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Intuition and affect in risk perception and decision making

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Intuition and affect have been neglected topics in the literature on human judgment and decision making for a long time. Judgmental processes involved in risk perception and decision making have traditionally been conceptualized as cognitive in nature, being based upon a rational and deliberate evaluation of the alternatives at hand. This picture started to change in the early 1980s when decision researchers looked beyond rational, deliberate, and cognitive processes and began to investigate intuitive — as opposed to deliberate — and emotional — as opposed to cognitive — aspects of decision making.

The study of affect and emotion in decision making started out with regret and disappointment theories within an economic framework (Bell, 1982; Loomes, & Sugden, 1982) and Johnsen and Tversky's seminal work on affect in risk perception (Johnsen & Tversky, 1983). Now, the issue of affect and emotion in decision making can even be regarded as a "hot" topic (Peters, Västfjäll, Gärling, & Slovic, 2006). At present, it is largely recognized that emotions are in manifold ways involved in judgments, risk perception, and decisions; and we find numerous and diverse approaches that address this question from a variety of perspectives and in a wide range of behavioral domains.

Similarly, the issue of intuitive decisions has become increasingly popular over the course of the past years (Hogarth, 2001). The origin of the study of intuition can be traced back to the heuristics-and-biases approach (Kahneman, Slovic, & Tversky, 1982) that identified deviations of human judgments from normative models. Since heuristics were seen as fast, simple, and effortless mechanisms for arriving at judgments, this approach was a basic step in the direction of locating judgment and choice on the level of intuitive processes. In later work, authors of the heuristics-and-biases program have started using the term intuition for their approach (Gilovich, Griffin, & Kahneman, 2002). Another line of research incorporating intuition into models of decision making can be seen in the development of dual-process models (Chaiken & Trope, 1999). These models assume that there are two distinct modes of operation of mental processes. One mode corresponds to the traditional view of rational deliberation. This is contrasted with an intuitive mode which is characterized by fast, automatic and effortless decisions (Kahneman, 2003).

In sum, decision research has seen a proliferation of approaches that look beyond rational, deliberate, and purely cognitive processes in decision making and investigate intuitive and emotional judgments in this area. This seemed like a good point in time to reflect the state of this emerging field in a special issue that addresses the question of how intuition and affect are related to each other and how they shape risk perception and decision making. This special issue is the result of a workshop that was held at the University of Bergen in November, 2006. We are very pleased that this initiative has attracted a great number of very interesting contributions to this special issue providing a wide diversity of perspectives. It seems that, after a beginning period in which most research searched for rather isolated effects and phenomena, it is now time to emphasize conceptual and theoretical questions. Quite a few contributions address general topics and try to clarify the functions, nature, and components of intuition and affect. Others broaden the scope to social and communicative factors. The collection of contributions clearly indicates the importance of intuition and affect in a wide array of applied domains, ranging from economics to environmental behavior.

We start the special issue with theoretical contributions that reflect upon the role of emotions in risk perception and decision making. The first article by *Pfister and Böhm* emphasizes the multiplicity of the role that emotions play in decision making. These authors argue that emotions are not a homogeneous phenomenon, but that four types of emotion should be distinguished according to the function that the emotion serves in the decision making process. One function is to provide information about pleasure and pain for preference construction. This involves emotions such as joy or distress, that is, emotions that do not imply particular cognitive appraisals of the decision situation other than the interpretation of its hedonic quality. The second function is to enable rapid choices under time pressure; this function is served by arousal states or affect programs, a typical example is the fear response. The third function is to focus attention on relevant aspects of a decision problem. This function is served by specific emotions such as regret and disap-

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pointment. The fourth function is to generate commitment concerning morally and socially significant decisions. This function is served by moral sentiments such as guilt, which prevent people from committing morally blameworthy actions. In sum, this contribution points to the diversity and multiplicity of emotions in decision making and stresses the necessity to distinguish different types of emotion.

The importance of studying specific emotions in contrast to general affect is also emphasized in the second paper by *Zeelenberg, Nelissen, Breugelmans and Pieters*. These authors present what they call the feeling-is-for-doing approach. This approach focuses on the motivational aspects of emotion. Zeelenberg et al. argue that the most important role of emotions in decision making is to guide behavioral decisions via motivational processes, allowing for fast actions if needed. Zeelenberg et al.'s argument is similar to that of Pfister and Böhm in that both papers emphasize the functions served by emotions in mastering the requirements that arise in decision situations. The prioritization of goals is the core mechanism in the feeling-is-for-doing approach. Different emotions are associated with different goals. For example, fear is associated with escape and anger with aggression. Zeelenberg et al. argue that we need to consider specific emotions and not mere affect and that the motivational function of emotions cannot be reduced to their valence. It is important to note that the feeling-is-for-doing approach assumes a forward-looking future-oriented perspective that explains how emotions can be instrumental for goal pursuit, unlike many other approaches that see emotions as indicators of past goal attainment.

The third paper by *Price and Norman* draws our attention toward the nature of intuition. The authors analyze the relationship between intuition and consciousness. Often, for instance in some dual-process models, deliberate processing is conceptualized as conscious and intuitive processing as unconscious. Price and Norman, in contrast, argue that intuition may be neither entirely conscious nor entirely unconscious. They draw on the concept of fringe consciousness (Mangan, 2003) and conceptualize intuitive processing as an informative conscious feeling without conscious access to the antecedents of the feeling. If intuitive signals are conscious, they may be monitored and their influence on behavior may be controlled by the individual in a flexible and contextually sensitive manner. The authors argue that their understanding of intuitive feelings may bridge the dichotomy between intuition and deliberation that is assumed by dual-process models.

The first three contributions provide theoretical accounts and try to clarify the concepts of emotion and intuition. Taken together, these three papers may help us to address the question of how intuition relates to affect and emotion. With respect to emotions, we learn from Pfister and Böhm and Zeelenberg et al. that affect needs to be distinguished from specific emotions, that there are different types of emotion differing in the functions they serve for decision making, and that only specific emotions help us to understand how emotions may facilitate goal pursuit in decision making. With respect to intuition, Price and Norman provide us with a definition according to which intuition corresponds to a feeling or hunch of knowing what the right response is; this feeling is conscious, but the underlying reasons are not.

Price and Norman's conceptual paper on intuition is followed by two empirical papers which study intuitive responses, but employ different concepts of intuition. *De Vries, Holland, and Witteman* think of intuition as affective signals and investigate the influence of mood on the reliance on such signals. They argue that positive mood increases reliance on affective signals whereas negative mood fosters thoughtful deliberation. Thus, mood is assumed to moderate which decision strategy people apply. In a series of three studies, the authors can confirm that in the Iowa Gambling Task people in a positive mood perform better at those stages that can be expected to be governed by affective signals than people in a negative mood.

Hanselmann and Tanner look at intuition as the use of heuristics. They investigate so-called sacred values. Sacred values are values which are seen as absolute and non-negotiable and thus are precluded from being traded-off with other values. The authors argue that sacred values may work as a heuristic and facilitate decisions. In two experiments they investigate the influence of sacred values on decision difficulty and negative affectivity. They show that decision problems that involve sacred values elicit negative emotions, compared to decision problems that involve only secular values (routine trade-offs). Decision situations that pit a sacred value against a secular value (taboo trade-offs) are perceived as easier whereas decision situations that pit two sacred values against each other (tragic trade-offs) are seen as more difficult than routine trade-offs. Hence, decisions involving taboo trade-offs are easy and yet trigger negative emotions.

This contribution is followed by two papers that examine the role of affect and emotion in the domain of environmental risks and disasters. *Västfjäll, Peters and Slovic* investigate how affective reactions to the 2004 Tsunami disaster influence subsequent judgments of risk and well-being. They approach this question from the perspective of the affect heuristic, so that their study is also a study of intuition: According to the affect heuristic (Finucane, Alhakami, Slovic & Johnson, 2000), affect provides informative signals about the qualities of a stimulus; the causes that gave rise to the affect, however, are not necessarily consciously known. Västfjäll et al. report two ex-

periments. The first study demonstrates that people who are reminded of the tsunami experience negative affect which spills over to judgments of well-being and to future pessimism so that these people regard their lives as more finite and limited in opportunities than people not reminded of the tsunami. The second study additionally showed that employing a difficult thought generation task in which people were asked to generate many natural disasters reduces the diagnosticity of the negative affect for risk judgments by highlighting how rare such events are. These results demonstrate that the negative affect that is induced by a natural disaster serves as a heuristic for risk judgments concerning future life events unless the affect is rendered as not being diagnostic for the judgmental task at hand.

Böhm and Pfister look at the role of anticipated emotions in the perception of risks that arise from the natural environment. They start out with the general assumption that decision makers anticipate at the point of decision how they would feel if they were to choose the various options at hand and then choose the option that promises to maximize positive and to minimize negative emotions. The authors focus on the accuracy of such affective forecasts and ask whether people accurately predict their emotional reactions to future encounters with environmental problems. They investigate two such environmental problems, ozone depletion and severe air pollution, by studying tourists who traveled to either Australia or Bangkok. The results show that an overestimation in the form of an impact bias, which has been a frequent result for affective forecasting in the domain of personal risks and outcomes (Wilson & Gilbert, 2003), was not found in this study. Böhm and Pfister also show that tourists learn from their travel experience and adjust their anticipations concerning future encounters with the environmental risk.

Marcatto and Ferrante add a methodological perspective to the special issue. They present a scale for measuring regret and disappointment, the two most widely studied emotions in decision research. They argue that the traditional method of measuring these two emotions, which is to directly ask participants to indicate on rating scales how much regret and disappointment they feel, may be misleading, because the verbal labels "regret" and "disappointment" are ambiguous in everyday language. The authors therefore developed a scale that does not use the verbal labels regret and disappointment. This scale is based on Weiner's emotion theory and measures regret and disappointment by measuring the intensity of the general affective reaction to a decision outcome and the cognitive appraisals that are indicative of regret and disappointment. The authors present four studies in which they explore the quality of their scale and compare it with other methods.

The concluding contributions broaden the scope from individual risk perception and decision making to social and communicative processes. *Hilton* analyzes how the way we phrase risk information and communicate about risks provides pragmatic signals and co-ordinates social processes. He argues that the primary function of communication is to influence the behavior of others. Thus, the language that we use to communicate risks, such as conditionals, quantifiers and probability expressions, implicitly signals whether the speaker wishes to encourage or discourage the course of action under discussion. For instance, "a few" sounds more positive than "few": "There are a few good books in the store" sounds like an encouragement to visit the store and check out the assortment; "there are few good books in the store", in contrast, implies that the speaker discourages a visit. Polarity and framing are two of the mechanisms by which such implicit valence is conveyed. Hilton discusses how such linguistic signals co-ordinate social processes, pointing to the role of intuition in social interaction.

Twyman, Harvey and Harries focus on the recipients of risk messages and on the role trust plays when an agent receives advice about risk. They draw on the trust-confidence-cooperation model (Siegrist, Earle, & Gutscher, 2003) and distinguish trust in competence from trust in motives. Trust in competence arises from the quality of past advice from the advisor. Trust in motives, in contrast, depends on how similar agents perceive the advisor's values to be to their own. Twyman et al. report an experiment in which they manipulated the quality of the advice and the degree of similarity between the agent's and the advisor's values. The results show that quality of advice and similarity of values independently influence the agent's behavior measured as stated (i.e., expressed) and revealed (i.e., weight given to the advice) trust. The authors discuss the role of intuition and affect in stated and revealed trust and suggest that revealed trust may rely on intuition and that trust in motives — albeit being a cognitive and not an affective judgment itself — may take affective factors into account because it is based on judgments concerning the similarity of values and values can be regarded as having affective components.

Some common threads and themes can be identified when surveying the diversity of the contributions. First, the time seems ripe for theoretical generalizations. Several contributions go beyond merely stating that emotion and affect do influence decision making in important ways, and try to specify and generalize the mechanisms by which emotions influence choices, actions, risk perception, and risk management. Our impression is that within a few years, a full-fledged theory of decision making and emotion might emerge. This, secondly, will most likely have effects on the area of emotion research, bridging the gap between two fields of research which have

been largely isolated from each other. Third, with respect to the notion of intuition, it seems that we are observing just the beginning of an important line of research, in particular, when studying the relationship between emotion and intuition. Some groundwork has been done, and it is not too audacious to predict more exciting findings in the near future about the relation between intuition and deliberation and how they relate to affect and emotion. Finally, there seems to be a natural link between studying emotion and intuition in decision making and the social and communicative processes in choice and risk judgments. In the end, most emotions are socially constructed, and one of their primary functions is to regulate and coordinate social interactions — which most people master intuitively, for the better or for the worse. The picture of the isolated rational decision maker is being replaced by viewing decision makers as social beings who communicate with others and experience a wealth of diverse emotions when planning and coordinating their actions.

We hope that the reader will find the contributions to this special issue inspiring and worthwhile reading.

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