic difficulty detaching from negative affective experiences (e.g., state orientation) may be less likely to adopt choice-consistent appraisals and therefore more likely to experience the negative effects of self-control conflict, compared to people for whom altering their emotional states is relatively easy (e.g., action orientation; Kuhl & Beckmann, 1994).¹⁶

A related question concerns whether a similar appraisal manipulation would also be effective in letting participants adopt a hedonic goal perspective, so that the experience of conflict does not spoil but enhance the pleasure of an 'unhealthy' choice. So far, our studies only suggest that this is not the default appraisal when making the 'unhealthy' choice, not even when the choices are made in a relatively hedonic restaurant setting (Study 3.1, 3.2, and 3.5). That is in line with previous research showing that hedonic enjoyment is usually overshadowed by self-conscious emotions, such as guilt (especially when the self-control conflict is strong; Hofmann et al., 2013; Macdiarmid & Hetherington, 1995). In those studies, however, hedonic goal appraisals were unlikely to be present, so that future research is needed to investigate whether, for example, framing their 'unhealthy' choice as a well-deserved treat could actually produce the predicted feelings of enjoyment. It would also be interesting to investigate the degree to which such occasional moments of hedonic pleasure are beneficial (vs. detrimental) to long-term self-control success.

Some of the relationships that we predicted were not obtained, whereas some that were obtained were not predicted. First, in Study 3.5 we found that for participants who made a healthy choice and self-control appraisals were present, conflict strength was related to increased levels of pride, but it did not influence general affect or regret. That was unexpected because successfully resolving conflict should actually lead to a general boost in positivity (Schouppe et al., 2015). However, our prediction is still indirectly supported considering that our manipulation did alleviate conflict-triggered negativity. Alternatively, it is possible that our appraisal manipulation had a very specific

¹⁶ Study 3.2 and Study 3.5 include measures of action vs. state orientation (Kuhl & Beckmann, 1994). Findings regarding that measure are beyond the scope of the present chapter and will be presented elsewhere.

effect on the respective self-control emotion (i.e., pride), which would also be in line with previous research showing that pride is not necessarily accompanied by general positive affect (Giner-Sorolla, 2001). Second, in Study 3.4 we obtained first evidence for the positive potential of self-control conflict even though we did not initially predict it. That the self-control framing of Study 3.4 was enough to trigger self-control appraisals highlighted the malleability of the appraisal process, but also that the mere framing of an experiment can – unintentionally – act as an ‘intervention’. That has important implications for future (experience sampling) studies. On the one hand, one should be aware that the experimental procedure might trigger a specific appraisal perspective influencing participants’ evaluations of their own behavior. On the other hand, an experience sampling study could, therefore, also be intentionally used as an intervention method to influence participants’ appraisals and behavior in a sustained manner. Specifically, experience sampling might increase the chronic accessibility of the focal (e.g., self-control) goal, and therefore encourage people a) to monitor their behavior regarding that specific goal more closely, b) to align their behavior with that specific goal in order to promote attainment, and c) to appraise their behavior from the perspective of the focal goal, thereby strengthening the behavior over time.

A final point of discussion concerns the nature of our predictor variables difficulty and self-control conflict. First, we had measured choice difficulty as a proxy of self-control conflict in Studies 3.1 and 3.2 (e.g., Kleiman & Hassin, 2011), but extended this measure with a more direct self-control conflict estimate in the subsequent studies. Even though the two were consistently related and produced similar results, the effects for conflict were generally stronger (especially in Study 3.5). As discussed before, this discrepancy could be due to difficulty measuring not only self-control conflict but also other aspects of the choice situation (e.g., difficulty imaging the food options, impression management). We conclude that choice difficulty remains a relevant variable in the study of self-control conflict, but that future research might benefit from measuring self-control conflict more directly. Second, in all our studies our main predictor variables were assessed via self-report rather than manipulated. That implies that we cannot draw firm conclusions about the causality of the observed conflict effects. The reasoning behind our choice was that we were primarily interested in how different degrees of self-control conflict dynamically influence the intensity of affective and emotional reactions. That was important because variations in conflict strength exist (see Hofmann et al., 2012), but have until now been largely ignored in the study of self-control

CHAPTER 3

emotions To still be able to draw causal conclusions, we tried to manipulate conflict strength as a categorical variable in Study 3.2, but that caused issues with the distribution of the other categorical predictor variable (i.e., choice) which was also free to vary. Despite the correlational nature of our effects, our findings provide us with highly consistent and important insights into the dynamics of the self-control process, and we are looking forward to further experimental tests of the ideas presented in this line of studies.

Concluding Remarks

Past research on emotional reactions to self-control choices has almost exclusively focused on how people's choices, to resist or give in to a temptation, impact on how people feel about their choice afterwards. 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. Accordingly, we showed that the experience of self-control conflict has an additional and predominantly negative influence. Not only does it spoil the hedonic pleasure of an unhealthy choice, it also spoils feelings of self-control success about a healthy choice (unless a self-control appraisal manipulation is administered). These findings are of considerable practical value because they highlight the potential benefits as well as costs of making healthy choices. Such a more nuanced view on self-control behavior is especially important in a culture in which the importance of making healthy choices is constantly and unanimously stressed. It goes without saying that we agree that healthy choices are generally desirable, and a necessary basis for an overall healthy lifestyle, but our findings also demonstrate that forcing yourself to make the healthy choice is in many situations more likely to hamper than to help future self-control.

Appendix 1

Overview of additional individual difference measures taken in each study.

For more detailed information, please contact the first author.

Study 3.1

1. Achievement motivation (Elliot & Church, 1997)
2. BIS/BAS (Carver & White, 1994)
3. BMI
4. Concern for dieting (subscale of Restrained Eating Scale; Herman & Polivy, 1980)

Note: each measurement was only completed by half the sample (given that scales were included for exploratory reasons).

Study 3.2

1. Action State Orientation (subscales AOD and AOF; Kuhl & Beckmann, 1994)
2. BMI
3. Concern for dieting (subscale of Restrained Eating Scale; Herman & Polivy, 1980)
4. Success of dieting (Meule, Papies, & Kübler, 2012)

Study 3.3

1. BMI
2. Chronic prevention/promotion focus (van Stekelenburg & Klandermans, 2003)
3. Concern for dieting (subscale of Restrained Eating Scale; Herman & Polivy, 1980)
4. Goal accessibility measure (self-developed word puzzle)
5. Success of dieting (Meule, Papies, & Kübler, 2012)

Note: each measurement was only completed by half the sample (given that scales were included for exploratory reasons).

Study 3.4

See Hofmann, Baumeister, Förster, & Vohs, 2012

Study 3.5

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, & Hurland, 2008)
4. Success of dieting (Meule, Papies, & Kübler, 2012)

CHAPTER 3

Appendix 2

Self-control appraisal questionnaire as used in Study 3.5.

(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)