Having second thoughts: Consequences of decision reversibility

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In a minute there is time for decisions and revisions which a minute will reverse.

– T.S. Elliot
A few years ago I arrived in an idyllic village in Austria. Together with a group of friends we had planned a skiing trip, and finally the time had come. Until then, I had always rented my gear at the local rental store. This year, however, I had brought my own brand-new skis that I had purchased back home during the low season sale. I hoped I had chosen the right skis, especially because I would not be able to return them to the store. As for my boots, I had decided to buy them at our holiday destination. There, I would get the opportunity to purchase a set of boots, try them for a couple of days, and, if not entirely satisfied, change them for a different pair. In essence, a perfect deal I reckoned. Choosing the boots turned out to be quite difficult. There were so many boots to choose from; all differed in type, shape, and color. Moreover, it turned out that there were quite a few additional attributes I should take into account. Anyway, after some fitting, thinking, doubting, and reasoning, I finally ended up with a nice pair of boots. They seemed perfect.

The fact that I still had the opportunity to change my mind, felt comforting at first. Nevertheless, throughout my holiday I was haunted by thoughts about my initially chosen boots; were they actually a bit too small? Maybe I should have bought boots that were a little more flexible than these. Do all boots hurt a little at the end of the day? At the end of my holiday, however, I decided not to exchange them, because over the days I had become rather attached to this particular pair of boots.

Altogether, when we drove back home, and I saw my new boots lying in the back of the car, I felt pleasure on the one hand (I had new boots!), but uncertainty about the correctness of my decision on the other. No such uncertainty, though, existed whenever I thought about my new skis. In fact, I was entirely satisfied with that decision. My skis were perfect; good shape and length, and easy to handle. And although the color red is definitely not my favorite, the redness of my skis helped me out when trying to find them back in the snow after one of my dropdowns.

Many of the decisions we make during our lives, like the aforementioned purchase of skis, are irreversible. Other decisions leave more room for changing our initial preferences, such as the decision regarding the boots. These reversible decisions provide us with the opportunity to change our minds at a later point in time. People generally prefer reversible to irreversible decisions (see Gilbert & Ebert, 2002). We, for
instance, tend to provide temporary (rather than permanent) contracts to new employees, live together with our romantic partners for a while before getting married, and buy products at full price that we can return to the store rather than products that are on sale but cannot be returned.

Apparently, people seem to believe that the option to change a decision at a later moment in time leads to better decisions and the most beneficial decision outcome. Research by Gilbert and Ebert (2002), however, demonstrated that reversible decisions in fact yield lower levels of post-choice satisfaction than decisions that are final. Hence, the subjective theories people have about reversible decision-making appear not to be entirely accurate. We do not seem very good at predicting our reactions subsequent to reversible decisions, as illustrated by my unexpected uncertainty about the purchased boots. Like the decision-makers themselves, research on decision-making also appears to provide limited insight into the topic of decision reversibility. Up until now very few studies investigated the consequences of reversible versus irreversible decision-making, and many questions concerning the topic are yet unanswered. This dissertation aims to fill this void in the literature by investigating more extensively the cognitive (Chapters 2 and 3), motivational (Chapter 4) and behavioral (Chapter 5) processes that are affected by the reversibility versus irreversibility of decisions. In the remainder of this introduction, I will first give a brief overview of the existing literature regarding decision reversibility. Thereafter, I will discuss some of the existing gaps in the literature, and, finally, I will provide an outline of the empirical chapters in this dissertation.

**What we know about decision reversibility**

As mentioned above, people generally prefer reversible to irreversible decisions. Gilbert and Ebert (2002), however, demonstrated that reversible decision-making tends to have a negative impact on choice satisfaction. In one of their studies, participants were asked to rank nine art posters and were subsequently given a choice between their third and fourth ranked posters to thank them for their participation. After making their decision, they were randomly allocated to a reversible or irreversible decision condition. Half of the participants were told that they could exchange their poster for a different one anytime during the following month, whereas the other half were told that their decision was final. After 15 minutes, all participants were again asked to evaluate the art
posters. Results revealed an increase in liking of the chosen poster for those in the irreversible decision condition and a decrease in liking of the chosen poster for those in the reversible decision condition.

Gilbert and Ebert (2002) explained their findings by suggesting that the “psychological immune system” is unable to start operating in the context of reversible decisions. This psychological immune system comprises people’s basic tendency to restructure their views of possible outcomes in such a way that their own outcomes are experienced more positively. As Gilbert and Ebert write: “human beings are famous for seeking, attending to, interpreting, and remembering information in ways that allow them to feel satisfied with themselves and their lots” (p.503). One of the most prominent theories that portray this general tendency within the decision-making domain is cognitive dissonance theory (Brehm, 1956; Festinger, 1957). Research on cognitive dissonance theory has convincingly shown that people increase the attractiveness of the chosen alternative, and decrease the attractiveness of the rejected alternative(s) after they have made a decision. In other words the desirability ratings of the chosen and rejected alternatives tend to be spread apart. Such spreading apart helps to reduce the cognitive inconsistencies (i.e., thoughts on the negative aspects of the chosen alternative and the positive aspects of the rejected alternative) people may have about the attitude object.

According to Gilbert and Ebert (2002), the psychological immune system is activated after people have made an irreversible decision. In that case people enhance the attractiveness of the chosen alternative, and reduce the attractiveness of the rejected alternative(s). However, after making a reversible decision, people will not spread apart the desirability of the alternatives, but instead opt for a revision (i.e., opt for another alternative) as the first line of defense. Yet, such revisions, as it appears from observations in both research and real life, are quite uncommon (see Gilbert & Ebert, 2002). As social psychologists have argued and demonstrated; even the most tentative steps towards making a choice commits the decision-maker toward the chosen option (e.g., Cialdini, Cacioppo, Basset, & Miller, 1978). Hence, an important reason for the general reluctance to revise a choice is that people already experience a sense of ownership of the preliminary chosen object (Bar-Hillel & Neter, 1996; Kahneman, Knetsch, & Thaler, 1990; Thaler, 1980). Along these lines, changing an initially chosen
object for another one will feel as a loss, which people generally try to avoid (Kahneman & Tversky, 1979; Tversky & Kahneman, 1991). As a result, reversible suboptimal decision outcomes are not resolved by any means; neither by the psychological immune system, nor by changing the decision.

The assumptions by Gilbert and Ebert (2002) appear to be supported by earlier research by Frey and colleagues (Frey, 1981; Frey & Rosch, 1984). They investigated the relationship between decision reversibility and information search and demonstrated that people show a stronger preference for choice-consistent new information (i.e., seeking positive information and avoiding negative information about one’s chosen alternative) following irreversible rather than reversible decisions. Thus, in the context of irreversible decisions, the relative attractiveness of new choice-consistent information increased, which, like spreading of alternatives, may possibly reduce dissonance and optimize choice satisfaction. In the context of reversible decisions, however, no such effect occurred. Altogether, it thus seems that the lower levels of choice satisfaction after reversible decision-making are due to the fact that the option to revise withholding the psychological immune system to start operating, thereby obstructing people’s basic tendency to find ways of optimizing their choice (such as spreading the attractiveness of alternatives).

Recently, the issue of decision reversibility and its effects on spreading of alternatives has been addressed more explicitly within the Inferences from Decision Difficulty model (IFDD; Liberman & Förster, 2006). Cognitive dissonance theory (Brehm, 1956; Festinger, 1957) predicts that the spreading of alternatives is especially enhanced when decisions are difficult, because then more post-decisional dissonance is produced (Brehm, 1956; Converse & Cooper, 1979; Shultz, Léveillé, & Lepper, 1999). IFDD, on the other hand, predicts that this is only true if the decision is irreversible. Thus, in case of a difficult irreversible decision, spreading of alternatives will occur in order to reduce post-decisional conflict. Yet, if the decision is reversible, the spreading of alternatives will be less pronounced or will even diminish, because the alternatives both remain relevant. Spreading, in this case, would not be beneficial because people are still able to change their minds into the direction of the other attractive alternative. In other words, when the decision is reversible, the psychological immune system is not activated,
because both the chosen and the rejected alternatives remain relevant to the decision-maker.

In one of their studies, the authors (Liberman & Förster, 2006; Study 4) directly examined the prediction that repeatability of a decision would moderate the effect of decision difficulty on spreading of alternatives. In this study, participants had to rate ten individuals in terms of how much they would like to cooperate with them in a following task. Subsequently they also had to choose between two of these individuals. This decision was either difficult or easy. In the easy decision condition, participants had to choose between the candidate with the highest rating and the candidate with the lowest rating. In the difficult decision condition, they were asked to choose between two candidates with similar ratings. The authors also added a manipulation of repeatability of the decision. Specifically, some participants were told that they would make a one-time decision (non-repeatable decision condition), whereas others were told that they would be allowed to repeat the same decision at a later stage (repeatable decision condition). It was predicted and found that in the non-repeatable decision condition, spreading apart of alternatives was enhanced when the decision was difficult. The reverse was true in the repeatable decision condition: here, results revealed less spreading of alternatives when the decision was difficult rather than easy. Although a repeatable decision is conceptually different from a reversible decision, for both reversible and repeatable decisions the alternatives remain relevant. According to IFDD, it is especially the future relevance of the decision alternatives that determines whether post-decisional spreading of alternatives occurs. In line with Gilbert and Ebert’s (2002) reasoning, this research, thus, shows that reversibility (i.e., when options remain relevant) triggers a different means of the psychological immune system.

In sum, previous research provided some preliminary insights into decision reversibility and its effects on spreading of alternatives. Yet, there are several important issues regarding decision reversibility that remain unclear and that deserve research attention. I will now discuss these issues in more detail.
What we do not yet know about decision reversibility

The small body of literature on the topic of decision reversibility mainly relies on self-report measures, and generally focuses on processes that take place on a conscious level. However, insight into more basic, and less deliberate cognitive processes associated with (ir)reversible decision-making is still lacking. Below I will elaborate on the processes that might play a role in the context of reversible versus irreversible decisions.

Decisional engagement

One issue not yet adequately explored, for example, concerns the question how much people remain occupied with reversible or irreversible decisions. That is, how much a choice remains on top of one’s mind. Do levels of decisional engagement actually differ as a function of the extent to which people can revise their choice? It could be argued that individuals are likely to think more about their choice after reversible rather than irreversible decision-making (i.e., they are more occupied with the decision at hand). This could be caused by the fact that in case of reversible decision-making they still contemplate on whether revising is actually necessary. In other words, one may suggest stronger decisional engagement after reversible as opposed to irreversible decision-making. Such a finding would not only provide us with better insight into what happens in people’s minds after having made a reversible or irreversible choice; finding a relation between decision reversibility and strength of decisional engagement could also spawn new interesting research questions such as to what extent decision reversibility (through decisional engagement) affects people’s cognitive capacity, and, thereby, their performance on cognitive tasks, even beyond the decision-making process itself.

In their research, Gilbert and Ebert (2002) only briefly related decision-reversibility to strength of decisional engagement. They simply examined how much participants thought about the choice alternatives after having made a reversible or irreversible decision. It appeared that participants reported similar amounts of decision-related thoughts, irrespective of the condition they were assigned to. On the basis of these results, one could argue that decision-makers seem as occupied with reversible
decisions as they are with irreversible decisions. However, research on goal fulfillment, may pose a challenge to this notion. Research on goal fulfillment has shown that as long as goals are active, goal-related constructs remain accessible ( Förster, Liberman, & Higgins, 2005; Goschke & Kuhl, 1993), which is thought to be conducive for effective goal pursuit (Bargh, 1997). The accessibility of goal-related constructs endures as long as the goal is active. Upon goal fulfillment, the accessibility of goal-related constructs is subsequently inhibited, which allows cognitive resources to be applied to other important goals/tasks (Förster, Liberman, & Friedman, 2007; Förster, Liberman, & Higgins, 2005; Zeigarnik, 1927).

One could argue that reversible decisions are akin to unfulfilled goals. That is, as long as the decision is open to change, the goal to make a decision is not yet fulfilled. As such, I expect higher accessibility of decision-related constructs (i.e., higher decisional engagement) after having made a reversible choice. Furthermore, I expect that as soon as the decision changes from reversible to irreversible, decision-related constructs are likely to be inhibited in order to create the cognitive capacity that is required to perform other tasks.

Thus, on the basis of goal fulfillment literature, I expect that decision reversibility increases accessibility of decision-related thoughts and, thus, decisional engagement. The fact that Gilbert and Ebert (2002) did not find differences in the amount of thoughts that participants reported about their decision, might be due to them not being aware of having these thoughts. It could be that self-reports do not accurately reflect decisional engagement. Hence, in the present dissertation I make a new attempt in investigating the relation between decision reversibility and decisional engagement, but this time by using a more implicit measurement.

**Choice satisfaction**

Another matter deserving further research is the counterintuitive relation between reversible decision-making and choice satisfaction. As already alluded to in this introduction, Gilbert and Ebert (2002) explained their revealed differences in choice satisfaction after reversible versus irreversible decision-making by arguing that the psychological immune system is unable to start operating after having made a reversible
choice. Furthermore, they suggested that in those circumstances people continue to critically evaluate the chosen option and especially pay attention to its imperfections in order to decide whether or not to keep their chosen alternative. According to Gilbert and Ebert this continued pondering may have a negative impact upon their satisfaction. Although the latter assumption appears plausible, direct evidence for the proposed underlying mechanism has never been provided. That is, we do not know whether decision-makers focus on the negative aspects of the chosen alternative after reversible decision-making. Knowing whether this is the case could explain why individuals are less satisfied with a reversible choice.

**Motivational consequences**

Interestingly, the *motivational* underpinnings of reversible and irreversible decision-making are also still unexplored. Recently, researchers started to acknowledge the importance of investigating motivational processes in the decision-making domain (see for instance, Aaker and Lee, 2001; Briley and Wyer, 2002; Pham and Avnet, 2004; Pham and Higgins, 2005; Werth and Förster, 2007; Zhou and Pham, 2004). In the context of decision reversibility, however, no such research yet exists.

One of the motivational theories gaining increased attention in the psychology of decision-making is regulatory focus theory (RFT) (Higgins, 1997, 1998, 2002). According to this theory, there are two self-regulatory systems to achieve a goal; a promotion system and a prevention system. Individuals in a promotion focus direct their attention towards gains and the achievement of ideals, and to the presence or absence of positive outcomes. Individuals in a prevention focus are concerned with the avoidance of losses and the fulfillment of duties, and the presence or absence of negative outcomes. As a result, people in a promotion focus show risk-taking and eager behavior, whereas people in a prevention focus show avoidant and careful behavior (Förster, Higgins, & Bianco, 2003).

On the one hand it could be argued that irreversible decisions elicit a careful and vigilant prevention strategy for decision-makers in order to deal with the pressure they may feel to immediately make the best decision. On the other hand, such ‘one-shot’ decisions may also make decision-makers eager in striving for success and may
therefore lead to a focus on positive outcomes, yielding a promotion focus instead. Reversible decisions may put the decision-maker’s mind at ease, perhaps even encouraging him/her to choose a more risky promotion strategy. On the other hand, reversible decisions may also activate a prevention focus as reversible decision-making may lead to a focus on the presence or absence of a negative outcome.

Altogether, there are quite a few questions concerning the topic of decision reversibility waiting to be answered. For instance, what cognitive processes occur when people have made an (ir)reversible decision? What processes actually underlie the effects found on choice satisfaction? What are the motivational consequences of decision reversibility? In this dissertation, I aim to answer these questions.

**Overview of empirical chapters**

Chapter 2 and 3 both revolve around the question what happens in people’s minds after having made a reversible or irreversible choice. In these two chapters, I aim to gain more insight into the cognitive processes underlying decision reversibility. In the first part of Chapter 2, I examine the relation between decision reversibility and strength of decisional engagement. On the basis of the goal fulfillment literature, I expect that individuals remain more occupied with reversible rather than irreversible decisions, at least as long as they can change their minds. I will test these ideas by having participants make a reversible or irreversible choice, and by subsequently measuring their reaction time performance on a lexical decision task containing decision-related and decision-unrelated words (Study 2.1). In the second part of Chapter 2, I investigate whether reversible decision-making (perhaps due to stronger decisional engagement) puts an extra strain upon people’s cognitive resources (Study 2.2).

In Chapter 3, I focus on the underlying processes driving the counterintuitive relation between decision reversibility and choice satisfaction. More specifically, in this chapter I aim to establish what aspects of the decision people attend to after having made a reversible or irreversible choice. Possible differences in attention will be related to choice satisfaction. I propose that, in line with what would be expected on the basis of cognitive dissonance theory, irreversible decision-making will direct one’s attention to those aspects of the decision that optimize choice satisfaction (i.e., to the positive
aspects of the chosen alternative and to the negative aspects of the rejected alternative). Reversible decision-making will, instead, direct one’s attention to the negative aspects of the chosen and to the positive aspects of the rejected alternatives (i.e., to the presence or absence of a negative outcome), thereby potentially reducing feelings of satisfaction.

In Chapter 4, I address the motivational effects of decision reversibility. More specifically, I investigate how reversible and irreversible decision-making affects regulatory motivation. On the basis of research by Hafner, White, and Handley (2011) who demonstrated more counterfactual thinking after reversible decision-making (likewise implying a focus on negative outcomes), I expect reversible decision-makers to become relatively more prevention than promotion-motivated as compared to irreversible decision-makers. I test this prediction in five studies using different indicators of regulatory motivation, such as participants’ self-expressed preferences for approach versus avoidance and their speed and accuracy motivations.

Chapter 5 examines whether the motivational effects of decision reversibility also carry-over to the post-decisional phase, and influence the decision-maker’s performance on a subsequent, unrelated task. I focus on the influence of decision reversibility on creative and analytical performance. I investigate this because regulatory motivation – the motivation that appears to be affected by decision reversibility – is known to impact upon people’s performance on these types of tasks (see for instance, Förster and Denzler, 2012; Friedman and Förster, 2001). I expect reversible decision-making to facilitate analytical ability, but impair creative performance. For irreversible decision-making, I expect the reverse to be true. If that is the case it would indicate that reversible decision-making is not as unequivocally detrimental as suggested by previous research.

Altogether, the four empirical chapters in this dissertation aim to gain more insight into the cognitive, motivational, and behavioral consequences of decision reversibility. Each chapter is based on an individual research article, and can therefore be read independently. However, there may be some overlap in content. The concluding Chapter 6 provides an overview of the findings, attempts to integrate the results in a comprehensive framework, and also presents directions for future research.