

Thoughts About Possible Failure:
Regulatory Focus and the Anticipation of Regret

Susanne Leder

Zeppelin University

Arnd Florack

University of Vienna

Johannes Keller

University of Ulm

SOCIAL COGNITION, in press

Author Note

Susanne Leder, Department of Communication and Cultural Management, Zeppelin University, Germany; Arnd Florack, Department of Economic Psychology, Educational Psychology and Evaluation, University of Vienna, Austria; Johannes Keller, Department of Social Psychology, University of Ulm, Germany.

This research was supported by a grant from the Deutsche Forschungsgemeinschaft (DFG) to Arnd Florack, FL 365/3-1. We wish to thank Jens Förster and two anonymous reviewers for their thoughtful comments and suggestions on an earlier version of the manuscript. Many thanks to Daniel Finck, Rouwen Hirth, Shynne Preissel, and Peter Riefer for their assistance in data collection.

Correspondence concerning this article should be addressed to Susanne Leder, Zeppelin University, Am Seemooser Horn 20, D-88045 Friedrichshafen, Germany. E-mail: susanne.leder@zu.de

Abstract

We examined the influence of self-regulatory focus on the anticipation of regret in the context of life decisions. Eager promotion-focused individuals consider different negative outcomes to be more relevant than do vigilant prevention-focused individuals (e.g., non-gains vs. losses). We proposed that the two regulatory foci would elicit more regret for different negative decision consequences and that these regrets would induce preferences for different options. In four studies, we found that promotion-focused self-regulation elicits more regret for absent positive aspects and the failure to realize ideal goals, whereas prevention-focused self-regulation elicits more regret for present negative aspects and the failure to fulfill ought goals. Further, we observed that prevention-relevant regret is related to a common conceptualization of regret associating regret with uncertainty and rumination about one's decisions. Promotion-relevant regret, instead, seems to represent a different type of regret—regret centering on missed positive outcomes and unfulfilled ideal goals—that has been neglected in previous research. Finally, we document that the two types of regret result in different choice behavior.

Keywords: self-regulation, regulatory focus, anticipated regret, life regrets, choice behavior

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People's decisions are often influenced by thoughts about the potential negative consequences of a certain course of action. Before making an important decision, for example, choosing a university or a new job, there is usually a moment in which people consider the possibility that the decision could turn out badly and focus on possible negative consequences of this decision. Such thoughts are related to an anticipated feeling of regret for making a wrong choice (e.g., Zeelenberg, 1999). People tend to anticipate potential regret when the decision is important or difficult, or when they expect to learn the results of alternative options and thus might discover that another option would have been a better choice (Zeelenberg, 1999; Zeelenberg & Pieters, 2007).

Generally, regret is considered a cognitive emotion. Anticipating regret implies imagining what might happen after a decision and can have a strong influence on behavior (see Zeelenberg and Pieters, 2007, for a review). Indeed, a considerable amount of research has provided evidence that anticipated regret can affect choice in different domains such as consumer, health-related, or investment decisions (e.g., Simonson, 1992; Smerecnik & Ruiter, 2010; Zeelenberg & Beattie, 1997).

This research has mainly focused on the structural aspects of anticipated regret (i.e., on the conditions under which it is taken into account and on how the anticipation of regret affects preference for specific options). There has been substantial evidence that the activation of regret for a specific negative decision consequence—for example, making people think about how much they would regret being injured in a car accident—can help to promote protective behavior (e.g., Chapman & Coups, 2006; Parker, Stradling, & Manstead, 1996).

Only recently has it been suggested that self-regulatory aspects of the anticipation and experience of regret should be examined more deeply (Epstude & Roese, 2011; Zeelenberg & Pieters, 2007). Results from previous research have emphasized the security-related effects of anticipated regret (e.g., Simonson, 1992; Parker et al., 1996). These results suggest that anticipated regret is related to a vigilant prevention-focused self-regulation that is concerned with security-related goals and sensitivity for the presence or absence of negative outcomes. Also, prominent regret measures, such as the Schwartz Regret Scale (Schwartz et al., 2002), are based on a conceptualization of regret that is related to decision uncertainty. We propose that anticipated regret might also be related to aspects that are relevant for an eager promotion-focused self-regulation that is concerned with growth-related goals and sensitivity for the presence or absence of positive outcomes. Specifically, we suggest that anticipated regret may also center on aspects that are not necessarily related to uncertainty avoidance, but rather to the idea of missing a positive outcome or failing to attain one's ideal-related goals. We argue that these aspects of anticipated regret have been neglected in previous research. Considering the strong effects of anticipated regret on choice behavior, the examination of different types of anticipated regret is an important issue.

Also, anticipated regret has mostly been examined using scenarios that present choices between two options, but it has not yet been systematically examined in the context of more complex life decisions such as choosing a career. Regret can refer to different components of a decision: the decision process, the options, or the outcome (e.g., Connolly & Zeelenberg, 2002; Connolly & Reb, 2005). Most of the studies on anticipated regret have (a) focused on *option* regret, which refers to determining which option (e.g., acting vs. maintaining the status quo) people choose in order to avoid regret, or (b) have examined how the activation of one specific *outcome* regret, as in the car accident example above, influences choice behavior. In the present research, we focus on anticipated outcome regret in the

context of life decisions. Such decisions—for example, what and where to study—can have manifold positive and negative consequences, and thus, the examination of regret in this context permits a distinction between different types of regret. The purpose of this research was to examine whether self-regulatory orientation influences whether certain possible negative consequences produce more anticipated regret when a person faces an important life decision and a specific regulatory focus predominates (compared to a predominance of the other regulatory focus). A further aim was to examine how these regrets are related to a common conceptualization of regret that defines regret with reference to uncertainty and ruminative thoughts concerning decision outcomes. Finally, we also aimed at assessing how these regrets affect decision behavior.

Regret and Self-Regulation

The feeling-is-for-doing approach (e.g., Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008, see also Zeelenberg & Pieters, 2007) considers emotions to be primary motivating forces in goal-directed behavior. This means, on a very basic level, that when anticipating regret, people should be motivated to avoid it, and once they experience it, they should be motivated to regulate it in order to feel better.

Apart from the well-documented effects of anticipated regret on behavior, some evidence for the self-regulatory function of post-decisional regret has been provided by research examining people's life regrets (e.g., Bauer & Wrosch, 2011). Major life regrets can have a strong impact on people's well-being (Lecci, Okun, & Karoly, 1994; Wrosch, Bauer, Miller, & Lupien, 2007). Self-regulatory processes can help people to cope with these regrets and also motivate them to learn from their mistakes in order to make things better in the future (e.g., Saffrey, Summerville, & Roese, 2008). For example, disengaging from unattainable goals and focusing on future goals generally diminishes past experiences of

regret of unattained goals (Lecci et al., 1994; Wrosch & Heckhausen, 2002; Wrosch, Bauer, & Scheier, 2005).

A further assumption in the feeling-is-for-doing approach is that specific emotions have distinct behavioral effects. Regret, for example, should bring about different behaviors than disappointment (cf. Yi & Baumgartner, 2004). But the approach also suggests that the same emotion in different situations may cause different behaviors, and that which behavior it evokes may depend on the type of goal a person is trying to achieve in the relevant context. As a consequence, people should adopt regret-avoidance strategies that serve the specific goal they aim to achieve in a certain choice situation (cf. Zeelenberg & Pieters, 2008).

The present research starts from this perspective. We suggest that regret not only induces specific regulation strategies and affects future goal pursuit, but that basic motivational orientations and strategies of goal pursuit may also influence the anticipation of regret. Specifically, we assume that when regret is anticipated for a specific course of action, different negative consequences should be relevant depending on the underlying motivation or self-regulatory focus. Further, if regulatory focus affects which negative decision consequences are most relevant, being primarily concerned with one or the other possible negative consequence might also influence choice behavior.

Distinct Motivational Orientations and Anticipated Regret

Generally, when pursuing goals or making decisions, people aim to achieve positive results and to avoid negative results (e.g., Atkinson, 1964; Miller, 1944). Regulatory focus theory (Higgins, 1997, 1998) proposes that individuals can adopt distinct motivational orientations—a promotion or a prevention focus—and that these orientations determine which strategies people use in order to attain goals or make decisions.

Promotion-focused individuals are primarily concerned with achieving growth-related goals, hopes, and aspirations. They have a tendency to approach goals by using eager

strategies and by trying to attain matches to a desired outcome (ensure hits, avoid errors of omission). Prevention-focused individuals are primarily concerned with security-related goals, responsibilities, and obligations. They have a tendency to approach goals by using vigilant strategies and by trying to avoid mismatches to a desired outcome (ensure correct rejections, avoid errors of commission).

The two distinct motivational concerns and strategies also determine which outcomes and goals are most relevant to an individual, and how success and failure are defined. A promotion focus is related to sensitivity to the presence or absence of positive outcomes (gains/non gains). A prevention focus, instead, is related to sensitivity to the presence or absence of negative outcomes (losses/non-losses; Higgins & Tykocinski, 1992; Idson, Liberman, & Higgins, 2000). As a consequence, promotion-focused individuals tend to construe success and failure in terms of whether they succeed or fail in achieving ideal or maximal goals, i.e. goals or standards they hope to achieve. Prevention-focused individuals, in contrast, tend to construe success and failure in terms of whether they succeed or fail in achieving ought or minimal goals, i.e. goals or standards they must achieve (Brendl & Higgins, 1996).

When anticipating future events, a prevention focus is related to a preference for pessimistic forecasts, whereas a promotion focus is related to a preference for optimistic forecasts (Hazlett, Molden, & Sackett, 2011). Also, considering negative outcomes suits a prevention focus more than a promotion focus (cf. Idson, Liberman, & Higgins, 2004). Therefore, when making a decision, prevention-focused people should prefer a course of action that represents a vigilant strategy in order to avoid negative outcomes.

Taking into account that common conceptualizations of regret proneness directly refer to uncertainty and sensitivity to possible negative decision outcomes (Schwarz et al., 2002) and that uncertainty avoidance and sensitivity to negative outcomes are characteristics of

prevention-focused self-regulation, it seems plausible to assume that regret is strongly related to prevention-focused self-regulation (cf. Greifeneder & Betsch, 2002). However, we assume that the relation between a prevention focus and regret is limited to a conceptualization of regret that refers to a propensity to ruminate and find information about possible alternative outcomes after a decision. We suppose that even if prevention-focused individuals might be more prone to spontaneously think about alternative outcomes of different decision outcomes after a decision, *prevention-* and *promotion-focused* individuals might anticipate regret in a specific context to a similar extent, but for different aspects of choice options. Hence, when thinking about the possibility of making a wrong choice, both promotion- and prevention-focused individuals should be concerned with avoiding a negative outcome, but they should differ with regard to the types of negative outcomes that are most relevant to them. As mentioned above, promotion-focused people tend to define failure in terms of non-gains or an absence of positive outcomes; prevention-focused people tend to define failure in terms of losses or the presence of negative outcomes. As a consequence, when thinking about failure with regard to an important life decision, promotion-focused people should be concerned that the chosen course of action might not fulfill their hopes and aspirations (ideal-related goals). Prevention-focused people, instead, should be concerned that the decision outcome might not fulfill their security needs (ought-related goals).

This assumption is in line with the proposition of regret regulation theory that proposes that regret has to be considered from a goal-specific perspective (Zeelenberg et al., 2008). This assumption is also in line with findings concerning the relation between regulatory focus and counterfactual thinking, the cognitive antecedent of regret (Markman & McMullen, 2003; Markman, McMullen, Elizaga, & Mizoguchi, 2006; Roese, Hur, & Pennington, 1999; Roese, Pennington, Coleman, Janicki, Li, & Kenrick, 2006). These findings suggest that promotion and prevention focus are related to different types of

counterfactual thoughts, showing that comparing reality to an imagined better situation – a thought process related to regret – increases persistence in a task both in promotion and prevention-focused individuals (e.g., Markman et al., 2006), and that a promotion focus is related to thoughts and regret centering on inaction, whereas a prevention focus is related to thoughts centering on action (Roose et al., 1999; 2006). These findings are important for our research as they confirm, on the one hand, that regret-related thoughts can have a motivating effect for both promotion- and prevention-focused individuals, and, on the other hand, that different antecedents of an outcome are relevant for promotion and prevention-focused individuals. It should be noted though, that these findings refer to thoughts *after* realizing a bad outcome and to the distinction between action and inaction as cause of the outcome, i.e. option-related and not outcome-related aspects (comparable to the above mentioned option regret). In our research, we focus on the *anticipation* of negative outcomes and make assumptions beyond the action-inaction distinction, i.e. we focus on the distinction of different types of outcome regret and also on how these types of regret affect actual choice behavior. To our knowledge, these aspects have not been examined in previous research.

The Present Research

Based on the above considerations, we derived the following assumptions: Our first assumption refers to specific anticipated outcome regret. When thinking about a bad decision outcome and focusing on the specific negative consequences a wrong decision may bring about, different negative consequences should be relevant in a promotion compared to a prevention focus. Specifically, a promotion focus should elicit more regret for the absence of positive outcomes and for not realizing ideal goals, and a prevention focus should elicit more regret for the presence of negative outcomes and for not fulfilling ought goals. This means that when regret for making a wrong decision is activated, promotion-focused and prevention-focused individuals should have different representations of the imagined

negative events. At the same time, they should not necessarily differ in the emotional intensity of anticipated regret that these events induce.

Our second assumption refers to regret proneness, defined with reference to uncertainty and ruminative thoughts regarding one's decisions (Schwartz et al., 2002). Uncertainty and rumination about possible decision outcomes of alternative options indicate a strong need for certainty and security, which are also considered to be determinants of prevention-focused self-regulation (Higgins, 1997). Hence, a prevention focus should be related to an uncertainty orientation reflecting general regret proneness, whereas a promotion focus should be independent of this general regret tendency. Analogously, prevention-relevant regret may be related to such uncertainty orientation concerning decision outcomes, whereas promotion-relevant regret may not be necessarily related to this classic way of assessing regret proneness.

Our third assumption refers to decision behavior. If promotion- and prevention-relevant regrets represent two different types of regret, this should be reflected in how they affect choice behavior. Also, if prevention-relevant regret is related to general regret proneness, it may also induce similar behavior as the one induced by non-specific regret observed in previous studies (mainly security-related behavior), whereas promotion-relevant regret may induce different behavior. Thus, we assumed that the two types of regret would differ in how they affect choice behavior. We tested these assumptions in four studies.

As we were interested in examining which possible negative consequences of one specific decision would induce more regret, we examined different regrets for the same course of action when making an important life decision. In a further step, we assessed the effect of these regrets on choice in a behavioral choice task reflecting actual decision behavior.

The two life domains for which people report the most severe regrets are education and professional career (Lecci et al., 1994; Roese & Summerville, 2005). Therefore, we tested the first two assumptions in the context of study and work-related decisions. In Studies 1 to 3, participants were asked to indicate possible regrets for a specific course of action, either for deciding to pursue their studies at a specific university or for deciding to accept a new job. The third assumption was tested by assessing actual behavior in a choice task.

Regret was examined in contexts that were highly relevant to participants. In Studies 1 to 3, we assessed how both induced and chronic regulatory focus—assessed with different measures—affect anticipated regret. The first two studies asked university applicants and first-semester students under which conditions they would regret their university choice. The third study asked employees under which conditions they would regret accepting a job offer. Regret was assessed using an open response format in the first study and with items designed to capture specific aspects of regret in the other two studies. In the fourth study, we assessed how focus-relevant regrets affect choice behavior. Specific regrets were induced by making participants describe distinct types of regrets they actually had experienced.

Study 1

This study aimed to examine the effect of induced regulatory focus on anticipated regret in the context of university choice. It was assumed that participants with an induced promotion focus would produce more regrets for missed positive outcomes and for not obtaining ideal-related promotion goals, whereas participants with an induced prevention focus would produce more regrets for obtaining negative outcomes and for not achieving ought-related prevention goals.

Method

Participants and procedure. Participants were 87 university applicants at Zeppelin University (42 women, 45 men) who were invited to take part in the experiment on university

selection days for bachelor and master courses. Their mean age was 21.37 ($SD = 2.62$). Data collection took place after participants had arrived at the university the evening before the selection day. After being welcomed, participants completed the paper-and-pencil questionnaire in university classrooms where they were supervised by a research assistant. Participants were randomly assigned to one of two experimental conditions (induced promotion focus, induced prevention focus). After inducing regulatory focus, possible regrets for a wrong university choice were assessed. Participants were debriefed at the end of the study.

Measures

Regulatory focus. Regulatory focus was induced by adopting a procedure by Pham and Avnet (2004). In order to induce a promotion focus, participants were asked to think about their hopes and goals and to write down at least two past and two present hopes and goals. In order to induce a prevention focus, participants were asked to think about their requirements and duties and to write down at least two past and two present requirements and duties.

Anticipated regret. In order to assess anticipated regret for making the wrong choice of university, participants first read a short text concerning their upcoming choice of a university and the possibility of regretting it:

Presently you are facing an important decision. In the next few weeks you will decide which course and at which university you wish to study. As with all decisions, there is the possibility that your choice might turn out badly. Let's assume that after the selection day, you are accepted at Zeppelin University and you decide to study at this university. What could cause you to regret your choice?

Anticipated regret was then assessed by asking participants to complete the sentence “I would regret my decision to study at this university if ...” and to write down any number of ideas that came to mind.

Further, two items assessed general outcome regret for finding out later that either the course or the university turned out to be the wrong choice (“Generally, how much regret would you have if this course turned out to be the wrong choice?” and “Generally, how much regret would you have if this university turned out to be the wrong choice?”) on a scale ranging from 1 (*not at all strongly*) to 7 (*very strongly*). The two items were significantly correlated, $r = .74$, $p < .001$, and were therefore combined into a composite score.

Results

Initial analyses. Regret aspects generated by participants in response to the open-ended question were coded by two judges who were blind to respondents’ induced regulatory focus. They were coded for whether they described an absent positive outcome or a failed promotion goal (e.g., not obtaining high grades), or a present negative outcome or a failed prevention goal (e.g., failing exams). The two judges showed good agreement (Cohen’s $\kappa = .81$).

Examples of regrets for an absent positive outcome or a failed promotion goal were “I would regret my decision to study at this university *if I had the impression that studying at another university would make me happier/... if I didn’t have the feeling that I was developing personally.*”

Examples of regrets for a present negative outcome or a failed prevention goal were “I would regret my decision to study at this university *if I wasn’t able to meet the requirements of the university and the courses/... if I was unemployed after completing my studies.*”

Overall, participants generated a mean number of 4.08 ($SD = 1.46$) possible future regrets. The mean number of regrets in the two conditions did not differ significantly ($F < 1$).

Also, participants in the two conditions did not differ in their regret intensity for choosing the wrong course or university ($F < 1$). This is a first hint that, as far as general anticipated outcome regret is concerned, the two regulatory foci did not differ with regard to the fluency of regret-related thoughts.

Specific regrets. As far as specific negative consequences of the decision were concerned, we expected participants in the promotion focus condition to produce more regrets for missed positive outcomes and for not obtaining promotion goals, and participants in the prevention focus condition to produce more regrets for obtaining negative outcomes and for not achieving prevention goals.

The effect of regulatory focus on specific regrets was tested by a repeated measures analysis of variance with regulatory focus as the independent variable and the two types of regret (proportion of regrets for not obtaining promotion goals of the overall sum of regrets generated, proportion of regrets for not obtaining prevention goals of the overall sum of regrets generated) as a within-subjects factor. The analysis revealed a significant main effect of type of regret, $F(1, 85) = 13.38, p = .001$. Participants generated a significantly greater proportion of regrets for failed promotion goals than for failed prevention goals ($M_{\text{promotion goal regrets}} = .56, SD = .24; M_{\text{prevention goal regrets}} = .38, SD = .23$). The analysis further showed a significant interaction effect of regulatory focus and type of regret, $F(1, 85) = 3.70, p = .05$. Participants in the promotion focus condition produced a significantly greater proportion of regrets for failing to obtain promotion goals than regrets for failing to obtain prevention goals ($M_{\text{promotion goal regrets}} = .60, SD = .24; M_{\text{prevention goal regrets}} = .33, SD = .21$), $t(45) = 4.17, p < .001$. Participants in the prevention focus condition did not differ in the proportion of the two types of regrets they produced, ($M_{\text{promotion goal regrets}} = .51, SD = .24$ and $M_{\text{prevention goal regrets}} = .43, SD = .23$), $t(40) = 1.16, p = .25$. A further contrast analysis showed that prevention-focused participants generated a greater proportion of regrets for failing to obtain prevention

goals than promotion-focused participants ($M_{prevention} = .43$, $SD = .23$; $M_{promotion} = .33$, $SD = .21$), $t(85) = 2.10$, $p = .04$.¹

Discussion

The results of this study suggest that in a situation in which regret is salient, prevention focus and promotion focus elicit an equal amount of general outcome regret for making a wrong choice. More importantly, Study 1 also provided the first evidence regarding the assumption that regulatory focus affects which negative decision consequences are particularly relevant to individuals. When a promotion focus was induced, participants produced more regrets for failing to obtain promotion goals than for failing to obtain prevention goals. When a prevention focus was induced, participants produced more regrets for failing to obtain prevention goals in comparison to when a promotion focus was induced. They produced equal amounts of each type of regret, though. The missing dominance of prevention goals in the prevention focus condition might be explained by the context of the study, which was likely to attract promotion-focused participants. Participants were applicants at a private school where the demanding selection procedure may particularly attract eager promotion-focused students. Hence, the missing predominance of prevention goals in the prevention focus condition might be due to the strong chronic promotion focus of the participants. In order to show that a prevention focus might actually lead to a reversal of the predominance of regret for prevention and promotion goals compared to a promotion focus, we conducted two additional studies at public schools where we expected a meaningful variance in chronic regulatory focus.

Studies 2a and 2b

Studies 2a and 2b were aimed at further examining our hypothesis concerning the influence of regulatory focus on anticipated regret in the context of academic choice where

¹ In all studies, we tested for possible effects of gender, age, and the interaction of promotion and prevention focus (when chronic regulatory focus was assessed). None of these variables showed a significant effect in any of the studies.

we measured the chronic regulatory focus of participants. Whereas we measured chronic regulatory focus in Study 2a with the Chronic Regulatory Focus Concerns measure (CRFC; Keller & Bless, 2008) and in Study 2b with the Regulatory Focus Questionnaire (RFQ; Higgins et al., 2001), we measured anticipated regret with items designed to assess specific aspects of regret in both studies. As in the first study, we assumed that a promotion focus would be related to more regret for missed positive outcomes and for not obtaining promotion goals, whereas a prevention focus would be related to more regret for obtaining negative outcomes and for not achieving prevention goals.

Method (Study 2a)

Participants and procedure. One hundred twenty first-semester students (103 women, 14 men, 3 participants without gender specification) participated in this study at the University of Ulm (Germany). Their mean age was 21.36 ($SD = 3.03$). After completing a chronic regulatory focus measure and other measures unrelated to the present study, participants indicated how much they would regret different possible negative consequences of their university choice.

Measures (Study 2a)

Regulatory focus. Chronic regulatory focus was assessed by the chronic regulatory focus concerns measure (CRFC; Keller & Bless, 2008). The CRFC consists of 9 items measuring promotion focus strength (e.g., “If I reach a goal that I had pursued for a long time, I am euphoric”) and of 9 items measuring prevention focus strength (e.g., “If I do not reach a goal that I had pursued, I am worried and I think about my mistakes”), with scale endpoints from 1 (*completely disagree*) to 7 (*completely agree*). Both the promotion and prevention scales were internally consistent (Cronbach’s $\alpha = .75$ and $.85$) and largely uncorrelated, $r = .04$, $p = .67$.

Anticipated regret. Participants read an introductory text similar to the one used in Study 1 that was adapted to the situation in which the decision for the university had already taken place. Anticipated regret was assessed by asking participants to rate 31 items that completed the sentence “I would regret my decision to study at this university if...” on a scale ranging from 1 (*not at all strongly*) to 11 (*very strongly*). The items were created on the basis of the most frequent answers observed in Study 1. Fifteen items were designed to assess regrets for missing a positive outcome or for not obtaining a promotion goal (e.g., “I would regret my decision to study at this university if I didn’t experience at least one challenge”), and 16 items were designed to assess regrets for obtaining a negative outcome or for not obtaining a prevention goal (e.g., “I would regret my decision to study at this university if I wasn’t able to fulfill the requirements of the university”; see Appendix for the items of the final scale).

General regret proneness. The general tendency to regret choices (i.e., to be uncertain and to ruminate about one’s decision outcomes) was assessed by a German version (Greifeneder & Betsch, 2006) of the Regret Scale by Schwartz et al. (2002). The Regret Scale consists of 5 items with scale end-points from 1 (*completely disagree*) to 9 (*completely agree*). The scale was internally consistent (Cronbach’s $\alpha = .86$). A sample item reads “Whenever I make a choice, I try to get information about how the other alternatives turned out.”

Results (Study 2a)

Initial analyses. The 31 items measuring aspects of regret were submitted to a principal axis factor analysis with oblimin rotation. A scree plot and analysis of items indicated two interpretable factors. These two factors accounted for 33.75% of the variance (22.25% and 11.50%, respectively). The eigenvalues of the two factors were 6.90 and 3.57, respectively. Nine items representing regret for failed prevention goals loaded highest on the

first factor (Cronbach's $\alpha = .86$), and six items representing regret for failed promotion goals loaded highest on the second factor (Cronbach's $\alpha = .83$). The two factors were largely uncorrelated ($r = .02, p = .81$).

Regulatory focus and specific anticipated regrets. In order to assess the relation between regulatory focus strength and type of regret, regression analyses with both the promotion and the prevention scales as predictors and the two types of regret as criterion variables were conducted. Higher promotion scores were positively related to promotion goal regrets, $\beta = .39, t(119) = 4.55, p < .001$, whereas higher prevention scores were not significantly related to this type of regret, $\beta = -.13, t(119) = -1.55, p = .12$. Further, higher prevention scores were positively related to prevention goal regrets, $\beta = .33, t(119) = 3.81, p < .001$, whereas higher promotion scores were not, $\beta = .08, t(119) = .90, p = .37$.

Regulatory focus, anticipated regrets, and regret proneness. To examine the relations between regulatory focus, specific outcome regrets, and general regret proneness, the five scales were submitted to a principal axis factor analysis with oblimin rotation. Correlations between the scales are shown in Table 1. Prevention focus and prevention goal regret were significantly correlated with general regret proneness, whereas promotion focus and promotion goal regret were not. The factor analysis revealed a two-factor solution with prevention focus, prevention goal regret, and general regret proneness loading on one factor, and promotion focus and promotion goal regret loading on the other factor (with eigenvalues of 1.87 and 1.39 accounting for 43.87% of the variance; for factor loadings, see Table 1). These results suggest that only prevention goal regret, but not promotion goal regret, is related to general regret proneness.

Method (Study 2b)

Participants and procedure. Fifty-eight first semester students (44 women, 14 men) participated in this study at the University of Vienna (Austria). Their mean age was 21.33 ($SD = 3.76$). The procedure was the same as in Study 2a.

Measures. Except from the RFQ measure of chronic regulatory focus, the measures were the same as in Study 2a. Both the promotion and prevention scales of the RFQ were internally consistent (Cronbach's $\alpha = .51^2$ and $.85$) and largely uncorrelated, $r = .03$, $p = .82$.

Anticipated regret was assessed by the same 15 items as in Study 2a. Both the nine items representing regret for failed prevention goals and the six items representing regret for failed promotion goals showed good reliability (Cronbach's $\alpha = .79$ and $.83$). The two scales were largely uncorrelated, $r = .15$, $p = .25$.

The general regret proneness was again assessed by the German version of Schwartz et al.'s Regret Scale (Cronbach's $\alpha = .74$).

Results (Study 2b)

As in Study 2a, in order to assess the relation between regulatory focus strength and type of regret, regression analyses with both the promotion and prevention scales as predictors and the two types of regret as criterion variables were conducted. Higher promotion scores were positively related to promotion goal regrets, $\beta = .27$, $t(57) = 2.04$, $p < .05$, whereas higher prevention scores were not significantly related to this type of regret, $\beta = -.02$, $t(57) = .13$, $p = .89$. Further, higher prevention scores were positively related to prevention goal regrets, $\beta = .25$, $t(57) = 1.90$, $p = .063$, whereas higher promotion scores were not, $\beta = -.13$, $t(57) = -1.13$, $p = .26$.

Factor analyses of the scales. As in Study 2a, to examine the relations between regulatory focus, specific outcome regrets, and general regret proneness, the five scales were submitted to a principal axis factor analysis with oblimin rotation. Correlations between the

² It should be noted that other studies have observed low internal consistency of the RFQ prevention scale as well (cf. Semin, Higgins, Gil de Montes, Estourget, & Valencia, 2005).

scales are shown in Table 2, confirming the results from Study 2a. Also, as in the previous study, the factor analysis revealed a two-factor solution with prevention focus, prevention goal regret, and general regret proneness loading on one factor, and promotion focus and promotion goal regret loading on the other factor (with eigenvalues 1.58 and 1.27 accounting for 33.16% of the variance; for factor loadings, see Table 2).

Discussion (Studies 2a and 2b)

Studies 2a and 2b replicated the results from Study 1 using two different measures of chronic regulatory focus with participants indicating anticipated regret on items assessing different types of regret. They provided evidence that, as expected, not only a promotion focus, but also a prevention focus is related to anticipated regret for specific negative decision outcomes. A chronic promotion focus was linked to the anticipation of promotion goal regret, whereas a chronic prevention focus was linked to the anticipation of prevention goal regret.

Further, both studies showed that prevention focus and prevention goal regret are related to general regret proneness, whereas promotion focus and promotion goal regret are not. This suggests that promotion goal regret represents a different type of regret that is unrelated to decision uncertainty and ruminative thoughts about decision outcomes.

Studies 1, 2a, and 2b supported our assumptions in the context of academic choice. To further examine the effect of regulatory focus on the anticipation of regret in a different context, a third study was conducted.

Study 3

Study 3 aimed to extend the findings from the previous studies to a different decision context. It assessed regrets employees anticipate when they are confronted with the decision of whether to accept a job offer or not. As in the previous studies, it was assumed that a promotion focus would be related to more regret for missed positive outcomes and for not

obtaining promotion goals, whereas a prevention focus would be related to more regret for obtaining negative outcomes and for not achieving prevention goals.

Method

Participants and procedure. Fifty-two employees (33 women, 19 men) participated in this study. Their mean age was 41.46 ($SD = 12.81$). Participants were all highly qualified employees (i.e., their minimum qualification was a bachelor's degree from a university). The study was conducted online. After completing a chronic regulatory focus measure and a filler task unrelated to the study, participants indicated how much they would regret different possible negative consequences of accepting a job offer.

Measures

Regulatory focus. As in Study 2a, chronic regulatory focus was assessed by the Chronic Regulatory Focus Concerns measure (CRFC; Keller & Bless, 2008). Both the promotion and prevention scales were internally consistent (Cronbach's $\alpha = .83$ and $.86$) and largely uncorrelated ($r = .12$, $p = .40$).

Anticipated regret. Participants read a short text in which they were asked to imagine that they were offered an interesting job by a renowned enterprise. In order to assess anticipated regret for negative consequences of accepting the job, the items from Studies 2a and 2b were adapted to a work context. Some of the items did not suit the job choice context and therefore were not used in this study. Overall, participants rated 11 items that completed the sentence "I would regret my decision to accept the job if ..." on a scale ranging from 1 (*not at all strongly*) to 11 (*very strongly*). Five items assessed regrets for missing a positive outcome or for not obtaining a promotion goal (e.g., "I would regret my decision to accept the job if the new tasks didn't challenge me"), and six items assessed regrets for obtaining a negative outcome or for not obtaining a prevention goal (e.g., "I would regret my decision to accept the job if I had the impression that I was not able to fulfill the requirements of my new

employer"; see Appendix for all items). Both the promotion goal regret items and the prevention goal regret items showed good reliability (Cronbach's $\alpha = .90$ and $.80$). The two scales were largely uncorrelated, $r = .10$, $p = .49$.

General regret proneness. As in the previous two studies, general regret tendency was assessed by the German version of Schwartz et al.'s Regret Scale (Cronbach's $\alpha = .74$).

Results

Regulatory focus and specific regrets. In order to assess the relation between regulatory focus strength and type of regret, regression analyses with both the promotion and prevention scales as predictors and the two types of regret as criterion variables were conducted. Higher promotion scores were positively related to promotion goal regrets, $\beta = .28$, $t(51) = 2.04$, $p < .05$, whereas higher prevention scores were not, $\beta = .03$, $t(51) = .20$, $p = .84$. Further, higher prevention scores were positively related to prevention goal regrets, $\beta = .60$, $t(51) = 5.23$, $p < .001$, whereas higher promotion scores were not, $\beta = -.04$, $t(51) = -.34$, $p = .73$.

Regulatory focus, anticipated regrets, and regret proneness. As in Studies 2a and 2b, to examine the relations between regulatory focus, specific outcome regrets, and general regret proneness, the five scales were submitted to a principal axis factor analysis with oblimin rotation. Correlations between the scales are shown in Table 3, confirming the results from the previous studies. Again, the factor analysis revealed a two-factor solution with prevention focus, prevention goal regret, and general regret proneness loading on one factor and promotion focus and promotion goal regret loading on the other factor (with eigenvalues of 1.98 and 1.35 accounting for 48.59% of the variance; for factor loadings, see Table 3).

Discussion

This study extended the findings from Studies 1, 2a, and 2b to a different decision context. For contemplating a bad outcome concerning the acceptance of a job offer, it was

found that promotion- and prevention-focused individuals differed regarding which negative consequences—failing to obtain promotion versus prevention goals—were more strongly associated with anticipated regret. It was confirmed, as well, that a prevention focus and prevention goal regret were related to general regret proneness, whereas a promotion focus and promotion goal regret were not.

If promotion- and prevention-focused individuals anticipate regret for different negative decision consequences the question arises if these two types of anticipated regret also affect decision behavior differently. In the job decision example from Study 3, rejecting the offer and staying with the current job represents a safe choice, whereas accepting the offer and changing the job is related to greater uncertainty and thus represents a risky choice.

We assumed that, in such a context, prevention goal regret and general, non-specific regret would result in similar decision behavior and be related to preference for safe options, whereas promotion goal regret would be related to preference for risky options. We conducted a further study to test how the activation of focus-specific regrets affects decision behavior.

Study 4

Study 4 aimed to assess the effect of prevention goal and promotion goal regret in comparison to unspecific regret on actual behavior. It was assumed that both prevention goal and non-specific regret would elicit risk-averse behavior, whereas promotion goal regret would produce risk-seeking behavior. Regrets were induced by making participants describe a situation in which they had experienced one of the three types of regret (prevention goal, non-specific, or promotion goal regret). Subsequently, decision behavior was assessed in a lottery choice task.

Method

Participants and procedure. Seventy-two students of the University of Vienna (46 women, 26 men) participated in this study. Their mean age was 23.57 ($SD = 4.15$). Data were collected in the laboratory via computer. Participants were randomly assigned to one of three experimental conditions (unspecific regret, prevention goal regret, promotion goal regret). After activating regret, participants completed a lottery choice task in order to assess actual decision behavior. At the end of the experiment, participants received the amount of money they had earned in the task (0.25 €, 4 €, 5 €, or 10 €; participants who had earned 0.25 € were actually paid 2 € for fairness reasons). Four participants who had not understood the choice task properly were excluded from analysis leaving a final sample of 68 participants.

Measures

Anticipated regret. Regret was activated by an autobiographical recall procedure that is frequently used in regret and emotion research (e.g., De Hooge, Breugelmans, & Zeelenberg, 2008; Martinez, Zeelenberg, & Rijsman, 2011). Participants were asked to think of a recent experience of regret. In the unspecific regret condition, it was not further defined what type of regret the event should refer to. In the prevention goal regret condition, participants were asked to think of a regret that had been caused by one or more aspects representing this type of regret. In the promotion goal regret condition, participants were asked to think of a regret that had been caused by one or more aspects representing this type of regret. The aspects were adapted from the items of Study 2 and 3 (e.g., for prevention goal regret: “Think of a situation [...] where you regret now that you did not think carefully enough about your behavior”; and for promotion goal regret: “Think of a situation [...] where you regret now that you could have obtained a better result if you had behaved differently”; see Appendix for all aspects).

In all conditions, participants first described the cause of their regret and how they felt when experiencing it (e.g., from participants’ answers: “angry about myself”, “guilty”,

“sad”). Then, they completed three “If ... then” sentences describing their regret more in detail (e.g., from the prevention goal regret condition: “If I had been more self-confident, I would have reached my goal”; from the promotion goal regret condition: “If I had gone abroad, I would have more life experience”).

Choice behavior. Next, participants took part in a – seemingly unrelated – lottery choice task (Holt & Laury, 2002). The task we used is one of the most frequently adopted ones in order to assess risk preference in a simple and context-free way (cf. Anderson & Mellor, 2008). The task reflects real decision behavior, because, while completing it, participants are aware that each of the decisions between two lotteries they make can determine the amount of money they are paid at the end. Further, in this task participants choose between a safer lottery that is related to a moderate earning (which could be considered a prevention goal), and a riskier lottery that is related to a possibly higher earning (which could be considered a promotion goal), and at the same time to the risk of a very low earning.

We used an adapted version of the task in which participants made 8 decisions between Lottery A and Lottery B (see Table 4). The possible earnings of Lottery A were either 4 € or 5 €, and the possible earnings of Lottery B were either 0.25 € or 10 €. In Lottery A, the payoffs were less variable than in Lottery B. Therefore in all 8 decisions, Lottery A was considered to be the safe choice, and Lottery B was considered to be the risky choice (cf. Anderson & Mellor, 2008). The probability of receiving the higher amount in both lotteries increases with each decision (from 10% to 80%). In decision 1, the higher amount (5 € or 10 €) was paid if the throw of a 10-sided die was 1, and the lower amount (0.25 € or 4 €) was paid if the throw of the die was 2-9, thus there being a 10% chance of getting the higher amount. By decision 8, the higher amount (5 € or 10 €) was paid if the throw of a 10-sided die was 1-8 and the lower amount (0.25 € or 4 €) was paid if the throw of the die was 9-10,

thus there being an 80% chance of getting the higher amount. The more often participants choose Lottery B, the more risk-seeking they are considered.

After participants had made all 8 decisions, the experimenter by a first die toss determined the decision row (1–8) that would be chosen for payment, and by a second die toss determined the earning of the lottery participants had chosen in that specific decision row (Lottery A: 4 € or 5 €; Lottery B: 0.25 € or 10 €).

Results

Regret conditions and choice behavior. The effect of type of regret on choice behavior was tested by an analysis of variance with regret condition as the independent variable and choice behavior (number of risky choices) as dependent variable. In line with our hypothesis, regret condition showed a significant effect on the number of risky choices, $F(2, 65) = 3.45, p = .04$. Participants in the promotion goal regret condition ($M = 4.74, SD = 2.11$) on average chose the risky option more often than participants in the prevention goal regret ($M = 3.39, SD = 1.83; t(44) = 2.31, p = .03$) and participants in the unspecific regret condition ($M = 3.45, SD = 1.92; t(43) = 2.13, p = .04$). This corresponds to a percentage of risky choices of 59% in the promotion goal regret condition, 42% in the prevention goal regret condition, and 43% in the unspecific regret condition.³

Discussion

This study showed that promotion-relevant regret – regret for not obtaining promotion goals – and prevention-relevant regret – regret for not obtaining prevention goals – affect choice behavior differently. Prevention goal regret and non-specific regret resulted in risk-averse behavior, which previously has shown to be a typical reaction to anticipated regret (e.g., Simonson, 1992; Parker et al., 1996). Promotion goal regret, instead, induced risk-

³ Participants' choice behavior was reflected in their earnings. On average, participants earned 4.88 €. Participants in the promotion goal regret condition earned more ($M = 6.35, SD = 3.86$) than participants in the prevention goal regret condition ($M = 3.80, SD = 2.71; t(44) = 2.58, p = .01$) and participants in the unspecific regret condition ($M = 4.35, SD = 3.65; t(43) = 1.78, p = .08$).

seeking behavior, suggesting that it does not only constitute a different type of regret, but that it also affects behavior differently.

General Discussion and Conclusions

The present research examined the influence of self-regulatory focus on anticipated regret and the effect of different focus-relevant regrets on choice behavior. In the first three studies, we activated regret in different decision contexts that were highly relevant for participants by making them think about making a wrong choice. We assessed the effects of both situationally induced and chronic regulatory focus on general anticipated outcome regret (i.e., overall regret intensity for making the wrong choice), and specific anticipated outcome regret. In Studies 2 and 3, we used two different scales for assessing regulatory focus, the CRFC (Keller & Bless, 2008) and the RFQ (Higgins et al, 2001), that tap into different aspects of regulatory focus. The validity of our results is supported by the finding that the observed effects are constant across different measures of regulatory focus. In Study 4, we examined the effect of promotion- and prevention-relevant regret on actual decision behavior, adopting a behavioral choice task.

In line with our predictions, it was found that the two motivational orientations did not affect the overall intensity of anticipated regret for failing to make the right choice in an important life decision. This shows that anticipating a wrong decision is not necessarily perceived as more negative by prevention- than by promotion-focused individuals. More importantly, the studies further showed that a promotion focus elicits more regret for absent positive aspects and unfulfilled promotion goals, whereas a prevention focus elicits more regret for present negative aspects and unfulfilled prevention goals. Studies 2 and 3 showed, as well, that only a prevention focus and prevention goal regret were related to a commonly used regret concept that defines regret as uncertainty about and rumination on one's decision outcomes, whereas a promotion focus and promotion goal regret were not. Hence, the

promotion-related type of anticipated regret is not related to a spontaneous propensity to ruminate about possible decision alternatives after a decision. The finding that promotion and prevention goal regrets are distinct types of regret is further supported by Study 4 showing that they also have different behavioral implications. Whereas non-specific and prevention-relevant regret were both related to safety-oriented choice behavior, promotion-relevant regret produced a different choice behavior (in this case: greater preference for risky vs. safe options).

The present results contribute to an understanding of the role of motivational aspects in anticipating negative decision outcomes and to regulatory focus theory. They showed that the two motivational orientations influence which negative outcome produces more anticipated regret. Our results further suggest that regret in accordance with common regret conceptualizations (e.g., Schwartz et al., 2002) can be considered a prevention-specific emotion, but that in specific contexts, regret is also relevant to promotion-focused self-regulation. The regret concept as used by Schwartz et al. conceptualizes regret as having a tendency to *spontaneously* ruminate and being uncertain about one's decision result. This tendency to question the quality of an outcome that is likely to elicit a feeling of regret - even if there is no objective reason for it - seems to be more pronounced in prevention- than in promotion-oriented individuals. At the same time, our results suggest that promotion-relevant regret might be prevalent once people are explicitly induced to think about possible regrets. In Study 1, participants generated more promotion- than prevention-relevant regrets. This is in line with findings from other studies that suggest a greater tendency of people to report promotion-related regrets and counterfactual thoughts (Mandel & Lehman, 1996; Roeser et al., 1999). Also in these studies, participants were explicitly asked to report regrets, which is different from spontaneously engaging in comparative thoughts concerning an outcome. Thus, it seems that the two types of regret do not differ in how frequently they generally

occur, but that they differ with respect to the conditions under which they are most likely to occur.

Our results add to prior research suggesting that promotion-relevant regret and prevention-relevant regret represent different types of regret and that both types of regret should be considered when examining the effects of anticipated regret on behavior. It also seems conceivable to assume that typical effects of regulatory focus on preference might be mediated by anticipated regret. For example, prevention-focused people's stronger preference for stability in different contexts, their reluctance to give up established beliefs, as well as their tendency to ensure correct rejections may be mediated by prevention goal regret, whereas promotion-focused people's greater openness to change, their willingness to accept uncertainty, as well as their tendency to ensure hits may be mediated by promotion goal regret (e.g., Crowe & Higgins, 1997; Förster, Higgins, & Strack, 2002; Liberman, Idson, Camacho, & Higgins, 1999).

Our results may also shed light on previous studies that examined the influence of anticipated regret on choice, but did not consider the possible role of motivational orientation. Previous research has shown, for example, that the anticipation of regret mostly promotes risk-avoiding, but sometimes also promotes risk-seeking behavior (e.g., Ritov & Baron, 1995; Simonson, 1992; Zeelenberg & Beattie, 1997; Zeelenberg, Beattie, Van der Pligt, & De Vries, 1996). Zeelenberg and colleagues suggest that whether regret induces risk-seeking or risk-avoidance depends on which option shields from feedback on non-chosen options, and find that if the risky option shields from learning the outcome of the safe option, people tend to choose the risky option and vice versa. Yet, another explanation could be that the idea of learning the outcome of the risky option might have induced a different type of regret than the idea of learning the outcome of the safe option. The idea of learning the outcome of the risky option could have made people think about a possibly higher gain of the risky option, thus

inducing promotion goal regret (“What if I miss a higher gain choosing the safe option?”). The idea of learning the outcome of the safe option, instead, could have made people think about a possible loss of the risky option, thus inducing prevention goal regret (“What if I miss an average gain choosing the risky option?”). In the decision task we used in Study 4, people could obtain a moderate vs. a high gain, and prevention goal regret was related to safe behavior, whereas promotion goal regret was related to risky behavior. The behavioral effect of prevention and promotion goal regret may change depending on the type of possible outcome. For example, it may reverse when the possible outcome is a moderate vs. high loss (cf. Scholer, Zou, Fujita, Stroessner, & Higgins, 2010).

The two types of regret may not only differ in when they are more likely to occur, they may also differ on another dimension. Indeed, taking a closer look at Study 1 and the contents of the two types of regret, it seems that a prevention focus induces regrets concerning aspects that refer to a more immediate future (e.g., stress, negative evaluation), whereas a promotion focus induces regrets referring to more long-term goals (e.g., personal development, challenge). We had two independent raters evaluate the regrets from the open answers in Study 1 on the dimensions concrete, abstract, near future, and distant future (each of the four dimensions on a 7-point-scale ranging from 1 = does not apply at all to 7 = applies completely). The promotion-relevant regrets, in comparison to the prevention-relevant regrets were evaluated as being more abstract (concrete–abstract difference score with higher values indicating dominance of concreteness: $M_{\text{promotion goal regrets}} = -.03$, $SD = 2.61$; $M_{\text{prevention goal regrets}} = 1.62$, $SD = 2.21$), $F(1, 353) = 39.75$ $p < .001$, and as referring to the more distant future (near-distant difference score with higher values indicating dominance of near future: $M_{\text{promotion goal regrets}} = .23$, $SD = 2.33$; $M_{\text{prevention goal regrets}} = 1.12$, $SD = 2.20$), $F(1, 353) = 13.52$ $p < .001$. Indeed, also other studies have found a promotion focus to be related to more abstract language and greater temporal distance (Pennington & Roese, 2003; Semin et al.,

2005); insofar it is not surprising that focus-specific regrets show a similar relation to these dimensions.

It is important to note though, that both types of regret seem to influence choice behavior, as shown in Study 4. Also, this dimension allows interesting assumptions for future research. For example, it could be examined how the temporal dimension in focus-specific regrets is related to choice behavior. When facing a job decision, for example, regret for not obtaining a prevention goal could be related to immediate action (accepting a job offer at hand), whereas regret for not obtaining a promotion goal could be related to inaction (waiting for a possibly better job offer). Thus, even though a promotion focus tends to be related to regrets of inaction, and a prevention focus tends to be related to regrets of action (Roese et al., 2006), prevention and promotion goal regrets in some contexts might lead to behavior one would not necessarily expect from promotion- or prevention-focused individuals in situations where regret is not involved.

Future research might also examine the role of self-regulatory states in the context of experienced life regrets. Recent research (Beike, Markman, & Karadogan, 2009) suggests that what people regret most when looking back on their lives, are missed opportunities, and in particular, inactions related to missed opportunities. Generally, action regrets fade over time whereas inaction regrets seem to become stronger over the life course (Gilovich & Medvec, 1994, 1995). However, the current research suggests that this pattern may differ for promotion- and prevention-focused individuals. Similar assumptions concerning post-decisional regret can also be made for other decision domains in which the temporal distance between the decision and its consequences is shorter, such as consumer choice (Mannetti, Pierro, & Kruglanski, 2007).

Future research should examine further the behavioral implications of these different types of regret. This is an important issue, as Higgins points out in his seminal paper

presenting regulatory focus theory (1997, p. 1297): “Are the motivational effects of anticipated failure the same when approaching a desired end-state as when avoiding an undesired end-state?”

Based on our results that regulatory focus is associated with specific focus-relevant regrets, it might also be assumed that regret intensifies focus-specific behavior. For example, contexts are conceivable in which regret intensifies the tendencies of prevention-focused individuals to attend to the presence and absence of negative outcomes and the tendencies of promotion-focused individuals to attend to the presence and absence of positive outcomes. If regret intensifies focus-specific behavior, this might have severe consequences for decisions. For social groups with a predominant prevention focus, the anticipation of regret might impede them from risky educational decisions (selecting a challenging subject of study), whereas the anticipation of regret might facilitate such decisions for groups with a predominant promotion focus. In the end, this might have manifest consequences regarding the educational and professional careers of individuals with a social background that may foster the development of a predominant prevention focus (cf. Oyserman et al., 2007).

To summarize, our results provide the first evidence for the effects of motivational orientation on the anticipation of negative decision consequences and suggest that two types of regret should be distinguished. The main contribution of the present research is that it shows the explanatory power of regulatory focus theory in the area of regret and decision making. Indeed, regret is considered to be one of the most important drivers of decisions. The present research shows for the first time that promotion- and prevention-specific types of regret exist, and that they affect decisions in opposite directions. It shows that the key predictions of regulatory focus theory are applicable to the area of regret and decision making. Thus, this research adds to research on regulatory focus theory, showing that the two regulatory foci are not only linked to different emotions like happiness and disappointment

for promotion, and anxiety and relaxation for prevention, but that they are also linked to different contents of the cognitive emotion of regret. We do not know of any previous research on regulatory focus theory that has related regulatory focus to regret (with exception of Markman & McMullen, 2003, Markman et al., 2006, Roese et al., 1999, 2006, who did not relate it to *anticipated* regret or actual decision behavior).

Given the findings obtained in the present set of studies, it seems worthwhile to further examine the self-regulatory aspects of regret in the decision process. It is evident that a motivational perspective on regret and its impact on judgment, decision making and behavior provide valuable insights regarding the nature of regret as a prototypical cognitive emotion.

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Table 1

Study 2a: Correlations between Promotion, Prevention, Promotion Goal Regret, Prevention Goal Regret, and General Regret Proneness, and Factor Loadings of the Scales

	Correlation matrix					Factor analysis	
	1.	2.	3.	4.	5.	I	II
1. Promotion	-					.06	.54
2. Prevention	.04	-				.78	-.11
3. Promotion goal regret	.38**	-.12	-			-.07	.71
4. Prevention goal regret	.09	.33**	.02	-		.45	.06
5. General regret proneness	.05	.58**	.02	.35**	-	.76	.01

* $p < .05$. ** $p < .01$.

Table 2

Study 2b: Correlations between Promotion, Prevention, Promotion Goal Regret, Prevention Goal Regret, and General Regret Proneness, and Factor Loadings of the Scales

	Correlation matrix					Factor analysis	
	1.	2.	3.	4.	5.	I	II
1. Promotion	-					-.08	.33
2. Prevention	.03	-				.41	.02
3. Promotion goal regret	.27*	.02	-			.15	.80
4. Prevention goal regret	-.14	.24+	.15	-		.63	.08
5. General regret proneness	-.04	.27*	-.06	.33*	-	.57	-.11

+ $p < .07$. * $p < .05$. ** $p < .01$.

Table 3

Study 3: Correlations between Promotion, Prevention, Promotion Goal Regret, Prevention Goal Regret and General Regret Proneness, and Factor Loadings of the Scales

	Correlation matrix					Factor analysis	
	1.	2.	3.	4.	5.	I	II
1. Promotion	-					.04	.38
2. Prevention	.12	-				.99	.12
3. Promotion goal regret	.28*	.06	-			-.04	.74
4. Prevention goal regret	.03	.60**	.10	-		.58	.12
5. General regret proneness	-.05	.54**	-.18	.31*	-	.58	-.22

* $p < .05$. ** $p < .01$.

Table 4

Study 4: Lottery choice task with 8 decisions (adapted from Anderson & Mellor, 2008; Holt & Laury, 2002) that were each presented on a separate page

Nr.	Option A	Option B	Expected payoff	
			Option A	Option B
1	5 € if the die is 1 ; 4 € if the die is 2-10	10 € if the die is 1 ; 0.25 € if the die is 2-10	4.1	1.2
2	5 € if the die is 1-2 ; 4 € if the die is 3-10	10 € if the die is 1-2 ; 0.25 € if the die is 3-10	4.2	2.2
3	5 € if the die is 1-3 ; 4 € if the die is 4-10	10 € if the die is 1-3 ; 0.25 € if the die is 4-10	4.3	3.2
4	5 € if the die is 1-4 ; 4 € if the die is 5-10	10 € if the die is 1-4 ; 0.25 € if the die is 5-10	4.4	4.1
5	5 € if the die is 1-5 ; 4 € if the die is 6-10	10 € if the die is 1-5 ; 0.25 € if the die is 6-10	4.5	5.1
6	5 € if the die is 1-6 ; 4 € if the die is 7-10	10 € if the die is 1-6 ; 0.25 € if the die is 7-10	4.6	6.1
7	5 € if the die is 1-7 ; 4 € if the die is 8-10	10 € if the die is 1-7 ; 0.25 € if the die is 8-10	4.7	7.1
8	5 € if the die is 1-8 ; 4 € if the die is 9-10	10 € if the die is 1-8 ; 0.25 € if the die is 9-10	4.8	8.0

Appendix

Regret Scale Items (Study 2)

Regret for present negative, ought-related aspects

I would regret my decision to study at this university if ...

1. ... the studies involved a lot of stress.
2. ... my performance was poor.
3. ... I had the feeling that the studies were too much for me.
4. ... I wasn't able to fulfill the requirements of the university.
5. ... I was afraid that I would not be able to complete my degree in the given time.
6. ... I realized that the chosen subject was the wrong one.
7. ... my previous knowledge was not sufficient to follow the teaching sessions.
8. ... I had difficulties in fulfilling my own requirements.
9. ... I had the impression that I was not able to fulfill the requirements of the studies.

Regret for absent positive, ideal-related aspects

I would regret my decision to study at this university if ...

10. ... no demands were placed on me as a student.
11. ... I didn't experience at least one challenge.
12. ... the general level was a too little demanding.
13. ... I couldn't realize my ideas.
14. ... I had the feeling that I was not developing personally.
15. ... I was not challenged.

Regret Scale Items (Study 3)

Regret for present negative, ought-related aspects

I would regret my decision to accept the job if ...

1. ... the job involved a lot of stress.
2. ... I had the feeling that the new tasks were too much for me.
3. ... I had the feeling that my experience was not sufficient for my new occupation.
4. ... I had the impression that I was not able to fulfill the requirements of my new employer.
5. ... I had difficulties in fulfilling my own requirements.
6. ... my performance was evaluated negatively.

Regret for absent positive, ideal-related aspects

I would regret my decision to accept the job if ...

7. ... I didn't experience at least one challenge.
8. ... my new occupation was less demanding than I had expected.
9. ... I couldn't realize my ideas.
10. ... I had the feeling that I was not developing on the job.
11. ... the new tasks didn't challenge me.

Regret Activation Items (Study 4)

Think back to an important situation in your life, in which you later regretted something.

Think of a situation in which the regret has been caused by one or more of the following aspects and where you regret now that ...

Regret for present negative, ought-related aspects

- you did not think carefully enough about your behavior.
- you didn't fulfill the requirements imposed on you.
- you didn't fulfill your own requirements.
- you were evaluated negatively by others due to your behavior.
- you felt like things were too much for you.

- you acted and made a mistake.

Regret for absent positive, ideal-related aspects

- you could have obtained a better result if you had behaved differently.
 - you missed an opportunity.
 - you did not take a challenge.
 - you couldn't realize your ideas.
 - you hampered yourself from developing due to your behavior.
 - you didn't act and thus missed an opportunity.
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