

Emotion and Decision-Making in Interdependent Settings:

Behavioral Effects of Regret and Disappointment

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Chapter 1

Why Valence Is Not Enough in the Study of Emotions: Behavioral Differences Between Regret and Disappointment

Introduction

All people have to make decisions all the time: which clothes to wear in the morning, how to commute to school or work, what to eat for lunch, where to go on holidays, which car/house to buy, and so forth. Some decisions are more complex than others and may require extra reflection and/or information processing time. Moreover, intuition plays an important role in decision-making (Zeelenberg, Nelissen, & Pieters, 2007). Thus, people do not always strive for optimal decisions, they often settle for satisfactory outcomes. Although making a choice is not a purely rational task, emotions have been considered irrational and dysfunctional for centuries and theories of rational choice view decision-making as a pure cognitive process in which the decision maker chooses the option with the highest expected utility. Nevertheless, the rationality question should not focus on the emotions itself but rather on whether it is rational to act on our emotions (Zeelenberg, 1999). Unfortunately, emotions have been neglected in traditional decision-making theories for a long time. However, this scenario is changing, because nowadays decision researchers recognize that emotion is a force to be reckoned with (Zeelenberg & Pieters, 2006).

Emotions can be conceived as experiences that differ on a number of dimensions (e.g., Russell, 1980) or as experiences that represent discrete categories (Izard & Ackerman, 2000; Lerner & Keltner, 2000). Despite the diversity of emotional states that people experience, research in emotion and decision-making field tends to concentrate on a single aspect of

emotion, i.e., the (dimensional) valence-based approach (Russell, 1980). Valence refers to the positivity (utility or satisfaction) or negativity (disutility or dissatisfaction) of an emotion. The distinction between “positive” and “negative” emotions is as ancient as the formalization of “medieval” theories of emotion (Solomon & Stone, 2002). According to Zeelenberg and Pieters (2006), this approach may be commonly adopted for reasons of parsimony, communicability and measurability. First, in the valence-based approach, emotion can be reduced to a single underlying dimension, such as utility, satisfaction or value. The communication within and across disciplinary boundaries is also facilitated, mainly due to the fact that valence is a well-known construct in psychology and other academic fields. Finally, it is also easier to obtain reliable measures at the level of a broad dimension, such as valence, than at the level of specific emotions (Izard & Ackerman, 2000; Lazarus, 1991).

Limitations of the Valence-Based Approach

However, by ignoring all the specific elements that make emotions distinct from one another, the strict focus on valence is hindering the progress in decision-making theory and application. Therefore, it is necessary to go beyond valence and adopt a generalized specific-emotions approach, because emotions with the same valence have different effects on the judgments and behaviors of decision makers (Zeelenberg & Pieters, 1999, 2004a, 2006, 2007). Since the 1980s, emotion theorists hold a much more complex view of emotions, and they commonly differentiate a large number of distinct emotional experiences – such as, guilt, shame, regret, disappointment, envy, gloating, anger, fear, sadness, joy, pride, love and happiness, to name only a few (e.g., Frijda, Kuipers, & Ter Schure, 1989; Lerner & Keltner, 2000; Roseman, Wiest, & Swartz, 1994).

Zeelenberg and Pieters (2006) state that there are situations where a valence-based approach may be useful or complementary to a specific-emotions approach. First, for low

intensity emotional experiences, such as the case for certain moods (e.g., being in a “good” or “bad” mood), the behavioral implications may be mostly in line with the positive or negative valence. Second, when decision makers first experience a primary emotion, with an overall positive or negative valence, which evokes and shapes more refined secondary emotions. Third, when the behavioral options are closely aligned with a positive or negative valence (for instance, buy the car or not buy the car). In these cases, it may be sufficient to know the valence of the emotional experience to predict future behavior.

However, even considering these situations, focusing on specific emotions is worth the effort. Zeelenberg and Pieters (2006) suggest at least five reasons to go beyond valence and distinguish specific emotions. First, the multiplicity and richness of emotional experience, since different emotions have idiosyncratic functions and signal specific problems to be dealt with to the decision maker. Second, the intrinsic bi-valence of some emotions, that is, some emotions carry aspects of both positive and negative valence in them. For instance, pride can be considered a positive emotion (e.g., a positive evaluation of one’s performance) or a negative emotion (e.g., by adopting a moral perspective, pride is one of the seven deadly sins). In these cases, it remains unclear the criterion used to determine the valence of an emotion. Third, decision makers sometimes experience mixed emotions, such as approach-avoidance conflicts, when the preferred alternative also carries negative consequences or when none of the options dominates. For example, experiencing hope and fear, being optimistic and worried at the same time, is somewhat ambivalent and cannot be reduced to an overall good-bad position. Fourth, the fact that valence is often measured by assessing specific emotions and summarizing these. Measures of specific emotions are often combined to form an overall measure of emotional positivity or negativity. Hence, valence does not result from a theoretical stance and the measure turns out to be more elaborate than adopting a specific-emotions approach. Finally, contrary to one-dimensional effects in most decision

research, in real life decision makers have multiple options to choose from and they can even delay or postpone a decision. Some emotions, such as regret, may promote inaction, in order to minimize future regrets due to counterfactuals – although Gilovich and Medvec (1995) referred that actions generally produce more regret than inactions, inaction is regretted more than action in cases where action is the norm (Zeelenberg, Van den Bos, Van Dijk, & Pieters, 2002). Similarly, decision makers in real interdependent situations may have the opportunity to consult others, include clauses in agreements that permit them to change their choice at a later moment, include more parties in a negotiation, or even leave the situation. Thus, even closely related emotions such as regret and disappointment have distinctive effects on choice behavior. We will discuss this last point later. Overall, decision makers are sensitive to the differential experiential qualities of emotion. In order to understand and predict behavior, the valence-based approach is insufficient and often counter-productive.

Adopting a pragmatic perspective will benefit our understanding of the influence of emotions, as suggested by Zeelenberg and Pieters (2006). The so-called “feeling-is-for-doing” perspective means that we should develop theories based on its practical implications, and rigidly test it. The concept of emotion must prove its worth by virtue of its correlation with behavioral decisions. In other words, the survival potential of emotion lies in its behavioral instrumentality. Thus, by adopting this perspective, we are forced to study behavior, focusing on the meaning of the emotion for the decision maker and taking the motivational aspect of emotion seriously. That is, we need to be aware of the feelings, thoughts and motivations that are part of an emotional experience and predict the behavioral consequences of emotions on basis of this meaning. Our propositions are summarized in Table 1.

Table 1*“Feeling-Is-For-Doing” Summarizing Propositions*

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1. The emotional system is the primary motivational system for goal-directed behavior.
 2. Each specific emotion serves distinct motivational functions in goal striving.
 3. These motivational functions cannot be reduced to the overall valence of the specific emotions.
 4. The distinct motivational functions are rooted in the experiential qualities of the specific emotions.
 5. Emotions can be either endogenous (an integral part) or exogenous (environmentally invoked) to the goal-striving process, their effect on behavior being contingent on their perceived relevance to the current goal.
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Note: adapted from Zeelenberg and Pieters (2006).

Emotions and Their Experiential Content

Emotion definition has been controversial among researchers (Kleinginna & Kleinginna, 1981). In spite of the complexity of the subject, which difficults a consensual exact definition, psychologists agree that emotions are acute, relatively momentary, object-based experiences of goal relevance (Zeelenberg & Pieters, 2006). Emotions are about something or someone. They differ from moods, which are more transient, last longer and do not have a clear object. Emotions also differ from affective personality traits that are person-based and more persistent. For instance, receiving a small free gift may promote a better mood (Isen, 1993), but one does not become emotional over something trivial. Thus, emotions typically arise when one evaluates an event or outcome as relevant for one’s concerns or preferences (Frijda, 1986).

Emotions have evolved in evolution mainly due to their adaptive functions in the survival of the species and the individual (Ketelaar, 2004). Among others, the informational and motivational functions of emotions are particularly important for decision-making theory (for other functions see, e.g., Pieters & Van Raaij, 1998; Izard & Ackerman, 2000). In order to understand these functions, we consider goal-directed behavior as a feedback-control system, with a sequence of goal setting, goal striving, monitoring, and goal adaptation (Zeelenberg & Pieters, 2006). Basically, the informational function of emotions is monitoring the extent of goal progress. Positive emotions signal that goal progress is according to plan, while negative emotions act as an “alarm signal” (Simon, 1994). Recent research has led to important new insights in this “feeling-as-information” (Schwarz & Clore, 2003, Loewenstein & Lerner, 2003). However, the mere immersion in affective feedback information is clearly insufficient in goal striving, because the decision makers also need clear guidelines in order to pursue their long-term goals. That is what the motivational function is about. Emotions do fuel and direct goal-directed behavior.

As multi-component concepts, emotions can be differentiated from each other both in terms of their cognitive appraisals and in terms of their experiential content (Zeelenberg & Pieters, 2006). According to appraisal theory (Scherer, Schorr, & Johnstone, 2001), appraisal refers to the process of judging the significance of an event for personal well-being. A particular event may elicit different specific appraisals to different people, although the same patterns of appraisals always give rise to the same emotions, i.e., specific emotions are associated with specific patterns of cognitive appraisals of a particular situation.

However, the experiential content of emotions is more relevant for the behavioral implications of emotion, mainly because the appraisal patterns only address the antecedent part. Roseman et al. (1994) have proposed and demonstrated that emotions can be differentiated in terms of the following five experiential categories: feelings, thoughts, action

tendencies, actions, and emotivational goals. Feelings are perceived physical or mental sensations. Thoughts refer to ideas, plans, conceptions, or opinions produced by mental activity. Action tendencies are impulses or inclinations to respond with a particular action. Actions include behavior that may or may not be purposeful. Finally, emotivational goals describe the goals that accompany discrete emotions. From a pragmatic perspective, the experiential content of an emotion is the true emotional experience, so it allows specific behavioral predictions. At present, in order to illustrate differences between emotions and make a contribution to specific emotion theory, we will focus on two specific negative-valence emotions: regret and disappointment.

Regret and Disappointment Differences

Regret and disappointment are very much tied to the decision process and its outcomes. As Zeelenberg and Pieters (2006) put it, these two emotions are by far the most important emotions in the context of decision-making. Shimanoff (1984) states that regret is, after love, the second most frequently named of all emotions. Although this fundamental role was recognized a long time ago (see e.g. Savage, 1954), the formalization of these presumed effects took some time. Economists independently developed a regret theory (Bell, 1982; Loomes & Sugden, 1982) and a disappointment theory (Bell, 1985; Loomes & Sugden, 1986). These theories assume that decision makers experience emotions as a consequence of making a decision and, more importantly, anticipate the experience of these emotions and take them into account when making decisions. Thus, decision-making is determined by the tendency to avoid negative post-decisional emotions (i.e. regret and disappointment aversion) and to strive for positive emotions (such as rejoicing, that occurs when the rejected option would have been worse than the chosen one).

Most decisions involve an element of uncertainty. Decision makers cope with uncertainty by forming expectancies about the possible outcomes of different courses of action, and also by speculating how they would evaluate these outcomes if they were to occur. Although expectancies tend to be confirmed most of the time (Olson, Roese, & Zanna, 1996), there are many situations where expectancies are violated. When the state of affairs is worse than initially expected, negative emotions often arise. There are at least two ways in which violated expectancies can give rise to negative emotions (Zeelenberg, Van Dijk, Manstead, & Van der Pligt, 2000). First, if the chosen option ends up being worse than the rejected options, i.e., when “bad decisions” are made, regret often arises. Second, if the chosen option results in an outcome that is worse than expected, i.e., when “disconfirmed expectancies” occur, disappointment may be experienced. Thus, regret and disappointment occur in response to negative decision outcomes and stem from comparing a foregone outcome to the obtained outcome. They can be considered negative emotions that often result when our current state of affairs is worse than initially expected. As such, regret and disappointment have much in common: both are related to risky decision-making and uncertain outcomes, and both involve comparisons between an obtained decision outcome and one that might have been. However, they are different emotions, with distinguishable consequences for decision-making (Zeelenberg et al., 2000).

There are mainly two reasons why regret and disappointment can be considered really distinct emotions: they have different antecedents and they feel different in terms of their phenomenology (Zeelenberg et al., 2000; Zeelenberg & Pieters, 2007). In what concerns their antecedents, regret is more closely related to self-agency, whereas disappointment is more related to other-agency (Frijda et al., 1989). This link between regret and responsibility is consistent with the results of recent studies (e.g., Zeelenberg, Van Dijk, & Manstead, 1998; Zeelenberg & Pieters, 2004b). Regret and disappointment seem to be associated with

different appraisal patterns, the first being associated with control potential, and the latter being associated with circumstances beyond anyone's control. Appraisals are regarded as a key component of emotional experience, and can be seen as causing emotions (e.g., Frijda et al., 1989; Roseman, Antoniou, & Jose, 1996).

The other reason why regret and disappointment are different emotions is their phenomenology. Following Roseman et al. (1994) procedure, Zeelenberg, Van Dijk, Manstead, and Van der Pligt (1998) asked participants to recall an instance of intense regret or disappointment, and assessed their feelings (what they felt), thoughts (what they thought), action tendencies (what they felt like doing), actions (what they did) and motivations (what they wanted). Although the results revealed significant differences in each component, the two most pronounced ones were the motivational components: action tendencies and motivations. Regret involves feeling that one should have known better, thinking about the possibility that one made a mistake, feeling a tendency to kick oneself and to correct one's mistake, and wanting to undo the event and to get a second chance. On the other hand, disappointment involves feeling powerless, accompanied by a tendency to do nothing and get away from the situation. Hence, although they have the same valence, regret and disappointment serve distinct motivational functions which are rooted in the experiential qualities of these emotions.

The ways how regret and disappointment influence decisions and behavior has been the subject of a growing number of recent empirical research studies. Zeelenberg and Pieters (1999, 2004a) compared the behavioral consequences of these emotions, concerning consumers who were dissatisfied with the delivery of a service. It was found that experienced regret resulted in switching to another service provider, whereas experienced disappointment resulted in complaining to the service provider and talking to others about the bad experience (word-of-mouth), but not switching to another service provider. Even after the effects of

general dissatisfaction had been accounted for, regret and disappointment showed different behavioral effects. Thus, whereas regretful consumers realize that switching to an alternative service provider is a better option, disappointed consumers complain to the service provider and share the experience with others. This evidence supports the fact that regret and disappointment have different experiential contents.

Regret arises when we realize or imagine that our present situation would have been better had we acted differently, whereas disappointment is assumed to originate from the comparison between the factual outcome and the counterfactual outcome that might have been had other state of the world occurred (Zeelenberg et al., 2000). That is, disappointment is felt when an outcome appears to be worse than expected and one typically does not feel responsible for the obtained outcome, and regret is especially salient in situations in which decision makers should have known better, that is, it has a close link to responsibility. Moreover, regret usually leads to a reparative action, i.e., learn from mistakes, whether disappointment typically involves feeling powerless and inactive, accompanied by a tendency to get away from the situation (Zeelenberg et al., 1998). Thus, regret is likely to promote goal persistence and disappointment may result in goal abandonment (Zeelenberg et al., 2000). As for regret, this “action effect” is supported by a large number of studies (e.g., Connolly, Ordóñez & Coughlan, 1997; Gilovich & Medvec, 1994, 1995; Kahneman & Tversky, 1982; Ordóñez & Connolly, 2000; Zeelenberg, et al., 1998). However, Feldman, Miyamoto, and Loftus (1999) challenge the generalization of those conclusions. Moreover, Zeelenberg et al. (2002) state, in a series of experiments involving sequences of decisions, that the “action effect” only occurs when prior outcomes are positive or absent. Following negative prior outcomes, more regret is attributed to inaction. Similarly, Anderson (2003) showed that some emotions – including regret – are likely to promote decision-aversion.

These emotions, when anticipated, can also influence decisions. It has been found that anticipated regret influences behavioral choice in several contexts, such as: lotteries (Ritov, 1996; Zeelenberg & Pieters, 2004b), investment decisions (Zeelenberg & Beattie, 1997), negotiations (Larrick & Boles, 1995; Zeelenberg & Beattie, 1997), consumer choice in the context of both products and services (Inman & Zeelenberg, 1998), whether to engage in unsafe sex (Richard, Van der Pligt, & De Vries, 1996), and whether to engage in unsafe driving behavior (Parker, Stradling, & Manstead, 1996). Anticipated regret can induce people to avoid or delay decisions, or even avoid feedback regarding foregone outcomes. This can promote either risk-seeking or risk-avoiding behavior. As for disappointment, there has been virtually no empirical research. Zeelenberg et al. (2000) suggest there are several strategies for avoiding disappointment: to try to live up to the initial expectations by investing more effort; to strategically lower the likelihood of obtaining a desired outcome; to derogate the attractiveness of a desired outcome; and to set global expectations that are hard to disconfirm.

Concluding Remarks and Chapter Overview

Taken together, ample research has shown that even closely related emotions (such as regret and disappointment), whether they are anticipated or experienced, have differential influences on the behavior of decision makers. This favors emotion-specific research in decision-making context. Following the explanatory success of regret and disappointment in individual research, it urges to investigate these dynamics in social decision-making. Regret and disappointment can be regarded as individual emotions, since a social context is not needed in order to experience these emotions. Maybe it is for that reason that the impact of these emotions on choices in interdependent situations has hardly been studied, even though there has been ample speculation about the role of regret in early game theory research (Luce & Raiffa, 1957). Thus, in order to further our understanding of the role of emotion in

decision-making, we believe research considering situations in which one's own interest is in conflict with the interest of the group (i.e. social dilemmas) is clearly needed, in accordance with the concept of social diversity (Rijsman, 1997) and patterns of interpersonal communication (Rutkowski, Fairchild, & Rijsman, 2004).

Overall, we claim that a pragmatic approach is clearly needed in order to have a better understanding of the experience of emotions, the behaviors they motivate and how they can shape subsequent decision-making (Zeelenberg & Pieters, 2007). According to this theory, emotions exist for the sake of behavioral guidance, the so-called "feeling-is-for-doing" approach (Zeelenberg & Pieters, 2006; Zeelenberg et al., 2007). We hope that a fuller understanding of different emotions and its idiosyncratic regulatory processes will lead to a better insight into the psychology of decision-making.

In the following chapters, I present studies that focus on the behavioral distinction of the effects of regret and disappointment in interpersonal decision-making contexts. Chapter 2 addresses the behavioral consequences of regret and disappointment in social bargaining games. Three studies show that regret increases prosocial behavior, whereas disappointment decreases it. Chapter 3 investigates the influence of these two emotions on the valuation of objects and the endowment effect. Two studies reveal that regret cancels the endowment effect while disappointment reverses it. Chapter 4 deals with the effects of these same emotions on trust behavior. Two studies demonstrate that regret decreases trust and trustworthiness, whereas disappointment increases them. Finally, Chapter 5 digests and summarizes the empirical results presented in the previous chapters and discusses the broad implications of our findings.

Chapter 2

Behavioral Consequences of Regret and Disappointment in Social Bargaining Games

Regret and disappointment qualify as the prototypical decision-related emotions, because they are very much tied to the decision process and its outcomes. Their impact on individual decision-making has been studied extensively (see for reviews, Martinez, Zeelenberg, & Rijsman, 2008; Zeelenberg et al., 2000). Interestingly, however, the impact of these emotions on choices in interdependent situations has hardly received any research attention. This neglect of studying the effects of these decision-related emotions in social settings is considerable, since many real-life decisions affect and can be affected by others. In this chapter we aim to fill this gap and empirically examine how regret and disappointment may exert an influence on decision-making in social dilemmas (i.e., interaction situations in which one person's individual interests are in conflict with the interests of another person).

Emotions have important social functions and consequences (Van Kleef, 2009). They are inherent to negotiation and social conflict (Davidson & Greenhalgh, 1999) and they motivate goal-directed behavior (Frijda, 1986, Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008). Unfortunately, although emotional states are crucial to understand how individuals behave within bargaining situations (Barry, 1999), empirical research on the role of emotions on social decision-making still discloses some limitations. So far, there is a plethora of evidence mainly centered on the "valence" aspect of emotions (i.e., their positive or negative dimension) and its influence on subsequent decision-making. This approach does not account for behavioral differences between specific emotions that share the same valence. In other words, previous research has clearly documented that emotions influence behavioral

decisions, but it remained relatively mute to the effects of several specific emotions. Moreover, further specific research on negative emotions and social bargaining games has focused primarily on social emotions such as anger (e.g., Pillutla & Murnighan, 1996; Van Kleef, De Dreu, & Manstead, 2004), guilt (e.g., De Hooge, Zeelenberg, & Breugelmans, 2007; Ketelaar & Au, 2003), and shame (De Hooge, Breugelmans & Zeelenberg, 2008). In this chapter, we present three experiments to investigate whether two negative emotions – regret and disappointment – lead to different behaviors in social decision-making situations. Let us first discuss some distinctive aspects of both emotions.

Regret and disappointment are emotional states that occur in response to negative decision outcomes. They are negative emotions that often result when our current state of affairs is worse than initially expected. As such, they have much in common: both emotions are related to risky decision-making and uncertain outcomes, and both involve comparisons between an obtained decision outcome (“what is”) and a foregone outcome (“what might have been”). However, they are clearly different emotions, with distinguishable consequences for decision-making (Zeelenberg et al., 2000). There are at least two ways in which violated expectancies can give rise to negative emotions. First, if the chosen option ends up being worse than the rejected options (i.e., when “bad decisions” are made) regret often arises. Second, if the chosen option results in an outcome that is worse than expected (i.e., when “disconfirmed expectancies” occur) disappointment may be experienced. In this section, we present three experiments to investigate whether regret and disappointment lead to different behaviors in social decision-making situations.

Research on the experiential content of these emotions (Roseman et al., 1994; Zeelenberg et al., 2000; Zeelenberg & Breugelmans, 2008) shows that regret involves feeling that one should have known better, thinking about the possibility that one made a mistake, feeling a tendency to kick oneself and to correct one’s mistake, and wanting to undo the event

and to get a second chance. On the other hand, disappointment involves feeling powerless, accompanied by a tendency to do nothing and get away from the situation. Hence, although they share the same (negative) valence, regret and disappointment serve distinct motivational functions which are rooted in the experiential qualities of these emotions.

Additionally, the ways how regret and disappointment influence decisions and behavior has been the subject of a growing number of empirical research studies. In a series of studies concerning consumers who were dissatisfied with the delivery of a service, it was found that experienced regret resulted in switching to another service provider, whereas experienced disappointment resulted in complaining to the service provider and talking to others about the bad experience (i.e., word-of-mouth), but not switching to another service provider (Zeelenberg & Pieters, 2004a). Even after the effects of general dissatisfaction had been accounted for, regret and disappointment showed different behavioral effects. Thus, whereas regretful consumers realized that switching to an alternative service provider was a better option, disappointed consumers complained to the service provider and shared the experience with others. This evidence is consistent with the fact that regret and disappointment have different experiential contents. Moreover, regret usually leads to a reparative action (i.e., learn from mistakes), whereas disappointment typically leads to inertia accompanied by the tendency to talk to other people (i.e., sharing the experience). Thus, regret is likely to promote goal persistence and disappointment may result in goal abandonment.

In order to further our understanding of the role of emotions in social decision-making, we present data concerning the effects of regret and disappointment in social dilemma situations. Regret is related to “self” agency – and uniquely tied to the making of decisions. When experiencing regret, people might try to overcome this feeling by being more generous to the opponent in an interdependent negotiation game. This proactive

decision (i.e., tendency to “correct one’s mistake”) consequently makes them feel better and decreases the possibility of facing rejection in the game – which would lead to more regret. This link between regret and responsibility explains why regret increases prosocial behavior. Moreover, recent empirical research (Van Kleef, De Dreu, & Manstead, 2006) has shown that regret – as an appeasement emotion (Baumeister, Stillwell, & Heatherton, 1994; Keltner & Buswell, 1997) – signals an outward focus and a concern for the other, producing a beneficial effect on the interpersonal relationship. Within a negotiation context, their study showed that participants who faced a regretful opponent made larger demands from them. Moreover, they perceived the opponent as being more interpersonally sensitive. Thus, regret motivates helping and compensation behaviors for others.

In what concerns disappointment, agency for negative outcomes is either undetermined, in the environment or in another agent (i.e., “other” agency). Although disappointment is highly relevant in interpersonal situations (Van Dijk, & Zeelenberg, 2002b) such as negotiation contexts, research on its behavioral consequences is more sparse. Disappointed people often undergo in a sensation of powerlessness, generalized distrust and also lower their expectations in order to prevent future disappointment (Zeelenberg et al., 2000). Therefore, this “withdrawal” reaction may lead to a reduction in prosocial behavior. Van Kleef et al.’s (2006) research revealed that disappointment – as a supplication emotion (Clark, Pataki, & Carver, 1996) – signals an inward focus and a preoccupation with the self, generating a damaging effect on the interpersonal relationship. In their study, negotiators conceded more to opponents who showed supplication emotions (than to those who exhibited appeasement emotions). Thus, disappointment generates helping and compensation behaviors for self.

According to the line of reasoning above, we hypothesize regret and disappointment will provoke different behavioral reactions in individuals that face interdependent decision

situations. Regret experiences will lead to “reparative” action that results in a more generous behavior. Disappointment experiences will lead to “self-reward” action that results in a less generous behavior. Thus, we predict that prosocial behavior (the size of the offers to others) increases after regret is induced, but decreases after disappointment is induced.

The general approach of our three experiments consisted of first an emotion induction and next an assessment of prosocial behavior in a social dilemma situation. In order to generalize and extend our findings to multiple contexts, we used two different types of emotion induction and two different dilemma games, which are described below.

The first game used was the “giving” version of the ultimatum game (Leliveld, Van Dijk, & Van Beest, 2008; Nelissen, Leliveld, Van Dijk, & Zeelenberg, 2010) framed within a negotiation context. It is a social bargaining game with two players in which the task is to divide a certain amount of money. In this version, the first player (the proposer) is the “property” owner and offers part of the money to the second player (the responder) – as opposed to the traditional (splitting) ultimatum game, in which players have to divide a joint endowment. If the offer is accepted by the responder, the sum of money is divided in the manner proposed by the first player. Should the offer be refused, no money is distributed (i.e., both players get nothing).

The second game used was a modified 10-coin give-some game (Van Lange & Kuhlman, 1994). Participants receive ten coins, each worth €1 for the participant but €2 for the interaction partner. The interaction partner also has ten coins, each worth €1 for themselves but €2 for the participant. The participant decides how many coins to give to the interaction partner, without knowing how many coins the interaction partner would give. Participants would earn most when keeping all their coins to themselves (the most selfish option). In contrast, participants would earn most together when both offer all coins to the interaction partner (the most cooperative option). The number of coins offered to the partner

is a measure of prosocial behavior. This measure is often used in social dilemma research (De Hooge et al., 2007; Ketelaar & Au, 2003; Nelissen, Dijk, & De Vries, 2007).

Experiment 2.1

Here we induced regret and disappointment with an autobiographical recall procedure and then measured prosocial behavior in a giving-type ultimatum bargaining game.

Method

Undergraduate students (84 females and 36 males, $M_{age} = 22.58$, $SD = 3.55$) participated voluntarily in a series of experiments. First, participants were asked to write a detailed description of an event. They were randomly assigned to one of three conditions: write a detailed description of a recent experience when they felt regretful (Regret, $n = 40$), or disappointed (Disappointment, $n = 40$), or write a detailed description of a typical day (Neutral, $n = 40$). This emotion manipulation was adopted from Ketelaar and Au (2003; see also, De Hooge et al., 2007; Nelissen et al., 2007). Participants worked approximately 15 minutes on the task. After the induction, participants indicated how intensely (1 = not at all; 9 = extremely) they felt several emotions, including regret and disappointment.

Next, participants played the “giving” version of the ultimatum game. By framing the situation in this way, we are looking for a more realistic approach of the game, so that participants would feel they were giving away part of their money, instead of dividing a joint endowment which in most cases would end up with a 50/50 split. The rules of the game were explained to them in the following manner:

“You [the proposer] are about to make a deal that will yield you a small amount of money, in this case 21 euro. However, a colleague of yours [the responder] was the one who made the whole deal possible, so (s)he is waiting

for a gratification. Thus, if your partner is not satisfied with your gratification, (s)he will make the deal impracticable. First, you will decide on the gratification and tell it to your partner. Once you have made your offer, you cannot change it. Then, your partner will accept or reject your offer. If (s)he accepts, the deal will succeed and both of you will divide the money according to your proposal. If (s)he rejects, the deal will not succeed and both of you will get nothing.”

Participants were told that half of them were randomly selected to be proposer and the other half to be responder, although in reality all of them were proposers. After reading the instructions, they were asked to divide 21 euro between themselves and the responder by filling in the blanks on a sheet of paper that stated: “I propose that ___ euro be given to me and that ___ euro be given to my partner”. Additionally, in order to prevent the likelihood of equalitarian divisions, an odd amount was used, and the possible proposals had to be in whole euro increments. The experiment ended when all participants made their offer.

Results and Discussion

The results are presented in the upper part of Table 2. The emotion induction procedure was effective. Regret levels were higher in the Regret condition and differed significantly from both other conditions (Disappointment: $t(78) = 12.57, p < .001$; Neutral: $t(78) = 13.38, p < .001$). Moreover, disappointment levels were higher in the Disappointment condition and differed significantly from both other two conditions (Regret: $t(78) = 10.94, p < .001$; Neutral: $t(78) = 16.56, p < .001$). There were no significant differences between the emotion conditions on the other assessed emotions.

As expected, proposals were significantly affected by our manipulations. They yielded the highest values in the Regret condition ($M = 7.15$), lower values in the Neutral

condition ($M = 5.15$) and the lowest values in the Disappointment condition ($M = 4.30$). Proposers who wrote essays on Regret were inclined to make higher offers in the negotiation game whereas Disappointment inductees made lower offers, $t(78) = 6.04, p < .001$. Moreover, offers in the Regret condition were significantly higher than offers in the Neutral condition, $t(78) = 4.20, p < .001$. Finally, when comparing the Disappointment and Neutral conditions, the proposals were significantly lower in the former condition, $t(78) = -2.12, p < .05$, although that effect was less pronounced, probably because the social withdrawal effects of the former emotion (leaving, hiding, or do nothing – the feeling of learned helplessness: ‘there is nothing you can do about it’) were not powerful enough to lower offers even more.

In sum, we found that regret and disappointment lead to different behaviors in a contextualized giving-type ultimatum game. Regret gave rise to more generous offers and disappointment to less generous offers, although this latter effect was less prominent. In the following experiments we sought to replicate and extend these results using other types of emotion induction procedures and other types of social dilemmas.

Experiment 2.2

In Experiment 2.2, we induced regret and disappointment via imagined scenarios. The measure of prosocial behavior and predictions were identical to Experiment 2.1.

Method

Students of all degree levels (104 females and 52 males, $M_{age} = 24.63, SD = 4.80$) participated voluntarily in a series of experiments. They were randomly assigned to the Regret condition ($n = 52$), the Disappointment condition ($n = 52$), or the Neutral condition ($n = 52$). We opted for describing an academic experience to stay close to the everyday experiences of our participants. Participants read a scenario about a Statistics exam of major

importance for obtaining their long-awaited university degree. The precise date of the examination was, indeed, scheduled since the beginning of the semester. In the Regret condition, participants read:

“You have adopted a passive attitude towards the course. You had not attended most of the classes nor studied properly during the semester. In the days prior to the exam, you could not resist going out, engaging in a series of social events, so again you did not train nor revise fundamental subjects. As a result, you were poorly prepared to the examination. Although the assessment was considerably easy, due to your lack of preparation you expect almost certainly to FAIL.”

On the contrary, participants in the Disappointment condition read:

“You have adopted a proactive attitude towards the course. You had attended most of the classes and studied hard during the semester. In the days prior to the exam, you were able to train and revise fundamental subjects. As a result, you felt properly prepared to the examination. However, you started to feel anxious when you realized the assessment was much harder than expected. Moreover, many questions were about subjects you dislike. To get things worse, you were disturbed with an unexpected diarrhea, losing 15 precious minutes in the toilet. Thus, you expect almost certainly to FAIL.”

In the Neutral condition, participants read that they had studied properly for the exam, nothing special happened, so it went normally and they will probably pass. After reading their scenario, participants indicated how intensely (1 = not at all; 9 = extremely) they would have felt several different emotions in that situation, including regret and disappointment. Next, they played the same ultimatum game as in Experiment 2.1.

Results and Discussion

The results are presented in the middle part of Table 2. Again, the emotion induction procedure was effective. Regret levels were higher in the Regret condition and differed significantly from both other conditions (Disappointment: $t(102) = 11.50, p < .001$; Neutral: $t(102) = 21.47, p < .001$). Moreover, disappointment levels were higher in the Disappointment condition and differed significantly from both other two conditions (Regret: $t(102) = 5.58, p < .001$; Neutral: $t(102) = 22.54, p < .001$). Guilt levels were also high in the Regret condition ($M = 6.15, SD = 2.24$) and differ significantly from the Control condition, $t(102) = 13.79, p < .001$. This is not unexpected, as feelings of regret and guilt tend to co-occur (Zeelenberg & Breugelmans, 2008). There were no significant differences between the emotion conditions on the other assessed emotions.

As expected, proposals were significantly affected by our manipulations. They yielded the highest values in the Regret condition ($M = 9.48$), lower values in the Neutral condition ($M = 7.88$) and the lowest values in the Disappointment condition ($M = 6.65$). As expected, Regret participants were inclined to make higher offers in the negotiation game whereas Disappointment inductees made lower offers, $t(102) = 5.02, p < .001$. Moreover, offers in the Regret condition were significantly higher than offers in the Neutral condition, $t(102) = 2.90, p < .01$. Finally, when comparing the Disappointment and Neutral conditions, the proposals were significantly lower in the former condition, $t(102) = -2.13, p < .05$. Again, these findings are consistent with the idea that regret and disappointment provoke different behavioral reactions in individuals that face an interdependent situation.

Experiment 2.3

Experiment 2.3 presents a replication using another dependent variable: the 10-coin give-some dilemma game (Van Lange & Kuhlman, 1994). We again used the autobiographical recall procedure as emotion induction.

Method

Undergraduate students (61 females and 35 males, $M_{age} = 21.04$, $SD = 2.34$) participated voluntarily in a series of experiments. Participants were randomly assigned one of a Regret ($n = 32$), Disappointment ($n = 32$), or Neutral ($n = 32$) condition. The emotion induction procedure was the same as in Experiment 2.1. Next, participants played the 10-coin give-some dilemma game. Participants were randomly seated in the room and told that they would play the game with the person sitting by their side. The rules of the game were explained to the participants in the following manner:

“You are playing a game with the partner who is sitting next to you. In this game, both of you have ten special coins. Each of your coins is worth €1 for you, but their value doubles (€2) for your partner. The same applies to your interaction partner: (s)he also has ten special coins, each worth €1 for (her)himself and €2 for you. You have to decide simultaneously how many coins to give one another – without knowing the other part’s decision... How many coins will you give to your interaction partner?”

Results and Discussion

The results are presented in the lower part of Table 2. Again, the emotion induction procedure was effective. Regret levels were higher in the Regret condition and differed significantly from both other conditions (Disappointment: $t(62) = 9.40$, $p < .001$; Neutral: t

(62) = 17.67, $p < .001$). Moreover, disappointment levels were higher in the Disappointment condition and differed significantly from both other two conditions (Regret: $t(62) = 10.10$, $p < .001$; Neutral: $t(62) = 21.31$, $p < .001$). There were no significant differences between the emotion conditions on the other assessed emotions.

As expected, offers were significantly affected by our manipulations. Again, they yielded the highest values in the Regret condition ($M = 6.81$), lower values in the Neutral condition ($M = 5.28$) and the lowest values in the Disappointment condition ($M = 4.16$). As expected, Regret participants were inclined to make higher offers in the negotiation game whereas Disappointment inductees made lower offers, $t(62) = 4.94$, $p < .001$. Moreover, offers in the Regret condition were significantly higher than offers in the Neutral condition, $t(62) = 2.88$, $p < .01$. Finally, when comparing the Disappointment and Neutral conditions, the proposals were significantly lower in the former condition, $t(62) = -2.15$, $p < .05$. We thus replicated results of the previous experiments using another interdependent social dilemma game. Again, regret led to a more generous behavior than disappointment.

Table 2

Average Regret, Disappointment and Proposals/Offers in the Negotiation games as a Function of the Experimental Conditions for Experiments 2.1, 2.2, and 2.3

D.V.	Experimental condition			Test statistic
	Regret <i>M (SD)</i>	Disappointment <i>M (SD)</i>	Neutral <i>M (SD)</i>	
<i>Experiment 1</i>				<i>F (2,117)</i>
Regretful	6.00 (1.70) ^a	2.13 (0.97) ^b	1.88 (0.97) ^b	135.50*
Disappointed	2.90 (1.26) ^a	6.20 (1.44) ^b	1.78 (0.89) ^c	143.11*
Proposals	7.15 (2.40) ^a	4.30 (1.77) ^b	5.15 (1.82) ^c	21.02*
<i>Experiment 2</i>				<i>F (2,153)</i>
Regretful	7.35 (1.66) ^a	3.37 (1.87) ^b	1.83 (0.83) ^c	182.70*
Disappointed	5.27 (2.32) ^a	7.50 (1.71) ^b	1.69 (0.73) ^c	151.65*
Proposals	9.48 (2.74) ^a	6.65 (3.00) ^b	7.88 (2.88) ^c	12.63*
<i>Experiment 3</i>				<i>F (2,93)</i>
Regretful	6.69 (1.60) ^a	3.47 (1.11) ^b	1.31 (0.64) ^c	167.86*
Disappointed	3.50 (1.46) ^a	6.97 (1.28) ^b	1.44 (0.72) ^c	175.04*
Offers	6.81 (2.19) ^a	4.16 (2.11) ^b	5.28 (2.07) ^c	12.61*

Note. Emotion level entries (Regretful and Disappointed) are mean scores on 9-point scales. Proposal entries are mean scores on a 0-21 scale. Offer entries are mean scores ranging from 0 to 10 coins. Higher scores indicate more intense emotions and more prosocial behavior (higher proposals and higher offers). Means per row with different superscripts differ significantly (all $t_s > 2.12$, all $p_s < .05$).

* $p < .01$.

General Discussion

We started our research with the question whether regret and disappointment could be distinguished on the basis of how these emotions manifest themselves in social dilemma situations. Our results clearly supported our predictions by showing that regret increases prosocial behavior, whereas disappointment provokes the opposite effect. These facts are in line with previous research that reported differences between individual action tendencies and motivations involved in regret and disappointment (e.g., Zeelenberg et al., 2000).

In all three experiments, regret led to more generous offers whereas disappointment led to less generous offers in the social dilemma games, our dependent measure of prosocial behavior. The situations used in our research typically involved interpersonal interaction and overcome a drawback of previous research, mainly focused at the individual level. Hence, our findings generalize the behavioral implications of regret and disappointment to interdependent situations. Below, we comment on the implications of our results as well as some of their limitations that call for future research.

Firstly, we believe that our findings have important consequences for researchers incorporating regret and disappointment in their studies. Negative emotions may enclose positive influences on prosocial behavior as previously found for shame (e.g., De Hooij et al., 2008) and guilt (e.g., Ketelaar & Au, 2003). Moreover, in line with the work of Van Kleef et al. (2006), we have found that experienced regret – as an appeasement emotion – has a beneficial effect on cooperation, increasing prosocial behavior. Conversely, experienced disappointment – as a supplication emotion – has a detrimental effect on cooperation, reducing prosocial behavior.

Secondly, although regret is a broader emotion than guilt, both emotions may promote similar behavioral reactions, as their phenomenology is shared in situations of interpersonal harm such as a social dilemma game (Baumeister et al., 1994; Berndsen, Van der Pligt,

Doosje, & Manstead, 2004; Zeelenberg & Breugelmans, 2008). In our study, regret operates quite similarly to guilt: it recalls that one has hurt another person, thereby motivating a reparative behavior in order to undo the wrongdoing (Gilovich & Medvec, 1995; Tangney, Miller, Flicker, & Barlow, 1996). On the contrary, disappointment elicits preoccupation with self, engaging in a conduct of self compensation. Again, this is in line with the findings reported by Van Kleef et al. (2006) that perceive regret as an appeasement emotion and disappointment as a supplication emotion.

Thirdly, in what concerns behavioral consequences of regret in social dilemma situations, we extended previous findings of Zeelenberg and Beattie (1997). Interestingly, in their study regret decreased prosocial behavior. Our study differs from theirs in relevant aspects: it did not involve feedback structures nor the knowledge of minimal acceptable offers in the dilemma games. More importantly, their study dealt with the effects of integral (or “endogenous”) anticipated regret about hypothetical offers on subsequent behavior in the classic ultimatum game, whereas our study entailed an incidental (or “exogenous”) emotion induction procedure followed by the social interaction.

Concerning the potential methodological weaknesses of the study, we consider the use of two emotion induction procedures to be a weakness but, at the same time, a strength. A weakness because it may hinder the comparison of the results given by distinct emotion induction methods but, more importantly, a strength, because the use of different methods definitely increases the validity of the main conclusions.

In closing, let us return to the core subject of our current research and depict its implications at a higher level. We searched for (and found) behavioral differences between two closely related emotions – regret and disappointment – in social interdependent situations. In line with previous research, and by taking the motivational aspect of emotion seriously, our findings report distinctive behavioral consequences between two negative

emotions, thus categorizing the valence-based approach as inadequate and counter-productive in order to understand and predict behavior.

Chapter 3

Regret, Disappointment and the Endowment Effect

The mere possession of a commodity may influence its perceived value, is apparent in many daily life situations and in experimental research. Generally, people tend to hold on to what they have got. As a result, they are inclined to demand more money as compensation for relinquishing a specific object than they are willing to pay so as to obtain the same object. This phenomenon has been labeled “the endowment effect” (Kahneman, Knetsch, & Thaler, 1990; Thaler, 1980). It derives from the concept of loss aversion (Kahneman & Tversky, 1979), according to which losses are weighted more heavily than gains of equal magnitude. Giving up (or selling) an object is perceived as a loss whereas obtaining (or buying) an object is perceived as a gain. Moreover, owning an item creates an association between the item and the self (Beggan, 1992; Morewedge, Shu, Gilbert, & Wilson, 2009), increasing its value for the owner. This effect has been highlighted in literature and empirically confirmed for a variety of objects (see Carmon & Ariely, 2000; Carmon, Wertenbroch & Zeelenberg 2003; Kahneman et al., 1990; Loewenstein & Adler, 1995; Reb & Connolly, 2007, Strahilevitz & Loewenstein, 1998; Tom, Lopez, & Demir, 2006; Van Dijk & Van Knippenberg, 1998, 2005, 2006; Van de Ven, Zeelenberg, & Van Dijk, 2005).

Interestingly, as became evident in recent research, the endowment effect may be moderated by the emotional state the decision maker is in. For example, Lin, Chuang, Kao, and Kung (2006) had participants experience either positive or negative emotions – via recalling past emotional events and also audiovisual stimuli. Next, they were asked to evaluate how much they would be willing to accept in return for a mug they were endowed

with, or how much they would be willing to pay for a mug they that was not part of their endowment. In two experiments, Lin et al. found that the endowment effect occurred when positive emotions were induced prior to the valuation, but not when negative emotions induced.

In a similar experiments, Lerner, Small, and Loewenstein (2004) found different effects for two negative emotions, disgust and sadness. They had participants watch film clips that elicited one of those emotions. Next, participants were asked their selling and choice (buying) prices of a set of highlighters. Consistent with previous theorizing, disgust evoked a tendency to expel current possessions and avoid obtaining new ones (Rozin, Haidt, & McCauley, 1993), therefore reducing both selling and buying prices – to the point of eliminating the classical endowment effect. On the contrary, sadness aroused from loss and helplessness and evoked changing one’s circumstances (Keltner, Ellsworth, & Edwards, 1993; Lazarus, 1991), thus reducing selling prices and increasing buying prices at the same time – reversing the classical endowment effect.

Thus, the research of Lerner et al. (2004) and Lin et al. (2006) both show that negative emotions may cancel out the endowment effect, but the Lerner et al. research reveals that this does not hold for all negative emotions, and shows that some (i.e., disgust) may actually reverse the effect. We built on these findings and extend them to other negative emotions that are highly relevant in the context of decision-making.

We are interested in the behavioral differences between regret and disappointment with regard to the endowment effect. Both emotions qualify as prototypical decision-related emotions (Zeelenberg & Pieters, 2006). Moreover, they are also highly prevalent. Regret is the second most named emotion, after love (Shimanoff, 1984) and disappointment is the third most experienced emotion, after anxiety and anger (Shimmack & Diener, 1997). Previous research has found that regret and disappointment are clearly different emotions, with

distinguishable consequences for decision-making (see for reviews, Martinez, Zeelenberg, & Rijsman, 2008; Zeelenberg, Van Dijk, Manstead, & Van der Pligt, 2000). Additionally, regret and disappointment are found to differ in their appraisals (Van Dijk & Zeelenberg, 2002a). The former emotion is appraised as thinking that one could undo the event and as caused by oneself, whereas the latter emotion is more appraised as unexpected, as wanting something pleasurable, as thinking that one was morally right, and as caused by circumstances beyond anyone's control. Recent neuropsychological research and neuroimaging data have stressed both the importance of anticipated regret as a powerful predictor of future decisions (Coricelli, Critchley, Joffily, O'Doherty, Sirigu, & Dolan, 2005), as well as the existence of learning based on cumulative emotional experiences (Coricelli, Dolan, & Sirigu, 2007).

We propose that regret and disappointment have distinct implications for the valuation of objects – and, consequently, for the endowment effect. We expect regret to eliminate the classical endowment effect. This will occur because regret points out an outward focus and a preoccupation with the other, operating as an appeasement emotion (Van Kleef, De Dreu, & Manstead, 2006, see also, Martinez, Zeelenberg, & Rijsman, in press). Regret also triggers “reparative” actions as people feel responsible for the situation that elicited the emotion (Zeelenberg et al., 2000). Thus, we predict that after a regret induction, selling prices will decrease (people will want to compensate others by selling their possessions at a lower price) and buying prices will increase (people will be willing to buy at a higher price in order to change their circumstances). As the first effect will be prominent, selling and buying prices are estimated to be equivalent and the endowment effect will no longer exist.

We expect disappointment to reverse the traditional endowment effect. This arises because disappointment signals an inward focus and a preoccupation with the self, operating as a supplication emotion (Van Kleef et al., 2006, see also, Martinez et al., in press).

Disappointment also involves feelings of powerlessness and evokes the goal of changing one's circumstances, turning away from the event that elicited the emotion (Zeelenberg et al., 2000). Thus, we predict that after a disappointment induction, buying prices will increase (people will be willing to pay more in order to obtain a new object that will please them) and selling prices will decrease (people will want to get rid of their current possessions and obtain new ones). Both effects will be strong enough to invert the endowment effect, as acquiring new goods and getting rid of possessions present a clear opportunity for change.

We conducted two experiments to test these predictions. The general approach of the two experiments was identical, each one consisting of an emotion induction procedure and a subsequent valuation of an object. On the basis of ample research, we believe emotions will persist beyond the eliciting situation, influencing subsequent behavior. Based on Lerner et al. (2004) and Lin et al. (2006), our research extended their settings by studying the decision-related emotions regret and disappointment. In addition, we include a Control condition in our experimental design, allowing us to investigate not only whether regret and disappointment lead to different behaviors, but also providing a benchmark to test whether both emotional states actually influence behavior. We were interested in the effects of the induced emotional state on WTA (the lowest price that Sellers are willing to accept to sell an object) and WTP (the highest price Buyers are willing to pay for the same object).

Experiment 3.1

The first experiment presented our participants a scenario of a trade of a lottery ticket, adapted from Van de Ven et al. (2005). We assessed sellers' WTA and buyers' WTP. Our prediction was that the classic endowment effect would subsist only in the Control condition. The effect was expected to disappear in the Regret condition and to reverse in the Disappointment condition.

Method

Undergraduate students (130 females and 110 males, $M_{age} = 20.5$, $SD = 1.82$) participated for course credit in a series of experiments. They were randomly and equally assigned to one of six different experimental conditions – 2 (Possession: Seller vs. Buyer) \times 3 (Emotion: Control vs. Regret vs. Disappointment) between-subjects design.

Participants entered the laboratory in groups with a maximum of 30 people. First, emotional states were induced via an implicit priming task – the scrambled sentence paradigm (Bargh & Chartrand, 2000). In this task, participants were asked to form a total of 20 four-word sentences from five given words. In the Regret condition, 18 of the 20 tasks contained words or expressions related to regret: worried; wish otherwise; carefully; pain; punishment; lost; poor choice; regret; bad luck; mistake; decision process; outcome; compared; self blame; justifiable; loss; forgone; fault. This regret priming was adopted from Reb and Connolly (2009). In the Disappointment condition, 18 of the 20 tasks contained words or expressions related to disappointment: worried; unexpected; betrayal; paralyzing; morally right; avoid; lower expectations; disappointment; no control; sadness; powerless; get away; do nothing; complaining; turn away; compensation; inactive; bad luck. In the Control condition, no such words were included, instead we opted for neutral expressions.

Then, in a seemingly unrelated experiment, participants read a scenario concerning a lottery ticket. Sellers were asked to imagine being endowed with a lottery ticket that they could sell to someone else. Conversely, Buyers were asked to imagine that someone else owned a lottery ticket and (s)he was willing to sell it to them. In both conditions, the lottery ticket could be worth any possible value in the range of €0 to €10. The dependent variable for the Sellers was their minimum selling price (WTA – Willingness to Accept) and for the Buyers it was their maximum buying price (WTP – Willingness to Pay). On a specific form,

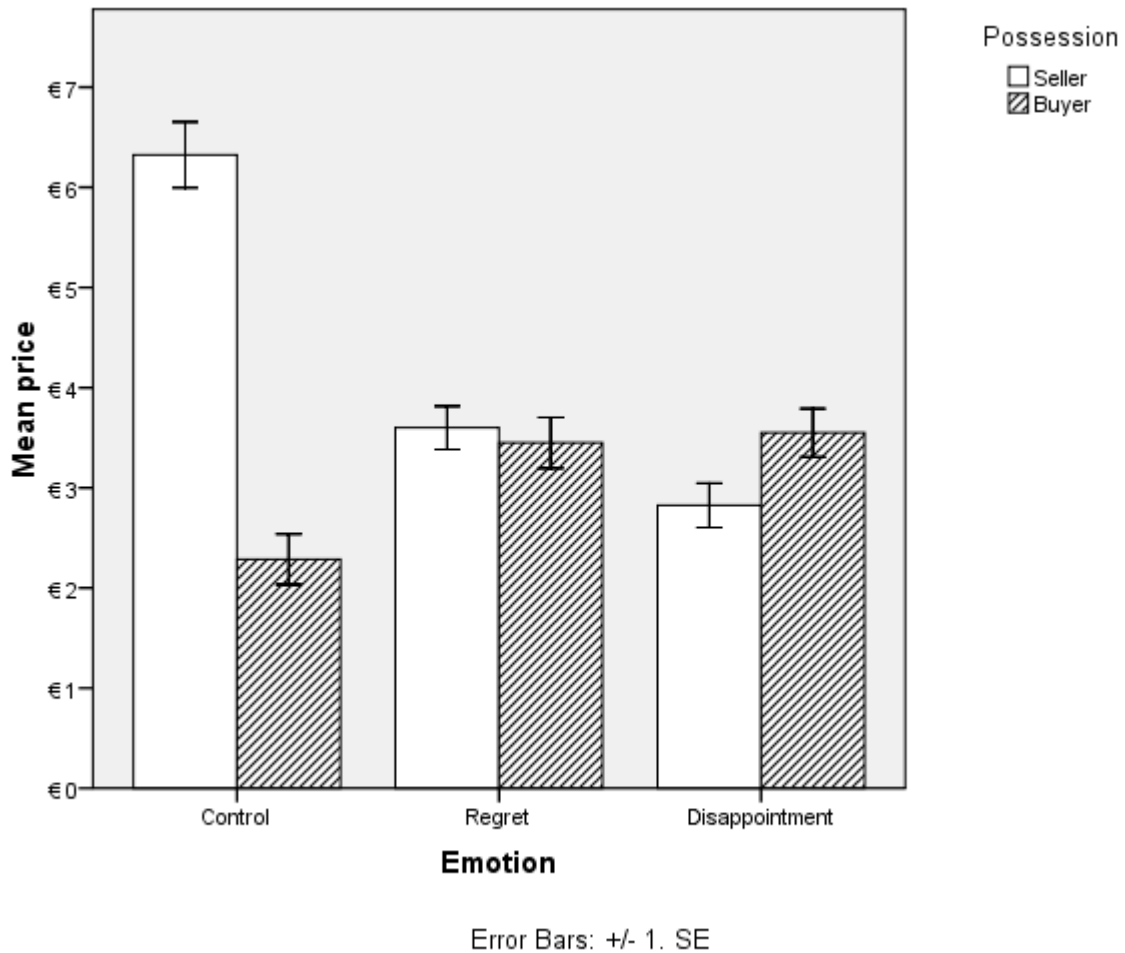
prices were listed from €0.50 to €10 (with €0.50 intervals). Sellers (Buyers) were requested to indicate on their forms whether or not they would sell (buy) the lottery ticket at each price. This procedure for indicating both WTA and WTP was adopted from Kahneman et al. (1990) (see also, Van Dijk and Van Knippenberg, 1996). The whole session lasted approximately 30 minutes. Subsequently, all participants were debriefed.

Results and discussion

The findings supported our predictions. A 2 (Possession: Seller vs. Buyer) \times 3 (Emotion: Control vs. Regret vs. Disappointment) ANOVA with WTA/WTP as dependent variable showed significant Possession main effect, $F(1, 234) = 30.72, p < .001, \eta_p^2 = .12$. Overall, this indicates a difference between Sellers ($M = 4.25, SD = 2.22$) and Buyers ($M = 3.10, SD = 1.67$) – the classic endowment effect. A significant Emotion main effect was found, $F(2, 234) = 10.12, p < .001, \eta_p^2 = .08$. More importantly, the results showed a two-way interaction, $F(2, 234) = 49.40, p < .001, \eta_p^2 = .30$. Results are presented in Figure 1, revealing the existence of the classic endowment effect only in the Control emotion condition (i.e., Sellers mean WTA was significantly higher than Buyers mean WTP; $M_{\text{sell}} = 6.33, SD = 2.08; M_{\text{buy}} = 2.29, SD = 1.60; t(78) = 9.73, p < .01$). For the Regret condition, the endowment effect was eliminated (i.e., Sellers mean WTA did not differ significantly from the Buyers mean WTP; $M_{\text{sell}} = 3.60, SD = 1.36; M_{\text{buy}} = 3.45, SD = 1.61; t(78) = 0.45, ns$). Finally, for the Disappointment condition, the endowment effect was reversed (i.e., WTP exceeded WTA; $M_{\text{buy}} = 3.55, SD = 1.52; M_{\text{sell}} = 2.83, SD = 1.40; t(78) = 2.22, p < .05$).

Figure 1

Average Lottery Ticket Selling (WTA) and Buying (WTP) Prices per Emotion Condition in Experiment 3.1



Experiment 3.2

In Experiment 3.2, we sought to replicate and extend the findings from Experiment 3.1 in two ways. First, we now chose for a more explicit emotion priming task, the often used autobiographical recall procedure. Second, participants were actually endowed with a mug (or not), asked to evaluate it and trade it among themselves. We extended the research of Lerner et al. (2004) and Lin et al. (2006), by including three distinct emotion conditions –

Control (Neutral); Regret; and Disappointment. Again, our prediction was that the endowment effect would exist only in the Control condition – it would disappear in the Regret condition and it would reverse in the Disappointment condition.

Method

Graduate and undergraduate students (93 females and 99 males, $M_{age} = 29.4$, $SD = 5.62$) participated voluntarily in a series of experiments and were paid €5 for their participation in the whole session. They were randomly and equally assigned to one of six different experimental conditions – 2 (Possession: Seller vs. Buyer) \times 3 (Emotion: Control vs. Regret vs. Disappointment) between-subjects design.

Participants entered the laboratory in groups with a maximum of 30 people. At the beginning of the experiment, all participants were paid a €5 show-up fee. Next, half of the participants were individually endowed with a mug (Sellers), and the rest received none (Buyers). Then, participants were induced emotional states via an autobiographical recall procedure (e.g., Ketelaar & Au, 2003; De Hooij et al., 2008). They were asked to write a detailed description of: (1) a typical day (Control, $n = 64$); (2) a recent experience when they felt regretful (Regret, $n = 64$); a recent experience when they felt disappointed (Disappointment, $n = 64$).

Next, Sellers and Buyers could trade the mug among themselves in the ‘Coffee Mug Market’. The dependent variable for the Sellers was their minimum selling price (WTA – Willingness to Accept) and for the Buyers it was their maximum buying price (WTP – Willingness to Pay). On a specific form, prices were listed from €0.25 to €5 (with €0.25 intervals). Sellers (Buyers) were requested to indicate on their forms whether or not they would sell (buy) the mug at each price.

After all participants had indicated their WTA/WTP, the experimenter would randomly select a price on a separate form (in the range of €0.25 to €5), in order to establish the 'market price' for the mug. If there were Sellers and Buyers who wanted to sell and buy for the selected 'market price', the corresponding mugs were traded between the participants in the presence of the experimenter. It was stressed from the outset that the indicated WTA/WTP were binding, instigating real transactions whenever possible (if there were sufficient Sellers and Buyers to trade the mug at the randomly selected market price). Thus, we reduced the possible effects of demand characteristics that could influence choice behavior in experimental markets. Moreover, this procedure encourages participants to state their true values (Kahneman, Knetsch, & Thaler, 1991). As all participants were paid a €5 show-up fee upfront, all Buyers had enough money for buying a mug.

Finally, participants were asked to reread their essay and indicate how intensely (1 = not at all; 9 = extremely) they felt several emotions, including regret and disappointment. The whole session lasted approximately 45 minutes. Subsequently, all participants were debriefed.

Results and discussion

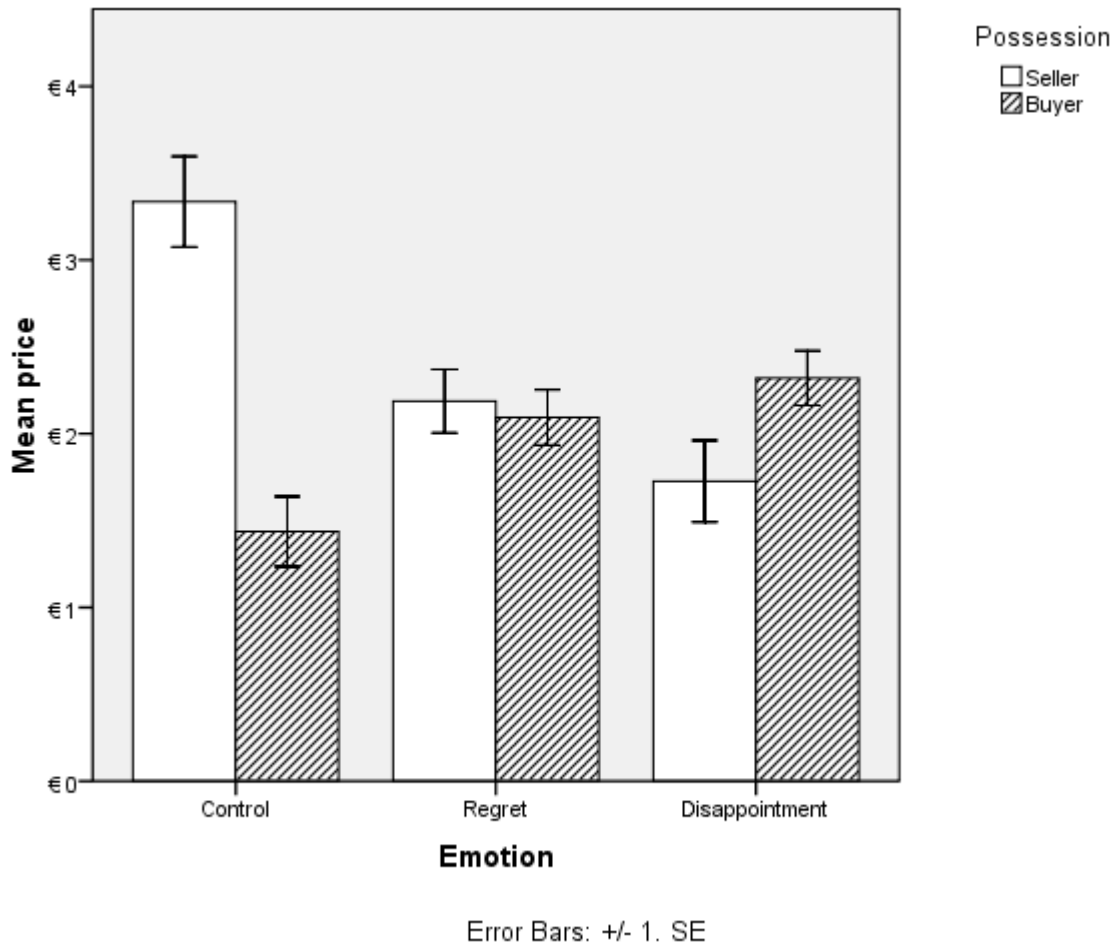
Manipulation checks of emotions showed that the emotion induction procedure was effective. Regret levels were higher in the Regret condition ($M = 7.33$, $SD = 1.72$) and differed significantly from both other conditions (Disappointment: $M = 4.02$, $SD = 2.54$, $t(126) = 8.64$, $p < .001$; Control: $M = 1.47$, $SD = 1.21$, $t(126) = 22.31$, $p < .001$). Moreover, disappointment levels were higher in the Disappointment condition ($M = 8.08$, $SD = 1.01$) and differed significantly from both other two conditions (Regret: $M = 5.31$, $SD = 2.27$, $t(126) = 8.89$, $p < .001$; Control: $M = 1.94$, $SD = 1.67$, $t(126) = 25.15$, $p < .001$). There were no differences between the emotion conditions on the other assessed emotions.

The findings concerning the valuation of the mug again supported our predictions. A 2 (Possession: Seller vs. Buyer) \times 3 (Emotion: Control vs. Regret vs. Disappointment) ANOVA with WTA/WTP as dependent variable showed significant Possession main effect, $F(1, 186) = 7.89, p < .01, \eta_p^2 = .04$. Overall, this indicates a difference between Sellers ($M = 2.42, SD = 1.45$) and Buyers ($M = 1.95, SD = 1.04$) – the classic endowment effect. No significant Emotion main effect was found, $F(2, 186) = 1.67, ns$. More importantly, the results showed a two-way interaction, $F(2, 186) = 20.06, p < .001, \eta_p^2 = .18$. Results are presented in Figure 2, revealing the existence of the classic endowment effect only in the Control emotion condition (i.e., Sellers mean WTA was significantly higher than Buyers mean WTP; $M_{\text{sell}} = 3.34, SD = 1.48; M_{\text{buy}} = 1.44, SD = 1.14; t(62) = 5.76, p < .01$). For the Regret condition, the endowment effect was eliminated (i.e., Sellers mean WTA did not differ significantly from the Buyers mean WTP; $M_{\text{sell}} = 2.19, SD = 1.04; M_{\text{buy}} = 2.09, SD = 0.90; t(62) = 0.39, ns$). Finally, for the Disappointment condition, the endowment effect was reversed (i.e., Buyers mean WTP exceeded Sellers mean WTA; $M_{\text{buy}} = 2.32, SD = 0.89; M_{\text{sell}} = 1.73, SD = 1.33; t(62) = 2.10, p < .05$).

Figure 2

Average Mug Selling (WTA) and Buying (WTP) Prices per Emotion Condition in Experiment

3.2



General Discussion

We started our research with the question whether regret and disappointment could exert a different influence in the classic endowment effect. Our results clearly supported our predictions by showing that regret cancels the endowment effect and disappointment reverses it. These facts are in line with previous research that reported differences between emotion conditions and the endowment effect (Lerner et al., 2004; Lin et al., 2006).

At this point, it may be worthwhile to discuss the broader consequences of our findings. Pierce, Kostova, and Dirks (2003) argued that the existence of psychological ownership can be explained by three intra-individual functions – efficacy and effectance, self-identity, and the need for having a place – that are served by this state and are, consequently, among the reasons for an individual to experience it. Identifying these functions is crucial to fully understand the processes through which psychological ownership emerges.

According to Morewedge et al. (2009), ownership – and not loss aversion – causes the endowment effect. In addition, as noted by Beggan (1992, p. 233), “the mere ownership effect is a self enhancement bias directed towards one’s possessions”. In our reasoning, we believe that emotions may moderate the tendency for people to overvalue what they own.

Overall, our pattern of results is consistent with the idea that regret triggers goals of “reparative” actions and preoccupation with the other, increasing buying prices and decreasing selling prices, with the latter effect being prominent, thus canceling the classic endowment effect. Our reasoning is also consistent with the findings in the disappointment condition, as we reasoned that disappointment triggers goals of changing one’s circumstances and preoccupation with the self, increasing buying prices and decreasing selling prices, thus reversing the endowment effect. These findings thus reveal, as do the findings of Lerner et al. (2004), that different negative emotions can differently affect the endowment effect. Some emotions may attenuate the effect, even to the extent that it may cease to exist. Other emotions may actually reverse the effect.

These results have additional implications. According to the emotion congruency model (ECM), the evaluation of objects is negatively influenced by negative emotion and positively influenced by positive emotions (Iness-Ker & Niedenthal, 2002; Rusting, 1998, 1999). Consequently, if an object is associated with negative emotions, people will project

those emotions onto the object, becoming more prone to accept losses, thus canceling (or even reversing) the endowment effect. Hence, a careful study of the involved (negative) emotions is needed in order to accurately predict their effects regarding object possession.

However, as the endowment effect is more pronounced for goods that are easy to associate with the self, such as mug with an insignia (Tom, 2004), we are more inclined to the ownership account to explain its occurrence (cf., Morewedge et al, 2009). Induced negative moods may reverse the nature of possessions, turning a “good” object into a “bad” object, resulting in lower selling prices. In this case, we are dealing with a possession loss but a valence gain (cf., Brenner, Rottenstreich, Sood, & Bilgin, 2007). Conversely, the same negative moods may increase the attractiveness of non-possessed objects, resulting in higher buying prices. Thus, a person’s affective state, even unrelated to the subsequent object valuation, influences the assessments of possessed and non-possessed items.

In sum, by reporting distinctive behavioral consequences between regret and disappointment in object valuation, this research contributed to disentangle the mechanisms associated to emotion and the endowment effect. We believe more research is needed in order to shed more light into the emotion moderation effects on the endowment effect.

Chapter 4

The Effects of Regret and Disappointment on Trust Game Behavior

As two major components of social capital, trust and trustworthiness are undeniably keystones in economic development (Fukuyama, 1995). Trust is the belief that others act in the interest of fairness and social welfare rather than their own self-interest, whereas trustworthiness is the extent to which trust in a person is justified (Bracht & Feltovich, 2009; Rousseau, Sitkin, Burt, & Camerer, 1998). This deliberate willingness of an individual to make himself vulnerable to the actions of another individual and the subsequent reciprocity are essential conditions in order to accomplish successful transactions (Fehr, Gächter, & Kirchsteiger, 1997). Whenever these two elements of social capital are absent, that hinders dramatically the quantity and quality of exchanges that take place between agents, thus dampening the efficient trade of goods and services (Kugler, Bornstein, Kocher, & Sutter, 2007).

The main experimental work horse is the trust game (Berg, Dickhaut, & McCabe, 1995; Wrightsman, 1966). The first mover in this game (the sender or investor) receives an initial endowment and can send (i.e., invest) any part of it to the second mover (the responder). Then, the amount sent is tripled, and the responder can return to the sender any portion of the tripled sum. The first move is taken as a measure of the sender's trust, whereas the return move points out the responder's trustworthiness. Standard equilibrium game-theoretic analysis assumes rationality and selfishness, thus predicting no transfers will be made. However, the trust game is an example of a social dilemma, as individual behavior leads to an inefficient outcome from the perspective of the group. In fact, the results of trust

game experiments approach desirable social outcomes: average transfers typically represent about half of the initial endowment and returns are around 30%–40% of the money received by the responder (for a review, see Camerer, 2003).

In recent years, research in trust game behavior has centered in demographic variables: differences across age groups (Sutter & Kocher, 2007), gender differences (Cox, 2002), and cross-cultural differences (Buchan, Croson, & Dawes, 2002). Other research topics include: individual versus group behavior (Kugler et al., 2007), stake size (Johansson-Stenman, Mahmud, & Martinsson, 2005), punishment (Barclay, 2006), and repeated play (Engle-Warnick, & Slonim, 2004).

But, there is also reason to believe that emotions may play a part in trust and trustworthiness behavior. If someone violates our trust we typically become emotional: angry at the trustee, disappointed in him/her and perhaps ourselves, and regretful over having trusted. Hence, decisions to trust people are likely to be fueled by positive emotions, and not trusting them by negative emotions. Indeed, Dunn and Schweitzer (2005) found that an incidental induction of positive emotions (happiness and gratitude) increased trust, whereas an induction of negative emotions (anger) decreased trust. No effects are known yet concerning inductions of disappointment and regret. Such knowledge is important, though, as research has found that different negative emotions have markedly different effects on judgment and decisions (e.g., Keltner et al., 1993; Martinez et al., 2008; Zeelenberg & Pieters, 1999).

We are particularly interested in the behavioral differences between regret and disappointment with regard to trust and trustworthiness, as these decision-related emotions are likely to be experienced after trust is violated. Regret and disappointment are clearly different emotions, with distinguishable antecedents, phenomenologies and consequences for decision-making (see for a review, Zeelenberg, Van Dijk, Manstead, & Van der Pligt, 2000).

Regret is felt when one feels responsible for the bad outcome and is associated with the tendency to repair the mistake and prevent it from happening in the future. Disappointment is felt when negative outcomes are unexpected and beyond one's control, and it is associated with wanting something pleasurable, and thinking that one was morally right and it evokes the goal of changing one's circumstances.

We propose that regret and disappointment have divergent impact on trust and trustworthiness. We expect disappointment to *increase* trust and trustworthiness behavior. Disappointment signals "disconfirmed expectancies" and may make people reckless, thus investing more money and increase their reciprocity levels. The possibility of a better final outcome will satisfy themselves and represent a chance of changing one's circumstances. On the contrary, we expect regret to *decrease* trust and trustworthiness behavior. Regret points out "bad decisions" and the tendency to correct one's mistakes. Consequently, people will become more prudent, thus investing less money and decreasing their reciprocity levels. In this way, people will shield themselves from the possibility of experiencing more regret.

We conducted two experiments to test these predictions. Each consisted of an emotion induction followed by a trust game. We studied senders in Experiment 4.1 and responders in Experiment 4.2.

Experiment 4.1

Method

Undergraduate students (46 females and 50 males, $M_{age} = 21.5$, $SD = 4.63$) participated for course credit in a series of experiments. They were randomly and equally assigned to one of the three different experimental conditions: (1) Control; (2) Regret; (3) Disappointment. First, emotional states were induced via an implicit priming task. We primed regret using the scrambled sentence paradigm based from Reb and Connolly (2009)

(containing words or expressions related to regret: worried; wish otherwise; carefully; pain; punishment; lost; poor choice; regret; bad luck; mistake; decision process; outcome; compared; self blame; justifiable; loss; forgone; fault). We developed a disappointment version along those lines (containing words or expressions related to disappointment: worried; unexpected; betrayal; paralyzing; morally right; avoid; lower expectations; disappointment; no control; sadness; powerless; get away; do nothing; complaining; turn away; compensation; inactive; bad luck). In the Control condition, no such words were included, instead we used neutral expressions.

Next, in a seemingly unrelated experiment, participants played a trust game (Berg et al., 1995). We asked them to imagine that they could actually gain or lose money dependent on their own decisions as well as their expectations on their partner verdict. Although subjects without financial incentives typically exhibit less trust than their “real-money-at-stake” counterparts, their trust choices are significantly correlated with survey trust answers (Holm & Nystedt, 2008). Participants were told half of them were randomly selected to be sender and the other half to be responder, although in reality all of them were senders. Each participant received a virtual endowment of 20 euro and had to decide how much to transfer to the respondent. Decisions were written down on decision sheets, which were collected by the experimenter. The possible amounts had to be in whole euros – no cents were allowed. The experiment ended when all participants made their decision.

Results and discussion

Results are presented in the upper part of Table 3. As expected, senders’ transfers were significantly affected by our manipulations. They yielded the highest values in the Disappointment condition ($M = 14.00$), lower values in the Control condition ($M = 11.53$) and the lowest values in the Regret condition ($M = 8.97$). All conditions differed significantly

from each other: Disappointment and Regret, $t(62) = 4.12, p < .001$; Disappointment and Control, $t(62) = 2.01, p < .05$; Control and Regret, $t(62) = 2.04, p < .05$. In Experiment 2 we sought to extend these results examining responders' behavior.

Experiment 4.2

Method

Undergraduate students (48 females and 48 males, $M_{age} = 17.5, SD = 2.11$) participated for course credit in a series of experiments. The design, emotion induction and procedure were identical to Experiment 4.1, but this time participants were all responders in the trust game. Each participant learned that the sender had transferred 10 euro from an initial endowment of 20 euro. Allegedly, this behavior signaled that the sender was willing to put some degree of trust in the responder. As the endowment tripled, the responder had to decide how much of the 30 euro to return to the sender.

Results and discussion

Results are presented in the lower part of Table 3. Again, behavior was significantly affected by our manipulations. Responses were highest in the Disappointment condition ($M = 18.28$), lower in the Control condition ($M = 13.94$) and lowest in the Regret condition ($M = 9.03$). All conditions differed significantly from each other: Disappointment and Regret, $t(62) = 5.89, p < .001$; Disappointment and Control, $t(62) = 2.71, p < .01$; Control and Regret, $t(62) = 3.44, p < .01$.

Table 3

Senders' Offers and Responders' Returns in the Trust Game as a Function of the Experimental Conditions for Experiments 4.1 and 4.2

D.V.	Experimental condition			<i>F</i> (2,93)
	Control <i>M</i> (<i>SD</i>)	Regret <i>M</i> (<i>SD</i>)	Disappointment <i>M</i> (<i>SD</i>)	
<i>Experiment 1</i>				
Senders' offers	11.53 (5.03) ^a	8.97 (5.00) ^b	14.00 (4.78) ^c	8.31*
<i>Experiment 2</i>				
Responders' returns	13.94 (5.85) ^a	9.03 (5.57) ^b	18.28 (6.91) ^c	18.19*

Note. Senders' offers could range from 0 to 20 euro. Responders' returns could range from 0 to 30 euro. Higher scores indicate more trust and trustworthiness. Means per row with different superscripts differ significantly ($ts > 2.01$, $ps < .05$).

* $p < .01$.

General Discussion

We started out with the question whether regret and disappointment would have different effects on trust and trustworthiness. Our experiments clearly demonstrate that disappointment increased trust (and trustworthiness), whereas regret decreased it. These findings are consistent with previous research (Zeelenberg et al., 2000), and extend the findings of Dunn and Schweitzer (2005) that negative emotions decreased trust. We found this to be the case for regret, but we found the opposite for disappointment. Another noteworthy finding is that regret and disappointment vary in cognitive appraisals of control, but both have equally strong (and opposite effects) on trust behavior.

We explain this as follows: participants in the disappointment condition see investing more money and increasing their reciprocity levels as a vehicle for “changing one’s circumstances” (cf., Zeelenberg et al., 2000) fueled by the possibility of a better final outcome – typically a “self-reward” action. On the contrary, participants in the regret condition see investing less money and decreasing their reciprocity levels as a means of “correcting one’s mistakes” (cf., Zeelenberg et al., 2000), also shielding themselves from the possibility of experiencing more regret – typically a “reparative” action.

In closing, we aimed to shed more light on how trust operates in the presence of emotional contexts. At a higher level, people seem to be guided by general propensities to trust others instead of approximating expected utility maximization (Kugler, Connolly, & Kausel, 2009), although the willingness to accept vulnerability based upon positive expectations about other person’s behavior may be moderated by emotional states. Unquestionably an essential ingredient for effective management and social systems, trust needs more insight in order to fully understand the influence of emotion on its mechanisms.

Chapter 5

Regret and Disappointment in Interpersonal Decision-Making:

Summary and Discussion

Emotions play a fundamental role in our daily lives, influencing people's behavior decisively. The main objective of this dissertation is to contribute to a better understanding of the behavioral consequences of regret and disappointment in several decision-making contexts. I started by reflecting on the role of emotions in decision-making and by stressing the limitations of a valence-based approach that only addresses the "positivity" versus "negativity" of the emotions. Then, I synthetically exposed the experiential content of emotions. Prior research has shown that even closely related emotions – such as regret and disappointment –, whether anticipated or experienced, have differential influences on the behavior of decision makers. This favors emotion-specific research in decision-making context, that is, a pragmatic "feeling-is-for-doing" approach (Zeelenberg & Pieters, 2006). As I believe that the emotional system is the principal motivational system for goal-directed behavioral decisions, the three empirical chapters in this dissertation presented several studies in order to contribute to the understanding of the behavioral consequences of two of the most important emotions in the context of decision-making, namely regret and disappointment. In the remainder of this chapter, I will first review the empirical findings exposed in this dissertation, and next discuss the implications of these findings for research on emotion and decision-making.

Summary of the Empirical Findings

Chapter 2 focused on the behavioral consequences of regret and disappointment in one-shot social bargaining games. Three experiments with two different often used and validated emotion induction procedures – autobiographical recall procedure (e.g., Strack, Schwarz, & Gschneidinger, 1985) and imagined scenarios (e.g., Koehler, 1991; Robinson & Clore, 2001) – and two different games – the ultimatum game (Güth, Schmittberger & Schwarze, 1982) and the 10-coin give-some game (Van Lange & Kuhlman, 1994) – revealed that regret increased prosocial behavior, whereas disappointment decreased it. In Experiment 2.1, we measured proposers' offers in a special “giving” version of the ultimatum game (e.g., Leliveld et al., 2008; Nelissen et al., 2010), and showed that regret lead to more generous offers, while disappointment lead to less generous offers. In Experiment 2.2, we replicated these results by using a different emotion induction procedure. Finally, in Experiment 2.3 we used another dependent variable: the 10-coin-give-some dilemma game (see also, De Hooge et al., 2007; Nelissen et al., 2007). In all three experiments, regret gave rise to higher offers and disappointment gave rise to lower offers in the social bargaining game.

These findings are consistent with my theorizing that regret induces – in the decision maker – an outward focus and a concern for the other, while disappointment induces an inward focus and a concern for the self. Thus, regret participants “correct their mistakes” by offering more money, while disappointment participants “change their circumstances” by offering less money in the dilemma game. The results presented in Chapter 2 extend previous findings concerning differences between regret and disappointment to interdependent situations and were amongst the first to reveal how such individual decision-making related emotion impact also decisions that are highly social in nature.

Chapter 3 dealt with the influence of regret and disappointment in the valuation of objects, relating in particular to the endowment effect phenomenon – the tendency for

minimum selling prices for a particular good exceed to exceed maximum buying prices (Kahneman et al., 1990). Two experiments with again two different emotion induction procedures – the scrambled sentence paradigm (e.g., Bargh & Chartrand, 2000; Reb, 2008) and the autobiographical recall procedure – showed that regret eliminated the classic endowment effect, whereas disappointment reversed the effect. Experiment 3.1 consisted of a scenario study concerning a hypothetical valuation of a lottery ticket. Experiment 3.2 involved the valuation and real trade of a mug. In both experiments, the classic endowment effect was only found in the control condition. In the regret condition, sellers and buyers mean prices did not differ significantly, thus canceling out the endowment effect. Moreover, in the disappointment condition, the average buying price (willingness to pay) exceeded the average selling price (willingness to accept), thus *reversing* the classic endowment effect.

The fact that these closely related emotions have such differential effects on the decisions concerning the buying and selling of material possessions makes sense when one realizes that regret and disappointment differ in their appraisals and phenomenology. So as to repair a mistake and compensate others, regret induces people to give away their belongings at a lower price, and to buy new objects at a higher price, in a way that buying prices will match selling prices. Alternatively, in order to change their circumstances, disappointment encourages people to get rid of their current possessions at a lower price, and to buy new gratifying objects at a higher price, in a way that buying prices will exceed selling prices. The findings once again demonstrated the crucial role that emotions play in decision-making and that a specific emotion approach is needed to understand these effects.

In the final empirical contribution, Chapter 4, I examined the effects of regret and disappointment on behavior in the trust game (Wrightsman, 1966; Berg et al., 1995) behavior. Two experiments showed that regret decreased trust and trustworthiness, whereas disappointment increased them. Experiment 4.1 looked for sender behavior in a trust game,

whereas Experiment 4.2 inspected responder behavior in the same game. In both experiments, regret elicited both lower initial transfers and returns in a scenario based trust game. Conversely, disappointment gave rise to both higher initial transfers and returns in the same game. The findings not only revealed that emotional states exert an influence on trust, but also that even closely related emotions may have opposing effects on trust behavior.

Again, such differential effects of different emotions can be understood and predicted when one pays attention to the experience of the emotion. Only when one realizes that regret involves pointing out “bad decisions” it follows that regret results in less trust. Similarly, only when one realizes that disappointment involves “disconfirmed expectancies” it becomes clear that the induction of disappointment should produce higher levels of trust.

Discussion and Implications

Let me now, after having reviewed the empirical contributions of this dissertation, discuss what these findings mean, and what the implications of these findings are. Of course, I am not the first to show that the induction of an emotional state influences subsequent cognitions and behaviors. Prior research has recognized that affective states decisively influence posterior (and even unrelated) decisions (see for reviews, Forgas & George, 2001; Isen & Baron, 1991; Rick & Loewenstein, 2008). Valence alone cannot explain the connection between those moods and emotions and unrelated behavior (e.g., DeSteno et al., 2000; Keltner et al., 1993; Zeelenberg et al., 2000). In addition, I believe that a pragmatic approach is clearly needed in order to have a better understanding of the experience of emotions, the behaviors they motivate and how they can shape subsequent decision-making (Zeelenberg & Pieters, 2006). In order to make a contribution to the understanding of emotions, the present dissertation reported some empirical investigations of the behavioral effects of two negatively valenced emotions: regret and disappointment.

Taken together, this body of research provided strong evidence these two emotions influence our behavior in quite distinctive ways. Although regret and disappointment have a lot in common – both share the same (negative) valence, both are related to uncertainty and risky decision-making, and both involve comparisons between an obtained decision outcome and one that might have been – they are undeniably distinct emotions that induce divergent behavior. Below, I comment on the implications of our findings and directions for future research.

First, our findings constitute a first step toward an understanding of the behavioral implications of regret and disappointment to interdependent situations. In all experiments of Chapter 2, regret led to more generous offers whereas disappointment led to less generous offers in the social dilemma games, our dependent measure of prosocial behavior. This results are noteworthy, as previous research had been focused at the individual level. Moreover, we extended previous findings of Zeelenberg and Beattie (1997) by examining exogenous influence of emotion in bargaining games and by adding a disappointment condition. Additionally, I found that even a negative emotion such as regret can have a beneficial effect on cooperation. Regret evokes that one has harmed another person, thus instigating to correct the misconduct (Gilovich & Medvec, 1995). In contrast, disappointment elicits preoccupation with self, thus engaging in a self compensation behavior. This is in line with the findings reported by Van Kleef et al. (2006) that recognize regret as an appeasement emotion and disappointment as a supplication emotion.

Second, I demonstrated that experienced emotions affect object valuation, thus canceling or even reversing the classic endowment effect. Chapter 3 results extended previous research that reported differences between emotion conditions and the endowment effect (cf., Lerner et al., 2004; Lin et al., 2006). Induced moods may reverse the nature of possessed and non-possessed objects – turning “good” items into “bad” ones and vice-versa

(Brenner et al., 2007). Regret, by triggering goals of reparative actions and preoccupation with the other, increased buying prices and decreased selling prices in a way that caused the classic endowment effect to disappear. Disappointment, by triggering goals of changing one's circumstances and preoccupation with the self, increased buying prices and decreased selling prices in a way that caused the endowment effect to reverse. These findings thus revealed, as did the findings of Lerner et al. (2004), that different negative emotions can differently affect the endowment effect. Some emotions may attenuate the effect, even to the extent that it may cease to exist, and other emotions may actually reverse the effect. A careful study of the effects of other emotions in the object possession is needed in order to fully comprehend these mechanisms.

Third, I intend to focus on some eventual contradictions involving our studies. In Chapter 2, and in line with the findings of Van Kleef et al. (2006), I found that experienced regret – as an appeasement emotion – had a beneficial effect on cooperation by increasing prosocial behavior, whereas experienced disappointment – as a supplication emotion – had a detrimental effect on cooperation by reducing prosocial behavior. In Chapter 4, however, results showed that regret decreased trust and trustworthiness behavior, whereas disappointment increased it. How should we reconcile these seemingly conflicting findings?

Let me start by stressing that measures of prosocial behavior in social bargaining games (e.g., ultimatum game and 10-coin-give-some game) are different from measures of trust in the trust game. In my view, participants regard their proposals in former type games as “offers” to a third party, and their proposals in latter type games as “investments” for themselves. According to this line of reasoning, Liberman et al. (2004) reported that situational labels influenced levels of cooperation in dilemma game moves. Hence, we believe that the way participants face the game influences their subsequent behavior in that game. In their study, actual levels of cooperation were higher when the same game was

named the “Community Game“ compared to when it was referred to as the “Wall Street Game” (Lieberman et al., 2004). Allegedly, the former game designation is connoted to cooperative behavior and collective interest, whereas the latter game description is associated to individualistic behavior and self-interest.

Let me now explain how emotion may have differential impact in this different types of games. Disappointed participants typically experience disconfirmed expectancies and want to change their own circumstances, thriving for a possibility of a better final outcome. This “self-reward” perspective is compatible with offering lower amounts in an ultimatum-type game (by keeping the most for themselves) and higher transfers in a trust game (by investing more, thus hoping for a better final outcome). On the contrary, regretful participants usually reveal a tendency to point out wrong decisions and want to correct their mistakes. This “reparative” standpoint is consistent with offering higher amounts in an ultimatum-type game (by increasing the opponent’s reward) and lower transfers in a trust game (by investing less, thus becoming more cautious). Taken together, I propose that the same “frame of mind” that is induced by regret or disappointment (or any other emotion) may induce different behaviors and that we must look carefully to what the goals and motives are that are associated with these emotions, and look carefully at how the specific situation allows for these motivations to be expressed. Let me demonstrate this by applying this reasoning to the work of Lieberman et al. (2004). If I am right, inducing regret in participants in their design would lead to higher offers in the “Community Game” than in the “Wall Street Game”. At the same time, inducing disappointment in participants would elicit higher offers in the “Wall Street Game” when compared to the “Community Game”. I am currently working on these studies.

Fourth, in what concerns potential methodological issues, I consider the use of several emotion induction procedures to be an imperative aspect of our research. I have used the autobiographical recall method in most studies. This approach is frequently used in emotion

research (e.g., Frijda et al., 1989; Roseman et al., 1996, and other papers cited in this dissertation). It is interesting to know that people who are engaged in such a recall procedure are found to spontaneously make emotional faces and expressions associated with the emotion they are recalling at that time (Matelesta & Izard, 1984). This clearly indicates that the autobiographical recall method not merely activates emotion language but also emotion experience. It is also instructive to know that Robinson and Clore (2001) found that emotions induced via scenarios and via on-line techniques have very similar effects. Thus, although critics may argue that this variety of emotion inductions may hamper a straightforward comparison of results, I believe that the use of different induction methods definitely increases the validity of the main conclusions.

In addition, the distinction between exogenous and endogenous influences of emotions should be taken into account in future research. If this distinction is not considered, this may hinder the conclusions about the behavioral consequences of emotions. Although the conceptual division is frequent in what regards the relevance of an emotion for the decision at hand, empirical studies about these effects remain scarce. For example, De Hooge et al. (2008) found considerable behavioral differences between exogenous and endogenous effects of shame. In their study, they found that shame experiences motivated prosocial behavior only in related events. Although we have found behavioral differences considering exogenous influences of regret and disappointment, contrasting results may be found when examining parallel endogenous situations. In what concerns regret and disappointment, I believe their endogenous effects would broaden even more their distinct implications on behavior. For example, people who feel disappointed or regretful about someone might act differently whether that person is present or not.

A last implication of this dissertation regards the analysis of interpersonal effects of emotions. Until now, most interdependent studies have focused on dyadic situations.

Although we have found interesting results in these contexts, we recommend that future research should address multiple person settings, as in real life we interact with multiple partners at the same time. Hence, the dyadic situations may only capture part of the full picture, offering a limited perspective on the effects of emotions on behavior. For instance, people might even try to minimize or overcome their experienced regret or disappointment at the expense of a third party. Examining the behavior of three or more participants at the same time would permit us to unfold eventual “brighter” or “darker” sides of these emotions.

In closing, with this dissertation I aimed to shed more light into the knowledge of how regret and disappointment guide behavior in several decision-making contexts. By concentrating on the experiential elements of these emotions, and by examining carefully the situations in which these emotions influence behavior, this body of research has taken a step towards a more complete understanding of behavioral effects of emotions.

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Curriculum Vitae



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