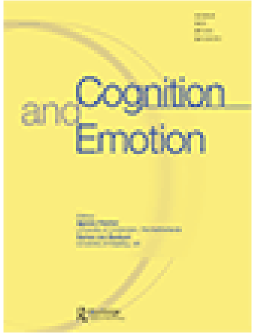

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Beyond valence: Toward a model of emotion-specific influences on judgement and choice

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Most theories of affective influences on judgement and choice take a valence-based approach, contrasting the effects of positive versus negative feeling states. These approaches have not specified if and when distinct emotions of the same valence have different effects on judgement. In this article, we propose a model of emotion-specific influences on judgement and choice. We posit that each emotion is defined by a tendency to perceive new events and objects in ways that are consistent with the original cognitive-appraisal dimensions of the emotion. To pit the valence and appraisal-tendency approaches against one another, we present a study that addresses whether two emotions of the same valence but differing appraisals—anger and fear—relate in different ways to risk perception. Consistent with the appraisal-tendency hypothesis, fearful people made pessimistic judgements of future events whereas angry people made optimistic judgements. In the Discussion we expand the proposed model and review evidence supporting two social moderators of appraisal-tendency processes.

INTRODUCTION

Once an exclusively cognitive enterprise, research on judgement and choice increasingly addresses the powerful influence of affect (for reviews see Bodenhausen, 1993; Bower, 1991; Clore, Schwarz, & Conway, 1994; Forgas, 1995; Loewenstein, 1996; Schwarz & Clore, 1996; Zajonc, 1998).

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Despite the recent flowering of research on affect and cognition, relatively few theories have systematically addressed the influences of specific emotions on judgement and choice. Rather, the majority of studies in this tradition have been motivated by a valence-based approach, contrasting the effects of positive versus negative feeling states on judgement and choice (for reviews reaching this conclusion see Elster, 1998; Forgas, 1995; Higgins, 1997). As a result, questions about whether and how different emotions of the same valence, such as anger, fear, and sadness, influence judgement and choice remain largely unaddressed (for notable exceptions see Bodenhausen, Sheppard, & Kramer, 1994a; Tangney, Niedenthal, Covert, & Barlow, 1998; Weiner, Graham, & Chandler, 1982).

The purpose of the present article is to present an emotion-specific framework for studying affective influences on judgement and choice.[1] To do so, we first briefly review valence approaches to affect and judgement. We then draw on cognitive-appraisal theories of emotion to outline how specific emotions influence judgement and choice. To pit these two approaches against one another, we present a study that addresses whether two emotions of the same valence but differing appraisals—anger and fear—are differentially related to risk perception. Our concluding section addresses theoretical implications of the proposed framework.

Valence-based approaches to the study of affect, judgement, and choice

Researchers have been concerned with two general kinds of affective influences on judgement and choice. Studies of *integral* affect document the influences of subjective experiences that are relevant to present judgements and choices. For example, anticipated regret when evaluating a gamble has been shown to influence how much one is willing to gamble (Larrick & Boles, 1995; Loomes & Sugden, 1982; Mellers, Schwartz, Ho, & Ritov, 1997). Studies of *incidental* affect—the concern of this paper—focus on the sometimes puzzling influence of subjective emotional experiences that should be irrelevant to present judgements and choices. For example, affect produced watching movies, enjoying sunny weather, or experiencing stressful exams has been shown to influence judgements of unrelated topics and objects (for reviews see Bodenhausen, 1993; Clore et al., 1994; Forgas, 1995; Forgas & Bower, 1988; Schwarz, 1990; Schwarz & Clore, 1996).

Studies of incidental affect have examined both direct and indirect mediational mechanisms (Forgas, 1995). Indirect mechanisms include

[1] Although this Special Issue addresses affect and decision making, we also address affective influences on judgement because decisions typically depend on initial judgements about a given situation.

affect-related cognitive processes that influence subsequent judgements. For example, people will selectively retrieve mood-congruent information from memory and then use that information in unrelated judgements (Bower, 1981, 1991; Isen, Shalker, Clark, & Karp, 1978). According to associative network models, this process explains why people in good moods make optimistic judgements and people in bad moods make pessimistic judgements (Kavanagh & Bower, 1985; Wright & Bower, 1992).

More direct influences of incidental affect on judgement have been summarised in the affect-as-information model. According to this model, people rely on their present feelings in heuristic fashion to make complex judgements, as long as the experienced feelings are perceived as relevant to the object of judgement (Clore, 1992; Schwarz, 1990; Schwarz & Clore, 1983). For example, when asked to rate overall life satisfaction, participants do not go to the trouble of calculating estimates on a number of life dimensions; they simply ask themselves, how am I feeling? Participants in a positive mood give higher ratings of life satisfaction than participants in a negative mood. Importantly, if participants attribute their feelings to a source that is irrelevant to the judgement at hand (e.g. the current weather), the feelings are no longer considered informative, and exert little or no influence on judgement (Keltner, Locke, & Audrain, 1993; Schwarz, 1990; Schwarz & Clore, 1983).

These various research traditions, although differing in claims about mediating mechanisms, share a common feature. They base predictions on the valence of the affect (Forgas, 1995, p. 61). Positive and negative moods are experimentally induced or observed naturalistically, and these general feeling states are expected to lead to more positive or negative judgements respectively. Indeed, readers of the affect-judgement literature could easily conclude that "the *only* relevant aspect of the emotions is their valence" (Elster, 1998, p. 64, emphasis added).

Valence-based approaches face one obvious shortcoming, however. They fail to specify whether different emotions of the same valence differentially influence judgements and choices. In fact, given the centrality of valence to emotion, valence-based approaches might by default predict that distinct emotions of the same valence, such as sadness, anger, and fear, would exert similar influences on judgement and choice. Yet this general prediction immediately encounters intuitive counterexamples (e.g. one would expect a highly fearful leader to make different decisions than an angry one). This general valence-based prediction is also out of step with current research on emotion, which indicates that emotions of the same valence differ in their antecedent appraisals (Smith & Ellsworth, 1985), facial expressions (Keltner & Ekman, in press), autonomic physiology (Levenson, Ekman, & Friesen, 1990), and central nervous system physiology (Panksepp, 1982). Valence-based approaches may sacrifice specificity in the service of parsimony (cf. Higgins, 1997). To assess the significance of this sacrifice, research needs to examine whether specific emotions of the same valence differentially influence judgement and choice outcomes.

The appraisal-tendency approach: Emotion-specific influences on judgement and choice

How might specific emotions influence judgement and choice? Two broad theoretical approaches provide a framework for answering this question: Cognitive-appraisal theories of emotion and functional (evolutionary) theories of emotion. From cognitive-appraisal theories we borrow the idea that a range of cognitive dimensions (rather than just valence) usefully differentiates emotional experience and effects.

Of the different accounts of cognitive-appraisal processes (e.g. Lazarus, 1991b; Ortony, Clore, & Collins, 1988; Roseman, 1984; Scherer, 1988; Smith & Ellsworth, 1985; Weiner, 1980, 1986), we draw most directly on that of Smith and Ellsworth (1985) to make predictions concerning the influences of specific emotions on judgement. Through empirical examination of all appraisal dimensions identified in the literature, Smith and Ellsworth (1985) identified the six cognitive dimensions that best define the patterns of appraisal underlying different emotions: certainty, pleasantness, attentional activity, control, anticipated effort, and responsibility. In their research, participants recalled past emotional experiences and rated the emotion-eliciting events along these six dimensions of appraisal (e.g. Smith & Ellsworth, 1985). Each emotion was found to be defined by central dimensions, which characterise its core meaning or theme (Lazarus, 1991a; Smith & Ellsworth, 1985). For example, certainty, control, and responsibility are the central dimensions which distinguish anger from other negative emotions. Anger arises from appraisals of: (a) other-responsibility for negative events, (b) individual control, and (c) a sense of certainty about what happened (Averill, 1983; Betancourt & Blair, 1992; Smith & Ellsworth, 1985; Weiner et al., 1982).

From functional approaches to emotion, we borrow the idea that emotions serve an impressive co-ordination role; they trigger a set of responses (physiology, behaviour, experience, and communication) that enable the individual to deal quickly with encountered problems or opportunities (Frijda, 1986; Levenson, 1994; Oatley & Johnson-Laird, 1996). Of particular importance, emotion-related cognition interrupts ongoing cognitive processes and directs attention, memory, and judgement to address the emotion-eliciting event (Johnson-Laird & Oatley, 1992; Lazarus, 1991a; Schwarz, 1990; Simon, 1967; Tooby & Cosmides, 1990). Interestingly, an emotion's ability to focus cognition may be so strong that the emotion not only directs thoughts relevant to the initial emotion-eliciting event but also to unrelated events. For example, anger triggered in one situation automatically elicits blame cognitions in other situations (Quigley & Tedeschi, 1996).

Appraisal tendencies. Drawing on evidence that each specific emotion (a) is defined by a set of central dimensions and (b) directs cognition to address specific problems or opportunities, we hypothesise that each emotion activates a cognitive predisposition to appraise future events in line with the central-appraisal dimensions that triggered the emotion—what we call an appraisal tendency. In short, appraisal tendencies are goal-directed processes through which emotions exert effects on judgement and choice until the emotion-eliciting problem is resolved.[2]

We believe that appraisal-tendency processes apply to the effects of both momentary and dispositional emotions. Whereas dispositional emotions refer to the tendency to react with specific emotions across time and situations, momentary emotions refer to immediate affective reactions to a particular target (Gross, Sutton, & Ketelaar, 1998; Larsen & Ketelaar, 1991; Lazarus, 1994; Malatesta, 1990). Recent empirical research indicates that dispositional emotion resembles momentary emotion in important ways, and thus, should yield similar effects on judgement. For example, people dispositionally prone to fear report experiencing more fear at a variety of points in time and across situations (Gross et al., 1998), they report higher levels of state fear in response to negative affect inductions (Gross et al., 1998), and they display more fear in the face (Keltner, 1996).

Some initial evidence supports the appraisal-tendency proposal. For example, incidental anger increases tendencies to perceive other individuals as responsible for subsequent events (Keltner, Ellsworth, & Edwards, 1993), and to make punitive judgements of other individuals, both related and unrelated to the original source of anger (Goldberg, Lerner, & Tetlock, 1999; Lerner, Goldberg, & Tetlock, 1998). Incidental sadness, in contrast, increases the tendency to perceive situational factors (such as fate or circumstances) as responsible for ensuing events (Keltner et al., 1993). These emotional carry-over effects are consistent with the underlying appraisal patterns of each emotion. Although both anger and

[2] Appraisal-tendencies are conceptually related to what Frijda (1986, p. 70) calls "action tendencies". Whereas action-tendencies are "states of readiness to execute a given kind of action", appraisal tendencies are the perceptual processes through which emotions colour the interpretation of stimuli. The appraisal-tendency sequence (appraisal-emotion-appraisal tendency) is also conceptually related to what Weiner (1980, 1986) calls an emotion-attribution-action sequence. Whereas Weiner's sequence primarily addresses attributional differences among emotions, the appraisal-tendency sequence can address all cognitive differences among emotions.

sadness are highly negative, anger arises from appraisals of individual control of negative events whereas sadness arises from appraisals of situational control of negative events.

For attempts to gather further evidence, the appraisal-tendency model points to a clear empirical strategy: Research should compare emotions that are highly differentiated in their appraisal themes on judgements/choices that relate to that appraisal theme. For example, because the responsibility dimension shares a conceptual theme with blame, researchers interested in studying integral or incidental emotion effects on blame could contrast emotions on opposite poles of the responsibility dimension, such as shame (self-responsibility) and anger (other-responsibility) (see Weiner et al., 1982). Implicit in this strategy is the idea that emotions of the same valence should sometimes influence judgement in opposite ways—a proposition that contradicts predictions from valence accounts and therefore provides a useful point for comparing valence and appraisal-tendency approaches.

To illustrate this appraisal-tendency approach, Table 1 compares predictions for the influences of two negative emotions—fear and anger—on risk perception (left side) and two positive emotions—surprise and pride—on attribution (right side). In the top panel of the figure, the left column contains six cognitive-appraisal dimensions (e.g. certainty) that differentiate emotions (see Roseman, 1984; Smith & Ellsworth, 1985). For each of the six dimensions, entries indicate the relative position of each emotion (for precise scale values of each emotion on the relevant dimension, see Smith & Ellsworth, 1985). If an emotion is relatively high or low on a given dimension, the dimension is considered central to the definition of that emotion and likely to exert influences on subsequent judgements or choices. In the middle panel, entries indicate the appraisal tendency that is likely to be associated with each emotion. Finally, in the bottom panel, entries indicate predictions for emotion influences on the outcome of interest.

As illustrated in the left side of the figure, fear is defined by three central appraisal themes that are conceptually related to risk perception: uncertainty, unpleasantness, and situational control (e.g. Lazarus, 1991a; Smith & Ellsworth, 1985). Drawing on fear's appraisal structure, the model predicts that fear will be associated with the tendency to perceive uncertainty and situational control in new situations and that fearful people will—as a consequence of that appraisal tendency—perceive greater risk across new situations. Anger, by contrast, will be associated with the tendency to perceive certainty and individual control in new situations and—as a consequence—to perceive *less* risk across new situations. As illustrated in the right side of Table 1, pride is defined by the central appraisal themes of self-responsibility and pleasantness. The model pre-

TABLE 1
Two illustrations of the appraisal-tendency approach, each comparing emotions that are highly differentiated in their central appraisal themes on a judgement that relates to those appraisal themes.

	Illustration with negative emotions		*Illustration with positive emotions*	
	Anger	*Fear*	*Pride*	*Surprise*
Certainty	High	Low	Medium	Low
Pleasantness	Low	Low	High	High
Attentional Activity	Medium	Medium	Medium	Medium
Anticipated Effort	Medium	High	Medium	Medium
Control	High	Low	Medium	Medium
Responsibility	High	Medium	Low	High
Appraisal Tendency	Perceive negative events as predictable, under human control, & brought about by others	Perceive negative events as unpredictable & under situational control	Perceive positive events as brought about by self	Perceive positive events as unpredictable & brought about by others
	Influence on risk perception		*Influence on attribution*	
Influence on Relevant Outcome	Perceive low risk	Perceive high risk	Perceive self as responsible	Perceive others as responsible

Notes: *Certainty* is the degree to which future events seem predictable and comprehensible (high) vs. unpredictable and incomprehensible (low). *Pleasantness* is the degree to which one feels pleasure (high) vs. displeasure (low). *Attentional activity* is the degree to which something draws one's attention (high) vs. repels one's attention (low). *Control* is the degree to which events seem to be brought about by individual agency (high) vs. situational agency (low). *Anticipated effort* is the degree to which physical or mental exertion seems to be needed (high) vs. not needed (low). *Responsibility* is the degree to which someone or something other than oneself (high) vs. oneself (low) seems to be responsible. We refer interested readers to Smith and Ellsworth (1985) for comprehensive descriptions of each dimension and each emotion's scale values along the dimensions.

dicts that pride will therefore be associated with the tendency to perceive the self as responsible for positive events, even in new situations. Surprise, by contrast, will be associated with the tendency to perceive others as responsible, even in new situations.[3]

The foregoing predictions are only a small sample of the ways in which an appraisal-tendency perspective systematically links specific emotions to

[3] Although Table 1 focuses on comparing the effects of two negative emotions on risk perception and two positive emotions on attribution, it is worth noting that anger should increase attributions to others and surprise should increase perceptions of risk.

specific judgement and choice outcomes. In the Discussion, we provide some additional examples of this approach. In the following study, we provide an initial test of the differential predictions for fear and anger on risk perception.

An empirical test of the valence and appraisal-tendency perspectives: The influences of fear and anger on risk perception

Risk perception has been the focus of several valence-based studies of affect and judgement (e.g. Johnson & Tversky, 1983; Wright & Bower, 1992), making it an interesting outcome variable on which to compare appraisal and valence-based predictions. In one of the most widely cited studies of affect and risk perception, Johnson and Tversky (1983) gave participants newspaper stories designed to induce positive or negative affect and then asked participants to complete a risk questionnaire. The risk questionnaire listed a variety of potential causes of death (e.g. heart attack) and instructed participants to estimate the annual number of fatalities associated with each potential cause.[4] Consistent with a valence-based approach, participants who received the negative-mood induction offered more pessimistic estimates (i.e. they estimated higher frequencies of death) than participants who received the positive-mood induction.

To derive predictions for the influences of specific emotions on risk perception, we followed the appraisal-tendency strategy briefly outlined earlier. First, we identified appraisal dimensions that are conceptually related to risk perception. We predicted that differences in the *certainty* and *control* dimensions would influence risk perception because these dimensions map directly onto the two cognitive metafactors in the risk literature that reliably determine risk assessments: "unknown risk" (defined at the high end by hazards judged to be uncertain), and "dread risk" (defined at the high end by perceived lack of individual control) (McDaniels, Axelrod, Cavanagh, & Slovic, 1997; Slovic, 1987, 1994; Slovic, Fischhoff, & Lichtenstein, 1986). We then selected emotions that fall at opposite ends of the certainty and control dimensions, namely fear and anger. As previously noted, fear arises from appraisals of profound uncertainty—a sense that even such basic needs as safety are uncertain—as well as appraisals of situational control—a sense that factors beyond one's control shape outcomes (Smith & Ellsworth, 1985). By contrast, anger arises from appraisals of certainty and individual control. Finally, we chose to investigate the influence of dispositional fear and anger because

[4] Risk researchers have found that frequency, rather than probability, estimates are superior indicators of risk perception (Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978).

some evidence supporting an appraisal-tendency perspective already exists for momentary emotions (see Keltner et al., 1993). In sum, to pit the valence and appraisal-tendency perspectives against one another, we compared the risk assessments made by fearful and angry individuals.

Competing research hypotheses

According to valence approaches, negative feelings lead to negative judgements. Fearful and angry people should, therefore, make relatively pessimistic risk assessments (Johnson & Tversky, 1983; Wright & Bower, 1992). According to the appraisal-tendency hypothesis, an emotion's underlying appraisal theme dictates its influence on subsequent judgements. Whereas the sense of uncertainty and situational control that defines fear should lead fearful people to make relatively pessimistic risk assessments, the sense of certainty and individual control that define anger should lead angry people to make relatively optimistic risk assessments. In sum, if the valence approach is correct, then both fear and anger will be positively related to pessimistic risk assessments, as defined by making higher frequency estimates for deaths. If the appraisal-tendency approach is correct, then only fear will be positively related to pessimistic risk assessments; anger will be negatively related to pessimistic risk assessments.

Method

Participants and procedural overview. A total of 97 undergraduates (28 males, 69 females) at the University of California participated in return for course credit. Participants expected to participate in several short, unrelated studies. Specifically, they were told that in order to make use of the full hour available different researchers had pooled together their respective questionnaire packets.[5] The first packet, a "Self-Evaluation Questionnaire", contained measures of baseline state emotions and dispositional emotions. After completing the packet, participants received a separate questionnaire containing the dependent measure (risk perception) followed by a variety of filler questionnaires on unrelated topics (e.g. potential causes for various events). Following completion of all packets, participants were fully debriefed.

Measures of dispositional fear and anger. Participants completed two measures that assess dispositional fear. First, they completed a 12-item

[5] Even extensive demand awareness interviews with participants have shown that this cover story elicits little suspicion among participants (Goldberg et al., 1999; Lerner et al., 1998).

version of the Fear Survey Schedule-II, which assesses the degree of fear, if any, participants feel in response to 12 specific situations or objects (e.g. enclosed places, snakes) (see Bernstein & Allen, 1969; Geer, 1965; Suls & Wan, 1987). Participants made their assessments on a Likert scale that ranged from 0 (*none*) to 4 (*terror*). Second, participants completed Spielberger's (1983) 20-item trait-anxiety scale, which assesses the frequency with which participants feel "nervous" or "anxious" on a Likert-scale that ranged from 1 (*almost never*) to 4 (*almost always*). The Pearson correlation between these two scales was reasonably high ($r = .57$, $P < .01$). To combine the two measures into one composite index of dispositional fear, we used principal components analysis and imposed a one-factor solution that retained all items (Eigenvalue = 10.20). We then calculated regression-factor scores for each participant. The composite dispositional-fear scale achieved an alpha-level of .91.

Participants also completed two measures of dispositional anger. First, participants completed Spielberger's (1996) 10-item trait-anger scale, which assesses tendencies to react with sudden and intense anger to a variety of life situations. Participants made these assessments on a Likert-scale which ranged from 1 (*almost never*) to 4 (*almost always*). Second, participants completed a 10-item face-valid anger scale that was written for this study; it addressed the chronic tendency to experience various forms of less intense anger. For each of 10 statements describing various kinds of chronic anger, participants were asked to indicate the extent to which the description was "true of them". Response options on a Likert-scale ranged from 1 (*not at all true of me*) to 7 (*very true of me*).[6] The Pearson correlation between the two measures of dispositional anger was reasonably high ($r = .70$, $P < .01$). To combine the two measures into one composite index of dispositional anger, we used principal-components analysis and imposed a one-factor solution that retained all items (eigenvalue = 6.53). We then calculated regression factor scores for each participant. The composite anger scale achieved an alpha-level of .81.

Measures of state affect. We have proposed that the appraisal tendency hypothesis applies to dispositional and momentary (state) emotions because we assume that a close correspondence exists between these two kinds of emotion. To address whether dispositional emotion does predict state emotion, which we have implicitly assumed, we assessed baseline-state

[6] The 10 items in this measure were: I rarely get pissed off at my friends; I am often mad at someone or something; I often find myself feeling angry; I am rarely frustrated by other people; I often blame others before blaming myself; A lot of people annoy me; I get mad easily; It's rare for me to get enraged; Other drivers on the road infuriate me; I'd like to tell people how much they piss me off.

emotions among participants at the start of the study. We measured state-fear with Spielberger's (1983) state-anxiety scale, which consists of 20 statements that evaluate the extent to which respondents feel anxious (i.e. tense, frightened and worried) "right now". We assessed baseline state-anger with Spielberger's (1996) state-anger scale, which consists of 10 statements that evaluate the extent to which respondents feel intensely angry (e.g. furious, burned up, like breaking things) "right now". For both scales, response options ranged on a Likert scale from 1 (*not at all*) to 4 (*very much so*).

Risk perception. Participants completed Johnson and Tversky's (1983) "Perception of Risk Questionnaire", which presented participants with 12 events that lead to a certain number of deaths each year in the United States (e.g. brain cancer, strokes, floods). The measure asked participants to estimate the number of annual fatalities due to each event, based on the knowledge that 50,000 people in the United States die in car accidents each year. Following procedures from Johnson and Tversky, participants were also instructed to: (a) be as accurate as possible, (b) check their answers for consistency, and (c) feel free to erase and change answers to make the relative frequencies of the entire set consistent with their best opinions.

Results

Preliminary analyses. Before testing our hypothesis, we conducted two preliminary analyses. First, we assessed the relationship between the two composite emotion dispositions. Consistent with the fact that fear and anger share a common valence, a significant correlation emerged between the composite dispositional scales for fear and anger ($r = .48$, $P < .05$). This correlation implied that inferential analyses would need to control for the influence of one emotion to ascertain the independent relationship between the other emotion and risk perception.

A second preliminary analysis addressed variance in the risk assessment measure. As in Johnson and Tversky (1983), frequency estimates spread across several orders of magnitude and produced skewed distributions. Following Johnson and Tversky's procedure, we calculated a logarithmic transformation of the data and then submitted the transformed scores to a confirmatory principal-components analysis. This procedure generated a normally distributed composite factor for risk perception (alpha = .86).

Inferential analyses. Recall that a valence approach to affect and judgement predicted that fear and anger would be positively related to pessimistic risk assessments. An appraisal tendency perspective, in contrast, predicted that fear would be positively related to pessimistic risk assessments, and anger, despite its negative valence, would be negatively related to pessimistic risk assessments.

To ascertain the independent influence of each emotion disposition on judgement, we simultaneously entered each emotion disposition in one regression equation with the measure of perceived risk as the outcome measure. Figure 1 presents the results of this regression analysis, which supported the appraisal tendency hypothesis rather than the valence hypothesis. Fear was positively related to perceived risk [$t(94) = 2.39$, $P < .05$], and anger was negatively related to perceived risk [$t(94) = -2.00$, $P < .05$]. Although fear and anger are both negative emotions, they exerted unique influences on judgements—systematically shaping risk perception in a manner consistent with their underlying appraisal structures.

We also tested our assumption concerning the relation between dispositional and state emotion. Recall that if the appraisal-tendency model applies to both dispositional and momentary emotion, a systematic correspondence should exist between these two kinds of emotion. Specifically,

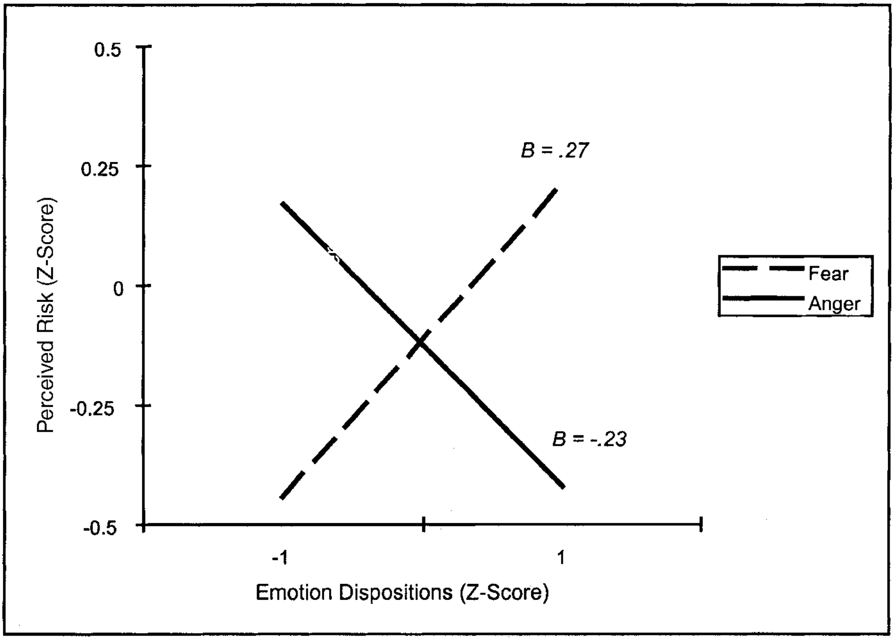

Figure 1. Whereas dispositionally fearful people make pessimistic assessments of future events, dispositionally angry people make optimistic assessments.

dispositional emotion should predict emotion states across time and situations (see Gross et al., 1998). Consistent with this prediction, high scores (more than one standard deviation above or below the mean) on the dispositional emotion scales predicted participants' baseline state emotions at the beginning of the study. Participants low in dispositional fear felt less baseline fear than did participants high in dispositional fear [respective means = −1.01 and 1.24; $t(33) = -8.65$, $P < .05$]. Similarly, participants low in dispositional anger felt marginally less baseline anger than did participants high in dispositional anger [respective means = −.28 and .11; $t(23) = -1.39$, $P = .09$]. Finally, the sex of participants did not qualify any of the findings; we observed the same patterns for males and females.

Discussion

The present study assessed the relative merits of two approaches to the study of affect and judgement. One widely influential approach assumes that valence constitutes the basis for predicting influences of affective states on judgement (see Bower, 1981, 1991; Isen et al., 1978). The valence approach predicted that fear and anger would have similar influences on judgement, both leading to pessimistic risk perception (see Johnson & Tversky, 1983; Wright & Bower, 1992). An appraisal-tendency approach assumes that underlying appraisal themes define the influences of different emotions on judgement. Because anger and fear sharply diverge on appraisals of uncertainty and control, they should exert different influences on risk assessments. Whereas fear (defined by great uncertainty and situational control) should predict pessimistic assessments, anger (defined by certainty and individual control) should predict optimistic assessments.

Consistent with the appraisal-tendency view, fearful and angry individuals indicated strikingly different assessments of the level of risk in the environment: Fear predicted higher risk assessments; anger predicted lower risk assessments. Notably, dispositional fear and anger led to different risk assessments despite the fact that they are both high in negative valence and involve heightened sympathetic autonomic nervous system arousal (Levenson et al., 1990). In combination with previous evidence indicating that sadness and anger influence causal attributions in highly distinct ways (Bodenhausen et al., 1994a; Keltner et al., 1993), the present study suggests that negative emotions are likely to influence a variety of judgements in highly differentiated ways.

The present study is significant in one other general way. The present study may be the only study to date that compares the influence of two dispositional emotions on judgement and choice among healthy, nondisordered participants. Almost all studies of dispositional affect have either:

(a) treated self-reports of emotion as the outcome measure (e.g. Larsen & Ketelaar, 1991; Watson & Clark, 1984; Watson & Tellegen, 1985), (b) addressed affective influences on cognition in disordered, clinical samples (e.g. Butler & Mathews, 1983; Rapee, 1986), or (c) focused on only one kind of dispositional affect (e.g. Butler & Mathews, 1987; Mathews, 1990). Given recent findings that emotion dispositions are: (a) reflected in relatively stable differences in underlying neurochemical systems (Davidson, 1998), (b) heritable (Gabbay, 1992), and (c) stable across the life course (Helson & Klohnen, 1998), it is increasingly important to link systematically differences in dispositional emotion to the extensive judgement and choice literature.

Limitations and implications for future research. The present study has certain limitations and raises questions that warrant further research. First, our study could not test possible mechanisms of the influence of dispositional fear and anger on risk assessment. Fearful and angry people, given their baseline differences in state affect, may have recalled different memories in making their risk estimates, as affect-priming theories might argue (Bower, 1981, 1991). Another possibility, perhaps complementary to the appraisal-tendency view, is that fearful and angry people used their current sense of certainty and control as information in making assessments, as the affect-as-information perspective might suggest (Schwarz, 1990; Schwarz & Clore, 1983). Future research should test these explanations for the differing risk assessments of fearful and angry people.

Although the present study sought to test competing hypotheses for the relationship between emotion dispositions and risk assessment, and did not seek to test causal paths, a potential third-variable cause merits note. If fearful people have actually experienced greater levels of risk in their lives than angry people, this could then influence judgements of future risk. We should note, however, that the evidence indicates that it is in fact anger-prone people who lead risky lives rather than fear-prone people (see Caspi, Elder, & Bem, 1987; Heaven, 1994; Leith & Baumeister, 1996; Pfefferbaum & Wood, 1994; Wills, Vaccaro, & McNamara, 1994). Indeed, the present evidence suggests that the tendency for angry people to take risks and behave recklessly may be partially mediated by a systematic misperception of risk. It is important, nevertheless, to generalise the findings from the present study to studies that manipulate momentary feelings of fear and anger, to establish more clearly causal relations between emotion and judgement.

Finally, the present study raises the intriguing question of whether dispositional and momentary emotions exert different or similar influences on judgement. We have argued that the effects of momentary and dispositional emotion on judgement are analogous in content, but we offered no claims about the magnitude of such effects. One might argue that because momentary emotions are likely to be more intense than dispositional emotions, they would exert greater influences on judgement. This simple notion encounters certain problems. First, momentary emotions are likely to be consciously linked to a cause of emotion, which reduces its effects on judgements of other objects and events (Schwarz, 1990). Second, several theorists have speculated that dispositional emotions play a larger role in shaping judgement and choice than do online state emotions, because dispositional emotions emerge early in life, remain stable over the life course, and function as chronic schemas for organising and interpreting events (Damasio, 1994; Gasper & Clore, 1998; Malatesta, 1990).

In our remaining discussion, we focus on two general issues. First, we will briefly address how other emotions might influence other judgement and choice domains. Second, we will consider potential boundary conditions for the influence of emotion-related appraisal tendencies on judgement and choice.

Applying an appraisal-tendency framework to other specific emotions

The benefits of systematic comparisons between different emotions extend beyond simply pointing out limitations to the valence-based approaches. By illuminating the cognitive processes associated with different emotions, they also bring emotion into the study of judgement and decision making in systematic ways. The appraisal-tendency approach provides a flexible yet specific framework for developing a host of testable hypotheses concerning affect, judgement and decision making.

To date, only two judgement domains have been explored from an appraisal-tendency perspective: the effects of specific negative emotions upon causal attributions (Keltner et al., 1993) and risk assessments (the present study). Research examining the effects of other emotions on other kinds of judgements will illuminate the more general role of emotion in judgement and decision making, and may lead to refinements of previous hypotheses. We have already outlined differential predictions for emotions of the same valence on attributions. Many other differential predictions may also be derived from the appraisal-tendency model. For example, our analysis suggests that incidental anger and sadness—two negatively valenced emotions—should exert different effects on unrealistic illusions of control (see Langer, 1975). Whereas anger (characterised by attributions of personal control) could amplify this illusion, sadness (characterised by attributions of situational control) should attenuate this illusion. Indeed, evidence from depressed and nondepressed individuals supports the idea that depressed individuals are "sadder but wiser", in that they are less likely to overestimate their control over outcomes (Alloy, Abramson, & Viscusi, 1981). As another example, the appraisal-tendency model suggests that incidental desire and disgust should exert different effects on subsequent motivation to pursue a task. Whereas desire (characterised by devout attention to a person or object) should increase attention to a task, disgust (characterised by strong unwillingness to attend to a person or object) should decrease attention given to a task.

Boundary conditions for the influences of emotion on judgement and choice

Studies of the influences of affect on judgement inevitably raise the question of boundary conditions: When do people make judgements or choices independent of their current emotion? This question has motivated centuries of philosophical discussion concerning the interplay between passion and reason, and more recently, several important lines of research (e.g. Schwarz, 1990). An appraisal-tendency perspective points to at least two kinds of social moderators of the influence of emotion on judgement: goal attainment and cognitive awareness processes.

Drawing on the idea that emotions guide specific judgements and perceptions to respond to significant problems or opportunities (Barrett & Campos, 1987; Schwarz, 1990), the *goal-attainment hypothesis* asserts that appraisal tendencies will be deactivated when an emotion-eliciting problem is solved or opportunity responded to, even if the emotion persists experientially (see Frijda, 1988). Consistent with this hypothesis, a recent study found that anger led to increased punitive judgements of unrelated cases, but only when the perpetrator of the original anger-inducing crime went unpunished due to a technicality (Goldberg et al., 1999). If the perpetrator of the crime had been punished, and the goal of anger served, the emotion no longer influenced subsequent judgements.[7] Researchers may develop and test similar goal-attainment hypotheses by drawing on the appraisal literature, which has identified essential goals of emotions (see Lazarus, 1991a).

Drawing on the idea that initial emotion-related appraisals are automatic in nature (Ekman, 1992; Lazarus, 1991a; LeDoux, 1996), the *cognitive-awareness hypothesis* asserts that appraisal tendencies will be deactivated

[7] Follow-up interviews with the research participants indicate that this finding should not be interpreted as a purely cognitive effect, wherein people react more punitively in the tort cases because they deem harsher punishment as a rational response in a world where violent perpetrators evade punishment. Rather, participants firmly believed that judgements they made in the tort cases were uninfluenced by the justice feedback in the ostensibly separate study.

when individuals become aware of their own judgement process. Specifically, conscious monitoring of one's judgement process will lead individuals to focus on judgement-relevant information and discount such judgement-irrelevant information as incidental affect. Several recent studies support this claim. The tendency for incidental happiness to increase reliance on stereotypes was attenuated when participants expected to be accountable for their judgements (Bodenhausen, Kramer, & Süsser, 1994b). In another study, accountability attenuated the tendency for incidental anger to increase punitiveness in unrelated tort cases (Lerner et al., 1998). In both studies, accountable participants discounted their present feelings as a function of increased attention to their judgement process. These results are consistent with evidence that certain kinds of accountability encourage individuals to scrutinise carefully the relevance of any cues used in forming an opinion (see Lerner & Tetlock, 1999).

SUMMARY

In this article, we have addressed two questions. How do specific emotions influence different judgements? And what social factors moderate the influences of different emotions upon judgement? Concurring with Forgas' (1995, p. 61) conclusion that "appraisal theories present a rich and largely untapped source of hypotheses about the judgmental consequences of affect", we have drawn on the appraisal literature to propose that emotions activate appraisal tendencies, which are relatively automatic processes that guide subsequent perception and judgement. This approach generated specific predictions concerning how and when specific emotions influence different judgements. Moreover, an initial test of this approach involving the influence of dispositional fear and anger on risk perception proved it to be a better predictor of outcomes than the historically dominant valence approach. Our hope is that the appraisal-tendency approach outlined here will encourage research addressing the systematic influences of specific emotions on judgement and choice and the social factors that moderate those influences (see also Lerner & Keltner, 1999).

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