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Emotion, cognition, and decision making

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INTRODUCTION

Our everyday experiences leave little doubt that our emotions can influence the decisions we make, much as the outcome of our decisions can influence the emotions we experience. Yet, the complex interplay of emotion, cognition, and decision making has received limited systematic attention in empirical research. The diverse contributions to this Special Issue address different aspects of this interplay. To place these contributions into context, this paper provides a short and selective discussion of the multiple links between emotion, cognition, and decision making. I first address the influence of moods and emotions experienced at the time of decision making. Subsequently, I turn to the affective consequences of decisions and the role of anticipated and remembered affect in decision making.

AFFECT AT THE TIME OF DECISION MAKING

As a large body of theorising and research documents, moods and emotions can profoundly influence cognitive processes (for reviews see Clore, Schwarz, & Conway, 1994; Forgas, 1995; Schwarz & Clore, 1996). First, individuals are more likely to recall information from memory that is congruent rather than incongruent with their current feelings (e.g. Bower, 1981; Isen, Shalker, Clark, & Karp, 1978). Second, individuals may use their apparent affective response to a target as a basis of judgement, essentially asking themselves: "How do I feel about this?" Because it is difficult to distinguish one's pre-existing feelings from one's response to the target at hand, individuals are likely to evaluate about any target more positively when they are in a happy rather than sad mood. Such mood-congruent evaluations are not obtained, however, when individuals are aware that their feelings are due to a source unrelated to the target, thus

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rendering them uninformative for the judgement at hand (see Schwarz & Clore, 1988, 1996 for reviews). Both mood-congruent recall and the use of one's feelings as a basis of judgement, may influence decision making by influencing the accessibility and evaluation of valenced features of the decision situation. Moreover, individuals in a happy mood tend to overestimate the likelihood of positive, and to underestimate the likelihood of negative outcomes and events, whereas the reverse holds for individuals in a sad mood (e.g. Johnson & Tversky, 1983; Nygren, Isen, Taylor, & Dulin, 1996).

In addition, affective states influence which strategy of information processing individuals are likely to adopt. As a large body of experimental research documents, individuals who are in a happy mood are more likely to adopt a heuristic processing strategy that is characterised by top-down processing, with high reliance on pre-existing knowledge structures and relatively little attention to the details at hand. In contrast, individuals who are in a sad mood are more likely to adopt a systematic processing strategy that is characterised by bottom-up processing, with little reliance on pre-existing knowledge structures and considerable attention to the details at hand (for a review see Schwarz & Clore, 1996). These differences have been observed across a wide range of content domains, including the processing of persuasive messages (e.g. Schwarz, Bless, & Bohner, 1991), the use of stereotypes in impression formation (e.g. Bodenhausen, Kramer, & Süsser, 1994), and reliance on scripts for behavioural sequences (e.g. Bless et al., 1996). Consistent with the more detail-oriented processing style fostered by negative moods, Luce, Bettman, and Payne (1997, p. 384) observed that "decision processing under increasing negative emotion both becomes more extensive and proceeds more by focusing on one attribute at a time". These differences in processing style presumably reflect that our thought processes are tuned to meet the requirements of the current situation, which are in part signalled by our affective states (Schwarz, 1990). In a nutshell, we usually feel bad when things go wrong and feel good when we face no particular problems. Hence, negative affective states may signal that the current situation is problematic and may hence elicit a processing style that pays close attention to the specifics of the apparently problematic situation. In contrast, a positive affective state may signal a benign environment that allows us to rely on our usual routines and pre-existing knowledge structures. Consistent with these assumptions, mood effects on processing style are eliminated when the informational value of the mood is called into question through misattribution manipulations (Sinclair, Mark, & Clore, 1994), much as has been observed for mood effects on evaluative judgements (Schwarz & Clore, 1983).

Hertel, Neuhof, Theuer, and Kerr (this issue) extend this line of research by addressing the impact of moods on individuals' decision behaviour in a

chicken dilemma game. Consistent with previous theorising, their findings suggest that individuals in a happy mood are likely to heuristically imitate the behaviour of other players, whereas individuals in a sad mood base their moves on a systematic analysis of the structure of the game. These differential processing strategies result in cooperative or uncooperative behaviour under markedly different conditions, thus challenging the popular assumption that being in a positive mood would generally increase individuals' cooperativeness.

Lerner and Keltner (this issue) note that nearly all previous research has taken a valence-based approach and has focused exclusively on positive versus negative feeling states, often in the form of undifferentiated positive or negative moods. Extending the feelings-as-information approach to specific emotions, they propose that judgements and processing strategies are likely to reflect the appraisal-tendency underlying the emotion at hand. Consistent with this notion, they demonstrate, for example, that two negative emotions, fear and anger, may affect judgements of risk in opposite ways: Whereas fearful individuals made pessimistic judgements about future events, angry individuals made optimistic judgements.

In a related contribution, Gault and Sabini (this issue) explore the relationship between emotional states and support for different social policies. Consistent with Lerner and Keltner's (this issue) conjectures, their findings suggest that anger is related to a greater preference for punitive policies, whereas empathy is related to a greater preference for reparative human services policies. These relationships, however, are complicated by gender differences and the authors suggest that gender differences in emotional dispositions may mediate gender differences in policy preference.

In combination, these papers extend our understanding of the role of concurrent emotional states in judgement and decision making and offer a rich set of hypotheses for future research.

POST-DECISION AFFECT

Quite obviously, the relationship between emotions and decision making is bidirectional and the positive or negative outcome of a decision can profoundly affect the decider's feelings. Appraisal models of emotion can be fruitfully applied to predict which outcomes are likely to elicit which emotions under which conditions. In this Special Issue, Zeelenberg, van Dijk, Manstead, and van der Pligt address two distinct emotions that may result from negative outcomes, namely regret and disappointment. They propose that we experience disappointment when the chosen option turns out to be worse than we expected. In contrast, we may experience regret even when we get what we expected, but realise in hindsight that another

course of action would have been (even) better. Zeelenberg and colleagues review the antecedent conditions, appraisals, and phenomenology of regret and disappointment and discuss their behavioural consequences.

Historically, regret and disappointment are the two emotions that have received most attention in the decision-making literature, which focused on how the *anticipation* of regret and disappointment may influence individuals' choices.

ANTICIPATED AFFECT

Specifically, Bell (e.g. 1982, 1985) and Loomes and Sugden (e.g. 1982, 1986) proposed that individuals are motivated to avoid the experience of regret or disappointment and hence make decisions in a way that minimises the likelihood of these emotions. As Zeelenberg and colleagues (this Issue) note, key to these models is the assumption "that possible future emotions are taken into account when determining the expected utility of different courses of action". In their contribution, they sketch the outlines of an expected utility model that takes anticipated emotions into account (for a related discussion see Mellers, Schwartz, Ho, & Ritov, 1997). Because people experience more regret for acts of commission rather than acts of omission (Gilovich & Medvec, 1995), one of the more problematic consequences of anticipated regret is a preference for action over inaction (see Baron, 1994). As Ritov and Baron (1990) observed, parents may hesitate to vaccinate their child when the vaccine has potentially fatal side effects, even under conditions where the likelihood of a fatal side effect is only a fraction of the death rate from the disease, presumably because anticipated regret looms larger for the act of vaccination.

Note, however, that the role of anticipated feelings in decision making is not limited to the emotions of regret and disappointment. As March (1978) noted in a highly influential article, *all* decisions involve predictions of future feelings. Our choice of one entrée over another typically entails the prediction that we will derive more pleasure from the chosen one, and our decision to get married is based on the assumption that we are likely to be happy with this spouse for at least some extended period of time. Unfortunately, our attempts to predict future feelings are fraught with uncertainty and we often get it wrong, resulting in suboptimal decisions (for a comprehensive review see Loewenstein & Schkade, 1999). The variables that contribute to erroneous predictions of future feelings include incorrect intuitive theories of affective response (e.g. Ross, 1989; Snell, Gibbs, & Varey, 1995) and a tendency to focus on the specific emotion eliciting event at the expense of other variables that may influence our feelings (e.g. Gilbert, Wilson, Pinel, Blumberg, & Wheatley, 1998). For

example, Gilbert et al. (1998) observed that current assistant professors predicted that they would be much happier during the first five years after getting tenure, yet no increase in happiness was observed among individuals who had recently received tenure. By focusing on the tenure decision, predictors presumably failed to take into account that numerous other events would influence their happiness, resulting in an overestimate of the impact of the tenure decision (see also Schkade & Kahneman, 1998). Finally, erroneous predictions are particularly likely when individuals in a "cold" state are asked to predict how they would feel and act in a "hot" state (e.g. when hungry, angry, in pain, or sexually aroused; for a review see Loewenstein, 1996). So far, research into the prediction of future feelings has been primarily conducted by researchers in decision making and consumer behaviour and this area would benefit from a higher involvement of emotion researchers.

In this Special Issue, Caffray and Schneider address the relationship between beliefs about the affective consequences of risky behaviours (like drinking alcohol, using drugs, or having sex) and adolescents' participation in these behaviours. They observe that adolescents with limited experience in risky behaviours focus on avoiding the negative affective consequences associated with unfavourable future outcomes. In contrast, adolescents who engage in these behaviours more frequently emphasise that participation in these behaviours can enhance positive and reduce negative affect.

Given individuals' general difficulties with the prediction of future feelings, one may hope that extensive experience with an affect-eliciting situation would increase the validity of predictions pertaining to future similar situations. Unfortunately, this hope is unwarranted (see Loewenstein & Schkade, 1999) and memories of past feelings are themselves subject to systematic biases.

MEMORIES OF PAST AFFECT

Specifically, a comprehensive programme of research by Kahneman, Fredrickson, and colleagues (e.g. Fredrickson & Kahneman, 1993; Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993) demonstrates that our retrospective assessments of past affective episodes do not take the full range of our actual affective experiences into account. Instead, the retrospective assessments are primarily based on only two moments of the affective experience: the moment of peak affect intensity and the ending. This reliance on the peak and end of the affective experience results in a profound, and often surprising, neglect of the duration of the affective episode. In a particularly compelling laboratory demonstration, Kahneman et al. (1993) had participants go through two painful experiences of

different duration. In a short trial, participants immersed one hand in painfully cold water (14°C) for 60 seconds. In a long trial, they went through the same experience, but kept their hand in the water for an additional 30 seconds, during which the water's temperature increased from 14°C to 15°C, a temperature that is still within the range of pain, as confirmed by on-line affect reports. Accordingly, the long trial entailed the same amount of intense pain as the short trial, plus some additional pain at a lower level of intensity. Following both experiences, participants were asked which one they wanted to repeat in a third trial. A majority chose the longer trial, voluntarily exposing themselves to 60 seconds of intense pain plus 30 seconds of milder pain, instead of the merely 60 seconds of intense pain provided by the short trial. Apparently, their reliance on the peak and end of both pain episodes led them to prefer the episode with a milder ending, even though it entailed a longer exposure to painful stimulation. As this example illustrates, individuals' retrospective assessments of affective experiences tend to neglect the duration of the episode, often resulting in suboptimal decisions, like voluntary exposure to more rather than less pain.

In the final article of this Issue, Fredrickson provides a comprehensive review of this line of work and outlines promising avenues for future research. Her provocative and far-reaching discussion links different moments of affective episodes to individuals' attempts to extract meaning from past emotional experiences and offers prescriptive implications for the optimisation of happiness.

CONCLUSION

In combination, the diverse contributions to this special issue highlight the close interplay of feeling and thinking in judgement and decision making. To date, systematic collaborations between emotions and decision researchers are rare, despite the overlap in the issues they address. Moreover, the research is published in different, highly specialised journals, reducing the likelihood that researchers are exposed to relevant work in the respective "other" field. Adding to this separation is the concern that one's work may not be seen by colleagues in one's field if published in a journal geared toward the "other" audience, a concern that I frequently encountered in the preparation of this Issue. It is hoped that this Special Issue can contribute to the beginning dialogue between emotions and decision researchers, facilitating the emergence of collaborative work in the future.

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