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On bad decisions and disconfirmed expectancies: The psychology of regret and disappointment

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Decision outcomes sometimes result in negative emotions. This can occur when a decision appears to be wrong in retrospect, and/or when the obtained decision outcome does not live up to expectations. Regret and disappointment are the two emotions that are of central interest in the present article. Although these emotions have a lot in common, they also differ in ways that are relevant to decision making. In this article we review theories and empirical findings concerning regret and disappointment. We first discuss how regret and disappointment differ with respect to their antecedent conditions, appraisals, and phenomenology. We also discuss possible behavioural consequences of experiencing these emotions. Next, we consider how the anticipation of regret and disappointment may influence decision making. We use regret and disappointment theory, developed by the economists Bell (1982, 1985), and Loomes and Sugden (1982, 1986, 1987), as a framework for our discussion. Finally, we argue that combining the theoretical approaches and research paradigms of behavioural decision theory with emotion theories will significantly increase our knowledge of antecedents and consequences of emotions.

INTRODUCTION

A key element of most decisions is that they involve a certain degree of uncertainty. We are often uncertain about future events; whether they will take place, and if so, how we will evaluate them when they do take place.

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One way to cope with this uncertainty when making decisions is to form expectancies about the possible outcomes of different courses of action, and about how we would evaluate these if they were to occur. For example, we might ask ourselves what would happen if we were to submit a paper to a prestigious journal, and whether it might be better to opt for a journal with a lesser reputation. These expectancies might help us to decide, and hence give direction to our behaviour. Indeed, as Olson, Roese, and Zanna (1996, p. 211) stated “‘expectancy’ forms the basis for virtually all behavior”. Although our expectancies tend to be confirmed most of the time (cf. Olson et al., 1996), violations of expectancies are not uncommon. Negative emotions often result when our current state of affairs is worse than initially expected. In the context of decision making there are at least two ways in which these violated expectancies can result in the experience of negative emotions. The first entails situations in which the chosen option ends up being worse than the rejected options. This is the case when we chose a certain course of action because we expected it to be the best, but it turned out that another course of action would have been better. Following these “bad decisions” we are likely to experience *regret*. Second, the chosen option can also result in an outcome that is worse than expected. Such “disconfirmed expectancies” often give rise to the experience of *disappointment*. These emotional reactions, and their relations with decision making, are the focus of the present article.

Not surprisingly, regret and disappointment have attracted the attention of decision researchers (for overviews see Gilovich & Medvec, 1995; Landman, 1993; van Dijk, 1999; Zeelenberg, 1996). In the present paper we discuss the psychology of these emotions. We attempt to demonstrate how emotion theory can enhance our understanding of decision making, and how decision theory can enhance our understanding of emotions. As Frijda (1994, p. 118) pointed out: “Actual emotion, affective response, anticipation of future emotion can be regarded as the primary course of decisions”. In line with Frijda we focus on the conditions under which the experience of regret and disappointment is felt in response to decision outcomes, and on research showing that both the experience and the anticipation of these emotions have an impact on our everyday decision making.

We argue that regret and disappointment are different emotions, with distinguishable consequences for decision making. At the same time we appreciate that regret and disappointment have much in common with each other: Both are negative emotions that are related to risky decision making and uncertain outcomes, and both originate in a comparison process in which the outcome obtained is compared to an outcome that might have been. To develop our case we will focus on differences in the antecedents

and experiences of regret and disappointment, and in the ways in which they influence our behavioural decision making.

Regret and disappointment are different emotions

If one maintains, as we do, that regret and disappointment have distinctive implications for decision making, it is important to establish that the terms "regret" and "disappointment" refer to different emotions. Are regret and disappointment really distinct emotions, or are they essentially similar subjective states that, for some reason, go by different names? This question can in turn be divided into two subquestions, namely: "Do regret and disappointment have different antecedents?" and "Do they feel different in terms of their phenomenology?" We first review research pertinent to the first question.

In a recent series of studies we focused on the role of responsibility as an antecedent of regret and disappointment (Zeelenberg, van Dijk, & Manstead, 1998a). In these studies we manipulated the way in which decision-makers arrived at a suboptimal outcome: This was either the result of their own choice, or the result of a random procedure over which they had no control. Greater regret was ascribed to those who were responsible for the outcome (i.e. the choosers) than for those who were not responsible. For disappointment the results were the reverse: More disappointment was ascribed to the decision-maker when the negative outcome was the result of a random procedure than when it resulted from a choice. These results are consistent with Frijda, Kuipers, and ter Schure (1989), who found that regret is more closely related to self-agency than disappointment, whereas disappointment is more related to other-agency than regret. This link between regret and responsibility may help to explain why Gilovich and Medvec (1994, study 4), in a study of everyday regrets, found so few regrets concerning negative outcomes that had been imposed on people. Gilovich and Medvec asked people to recall their biggest regrets. Less than 5% of these regrets involved outcomes caused by circumstances beyond the regretter's control.

The regret-responsibility relation also emerged in a separate study investigating the patterns of appraisal associated with regret and disappointment (van Dijk, van der Pligt, & Zeelenberg, 1998a). Participants were asked to describe an occurrence of intense regret or disappointment (or one of several other negative emotions, not discussed here). Next, they were asked to report the appraisals that were made in these situations, on eight dimensions (cf. Roseman, Antoniou, & Jose, 1996). There were significant differences on five of these dimensions. Disappointment was associated with higher scores on the dimensions of *unexpectedness* (cf. Frijda et al., 1989), *motivational state* (wanting something pleasurable; see also van Dijk, Zeelenberg, & van der Pligt, 1999), *legitimacy* (thinking

that one was morally right) and *circumstances agency* (caused by circumstances beyond anyone's control). Regret was associated with higher scores on the dimensions of *control potential* (thinking that one could do something about the event), and *self-agency*. Regret and disappointment therefore seem to be associated with different appraisal patterns. Regardless of whether appraisals are seen as causing emotions (e.g. Frijda et al., 1989; Roseman et al., 1996), or as characterising them (Parkinson, 1997), appraisals are regarded by most emotion theorists as a key component of emotional experience. In this sense it could be argued that establishing that regret and disappointment are associated with different patterns of appraisal not only suggests differences in the antecedents of these emotions; it also goes some way to answering the question of whether the two emotions entail different experiences.

Another way of differentiating regret and disappointment as experiences is to examine their phenomenology (Roseman, Wiest, & Swartz, 1994). In a recent study (Zeelenberg, van Dijk, Manstead, & van der Pligt, 1998b) we asked participants to recall an instance of intense regret or disappointment, and to indicate what they felt, thought, felt like doing, did, and wanted during this experience (see Table 1 for the specific items used). These five aspects—feelings, thoughts, action tendencies, actions, and emotivational goals—are assumed to be central components of an emotional experience (see also Frijda, 1987; Plutchik, 1980). Roseman et al. (1994) have shown that emotions can be differentiated on the basis of these components. The results of our study, summarised in Table 1, reveal significant differences between regret and disappointment in each component. The differences were most pronounced for action tendencies (what participants felt like doing during the experience) and for emotivations (specific emotional motives or goals that participants had during the experience). More specifically, we found that the experience of regret could be differentiated from that of disappointment in that the former involves feeling more intensely 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. We also found that the experience of disappointment, more than that of regret, involves feeling powerless, feeling and a tendency to do nothing and to get away from the situation, actually turning away from the event, and wanting to do nothing.

Taken together, then, there is evidence that regret and disappointment are associated with different antecedent conditions and different appraisal patterns, and that they have different phenomenologies. Despite the fact that these two emotions clearly have much in common, the findings of the studies reviewed earlier suggest that they also differ in important respects. We interpret the evidence as showing that regret and disappointment are different emotions.

TABLE 1
Means for each response item per emotion recalled (adapted from
Zeelenberg et al., 1998b)

<i>Response Type and Item</i>	<i>Condition</i>	
	<i>Regret</i>	<i>Disappointment</i>
<i>Feelings</i>		
Feel a sinking feeling?	5.38	= 5.59
Feel powerless?	5.84	< 7.08
Feel that you should have known better?	7.32	> 5.75
Feel that you lost control?	5.97	= 6.27
<i>Thoughts</i>		
Think about what a mistake you made?	7.09	> 5.51
Think about what you missed out on?	5.85	= 6.38
Think about a lost opportunity?	5.81	= 6.01
Think about how bad things could get?	5.01	= 5.23
<i>Action Tendencies</i>		
Feel the tendency to kick yourself?	7.11	> 5.16
Feel the tendency to get away from the situation?	5.47	< 6.16
Feel the tendency to correct your mistake?	6.80	> 4.89
Feel the tendency to do nothing?	3.36	< 4.14
<i>Actions</i>		
Do something differently?	5.42	= 5.86
Turn away from the event?	4.54	< 5.23
Change the situation?	5.82	= 5.64
Become inactive?	3.75	= 4.05
<i>Emotivational goals</i>		
Want to undo the event?	7.71	> 6.89
Want to be far away from what happened?	5.77	= 6.20
Want to get a second chance?	7.57	> 6.77
Want to do nothing?	2.97	< 3.63

Note: **Bold** printed response items were intended to measure the experience of regret, the remaining items were intended to measure disappointment. Entries are mean answers to the questions: "When you felt regret [disappointment], to what extent did you feel/think/feel the tendency/did/want" followed by a response item. Participants could answer on a 9-point scale, with endpoints labelled *not at all* (1) and *to a very great extent* (9). Means separated by a < or > sign differ significantly ($P < .05$).

Behavioural consequences of experienced regret and disappointment

How people cope with regret and disappointment, and how these emotions influence decisions and behaviour, have not yet been the subject of much empirical research. However, the findings reviewed earlier provide some leads with regard to how the two emotions influence decision making and

action. Because the experience of regret involves the tendency to kick oneself, the tendency to correct one's mistake, and the motivation to undo the event, experienced regret should be associated with active attempts to undo the unpleasant effects of the decisions that went wrong. In a recent series of studies we focused on the *behavioural undoing* of two kinds of regrets: those that stem from actions taken and those that stem from actions foregone (Zeelenberg, van der Pligt, & Manstead, 1998c). Kahneman and Tversky (1982) were the first to show that people tend to regret actions with bad outcomes more than inactions with identical outcomes. In their study participants read about two stockbrokers, one who decided to make a trade and another who decided not to. In the end both stockbrokers lost a substantial amount of money. When asked who regretted his decision most, virtually all participants responded by identifying the one who had decided to act. This *emotional amplification* (cf. Kahneman & Miller, 1986) has been replicated in several studies (e.g. Baron & Ritov, 1994; Connolly, Ordóñez, Coughlan, 1997; Landman, 1986; Ritov & Baron, 1995; Zeelenberg et al., 1998a). Gilovich and Medvec (1994) noted that these findings do not fit with the everyday observation that people, when reflecting on their own lives, tend to regret the things that they did *not* do. In an extensive programme of research, they (Gilovich and Medvec, 1994, 1995) showed that the experience of regret appears to exhibit a temporal pattern, such that regrets over actions are more painful in the short run, whereas regrets over inactions are more painful in the long run. Consistent with these findings, we (Zeelenberg et al., 1998c) found that regrets over actions result in behavioural undoing more often and more quickly than do regrets over inactions. This suggests a close link between at least one type of regret and attempts at behavioural undoing.

Zeelenberg and Beattie (1997) investigated experimentally the impact of experienced regret on subsequent decisions. Participants played the ultimatum game, a very simple game in which there are two players, a proposer, and a responder. The proposer is endowed with a sum of money, say 100 Dutch guilders, and offers a division of this money to the responder (e.g. 25 guilders for you, 75 guilders for me). The responder can then accept this offer, after which the two players receive the agreed amount and the game ends; or the responder can reject the offer, after which neither player receives any money and the game ends. In the Zeelenberg and Beattie study all players were proposers; although they thought they were interacting with other players, they were in fact playing against a computer programme. After making their offer, participants learned that it had been accepted. They also received feedback on how much less they could have offered and still have their offer accepted. Participants who could have offered 10 guilders less experienced more regret than did participants who could have offered only 2 guilders less.

When participants were asked to play a second round of the game (against another responder), those who offered 10 guilders too much in the first round offered less money to the second responder than those who offered only 2 guilders too much in the first round. An analysis of covariance revealed that these differences disappeared when regret was included as a covariate. Thus, their second offer appeared to be influenced by the regret experienced over the first offer. Participants apparently engaged in a form of emotion management, or more specifically *regret management*: They behaved in such a way that their currently experienced regret would be reduced and/or their future regret would be minimised.

In a study in which the behavioural consequences of regret and disappointment were explicitly compared, distinct effects of both emotions were found (Zeelenberg & Pieters, 1999). This study examined consumer dissatisfaction with services. In one condition, dissatisfaction was caused by the fact that, in retrospect, the consumer would have liked to have chosen a different service provider; in another condition the obtained service was worse than expected. Experienced regret and disappointment, together with the behavioural responses in which the consumers engaged were assessed. The analyses showed that the experience of disappointment resulted in complaining to the service provider, and in talking to others about the bad experience, whereas the experience of regret resulted in switching to another service provider. Moreover, there was a tendency for higher levels of regret to result in less talking to others about the experience. These results are consistent with the notion that disappointment occurs in situations in which the person does not feel responsible for the outcome—but note that in this case the disappointing event can be attributed to one or more other persons, instead of being attributed to circumstances. The consumer will be inclined to complain to the person who is responsible (the service provider), and to share the experience with others (perhaps as a means of exacting some revenge on the service provider, in the sense that others may be less inclined to buy his/her services, and/or to obtain sympathy from others). Regretful consumers are those who realise that there is a better option, and they switch to this alternative service provider. Moreover, since they feel responsible for the unsatisfactory outcome they tend to refrain from sharing it with others (they are not likely to say to others: “Look what a stupid choice I made”).

Van Dijk (1999) examined the effects of experienced disappointment. The findings of this study, together with the results of research on the experiential content of disappointment provide a reasonable basis for predicting what the effects will be. Our research on the experiential content of disappointment shows that experiences of disappointment tend to be accompanied by, among other things, feelings of powerlessness, and a tendency to get away from the situation (Zeelenberg et al., 1998b). We

suggest that the experience of disappointment will make people reluctant to make subsequent decisions. Feelings of powerlessness might lead people to think that making any decision at all will not make a difference, and could therefore lead to inertia (Seligman, 1975). Furthermore, the tendencies of people who experience disappointment to remove themselves from the situation and to turn away from the event are likely to lead them to pay attention to goals other than those that they were concerned with when making the initial decision. These suggestions are consistent with van Dijk's (1999) findings. Participants reported that when they are disappointed they engaged in behaviours that entail "doing something different" to that which led to the disappointment. It has been argued that disappointment signals the relationship between progress towards a goal and expectations regarding one's rate of progress (Carver & Scheier, 1990) and that it could have implications for energy investments and ultimately for action termination or the abandonment of current goals (Frijda, 1994). Thus, whereas regret is likely to result in a focus on non-attained goals and promote goal persistence, disappointment may result in goal abandonment.

We also expect experienced disappointment to result in increased risk aversion. Risky options carry by definition a higher potential for disappointment than do safer options. We suspect that when a decision-maker is disappointed and engages in emotion management, he/she is not likely to opt for choices that could result in even greater disappointment (i.e. disappointed decision-makers are probably more sensitive to future disappointments). They will therefore prefer safe alternatives.

The research reviewed in this section indicates that regret and disappointment may have different consequences for how we cope with these emotions. The findings are not only consistent with the idea that regret and disappointment have different antecedents and are different experiences; they also follow from these differences. That is, the behavioural consequences make sense if one takes account of how the emotion concerned arises and how it feels to the person. For example, in the ultimatum game study (Zeelenberg & Beattie, 1997) participants *offered less money* in the second round precisely because they *regretted offering too much* in the first round. Similarly, in the consumer behaviour study (Zeelenberg & Pieters, 1999) participants who were disappointed with a particular service complained to the service provider, whereas those who regretted their choice switched to another service provider. Thus it seems that the behavioural consequences of the experienced emotions are closely related to a reduction of the aversive experience. This shows that decision researchers interested in the behavioural impact of emotions could profit from knowing more about the antecedents and phenomenology of the emotions. However, emotion researchers would also probably benefit from paying closer atten-

tion to the way in which decision theorists have examined the behavioural effects of regret and disappointment. It is to this research that we turn next.

Regret and disappointment theories

The idea that regret and disappointment play a role in decision making is by no means new (see e.g. Savage, 1954; Shand, 1914). However, it took some time before the presumed effects became formalised. The economists Bell (1982, 1985) and Loomes and Sugden (1982, 1986, 1987) independently developed both a regret theory and a disappointment theory. These theories assume that decision-makers experience emotions as a consequence of making a decision. More importantly, it is assumed that decision-makers *anticipate* the experience of these emotions, and take them into account when making decisions. Thus, according to these theories decisions are partly based on regret and disappointment aversion (i.e. on the tendency to make choices in such a way as to minimise the future experiences of these negative emotions).

In these economic theories regret and disappointment are conceptualised in different ways. The theories assume that there is a difference in the source of comparison from which the two emotions arise. Although regret and disappointment both stem from a comparison between “what is” and “what might have been”, regret is assumed to originate from comparisons between the factual decision outcome and a counterfactual outcome that might have been *had one chosen differently*; disappointment is assumed to originate from a comparison between the factual decision outcome and a counterfactual outcome that might have been *had another state of the world occurred*. This other state of the world is typically the expected state of the world.¹ This difference can be illustrated by the choice depicted in Table 2, where the outcome of the two possible actions (A1 or A2) depends on the occurrence of one of five possible states of the world. According to regret theory, an individual feels regret after having chosen action A1, and state of the world S2 occurs. Regret occurs because the individual knows that, given this state of the world, action A2 would have resulted in a better outcome. According to disappointment theory, disappointment would be felt, for example, if an individual chose action A2, and state of the world S5 were to occur. The outcome obtained in this combination (\$50), is worse than the majority of outcomes that would have occurred in another state of the world. Note that although one would experience disappointment when confronted with this outcome, one should not experience regret, because

¹ Note that the difference in responsibility for regret and disappointment, as discussed earlier, is already implicit in this approach. We are typically responsible for our own choices, but not for the state of the world that occurs.

TABLE 2
 Outcomes of actions A1 and A2 for each possible state of the world (S1–S5)

Actions	States of the World				
	S1(20%)	S2(20%)	S3(20%)	S4(20%)	S5(20%)
A1	\$250	\$100	\$100	\$0	\$50
A2	\$0	\$250	\$100	\$100	\$50

Note: This table depicts a choice between actions, A1 and A2, for which the outcomes depend on the specific state of the world that occurs. There are five different states of the world. Each state of the world has a 20% probability of occurrence. Thus, the outcome at which a decision-maker arrives depends both on his/her choice, and on the state of the world that occurs.

the outcome of the rejected action is equally bad. Thus, decision outcomes can produce emotional experiences when they are compared to foregone outcomes.

We recently tested whether regret indeed follows from comparisons between an obtained outcome and a counterfactual outcome that would have been produced by another choice, and whether disappointment follows from comparisons between an obtained outcome and a counterfactual outcome that would have been produced by a different state of the world (for details see Zeelenberg et al., 1998d). In a first study we asked people to recall a regretful or a disappointing experience. When we asked them to indicate in what way the situation could have been better, the regret participants tended to focus on how things that were under their own control (e.g. choices, behaviours) could have produced a better outcome, whereas disappointment participants tended to focus more on things that were *not* under their control (e.g. aspects of the situation—i.e. the state of the world). In two further studies participants were confronted with a detailed vignette describing a person who experiences a negative outcome. There were various elements in the vignette that contributed to the negative outcome, including the protagonist's own choices and also uncontrollable aspects of the situation. Participants were asked to “undo” the outcome, by focusing on either the controllable or the uncontrollable features of the scenario. Focusing on behaviour resulted in amplified regret, whereas focusing on uncontrollable aspects of the situation resulted in amplified disappointment. These studies therefore provide support for the assumptions in regret theory and disappointment theory regarding the causes of the emotions.

However, most economists are not interested in the experience of emotions *per se*, but rather in how they shape our behavioural choices. This is

also true of regret and disappointment theories. In these theories it is assumed that the emotions influence the utility that is derived from an obtained outcome, or in other words, the valuation of that outcome. In similar studies, Inman, Dyer, and Jia (1997) and Taylor (1997) invited participants to make decisions and manipulated the outcomes of the chosen and unchosen options. They found that the valuation of the obtained outcome was both influenced by how the outcome of the chosen option compared to the previously held expectations (a proxy for disappointment) and by how it compared to the outcome of the unchosen option (a proxy for regret). These studies therefore provide support for the assumption that regret and disappointment can affect the utility of an outcome.

The central idea in regret and disappointment theories is that possible future emotions are taken into consideration when determining the expected utility of different courses of action. In this way anticipated emotional reactions to decision outcomes can influence current decision making. Note that the way in which these *anticipated emotions*, as conceptualised in these decision theories, influence decision making differs quite markedly from the influence of *experienced emotions*, which are more typically the focus of emotion researchers. The effects of anticipated regret or disappointment are different because decision-makers do not have to experience the emotions in order to be influenced by them. Rather, they can predict the emotional consequences of different decision outcomes in advance, and opt for the choices that minimise the possibility of negative emotions.

In what follows we combine regret and disappointment theories' notions of anticipated regret and disappointment into a general decision theory of anticipated emotions. Expected utility theory is a normative theory of decision making in which it is assumed that decision-makers weigh the possible outcomes of an action and assign utilities to them. These utilities are weighted by the perceived probabilities of the outcomes. Expected utility theory does not take into account the possible regret and disappointment that may be felt as a consequence of decision outcomes. A version of expected utility theory that includes anticipated regret and disappointment would be the following.²

² This equation is a conceptual integration of Loomes and Sugden's (1982, 1986) and Bell's (1982, 1985) theories about anticipated regret and disappointment. Inman et al. 1997) present a similar integration of these ideas (see also Mellers, Schwartz, Ho, and Ritov, 1997; Mellers, Schwartz, & Ritov, in press). Our present approach is different in that it focuses on the effects of the pre-decisional anticipation of these emotions on choice, whereas Inman et al. focus more on the effects of the post-decisional experience of these emotions on the post-choice valuation of options.

$$\text{Generalised Expected Utility}_{[A1]} = \text{Expected Utility}_{[A1]} \pm \text{Regret} \pm \text{Disappointment} \quad (1)$$

In eq (1) the generalised expected utility of action A1 in Table 2 would be considered to be equal to its traditional expected utility, corrected for the possible regret and disappointment associated with that action. The “Expected Utility_[A1]” term thus stands for the traditional expected utility of A1: $\sum U \times P_{[A1]}$, a sum of the utilities of each outcome of A1 (\$250, \$100, \$100, \$0, and \$50) weighed by their probability of occurrence (.20 for each outcome).

The “Regret” term in eqn(1) represents the extent to which the possible regret is taken into account, and can be formalised as follows: $\omega_1(\sum RI \times RP_{[A1o - A2o]})$. RI (Regret Intensity) represents the intensity of the possible regret that stems from comparing the outcome realised by action A1 (= A1o) with the outcome that would be realised when action A2 (= A2o) was chosen. RP (Regret Probability) represents the probability with which this particular regret occurs. For example, RI would be -150 when S2 occurs, because in this case the chosen action A1 provides a gain of \$100, whereas A2 would have provided a gain of \$250, and $100 - 250 = -150$. RP would in this case be .20 (all five states of the world in Table 2 have a probability of 20%). RI can also be positive (i.e. it can also represent *rejoicing* over the decision). This would be the case when S1 occurs. Here the decision-maker not only gains \$250, but also experiences “positive regret” (i.e. rejoicing) because A2 would have resulted in a much worse outcome (\$0). The regret term is 0 when the two actions would have resulted in the same outcome. In our example, this would be the case if S3 or S5 occurs. The multiplication and summation of all RIs and RPs represent the “expected regret”. The weight assigned to the expected regret is represented by ω_1 . This weight reflects the importance of the role played by expected regret in this particular decision. The value of ω_1 will depend on the personality of the decision-maker (i.e. for those who are dispositionally averse to regret, ω_1 will be higher), and on situational factors (i.e. the importance of the decision, the extent to which feedback is expected, etc.; see Zeelenberg 1999). Finally, ω_1 will be higher for regret than for rejoicing, reflecting a tendency for regret aversion to have a greater impact than rejoice seeking (cf. Zeelenberg, Beattie, van der Pligt, & de Vries, 1996), which is consistent with Kahneman and Tversky’s (1979) conclusion that losses loom larger than gains.

The same applies to the anticipation of disappointment. The “Disappointment” term in eqn(1) represents extent to which the possible disappointment is taken into account, and could be formalized as follows: $[\omega_2(\sum DI \times DP_{[A1o - A1exp.]})]$. DI represents the intensity of the possible disappointment that stems from comparing the outcome realised by action A1 with the expectation for that action. The expectation can either be the

mathematical expectation (i.e. $.20 \times \$250 + .20 \times \$100 + .20 \times \$100 + .20 \times \$0 + .20 \times \$50 = \125), or one of the specific other outcomes that could be realised given that the same choice was made. DP represents the probability with which this particular disappointment occurs. Thus, for example, if after having chosen action A1 state of the world S2 were to occur, one might feel disappointed because the outcome is less than expected, or because one compares the obtained \$100 to the \$250 that would have been obtained had S1 occurred. These comparisons of outcomes produced by different states of the world given a certain choice can also result in *elation*, the positive counterpart of disappointment. This would be the case if S1 were to occur. There would be no disappointment or elation if the outcome obtained was equal to the expectation. The multiplication and summation of all DIs and DPs represent the "expected disappointment". The weight assigned to the expected disappointment is represented by the ω_2 in eqn(1). This weight reflects the importance of expected disappointment in this particular decision. The value of ω_2 is again seen as depending on the personality of the decision-maker and on situational factors, and ω_2 will be higher for disappointment than for elation, reflecting the fact that the tendency to avoid disappointment is stronger than the tendency to seek elation.

Substituting the above in eqn (1) results in the following:

$$\begin{aligned} \text{Generalised EU}_{A1} = \Sigma U \times P_{[A1]} \pm \omega_1(\Sigma \text{RI} \times \text{RP}_{[A1o - A2o]}) \\ \pm \omega_2(\Sigma \text{DI} \times \text{DP}_{[A1o - A1exp.]}) \end{aligned} \quad (2)$$

Thus, the core idea in these decision theories about anticipated emotions is that decision-makers not only seek to maximise their traditional expected utility, but also tend to *avoid* negative post-decisional emotions, such as regret and disappointment, and to *strive* for positive emotions, such as rejoicing and elation. Thus, in the example shown in Table 2 the decision-maker has to come to terms with the fact that either choice exposes him/her to the possibility of regret and disappointment. The anticipation of these emotions may result in a preference for option A1 or option A2, whereas expected utility theory would predict indifference because the expected utilities of the two choices are identical. In the following, we describe empirical research supporting the claim that the anticipation of regret and disappointment influences decision making.

Effects of anticipated regret and disappointment on decision-making processes

There remains the question of *how* these anticipated emotions influence decisions. The formulas described in the previous section provide a structural approach to the effects of anticipated emotions, but this approach

remains mute with respect to how this influence occurs on a psychological level. We suggest that decision-makers can employ several different strategies in order to anticipate or avoid future regret and disappointment. First, people may simply avoid making decisions, that is they can become decision-averse (Beattie, Baron, Hershey, & Spranca, 1994). Making no decision prevents both regret and disappointment, because one simply cannot make the "wrong" decisions or experience outcomes that fall below expectancies. However, such a strategy is not likely to be useful, because most situations require a decision. Moreover, there may be long-term disadvantages to decision-avoidance, because in the long-run we may well regret our inactive decision attitude (Gilovich & Medvec, 1995). Second, people may delay their decision making. Delaying a decision also postpones acquiring feedback about the outcome of the decision, and thereby prevents the experience of regret or disappointment. This strategy has the same disadvantage as making no decision. However, delaying a decision might be beneficial in preventing regret. One of the aversive things about regret is that people who experience regret have a feeling that they should have known better. Delaying a decision might be helpful in escaping this feeling, if the delay is used to gather all information relevant to the decision, with a view to making better decision. If everything has been taken into account, there is less likelihood that one will think that one should have known better, and therefore less likelihood of regret.

The two strategies described earlier can be used to avoid both regret and disappointment. Next, we describe strategies that can be used either to avoid regret or to avoid disappointment. As regret stems from comparisons between outcomes of different options, decision-makers can try to avoid regret by avoiding feedback about nonchosen options. This tendency to avoid feedback regarding foregone outcomes can promote both risk-avoiding and risk-seeking tendencies (Zeelenberg, 1999). Which tendency prevails depends on whether the risk-seeking or risk-avoiding tendency avoids feedback on foregone outcomes. Zeelenberg et al. (1996) found that when participants were given a choice between a risky and a safe gamble, those who expected to receive feedback on the safe option, regardless of their choice, were likely to choose this safe option. They thereby protected themselves from potentially threatening feedback on the foregone outcome. Likewise, those who expected to receive feedback on the risky option tended to choose the risky option. A substantial body of research focuses on the effects of the anticipation of regret on decision-making. It has been found that regret influences decision-making in the context of lotteries (Josephs, Larrick, Steele, & Nisbett, 1992; Ritov, 1996; Zeelenberg et al., 1996), investment decisions (Zeelenberg & Beattie, 1997), negotiations (Larrick & Boles, 1995; Zeelenberg & Beattie, 1997), consu-

mer choice in the context of both products and services (Inman & Zeelenberg, 1998), whether to take advantage of a special sales promotion (Inman & McAlister, 1994; Simonson, 1992), whether to engage in unsafe sex (Richard, van der Pligt, & de Vries, 1996), and whether to engage in unsafe driving behaviour (Parker, Stradling, & Manstead, 1996). All these studies provide evidence consistent with the idea that anticipated regret influences behavioural choice. However, there are also some studies that have failed to find this effect (for a review see Zeelenberg, 1999).

Although disappointment theory (Bell, 1985; Loomes & Sugden, 1986) states that people take disappointment into account when making decisions, there has been virtually no empirical research focusing specifically on the effects of disappointment on decision making. We suggest that, as with regret, people can employ several strategies in order to avoid feeling disappointment. Disappointment stems from disconfirmed expectancies, so in order to avoid disappointment one's expectancies concerning decision outcomes need to be in line with the obtained outcomes of the decision. Hence, if one has to take a decision, avoiding risk is a simple way of avoiding disappointment. Opting for safe alternatives, leading to outcomes that are known in advance to occur with certainty, does not carry the risk of disappointment. In such cases, the outcome equals the expectation, precluding the possibility of disappointment. Outcomes of riskier options may fall short of the expectation level, and thereby give rise to disappointment (van Dijk & van der Pligt, 1997). Risk aversion, then, is a way of avoiding disappointment. However, this strategy may sometimes enhance the likelihood that regret will be experienced, as noted earlier.

Another way of avoiding disappointment is by trying to live up to one's initial expectations (cf. Armor & Taylor, 1998). The motivation to avoid disappointment may prompt the individual to intensify his/her efforts in order to avoid the possibility of a negative outcome (cf. Averill, 1968). In other words, people may try harder to attain a desired outcome. Investing effort will generally increase the probability of attaining a desired outcome, and therefore decrease the probability of getting disappointed.

A further means of avoiding disappointment is also based on the relation between expectancies and disappointment. Feather (1967, 1969) suggested that people perceive unexpected negative outcomes as more aversive than expected negative outcomes. Thus, when an outcome is unfavourable, the lower one's initial expectations, the less one's dissatisfaction with the actual outcome. When people are faced with uncertainty regarding the occurrence of a desirable outcome, they may attempt to avoid the disappointment that would occur if the outcomes are not obtained by underestimating their chances of obtaining the outcomes in question. That is, people may avoid getting their hopes up when desirable but uncertain outcomes are at stake. The lower one's expectations, the less

likely it is that they will be higher than the obtained outcome, and the likelihood of disappointment is correspondingly lower.

There is some research showing that people do indeed employ a strategy of lowering expectancies when anticipating future disappointment (Loewenstein & Linville, 1986; Nisan, 1972; Pyszczynski, 1982; Shepperd, Ouellette, & Fernandez, 1996; van Dijk et al., 1998b; see also Cantor & Norem, 1989, on the issue of defensive pessimism). Although lowering expectancies is likely to eliminate negative feelings about a poor outcome, it might more specifically eliminate disappointment stemming from an unexpectedly unfavourable outcome. For example, van Dijk et al. (1998b) had psychology students take a test that was described as predictive either for a career as a psychologist or for a career as a lawyer. Students were asked to give performance estimates directly after completing the test and again just before they were to receive feedback about their performance. Consistent with previous research (e.g. Shepperd et al., 1996), participants lowered their expectations when they were closer to learning the (possibly disappointing) result of the test. Interestingly, they did this only when the outcome really would have been disappointing (i.e. when the test they had taken was predictive for their career as a psychologist).

Lowering expectations in the sense of likelihood is not the only way in which people might try to avoid disappointment. Pyszczynski (1982) argued that when a person fears that he/she will not obtain a highly desired outcome, one way of preparing for this possibility is to convince oneself that the outcome is really not so desirable after all. By derogating the desired but uncertain outcome, one reduces the negative affect that would result if the outcome is not obtained. Results of this study are consistent with this reasoning. Participants derogated a prize when their chances of winning were low, but only when the prize was high in attractiveness. Apparently, people employ this protective strategy only when the potential for future negative affect is relatively high (i.e. when a highly attractive outcome is at stake). Yet another way of avoiding disappointment has been suggested by Armor and Taylor (1998). They argue that setting *less specific* expectations can be a way of avoiding disappointment, because vague expectations are harder to disconfirm. Armor and Taylor found that people's overly optimistic expectations for success were associated with greater disappointment following performance, but only when these expectations were specific and thus potentially verifiable.

Summarising, these are several strategies for avoiding disappointment. Individuals can try to live up to their initial expectations by investing more effort, they can strategically lower the likelihood of obtaining a desired outcome, they can derogate the attractiveness of a desired outcome, or they can set global expectations that are hard to disconfirm. In sum, regret and disappointment theories assume that decision-makers base their decisions

partly on the emotions that they anticipate experiencing in reaction to the decision outcomes. The research reviewed earlier provides evidence in keeping with this assumption. Although there is more empirical support concerning the effects of regret, there are good theoretical grounds for expecting clear effects of disappointment.

SUMMARY AND CONCLUSIONS

The research reviewed in the present paper shows that regret and disappointment are different emotions. They arise from different antecedent conditions and are associated with different appraisals. Regret typically arises in situations where one is, or feels, responsible for the occurrence of a negative event. Disappointment is typically experienced in response to unexpected negative events that were caused by uncontrollable circumstances, or by another person. Regret and disappointment also differ in their phenomenology, and have distinctive behavioural consequences. Regret is associated with a tendency to blame oneself for having made the wrong decision, a focus on the regretted event with a view to undoing it or preventing it from happening again in the future. Moreover, regret often results in reparative action. Because of self-blame, regret is probably the more intense of the two emotions, but it is also the one that promotes learning from one's mistakes and it may therefore be a more "functional" emotion. Disappointment is an emotion that results in feeling powerless and inactive. It may be paralysing because it is often not clear how one could have avoided the disappointment or what one could do about it when it is experienced. However, when another person is responsible for the disappointing event, as in the consumer dissatisfaction study (Zeelenberg & Pieters, 1999) reviewed earlier, disappointment may result in active attempts to overcome the disappointment. We suspect that this person-related disappointment is often associated with feelings of anger, whereas the more common outcome-related disappointment is associated with feelings of sadness (cf. van Dijk et al., 1998a). Finally, as suggested by regret and disappointment theories, these emotions can be anticipated, and thereby exert an influence on decisions before they are actually experienced. Anticipated regret promotes choices that shield one from painful feedback on foregone options, and is assumed to promote information search and elaborated decision processes. Anticipated disappointment may result in trying to live up to an initial expectation or in strategically lowering ones expectations, so that disconfirmation of expectations is less likely.

An important implication of these findings is that there is a need to be specific about the emotion under investigation when researching the influence of emotions on decision making (see also van der Pligt, Zeelenberg,

van Dijk, de Vries, & Richard, 1998c; van Dijk et al., 1999; Zeelenberg & Beattie, 1997; Zeelenberg et al., 1998a). As the present review suggests, even closely related emotions such as regret and disappointment have distinctive effects on choice behaviour. These influences are best understood when there is knowledge about the antecedents and phenomenology of the emotions. It is therefore of critical importance for decision researchers to focus not only on decisional consequences of (anticipated) emotions, but also on the processes that mediate these consequences.

A further implication is that, in addition to the variables measured in traditional emotion research, emotions can be differentiated on the basis of their behavioural consequences or the consequences arising from the anticipation of emotions. Here, emotion researchers can benefit from adopting a decision-making perspective. Decision researchers have traditionally focused on the effects of variables on behavioural choice, and the present review shows how some of their paradigms can be useful in differentiating emotions.

In conclusion, we favour the integration of theories, paradigms, and findings from decision research and emotion research, and we believe that there are many interesting research questions that would be addressed more effectively by such a combined approach than by either field on its own. One such question concerns the dynamics of emotion-behaviour interaction. It would be interesting to study how behavioural decisions and their outcomes influence appraisal processes, which in turn result in the labelling and experience of an emotion (e.g. as regret or disappointment), and how behavioural attempts to cope with the emotion may affect the emotion either directly or result in a reappraisal of the emotion-eliciting situation. Investigating these dynamics should further our understanding of both decision processes and the dynamics of emotional experiences.

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REFERENCES

- Armor, D.A., & Taylor, S.E. (1998). Situated optimism: Specific outcome expectancies and self-regulation. In M.P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 30, pp. 309–379). New York: Academic Press.
- Averill, J.R. (1968). Grief: Its nature and significance. *Psychological Bulletin*, *70*, 721–748.
- Baron, J., & Ritov, I. (1994). Reference points and omission bias. *Organizational Behavior and Human Decision Processes*, *59*, 475–498.
- Beattie, J., Baron, J., Hershey, J.C., & Spranca, M.D. (1994). Psychological determinants of decision attitude. *Journal of Behavioral Decision Making*, *7*, 129–144.
- Bell, D.E. (1982). Regret in decision making under certainty. *Operations Research*, *30*, 961–981.
- Bell, D.E. (1985). Disappointment in decision making under certainty. *Operations Research*, *33*, 1–27.

- Cantor, N., & Norem, J.K. (1989). Defensive pessimism and stress coping. *Social Cognition*, 7, 92–112.
- Carver, C.S., & Scheier, M.F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, 97, 19–35.
- Connolly, T., Ordóñez, L.D., & Coughlan, R. (1997). Regret and responsibility in the evaluation of decision outcomes. *Organizational Behavior and Human Decision Processes*, 70, 73–85.
- Feather, N.T. (1967). Valence of outcome and expectation of success in relation to task difficulty and perceived locus of control. *Journal of Personality and Social Psychology*, 8, 372–386.
- Feather, N.T. (1969). Attribution of responsibility and valence of success and failure in relation to initial confidence and task performance. *Journal of Personality and Social Psychology*, 13, 129–144.
- Frijda, N.H. (1987). Emotion, cognitive structure, and action tendency. *Cognition and Emotion*, 1, 115–143.
- Frijda, N.H. (1994). What is the function of emotions? In P. Ekman & R.J. Davidson (Eds.), *The nature of emotions* (pp. 112–122). New York: Oxford University Press.
- Frijda, N.H., Kuipers, P., & ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology*, 57, 212–228.
- Gilovich, T., & Medvec, V.H. (1994). The temporal pattern to the experience of regret. *Journal of Personality and Social Psychology*, 67, 357–365.
- Gilovich, T., & Medvec, V.H. (1995). The experience of regret: What, when, and why. *Psychological Review*, 102, 379–395.
- Inman, J.J., Dyer, J.S., & Jia, J. (1997). A generalized utility model of disappointment and regret effects on post-choice valuation. *Marketing Science*, 16, 97–111.
- Inman, J.J., & McAlister, L. (1994). Do coupon expiration dates influence consumer behavior? *Journal of Marketing Research*, 31, 423–428.
- Inman, J.J., & Zeelenberg, M. (1998, February). What might be: The role of potential regret in consumer choice. In L.J. Abendroth (Chair), *Regret me not: An examination of regret in pre- and post-purchase evaluations*. Symposium conducted at the Society for Consumer Psychology Winter Conference, Austin, TX.
- Josephs, R.A., Larrick, R.P., Steele, C.M., & Nisbett, R.E. (1992). Protecting the self from the negative consequences of risky decisions. *Journal of Personality and Social Psychology*, 62, 26–37.
- Kahneman, D., & Miller, D.T. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, 93, 136–153.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263–291.
- Kahneman, D., & Tversky, A. (1982). The psychology of preferences. *Scientific American*, 246, 136–142.
- Landman, J. (1987). Regret and elation following action and inaction. *Personality and Social Psychology Bulletin*, 13, 524–536.
- Landman, J. (1993). *Regret: The persistence of the possible*. New York: Oxford University Press.
- Larrick, R.P., & Boles, T.L. (1995). Avoiding regret in decisions with feedback: a negotiation example. *Organizational Behavior and Human Decision Processes*, 63, 87–97.
- Loewenstein, G., & Linville, P. (1986). *Expectation formation and the timing of outcomes: A cognitive strategy for balancing the conflicting incentives for savoring success and avoiding disappointment*. Unpublished manuscript, University of Chicago.
- Loomes, G., & Sugden, R. (1982). Regret Theory: An alternative theory of rational choice under uncertainty. *Economic Journal*, 92, 805–824.

- Loomes, G., & Sugden, R. (1986). Disappointment and dynamic inconsistency in choice under uncertainty. *Review of Economic Studies*, *53*, 271–282.
- Loomes, G., & Sugden, R. (1987). Testing for regret and disappointment in choice under uncertainty. *Economic Journal*, *97*, 118–129.
- Mellers, B.A., Schwartz, A., Ho, K., & Ritov, I. (1997). Decision affect theory: Emotional reactions to the outcomes of risky options. *Psychological Science*, *8*, 423–49.
- Mellers, B.A., Schwartz, A., & Ritov, I. (in press). *Emotion-based choice*. *Journal of Experimental Psychology: General*.
- Nisan, M. (1972). Dimensions of time in relation to choice behavior and achievement orientation. *Journal of Personality and Social Psychology*, *21*, 175–182.
- Olson, J.M., Roese, N.J., & Zanna, M.P. (1996). Expectancies. In E.T. Higgins & A.W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp.211–238). New York: Guilford Press.
- Parker, D., Stradling, S.G., & Manstead, A.S.R. (1996). Modifying beliefs and attitudes to exceeding the speed limit: An intervention study based on the theory of planned behavior. *Journal of Applied Social Psychology*, *26*, 1–19.
- Parkinson, B. (1997). Untangling the appraisal-emotion connection. *Personality and Social Psychology Review*, *1*, 62–79.
- Plutchik, R. (1980) *Emotion: A psychoevolutionary synthesis*. New York: Harper & Row.
- Pyszczynski, T. (1982). Cognitive strategies for coping with uncertain outcomes. *Journal of Research in Personality*, *16*, 386–399.
- Richard, R., van der Pligt, J., & de Vries, N.K. (1996). Anticipated regret and time perspective: Changing sexual risk-taking behavior. *Journal of Behavioral Decision Making*, *9*, 185–199.
- Ritov, I. (1996). Probability of regret: Anticipation of uncertainty resolution in choice. *Organizational Behavior and Human Decision Processes*, *66*, 228–236.
- Ritov, I., & Baron, J. (1995). Outcome knowledge, regret and omission bias. *Organizational Behavior and Human Decision Processes*, *64*, 119–127.
- Roseman, I.J., Antoniou, A.A., & Jose, P.E. (1996). Appraisal determinants of emotions: Constructing a more accurate and comprehensive theory. *Cognition and Emotion*, *10*, 241–277.
- Roseman, I.J., Wiest, C., & Swartz, T.S. (1994). Phenomenology, behaviors, and goals differentiate discrete emotions. *Journal of Personality and Social Psychology*, *67*, 206–211.
- Savage, L.J. (1954). *The foundations of statistics*. Chichester, UK: Wiley.
- Seligman, M.E.P. (1975). *Helplessness: On depression, development, and death*. San Francisco, CA: Freeman.
- Shand, A.F. (1914). *The foundations of character*. London: Macmillan.
- Shepperd, J.A., Ouellette, J.A., & Fernandez, J.K. (1996). Abandoning unrealistic optimism: Performance estimates and the temporal proximity of self-relevant feedback. *Journal of Personality and Social Psychology*, *70*, 844–855.
- Simonson, I. (1992). The influence of anticipating regret and responsibility on purchase decisions. *Journal of Consumer Research*, *19*, 105–118.
- Taylor, K.A. (1997). A regret theory approach to assessing consumer satisfaction. *Marketing Letters*, *8*, 229–238.
- van der Pligt, J., Zeelenberg, M., van Dijk, W.W., de Vries, N.K., & Richard, R. (1998c). Affect, attitudes and decisions: Let's be more specific. *European Review of Social Psychology*, *8*, 34–66.
- van Dijk, W.W. (1999). *Dashed hopes and shattered dreams: On the psychology of disappointment*. Ph.D. dissertation, University of Amsterdam.
- van Dijk, W.W., & van der Pligt, J. (1997). The impact of probability and magnitude of outcome on disappointment and elation. *Organizational Behavior and Human Decision Processes*, *69*, 277–284.

- van Dijk, W.W., van der Pligt, J., & Zeelenberg, M. (1998a). Different or the same? Outcome related disappointment. In A.H. Fischer (Ed.), *Proceedings of the Xth Conference on the International Society for Research on Emotions* (pp. 162–165). Amsterdam: ISRE.
- van Dijk, W.W., Zeelenberg, M., & van der Pligt, J. (1998b). *Blessed are they who expect nothing: Lowering expectations as a strategy to avoid disappointment*. Manuscript under review.
- van Dijk, W.W., Zeelenberg, M., & van der Pligt, J. (1999). Not having what you want versus having what you don't want: The impact of type of negative outcome on the experience of disappointment and related emotions. *Cognition and Emotion, 13*, 129–148.
- Zeelenberg, M. (1996). *On the importance of what might have been: Psychological perspectives on regret and decision making*. Ph.D. dissertation, University of Amsterdam.
- Zeelenberg, M. (1999). Anticipated regret, expected feedback and behavioral decision-making. *Journal of Behavioral Decision Making, 12*, 93–106.
- Zeelenberg, M., & Beattie, J. (1997). Consequences of regret aversion: 2. Additional evidence for effects of feedback on decision making. *Organizational Behavior and Human Decision Processes, 72*, 63–78.
- Zeelenberg, M., Beattie, J., van der Pligt, J., & de Vries, N.K. (1996). Consequences of regret aversion: Effects of expected feedback on risky decision making. *Organizational Behavior and Human Decision Processes, 65*, 148–158.
- Zeelenberg, M., & Pieters, R. (1999). On serviced delivery that might have been: Behavioral responses to disappointment and regret. *Journal of Service Research, 2*, 86–97.
- Zeelenberg, M., van Dijk, W.W., & Manstead, A.S.R. (1998a). Reconsidering the relation between regret and responsibility. *Organizational Behavior and Human Decision Processes, 74*, 254–272.
- Zeelenberg, M., van Dijk, W.W., Manstead, A.S.R., & van der Pligt, J. (1998b). The experience of regret and disappointment. *Cognition and Emotion, 12*, 221–230.
- Zeelenberg, M., van Dijk, W.W., van der Pligt, J., Manstead, A.S.R., van Empelen, P., & Reinderman, D. (1998d). Emotional reactions to outcomes of decisions: The role of counterfactual thought in the experience of regret and disappointment. *Organizational Behavior and Human Decision Processes, 75*, 117–141.