

Regret aversion and decision process quality: Effects of regret salience on decision process carefulness [☆]

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Abstract

A considerable amount of past research has examined the effects of regret aversion on which options decision makers choose. However, past research has largely neglected to address the effect of regret aversion on the decision process. We conducted five experiments to examine the effect of making regret salient on decision process quality. We predicted that increased regret aversion would lead to more careful decision processing. The results consistently supported this prediction across the different decision situations, incentive structures, regret salience manipulations, and dependent variables used. In all experiments making regret salient led decision makers to take significantly longer to reach a decision. In Studies 2a, 2b, and 4 it also led participants to collect significantly more information before making a choice. Implications and future directions are discussed.

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When making decisions, such as which job offer to accept, which house to buy, or which medical treatment to undergo, people often worry about the regret that might result from their choices (e.g., Connolly & Zeelenberg, 2002). Regret aversion has been found to influence choices in a variety of important domains including sexual behavior (Richard, van der Pligt, & de Vries, 1996), negotiation behavior (Larrick & Boles, 1995), health-related decisions (Connolly & Reb, 2003; Wroe, Turner, & Salkovskis, 2004), consumer behavior (Inman & Zeelenberg, 2002; Simonson, 1992), and investment decisions (Seta, McElroy, & Seta, 2001).

How exactly regret aversion affects decision making has been the topic of a considerable amount of research dating

back to the very beginnings of modern decision theory (Savage, 1951). However, almost all of the empirical and theoretical research has been concerned with the influence of decision makers' worries about potential future regret on *choice of option* (i.e., which option is chosen). While this research has yielded important results, it has largely neglected another potentially important role of regret aversion in decision making: its influence on the *decision process*. This paper presents several experiments on the effect of regret aversion on the decision process. Specifically, we examine whether heightened regret salience leads to more careful, higher-quality, decision processing as reflected in measures of information collection and decision duration. We start by reviewing past research on regret aversion.

Regret aversion and choice of option

Most research on regret aversion has been concerned with its influence on which option is chosen. A crucial

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idea guiding this research has been that decision makers—rather than evaluating every option in isolation as in traditional expected utility theory—evaluate options *comparatively*. This approach dates back to Savage (1951), who proposed a *minimax regret rule* for decision making under uncertainty (that is, when possible outcomes can be specified but their probabilities cannot). This rule seeks to minimize the possible post-decisional regret for having chosen the relatively worse option. To illustrate, consider a decision maker who needs to decide whether to carry an umbrella or not and anticipates two possible future states of the world: rain or sunshine (Savage, 1951; p. 56). She introspects and derives her utilities for the different outcomes, shown in Table 1, left columns. Next, she comparatively evaluates the options by calculating relative losses. To do so, she subtracts the worse outcome from the better outcome for each possible state of the world (assuming zero regret if the chosen option yielded the better outcome) conditional on the state. This yields a regret matrix as depicted in Table 1, right columns. To minimize the maximum expected regret, she chooses to carry an umbrella, because a relative maximum loss (i.e., regret) of 5 is lower than a relative maximum loss (regret) of 14.

The importance of Savage's minimax regret rule lies probably less in its value as a normative and descriptive model of decision making (e.g., Edwards, 1954) than in the fact that several assumptions and characteristics of the model constitute, in whole or in part, important underlying assumptions and guiding principles of much subsequent research on regret aversion. These assumptions are (cf. Connolly & Reb, 2005):

- (1) Regret is seen as aversive: Decision makers are regret averse and, therefore, have an incentive to avoid, or at least reduce or minimize, regret.
- (2) Regret is considered anticipatable: In order to avoid regret, decision makers are thought to predict its intensity for the different options under different states of the world and use these anticipated regret intensities as a basis for choosing the (expected) regret minimizing option.
- (3) Anticipated regret is a function of predicted decision outcomes (and experienced regret a function of actual outcomes). Other aspects of a decision, such as the decision process, are not explicitly considered.

Table 1
Illustration of Savage's Minimax Regret Rule

Action	Utility State		Relative Loss/Regret State	
	Rain	Shine	Rain	Shine
Carry Umbrella	4	5	0	5
Don't Carry	-10	10	14	0

Notes. Positive numbers in the two rightmost columns indicate regret or a relative loss.

- (4) The intensity of anticipated regret associated with an outcome is driven by a comparison of that outcome with the outcome that would have resulted from the foregone alternative, illustrating the importance of counterfactual thoughts about "what might have been" (e.g., Roese & Olsen, 1995; Zeelenberg, 1999a).

This focus on the comparative evaluation of outcomes is characteristic of most subsequent work. Perhaps the most well-known example is economic *regret theory*. Loomes and Sugden (1982) define regret as arising from the post-decisional thought of the decision maker that his position would have been better had he chosen differently. Bell (1982), similarly, defines regret as resulting from making the wrong decision, "wrong in the sense that the outcome of their chosen alternative proves to be worse than could have been achieved with another alternative" (p. 1156). Thus, economic regret theory proposes that decision makers choose on the basis of a modified expected utility composed of a basic expected utility component and a component for expected regret (or rejoicing, for a relatively better outcome). (In subsequent work the modified expected utility of an option also includes a component for expected disappointment/elation, e.g. Bell, 1985).

Economic regret theory has been able to account for Allais' paradox as well as other observed violations of axioms of standard expected utility theory (Bell, 1982). In addition, one can argue that taking expected regret into account when making decisions should not be considered irrational (e.g., Bell, 1982; Loomes & Sugden, 1982). In this sense, it appears to be an attractive alternative to standard expected utility theory. Regardless of the theory's normative status, however, recent empirical research suggests that early findings supporting regret theory were due to a methodological artifact (event splitting effect), thus casting serious doubt on the theory's descriptive validity (Humphrey, 1995; Starmer & Sugden, 1993).

While both the minimax regret rule and economic regret theory seem to have failed as descriptive models of choice, the broader idea that individuals tend to prefer the regret minimizing option has been widely supported (e.g., Larrick & Boles, 1995; Mellers, Schwartz, & Ritov, 1999; Zeelenberg & Pieters, 2004; Simonson, 1992; Zeelenberg, Beattie, van der Pligt, & de Vries, 1996; Zeelenberg & Beattie, 1997). For example, work by Mellers and colleagues (Mellers, 2000; Mellers et al., 1999) on *decision affect theory* has shown preferences to be affected by the difference in outcomes between the available options, which their model treats as anticipated regret.

Another important stream of research has shown that individuals' choices are affected by a manipulation of the expected availability of outcome feedback on the foregone option (Zeelenberg & Beattie, 1997; Zeelenberg, Beattie, van der Pligt, & de Vries, 1996). The idea is that

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