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Abstract

People often encounter one emotion-triggering event after another. To examine how an emotion experience affects those that follow, the current article draws on the appraisal-tendency framework and cognitive appraisal theories of emotion. The *emotional blunting hypothesis* predicts that a specific emotion can carry over to blunt the experience of a subsequent emotion when defined by contrasting appraisal tendencies. Results support the hypothesis: Inducing sadness blunted subsequent anger (Studies 1 and 2), and inducing anger blunted subsequent sadness (Study 2). Situational (human) agency appraisals mediated the effect of anger (sadness) on subsequent sadness (anger) elicitation (Study 2). Priming agency appraisals (Study 3) also moderated results. Finally, the effect of emotional blunting carried over to cognitive outcomes in each of the three studies. Together, the results reveal the importance of examining the sequence of emotional experiences. Implications for emotion and judgment in applied settings (e.g., the courtroom) are discussed.

Keywords

emotion, cognitive appraisals, sadness, anger, judgment, decision making, approach/withdrawal

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Contrary to Mr. Spock's steady stoicism throughout the classic *Star Trek* series, human beings typically experience different, and sometimes strong, feelings throughout the course of a day. And such feelings can have strong effects on judgments (Keltner & Lerner, 2010; Schwarz & Clore, 1983; Zajonc, 1998).

Psychologists exploring the role of feelings in judgments and choice have often drawn on appraisal theories of emotion as a basis for making predictions about the nature of such effects. The appraisal-tendency framework (ATF; Lerner & Keltner, 2001; Lerner & Tiedens, 2006), as an example, posits that emotions give rise to an implicit cognitive predisposition to appraise future events in line with the central appraisals characterizing the emotions. Consistent with the ATF, research has concluded that if jurors are incidentally primed to feel anger, they are likely to make more punitive attributions than jurors in a neutral state because appraisals of individual responsibility automatically arise from the anger (Lerner, Goldberg, & Tetlock, 1998).

However, to fully understand how feelings influence judgments, it may be important to recognize that individuals experience a sequence of emotion-eliciting events throughout the course of a typical day. How does one emotional experience influence the next one and the judgments that follow? If a

defense attorney elicits sadness among jury members, for example, will the members be more or less likely to experience anger when the prosecutor details the defendant's alleged crimes? To answer these questions, the present studies seek to test extensions of the ATF, examining the extent to which the appraisals of an emotional experience inhibit the experience of an emotion elicited from a subsequent, unrelated event. We call this *emotional blunting*.¹

The Original ATF

The ATF (Lerner & Keltner, 2000, 2001) has helped elucidate effects of emotions in a variety of judgment and choice domains (for reviews, see Han, Lerner, & Keltner, 2007; Keltner & Lerner, 2010; Lerner & Tiedens, 2006). Across domains, the ATF rests on a set of theoretical assumptions.

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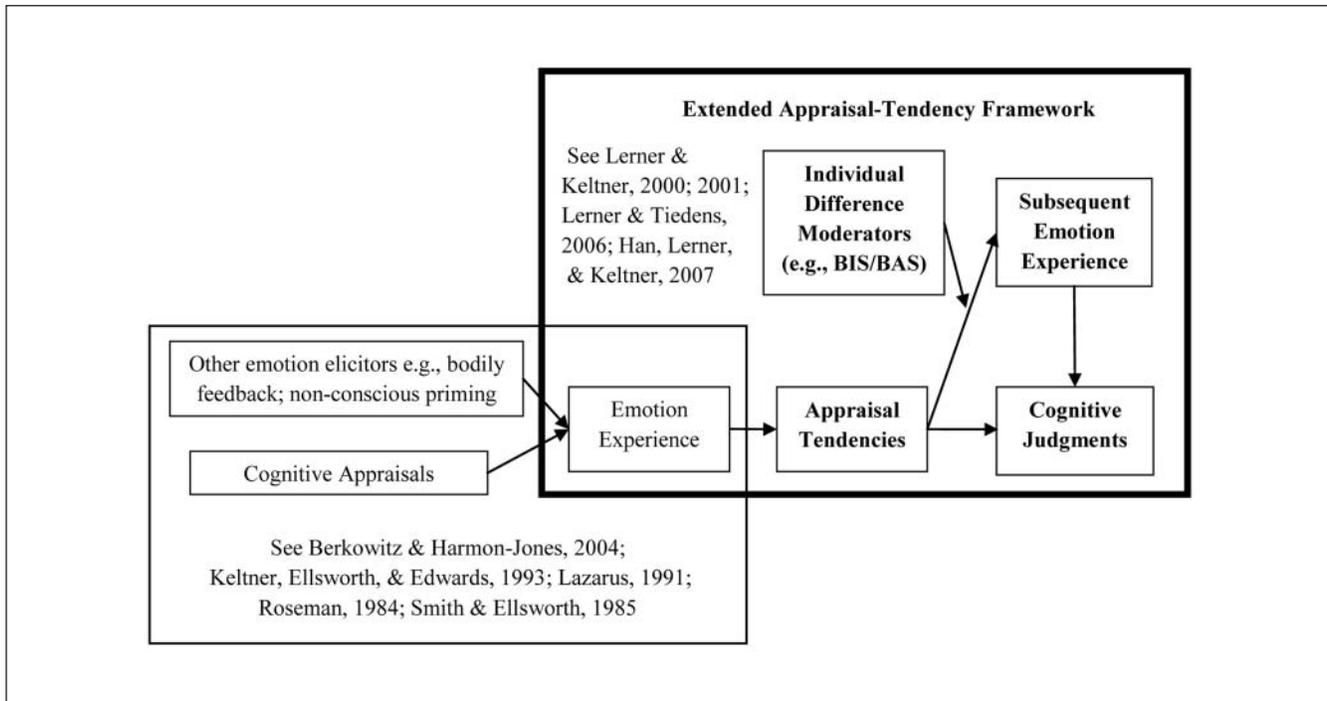


Figure 1. Extended appraisal-tendency framework

The present research examines only behavioral inhibition system (BIS) and behavioral approach system (BAS) individual differences, but future research should examine a wide range of conceptually relevant moderators.

First, it assumes that emotions are characterized by cognitive appraisals. Specifically, appraisal theories of emotion posit that emotions are associated with people's cognitive appraisals of a situation, such that each emotion is defined by a specific pattern of cognitive appraisals (Ellsworth & Scherer, 2003; Lazarus, 1991; Roseman, 1984; Smith & Ellsworth, 1985; Weiner, Graham, & Chandler, 1982).² For instance, if an individual appraises a negative event (e.g., a car accident) to be controlled by other individuals (e.g., bad drivers), she will experience anger. If, however, she appraises the event to be controlled by the situation (e.g., bad weather), she will experience sadness. Although the precise terminology used to describe dimensions of appraisals differs among researchers, many researchers agree that six cognitive dimensions define the appraisals underlying emotions: pleasantness, anticipated effort, certainty, attentional activity, self-other responsibility/control, and situational control/agency (e.g., Smith & Ellsworth, 1985).

Second, the ATF assumes that cognitive appraisals can play a role not only in eliciting a specific emotion (Neumann, 2000; Roseman & Evdokas, 2004) but also in shaping perceptions of subsequent, unrelated situations and in guiding behaviors. Specifically, underlying cognitive appraisals define the ways in which emotions color subsequent judgments. The ATF posits that emotions give rise to an implicit cognitive predisposition to appraise future events in line with the central appraisals characterizing the emotions. The ATF

summarizes these processes as "appraisal tendencies," which have been found to influence subsequent judgments for events even when the judgments are normatively unrelated to the cause of an emotion (Keltner, Ellsworth, & Edwards, 1993; Lerner & Keltner, 2001; Lerner, Small, & Loewenstein, 2004; Tiedens & Linton, 2001). For instance, an individual may experience anger after being cut off in traffic. Consequently, the appraisal tendencies activated by anger—that is, appraisals of certainty and of human control—carry over and shape subsequent perceptions. The resulting effect is that the angry (vs. neutral) individual makes riskier judgments in subsequent settings (e.g., risk estimates for life events; Lerner & Keltner, 2001; Litvak & Lerner, 2009).

We note the important distinction between *cognitive appraisals* and *appraisal tendencies*. *Cognitive appraisals* take temporal precedence. They refer to the thoughts elicited from a specific event that result in the experience of a specific emotion. *Appraisal tendencies* occur only after the emotion is elicited. They refer to the predisposition to appraise future events in line with the cognitive appraisals that characterize the emotion (Lerner & Tiedens, 2006). Figure 1 clarifies the distinction.

Although originally developed as a basis for distinguishing the effects of specific emotions on judgments, appraisal tendencies may also afford hypotheses concerning emotion-specific effects on emotional blunting and on subsequent cognitive outcomes. Indeed, the present research seeks to

determine whether appraisal tendencies affect outcomes other than cognitions, such as subsequent emotional experiences. In testing these ideas, we seek to extend the ATF.

Extending the ATF for Emotional Blunting

Do emotional experiences and their corresponding appraisal tendencies affect subsequent emotional experiences? If a juror experiences sadness about the family situation of the defendant, for example, will that juror be less likely to experience anger when the prosecutor details the defendant's alleged crimes? Drawing from the ATF, which has demonstrated the effect of appraisal tendencies on cognitions, it stands to reason that any outcome, be it an emotion or a judgment, that is determined at least in part by appraisals is subject to influence by appraisal tendencies of an existing emotional experience. Therefore, just as judgments are colored by appraisal tendencies, so too may an emotional experience be altered by the appraisal tendencies of an existing emotional experience. Building on the ATF (Lerner & Keltner, 2001; Lerner & Tiedens, 2006) and on cognitive appraisal theories of emotion (e.g., Clore & Ortony, 2008; Ellsworth & Scherer, 2003; Lazarus, 1991; Roseman, 1984; Smith & Ellsworth, 1985), we hypothesize that appraisal tendencies of emotions will carry over to blunt emotion elicitation from a subsequent emotion-eliciting event when that emotion-eliciting event is characterized by *contrasting appraisals*. This inhibition of an emotion with contrasting appraisal tendencies is referred to as *emotional blunting*. It is important to note that our emotional blunting hypothesis draws not only on the ATF but also on prior work by Ellsworth (1991). Ellsworth proposed that the transition between hope and sadness, emotions that differ not only in valence but also in cognitive appraisals of self-responsibility and certainty, should be more difficult than the transition between hope and fear, which differ only in valence. The present work empirically tests Ellsworth's proposition and extends her notion by incorporating emotional transition, generally, and emotional blunting, specifically, into an extended ATF.

In theorizing the extended ATF for emotional blunting, we also draw on a rich and growing literature examining emotional transitions. In a series of innovative studies, Branscombe (1985) as well as Neumann, Seibt, and Strack (2001) have demonstrated that an existing affective (i.e., mood or emotion) state can blunt a subsequent emotional experience when the valences of the two emotional states are the opposite of one another.³ Thus, consistent with Ellsworth's (1991) speculation, these studies provided the first (to our knowledge) evidence that subsequent emotional experiences may be affected by current emotional states. These results lend key empirical support for the present hypothesis in that they demonstrate how general affective states affect susceptibility to subsequent emotional states. The present studies aim

to add emotion-specific predictions, testing hypotheses for emotions within the same valence, as well as proposing an overarching theoretical framework for this line of inquiry.

The present studies test these hypotheses in the context of two negative emotions: sadness and anger. We intentionally selected these emotions for both theoretical and practical reasons. From a theoretical standpoint, sadness and anger have been studied extensively in the literature, providing a rich factual groundwork from which to form hypotheses. It is well understood from the existing literature that although sadness and anger share similarities (e.g., negative valence), a key distinction exists between these two negatively valenced emotions; namely, sadness and anger are characterized by contrasting agency appraisals. Specifically, sadness is characterized by situational agency, whereas anger is characterized by appraisals of human or individual agency (other-individual responsibility; Siemer, Mauss, & Gross, 2007; Smith & Ellsworth, 1985; Weiner et al., 1982). Situational agency, also known as situational control (Smith & Ellsworth, 1985), refers to an event that is controlled by situational circumstances beyond human control (Ellsworth & Smith, 1988; Keltner, Ellsworth, et al., 1993). By contrast, human agency, or other agency (Ellsworth & Tong, 2006), refers to situations in which an individual other than oneself is in control (Keltner, Ellsworth, et al., 1993).

Consistent with this critical distinction based on agency appraisals, sadness and anger have been found to differentially influence judgments. For instance, Keltner, Ellsworth, et al. (1993) demonstrated that sad participants, as compared to angry participants, (a) perceived situationally caused events to be more likely than events of human agency and (b) were more likely than angry participants to attribute responsibility for ambiguous events to situational (rather than human) agency. Similarly, Siemer et al. (2007) found that anger experienced from a negative and stressful—but otherwise ambiguous—event was predicted by human agency appraisal ratings. Additionally, anger, as described previously, can result in more optimistic risk estimates relative to fear, even when the emotion-inducing events are normatively irrelevant to the risk estimates (Lerner & Keltner, 2001; Rydell et al., 2008). Individuals induced to feel anger also tend to make more punitive attributions than those induced to be in a neutral state (Lerner et al., 1998). Thus, knowledge of the distinct agency appraisals of sadness and anger and the corresponding effects of these agency appraisal tendencies on judgments provides a solid theoretical base on which to test emotional blunting.

Beyond the theoretical reasons for studying sadness and anger, practical reasons also make them the preferred focus. Both sadness and anger are experienced frequently in consequential contexts. As mentioned earlier, consider the presence of anger and sadness in our legal system. A defense lawyer may attempt to elicit sadness in a jury. In so doing, not only could the appraisal tendencies of sadness result in

jurors experiencing less anger when considering the defendant's actions, but also (and more importantly) the blunted anger experience likely would lead the jury to hold the defendant less responsible for his or her actions and thus to recommend a lesser penalty than it otherwise would. Alternatively, the prosecutor could elicit anger in the jury, which could subsequently prevent the jury from feeling sadness and acknowledging the situational factors associated with the case. This blunted sadness could thereby cause the jury to hold an innocent victim wrongfully accountable for a crime.

Emotional blunting hypothesis: Drawing on the forgoing work, we predict that, due to contrasting agency appraisals, sadness will blunt the elicitation of anger in a subsequent anger-eliciting event. We also predict the reverse: Anger will blunt the elicitation of sadness in a subsequent sadness-eliciting event.

We also propose that the hypothesized effect of emotional blunting carries over to cognitions. As discussed earlier, tests of the ATF have documented a two-stage process for the effects of emotions on judgment and choice (Lerner & Keltner, 2000, 2001; Lerner & Tiedens, 2006; Tiedens & Linton, 2001). The present studies seek to extend this framework by examining the extent to which the effect of appraisal tendencies on emotional blunting influences cognitive outcomes. Specifically, we test a three-stage sequence in which we examine whether an emotion from one situation carries over to blunt elicitation of an emotion in a new situation and to influence judgments after the elicitation of the second emotion. Two kinds of cognitive outcomes, (a) evaluation of risk and (b) punitive attributions, are used to test this hypothesis.

It is useful to review the typical effects observed in these domains. First, as described previously, individuals induced to feel angry make more optimistic risk estimates than those induced to feel fear, even when the emotion-inducing events are normatively irrelevant to the risk estimates (Lerner & Keltner, 2001; Litvak & Lerner, 2009). This enhanced optimism in risk estimates for angry participants is associated with the human-agency appraisal tendencies. Based on this relation between anger and risk estimates (Lerner & Keltner, 2001; Rydell et al., 2008), if emotional blunting reduces the experience of anger due to conflicting agency appraisals, it should also reduce the extent of optimism in risk estimates.

Second, participants induced to feel anger tend to make more punitive attributions than those induced to be in a neutral state, even when the emotion-inducing events are normatively irrelevant to the task at hand (Lerner et al., 1998). As described earlier, this pattern was found to occur because of the human-agency appraisals associated with anger, such that the appraisals of human agency result in angry individuals perceiving enhanced levels of another individual's responsibility, thereby making more punitive attributions. Thus, if emotional blunting reduces the experience of anger, it should

also reduce the punitiveness of one's attributions. In summary, the appraisals elicited from one experience may carry over to blunt subsequent experiences of emotions with contrasting appraisals as well as to alter cognitions influenced by agency appraisals.

To recap, we note the distinction between (a) the present hypothesis about emotional carryover to judgments and (b) hypotheses from prior work on emotion and judgments. Whereas prior studies (e.g., Lerner & Keltner, 2001) tested whether emotions from one situation carried over to subsequent judgments (a two-stage sequence), the present studies test whether emotions from one situation carry over to blunt elicitation of an emotion in a new situation and also to influence judgments after the elicitation of the second emotion (a three-stage sequence). For example, prior work examined whether priming anger influenced risk estimates. The present work examines whether priming sadness blunts the experience of anger, which would in turn blunt the risk estimates that would otherwise be experienced if anger was not blunted.

The Present Studies

Three studies were conducted to assess this three-stage process. Study 1 tested whether experimentally induced sadness blunted the subsequent elicitation of anger *and* whether the blunting effect carried over to participants' optimistic risk estimates. Study 2 tested the potential bidirectionality of emotional blunting by examining whether induced anger blunted the subsequent elicitation of sadness. Study 2 also examined the process through which emotional blunting occurs by testing (a) the mediating role of agency appraisals and (b) the moderating role of BIS and BAS (Carver & White, 1994). Continuing to examine mechanisms, Study 3 assessed whether cognitive-appraisal primes of *situational-* (vs. *human-*) agency for negative events blunted the *subsequent* experience of anger and whether this blunting extended to punitive attributions.

Study 1: The Blunting Effect of Sadness on Anger and Optimistic Risk Estimates

As described, Study 1 tested the hypothesis that if appraisal tendencies of emotions influence emotional blunting, participants who are exposed to a sadness induction should experience less subsequent anger than their neutral counterparts. Additionally, Study 1 examined whether the effect of emotional blunting would extend to subsequent cognitions; specifically, we theorized that sadness condition participants should not only experience less anger but also make less optimistic risk estimates than neutral condition participants.

Method

Pretest. Prior research has found that receiving unfair offers in economic games can result in anger (Pillutla & Murnighan, 1996). A pretest with 19 undergraduate students (11 females, 8 males) was conducted to ensure that the economic game task to be used as the anger treatment in the main study elicited anger. In this task, each participant played two rounds of the dictator game (Camerer & Thaler, 1995) with an anonymous partner. Unbeknownst to the participants, the experimenter acted as their partner in both rounds. Before playing, participants read instructions about how to play the game, played a sample round of the game, and were informed they would play two “real” rounds for real money.

In the first round, all participants were the decision maker and were given the choice of how to allocate \$10 to their partner. The three allocation choices offered for participants’ consideration included: \$2 self/\$8 other, \$5 self/\$5 other, and \$8 self/\$2 other. Eighteen participants chose to allocate the \$10 equally; the 1 participant who chose the unfair option by choosing \$8 self/\$2 other was dropped from the analysis because we could not expect this participant to be angered by receiving an unfair offer from others (Pillutla & Murnighan, 1996). The first round, in which participants could make a fair offer or an unfair offer, was included to enhance the perceived validity of the economic game. For the second round, all participants were assigned the role of receiver and were randomly assigned to receive an offer from their partner: either \$5 self/\$5 other (fair) for the neutral condition, or \$8 self/\$2 other (unfair) for the anger condition. Participants in the anger condition reported significantly more anger than those in the neutral condition ($M_s = 3.37$ vs. 1.53), $t(17) = 2.70$, $p < .05$, indicating that receiving an unfair offer in the dictator game after giving a fair offer successfully induced anger.

Participants and procedure. Ninety-six undergraduate students completed the main study for course credit. In this and all of our subsequent studies, participants were seated at individual computer workstations equipped with headphones and separated from other workstations by partitions. In all of our studies, participants were told they were participating in multiple, short studies during the same research session to reduce potential demand for a carryover effect. For example, in this study, the first task was described as an “imagination study,” and the second task, an anger treatment, was presented as an “economic game.”

The procedure is illustrated in Figure 2. Following the randomly assigned emotion induction, participants played two rounds of the dictator game as described in the pretest. Unlike the pretest, however, in the second round, all participants were assigned to be the receiver and were given an unfair allocation of \$8 self/\$2 other by their hypothetical partner. This was done to test the emotional blunting hypothesis by assessing the extent to which anger from receiving an unfair offer (Pillutla & Murnighan, 1996) differed among

participants previously primed with sadness or a neutral state.

We anticipated that a high number of participants would choose the unfair allocation (\$8 self/\$2 other) in the first round, as research on the dictator game has found that up to 79% of people allocate less than an equal share to their partner (Forsythe, Horowitz, Savin, & Sefton, 1994). Consistent with our expectation, 36% of people allocated less than an equal share. The benefit of this real experience for an anger treatment is that it enhances validity. However, it required us to drop the participants who made an unfair initial offer because they could not be expected to be angered by receiving an unfair offer from others (Pillutla & Murnighan, 1996). Fortunately, unfair allocation was not correlated with emotion condition ($r = .03$, $p > .70$) or gender ($r = .17$, $p > .05$), indicating that choosing to allocate unequally in the first round was not influenced by experimental conditions. Three additional participants were excluded because of unsuccessful manipulation inductions, and 1 participant was excluded after guessing that there was not a real partner in the economic game. The remaining 57 participants (25 females, 32 males) were included in all subsequent analyses.

Immediately after completing the economic game, participants completed the emotion self-report, followed by measures of optimistic risk estimates. The three anger measures were of primary interest, and we averaged them into a composite score (angry, irritated, and mad; $\alpha = .93$). Optimistic risk estimates were measured with the Life Events Questionnaire adapted from Lerner and Keltner (2001; see Table 1). Principal components analysis with varimax rotation revealed one factor (eigenvalue = 2.40). Items were averaged to form an optimistic risk estimates score (four positive, two negative; $\alpha = .62$). At the end of this and our subsequent studies, participants responded to demand awareness questions and then received an information sheet that revealed the true purpose of the experiment.

Results and Discussion

Drawing on established paradigms (see Keltner, Locke, & Audrain, 1993; Schwarz & Clore, 1983), a manipulation check of the previously validated emotion clips (Rottenberg, Ray, & Gross, 2007) was not included to minimize the extent to which the emotion carryover would be attenuated by drawing attention to the source of the potential carryover effect. Additionally, two graduate students who were unaware of the hypothesis coded participants’ written responses to ensure elicitation of sadness (62% agreement). As noted earlier, 3 participants whose responses were coded as feeling no sadness were not included in the analysis.

Inferential analysis: Blunting anger. Sadness from the emotion induction was expected to influence the extent to which anger was elicited through a subsequent anger-eliciting situation. This hypothesis was tested by means of a one-way

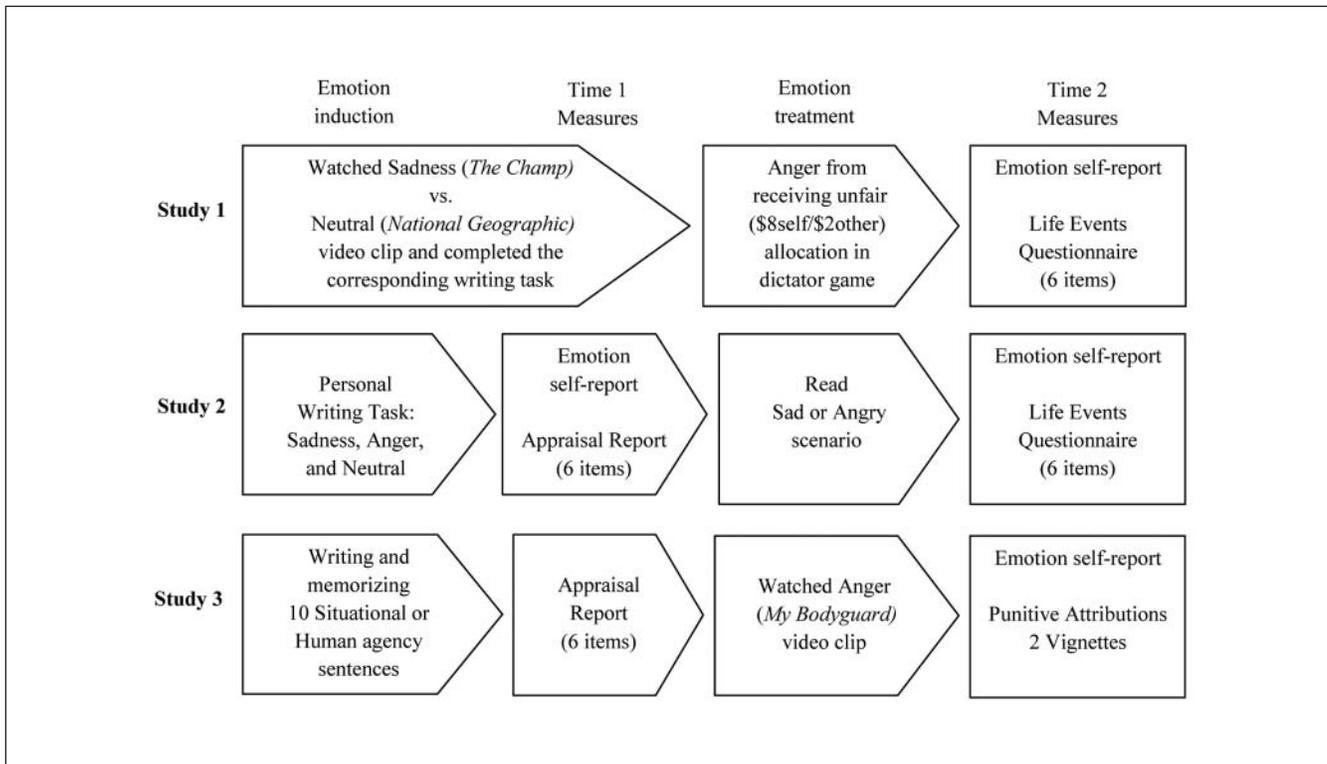


Figure 2. Study procedures

Assignment to emotion induction or emotion treatment conditions was randomly assigned in all studies. Video clips (Rottenberg, Ray, & Gross, 2007), two-question writing tasks (Lerner, Small, & Loewenstein, 2004), and scenarios (Keltner, Ellsworth, & Edwards, 1993) are previously validated emotion inductions. In Study 3, the sadness scenario details a mother dying unexpectedly and the anger scenario describes receiving a low grade from an unfair and unreasonable teaching assistant. Participants were told to try to experience the event as vividly as possible by imagining how they would feel and imagining people they knew as characters in the scenarios. The emotion elicitation methods intentionally differed in each study to test the generality of the phenomenon across elicitation procedures. All emotion reports were on a 9-point scale from 1 (*do not feel this emotion at all*) to 9 (*feel this emotion more strongly than ever before*). In Study 2, the emotion list at baseline and Time 1 consisted of afraid, angry, disgusted, happy, neutral, and sad, with depressed, downhearted, indifferent, irritated, and mad also included in the list at Time 2. The emotion lists assessed a limited number of emotions in this study to minimize the repetitiveness and potential demand effect of responding to a 24-item emotion list three times throughout the 1-hr research session: baseline, after Emotion 1, and after Emotion 2.

Table 1. Life Events Questionnaire for Optimistic Risk Estimates (Studies 1 and 2)

| |
|--|
| I enjoyed my post-graduation job. |
| I had a heart attack before age 50. (Reverse-coded) |
| I received good grades. |
| My achievements were written up in the newspaper. |
| I got into a prestigious internship program. |
| I could not find a job for 6 months. (Reverse-coded) |

The response scale was 0 (*extremely unlikely*) to 7 (*extremely likely*).

ANOVA with emotion condition as the independent variable and a self-reported, composite anger score as the dependent variable. As theorized, sadness condition participants reported less anger ($M = 2.83$) than neutral condition participants ($M = 4.13$) after the economic game anger treatment, $F(1, 56) = 6.18, p < .05; d = .67$ (see Figure 3). This finding reveals that sadness blunts the subsequent experience of

anger. Notably, after the anger-inducing economic game, sadness condition participants reported sadness equal to that of neutral condition participants ($M_s = 1.78$ vs. 2.26), $t(56) = 1.35, p > .15, d = .36$. Therefore, the effect of sadness on subsequent anger cannot be explained by sadness condition participants interpreting the anger treatment as a sadness-eliciting situation rather than an anger-eliciting situation (see Figure 3 for all emotion self-reports by emotion condition).

Inferential analysis: Optimistic risk estimates. We examined whether the blunting effect of sadness on anger would affect cognitive outcomes. We theorized that if sadness condition participants experienced less anger than did neutral condition participants, then sadness condition participants should be less optimistic in their risk estimates than should neutral condition participants. We conducted a one-way ANOVA with emotion condition as the independent variable and optimistic risk estimates as the dependent variable. As

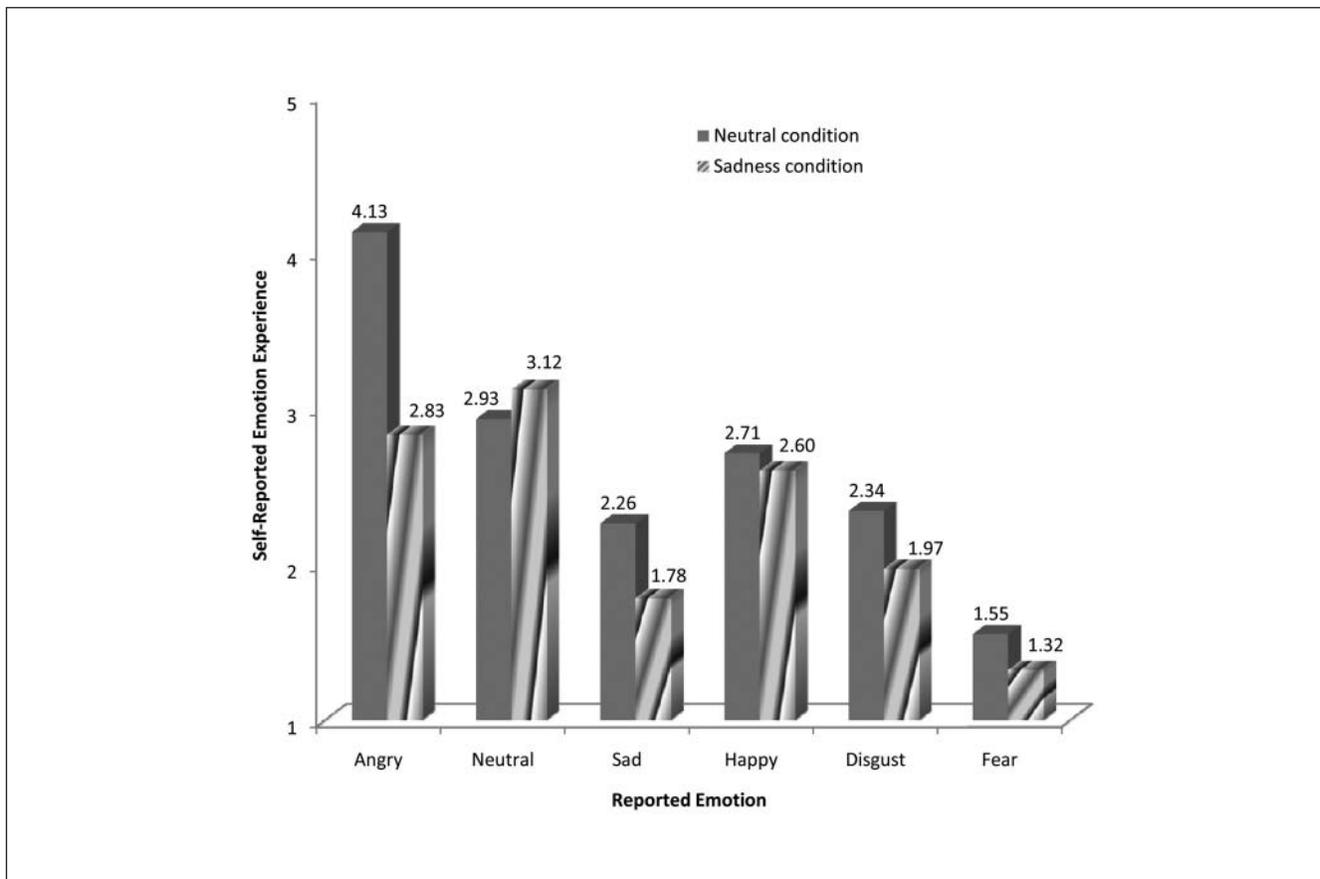


Figure 3. Effect of emotion condition on subsequent self-reported emotion (Study 1)

expected, sadness condition participants were less optimistic about life events ($M = 5.98$) than were neutral condition participants ($M = 6.55$), $F(1, 56) = 3.75$, $p = .05$, $d = .52$. That is, sadness condition participants not only experienced less anger than did neutral condition participants, but they were also less optimistic than neutral condition participants. Our check of hypothesis guessing indicated that participants were unaware that their emotional experience carried over to their risk estimates. This reveals that in addition to blunting the subsequent experience of anger, sadness also blunted anger's otherwise reliable effect on optimism (Lerner & Keltner, 2001).

Study 1 therefore provides support for the role of appraisal tendencies in emotional blunting, demonstrating that incidental sadness (as compared to a neutral state) blunts individuals' reported anger after exposure to an otherwise anger-eliciting situation. Study 1 also establishes that emotional blunting carries over to affect the extent of optimism in risk estimates. Together, the results provide initial support for the three-stage process, such that a current emotion experience can affect both subsequent emotional experience and subsequent judgments.

Study 2: Bidirectional Effects of Emotional Blunting on Emotion and Optimistic Risk Estimates

Although the data from Study 1 revealed a pattern consistent with the hypotheses, it did not show any link between agency appraisals and subsequent emotional experience. Study 2 therefore sought to test this mediational link. Specifically, we expected that human-agency appraisals of anger would mediate the blunting effect on subsequent experience of sadness.

Second, Study 2 addressed the potentially interactive role of motivational factors—specifically, BIS and BAS (see Carver & White, 1994) in emotional blunting. Motivational systems underlie affect and have been found to differ among negative emotions (Carver, 2004; Harmon-Jones, 2003). Though negative emotions are typically associated with BIS (Carver, 2004; Carver & White, 1994), research has demonstrated that anger, unlike negative emotions such as sadness (Lerner & Tiedens, 2006), is associated with BAS (Carver & Harmon-Jones, 2009; Harmon-Jones, 2003). Thus, contrary to our hypothesis, the emotional blunting effect we observed could be attributed to motivational differences between anger

and sadness.⁴ That is, the greater inhibition and lower approach motivation associated with sadness, rather than the contrasting agency appraisals, may have led participants to subsequently experience less anger because of the contrasting motivational systems associated with anger. To test this possibility, we assessed the moderating role of BAS (BIS) on the emotional blunting of anger (sadness).

A third objective of Study 2 was to determine the bidirectionality of emotional blunting. That is, would anger blunt the elicitation of sadness just as sadness blunts the elicitation of anger? Our framework suggests that the underlying agency appraisals can be influential irrespective of their direction. Thus, we aimed to demonstrate that emotional blunting effects are bidirectional for both subsequent emotions and cognitions.⁵

Finally, one may wonder what occurs when individuals transition from one emotion-eliciting event to another event that elicits the same emotion. Because the subsequent emotional treatment inevitably reinforces the same cognitive appraisals as the prior emotional experience, emotional augmentation (Ames & Johar, 2009), the opposite of emotional blunting, could occur. To clarify this question, the present study employed a fully-crossed design with not only anger-to-sadness and sadness-to-anger transitions, but also anger-to-anger and sadness-to-sadness transitions.

Method

Participants and procedure. One-hundred and ninety-three undergraduate students (91 females, 102 males) completed the study for course credit. We followed a “two-study” cover story in which participants were randomly assigned to one of six conditions in a 3 (emotion induction: sadness, anger, neutral) \times 2 (subsequent emotion treatment: sadness vs. anger) fully-crossed between-subjects design with BIS/BAS scales measured as continuous variables.

Baseline emotion and BIS/BAS scales were completed at the beginning of a 1-hr research session. *The scales contained 20 items, and response options on the BIS/BAS scales ranged from 1 (very false for me) to 7 (very true for me).* One dimension (7 items, $\alpha = .82$) reflects BIS sensitivity, or threat responsiveness, whereas the other three dimensions (the average correlation in this sample was .42) reflect aspects of BAS sensitivity, or incentive responsiveness: Fun Seeking (4 items, $\alpha = .88$), Drive (4 items, $\alpha = .88$), and Reward Responsiveness (5 items, $\alpha = .85$). The BIS dimension was of primary interest for emotional blunting of sadness, whereas the BAS Drive dimension rather than Fun Seeking or Reward Responsiveness was the focus for emotional blunting of anger (Carver, 2004; Harmon-Jones, 2003; Wilkowski & Meier, 2010).

The procedure is detailed in Figure 2. Approximately 30 minutes after the start of the research session, participants completed the two-question essay writing task (Lerner &

Table 2. Agency Appraisal Items (Studies 1 and 3)

| |
|---|
| Someone else had the ability to influence what was happening. (H) |
| Another individual was to blame for what was happening. (H) |
| The events were caused by human control. (H) |
| No individual was to blame for what was happening. (S) |
| The events were caused by situational factors. (S) |
| The events were beyond any human's control. (S) |

The agency appraisal items were adapted from Smith and Ellsworth (1985). Responses ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). The three human agency items ($\alpha_{\text{Study 2}} = .83$, $\alpha_{\text{Study 3}} = .95$) and two situational agency items were averaged to create a composite score ($\alpha_{\text{Study 2}} = .74$, $\alpha_{\text{Study 3}} = .94$). We used only two of the three situational agency items because factor analysis indicated the second situational agency item did not factor well; reliability of the index increased with exclusion of the second situational agency item ($\alpha_{\text{Study 2}} = .74$ from .63, $\alpha_{\text{Study 3}} = .94$ from .85). H = human; S = situational.

Keltner, 2001), which was followed by the emotion self-report and appraisal measures (see Table 2). Then, to elicit a subsequent emotion experience to assess emotional blunting, participants next read a scenario from Keltner, Ellsworth, et al. (1993) and responded to the emotion list and Life Events Questionnaire. The three anger measures (angry, irritated, and mad; $\alpha = .93$) and the three sadness measures (sad, depressed, and downhearted; $\alpha = .89$) were of primary interest. Optimistic risk estimates were assessed with the same Life Events Questionnaire from Study 1 (eigenvalue = 1.91; $\alpha = .69$).

Manipulation check. Self-reported emotions after the emotion induction revealed that anger condition participants reported significantly more anger than did sadness condition participants ($M_s = 5.87$ vs. 3.03), $t = 6.61$, $p < .01$, or neutral condition participants ($M = 2.28$), $t = 8.93$, $p < .01$. In contrast, sadness condition participants reported significantly more sadness than did anger condition participants ($M_s = 6.08$ vs. 3.11), $t = 7.55$, $p < .01$, or neutral condition participants ($M = 1.61$), $t = 12.40$, $p < .01$. Thus, our emotion induction worked as anticipated.

Results and Discussion

Subsequent Anger Treatment Results

Inferential analysis: Blunting anger. We proposed that individuals experiencing sadness (vs. neutral or angry states) would subsequently experience less anger. However, we also theorized that the motivational approach system (accessed via BAS Drive) could moderate the blunting effect of sadness on anger. To test the hypothesized moderating role of BAS Drive, we conducted a regression for those with anger as the subsequent emotion treatment. Emotion induction, BAS Drive, and their interaction were the independent variables; self-reported composite anger score was the dependent variable; and baseline anger and sadness were included as covariates.⁶ All variables were mean-centered before

Table 3. Regression Analyses for Subsequent Anger (Sadness) Treatments: Self-Reported Anger (Sadness) and Optimistic Risk Estimates (Study 2)

| Variable | Subsequent anger treatment results | | | | | |
|--|--------------------------------------|------|---------|---------------------------|------|---------|
| | Anger | | | Optimistic risk estimates | | |
| | B | SE B | β | B | SE B | β |
| Sadness emotion | -.05 | .14 | -.05 | -.48 | .25 | -.23† |
| Neutral emotion | .17 | .13 | .15 | -.02 | .24 | -.01 |
| BAS Drive | -.17 | .10 | -.29† | -.02 | .17 | -.02 |
| Sadness \times BAS | .40 | .15 | .34* | .47 | .27 | .23† |
| Neutral \times BAS | .34 | .13 | .39* | .42 | .23 | .27† |
| Baseline sadness | .06 | .04 | .20† | -.02 | .07 | -.04 |
| Baseline anger | -.02 | .05 | -.05 | -.07 | .08 | -.11 |
| Mediation analysis | | | | | | |
| Sadness \times BAS | .22 | .17 | .18 | | | |
| Neutral \times BAS | .15 | .15 | .18 | | | |
| Human agency appraisals | -.05 | .07 | -.08 | | | |
| Human Agency Appraisals \times BAS | -.15 | .07 | -.28* | | | |
| Variable | Subsequent sadness treatment results | | | | | |
| | Sadness | | | Optimistic risk estimates | | |
| | B | SE B | β | B | SE B | β |
| Anger emotion | -.66 | .46 | -.18 | .32 | .23 | .17 |
| Neutral emotion | -.17 | .42 | -.05 | -.09 | .21 | -.05 |
| BIS | -.27 | .35 | -.15 | .31 | .18 | .34† |
| Anger \times BIS | .97 | .44 | .35* | -.56 | .22 | -.40* |
| Neutral \times BIS | .97 | .46 | .32* | -.51 | .24 | -.32* |
| Baseline sadness | -.09 | .13 | -.07 | -.10 | .07 | -.17 |
| Baseline anger | .14 | .12 | .13 | -.10 | .06 | -.17 |
| Mediation analysis | | | | | | |
| Anger \times BIS | .27 | .55 | .10 | | | |
| Neutral \times BIS | .73 | .47 | .24 | | | |
| Situational agency appraisals | .27 | .11 | .29* | | | |
| Situational Agency Appraisals \times BAS | -.26 | .13 | -.57* | | | |

BIS = behavioral inhibition system; BAS = behavioral approach system.

† $p < .10$. * $p < .05$.

the analysis. We created two dummy variables for emotion induction because it is a three-level categorical variable: sad, anger, and neutral (Aiken & West, 1991). Anger was the base comparison condition with a dummy variable for sadness and neutral conditions. The sadness and neutral dummy variables were each interacted with BAS Drive.

Results revealed that, consistent with our theorizing, the interaction of the sadness condition and BAS Drive was significant, $\beta = .34$ (.15), $t = 2.59$, $p < .05$, as was the interaction between the neutral condition and BAS Drive, $\beta = .39$ (.13), $t = 2.60$, $p < .05$. See Table 3 for complete regression analysis results. To examine whether the pattern of these interactions is consistent with our predictions, we conducted simple slope analysis at 1 *SD* below the mean of BAS Drive. The key question of interest is whether anger is blunted when participants with low BAS Drive are experiencing sadness

relative to when participants with low BAS Drive are experiencing anger. As hypothesized, sadness condition participants reported less anger after the subsequent anger treatment than did anger condition participants, $\beta = -.43$ (.23), $t = 2.24$, $p < .05$, $d = .47$, indicating that sadness blunts the subsequent experience of anger for individuals with low BAS. Susceptibility to the anger treatment did not differ as a function of whether participants had been exposed to a neutral induction or to an anger induction, $\beta = -.19$ (.19), $t = -1.14$, $p > .20$, $d = .24$, which suggests that it is the specific experience of sadness rather than the experience of any emotion (i.e., anger) that blunts anger. We find no evidence for emotional blunting at high levels (1 *SD* above the mean) of BAS Drive, as expected. Similar to Study 1, these findings support our theory that participants experiencing sadness subsequently experience less anger relative to those first experiencing

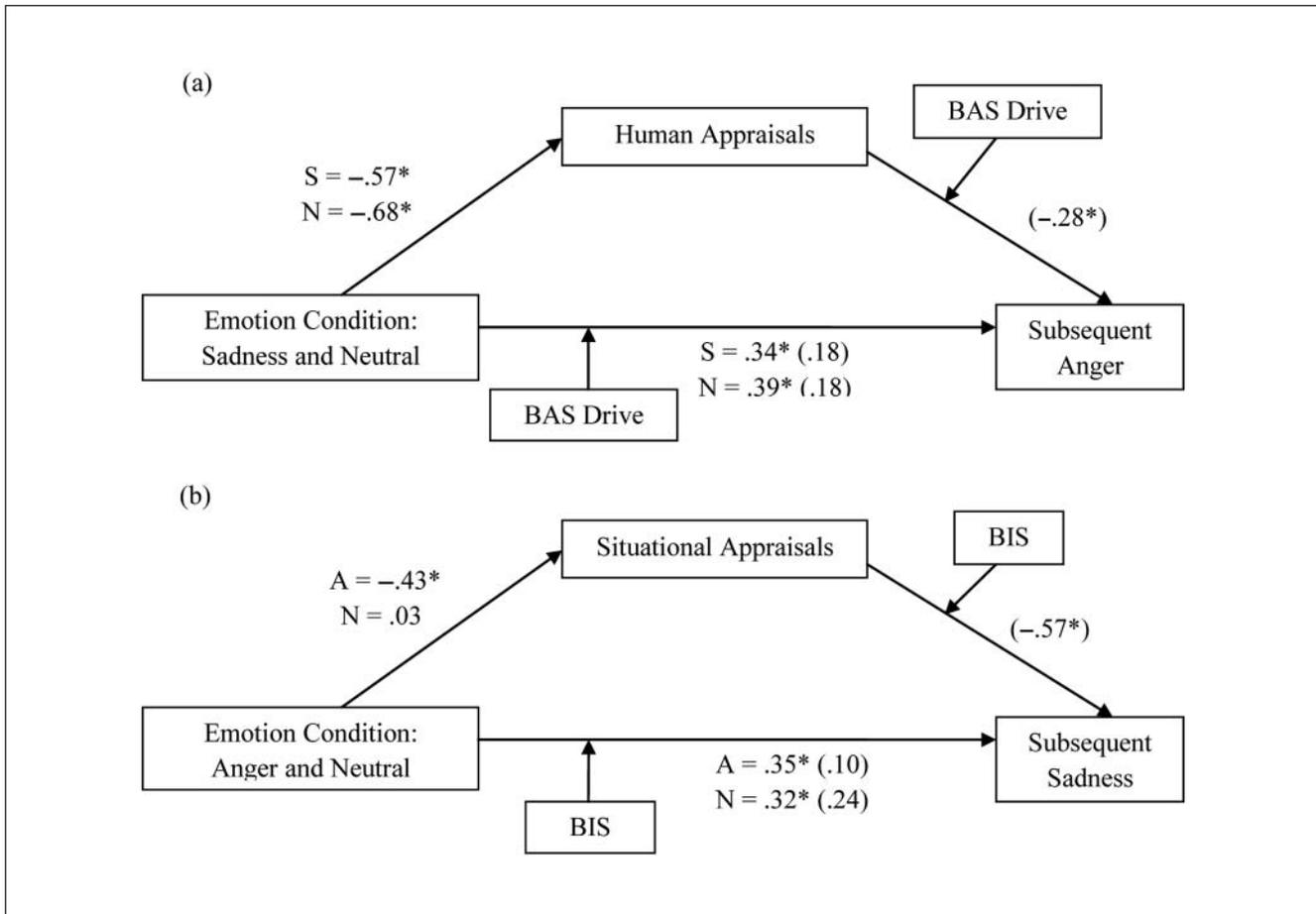


Figure 4. Mediating role of self-reported agency appraisals on the effect of emotion condition and behavioral inhibition system (BIS) and behavioral approach system (BAS) on subsequent emotion (Study 2)

BAS Drive moderates the effect of the sadness condition on subsequent anger, and the sadness condition predicts human agency appraisals. The moderating effect of BAS Drive on the sadness condition on subsequent anger is mediated through human agency appraisals (Panel a) for mediated moderation. In Panel b, BIS moderates the effect of the anger condition on subsequent sadness, and the anger condition predicts situational appraisals. The moderating effect of BIS on the anger condition on subsequent sadness is mediated through situational appraisals. Coefficients without parentheses represent parameter estimates for simple linear regression models. Coefficients within parentheses represent parameter estimates for a regression model containing the mediator (agency appraisals) and the interaction of the mediator and the moderator (BAS Drive/BIS; see Muller, Judd, & Yzerbyt, 2005, for details). A = anger condition; N = neutral condition; S = sadness condition.

* $p < .05$.

anger. However, the blunting of anger only occurs among those with low BAS Drive.⁷ These results are consistent with recent research linking BAS and anger (Carver & Harmon-Jones, 2009; Harmon-Jones, 2003; Wilkowski & Meier, 2010).

Mediating role of human-agency appraisals. To assess whether self-reported human-agency appraisals mediated the relation between emotion condition and BAS Drive on self-reported anger, we conducted a mediated moderation analysis (see Muller, Judd, & Yzerbyt, 2005). The three regressions were conducted with baseline anger and sadness included as covariates (see Table 3 and Figure 4). As theorized, the results indicated that human-agency appraisals mediate the moderating effect of BAS Drive on the effect of emotion condition on subsequent anger experience.

Inferential analysis: Optimistic risk estimates. As in Study 1, we examined whether emotional blunting would carry over to blunt optimistic risk estimates. Consistent with our theorizing, the regression analysis revealed that participants in the sadness condition made less optimistic risk estimates than did those in the anger condition, $\beta = -.23 (.25)$, $t = -1.91$, $p = .06$, $d = .40$, supporting the hypothesis that emotional blunting carries over to blunt optimistic risk estimates for participants who first experienced sadness rather than anger (see Table 3 for complete regression analysis results).

Subsequent Sadness Treatment Results

Inferential analysis: Blunting sadness. We explored the possibility that because of the relation between BIS and

negative emotions such as sadness (Carver, 2004), sadness should be blunted by anger for participants with low BIS. Specifically, we conducted a regression for participants who experienced sadness as the subsequent emotion treatment. Emotion induction, BIS, and their interactions were the independent variables; self-reported composite sadness score was the dependent variable; and baseline anger and sadness were included as covariates. We created two dummy variables for emotion induction because it is a three-level categorical variable: sad, anger, and neutral. Sadness was the base comparison condition, with a dummy variable for the anger and neutral conditions. The anger and neutral dummy variables were each interacted with BIS.

Results revealed that the interaction of sadness condition and BIS was significant, $\beta = .35 (.44)$, $t = 2.23$, $p < .05$, as was the interaction of neutral condition and BIS, $\beta = .32 (.46)$, $t = 2.08$, $p < .05$. See Table 3 for complete regression analysis results. To examine whether the pattern of these interactions is consistent with our predictions, we conducted simple slope analysis at 1 *SD* below the mean of BIS. The key question of interest is whether sadness is blunted when participants with low BIS are experiencing anger relative to when participants with low BIS are experiencing sadness. Indeed, anger condition participants reported less sadness after the subsequent sadness treatment than did sadness condition participants, $\beta = -.44 (.69)$, $t = -2.38$, $p < .05$, $d = .49$, indicating that anger blunts the subsequent experience of sadness for individuals with low BIS. Susceptibility to the sadness treatment did not differ as a function of whether participants had been previously exposed to a neutral induction or previously exposed to a sadness induction, $\beta = -.33 (.71)$, $t = -1.62$, $p > .10$, $d = .34$, which suggests that it is the specific experience of anger rather than the experience of any emotion (i.e., sadness) that blunts sadness. Similar to the results for anger as the subsequent emotion, we find no evidence for emotional blunting at high levels (1 *SD* above the mean) of BIS, as expected. These findings reveal that bidirectional emotional blunting occurred: Anger blunted the experience of sadness, but only among those with low BIS.⁸

Mediating role of situational-agency appraisals. Similar to human-agency appraisals, we conducted mediated moderation analysis (Muller et al., 2005) for situational-agency appraisals. As theorized, the results indicated that situational-agency appraisals mediated the moderating effect of BIS on the effect of emotion condition on subsequent sadness experience (see Table 3 and Figure 4).

Inferential analysis: Optimistic risk estimates. Recall that another goal of this study was to determine whether the bidirectional effect of emotional blunting carried over to optimistic risk estimates. Given the relation between anger and evaluations of risk discussed previously (Lerner & Keltner, 2001; Rydell et al., 2008), we expected anger condition participants to make more optimistic risk estimates than sadness condition participants because the human-agency appraisals

associated with anger would blunt subsequent sadness, resulting in more optimistic risk estimates. Testing this effect, we found a significant interaction of sadness condition and BIS, $\beta = -.40 (.22)$, $t = -2.55$, $p < .05$, $d = .53$, and neutral condition and BIS, $\beta = -.32 (.24)$, $t = -2.13$, $p < .05$, $d = .44$. See Table 3 for complete regression analysis results. To determine whether these interactions were consistent with our theorizing, we conducted simple slope analysis at 1 *SD* below the mean of BIS. The results showed that anger condition participants made more optimistic risk estimates after the subsequent sadness treatment than did sadness condition participants, $\beta = .46 (.35)$, $t = 2.54$, $p < .05$, indicating that the blunting of sadness among anger condition participants carries over to increase optimistic risk estimates for individuals with low BIS. No systematic differences were found in optimistic risk estimates, regardless of whether participants were exposed to a neutral induction or an anger induction. As anticipated, optimistic risk estimates did not differ among those with high BIS. These findings replicate the extension of emotional blunting to cognitions for the blunting of sadness, but only among those with low BIS.

We note the important role of motivational systems, specifically individual differences in BIS and BAS, in this study. Though agency appraisals are demonstrated to be the mechanism through which emotion-specific emotional blunting occurs, agency appraisals did not act alone in influencing emotion transitions.

In sum, Study 2 makes three main contributions to our understanding of emotional blunting. First, we demonstrate that emotional blunting is mediated by self-reported agency appraisals. These findings support our theorizing that subsequent emotional experience may be blunted when characterized by contrasting appraisals. Second, we show that emotional blunting is bidirectional for both subsequent emotions and cognitive outcomes. Specifically, participants in the sadness condition experienced less subsequent anger and less optimistic risk estimates than did participants in the neutral or anger condition, and participants in the anger condition experienced less subsequent sadness and more optimistic risk estimates than did participants in the anger or neutral condition. Third, the influential role of BIS and BAS in this study suggests that emotional blunting may be affected by these motivational systems or by other conceptually relevant individual differences (see Figure 1). Most emotion researchers agree that emotions may be differentiated from each other on several different dimensions, and we find that BIS and BAS moderate the role of agency appraisals in emotional blunting.

Study 3: Effects of Agency Appraisals on Subsequent Anger

Although measures of agency appraisal (as in Study 2) reveal the potentially causal role of such appraisals, it is important to experimentally manipulate appraisals to have increased

confidence regarding a causal role. Study 3 therefore experimentally primes agency. It also examines the carryover of emotional blunting to cognitions via punitive attributions. If emotional blunting reduces the subsequent elicitation of anger because of conflicting situational agency appraisals, participants primed with situational agency should experience less anger and be less punitive than those primed with human agency (Lerner et al., 1998).

Method

Participants and procedure. Participants were 109 undergraduates (66 males, 43 females) who received course credit for participation. The “two-study” procedure (i.e., memory study and imagination study) was used to dissociate the appraisal priming task from the emotion induction. This study was a one-factor between-subjects design with two levels: human agency or situational agency.

The procedure is illustrated in detail in Figure 2. First, participants completed the appraisal prime (see Table 4),⁹ followed by agency appraisal measures used in Study 2. Next, all participants viewed the video clip and responded to the emotion list and punitive attributions. The three anger measures were of primary interest and were averaged into a composite score (angry, irritated, and mad; $\alpha = .89$). For the punitive attributions, participants read two short vignettes, which were counterbalanced (see Lerner et al., 1998), and completed five items assessing punitiveness toward the main actor in each vignette (1 = *not at all* to 7 = *very much so*). The five items across the two vignettes were collapsed to produce a punitiveness score ($\alpha = .87$). Each vignette described harm resulting from negligence by a worker.

Results and Discussion

Manipulation check. We expected participants’ agency appraisals to differ depending on their appraisal prime condition. Indeed, situational-agency condition participants reported significantly more situational control for events than did human-agency condition participants ($M_s = 4.99$ vs. 1.88), $t = 12.85$, $p < .01$. In contrast, human-agency condition participants reported significantly more individual control for events than did situational-agency condition participants ($M_s = 6.11$ vs. 2.93), $t = 13.42$, $p < .01$. Though not measured in the main study, we conducted a posttest to examine the extent to which the agency appraisal primes elicited anger and sadness.¹⁰

Inferential analysis: Blunting anger. We hypothesized that agency appraisal primes would influence the extent to which subsequent anger was elicited by the anger-eliciting film clip. We tested the simple main effects of agency appraisal condition on self-reported, composite anger score. As expected, situational-agency condition participants reported experiencing lower levels of subsequent anger in response to the anger

Table 4. Agency Appraisal Priming Sentences (Study 3)

| | Human agency appraisals | Situational agency appraisals |
|----|--|--|
| 1 | You don't get to see a favorite group perform because the lead singer decided to cancel the show at the last-minute. | You don't get to see a favorite group perform because their concert was cancelled when their international flight was delayed. |
| 2 | All the food in your refrigerator spoils because your roommate didn't shut the refrigerator door tight. | All the food in your refrigerator spoils because the electricity was off for hours. |
| 3 | Your outdoor volleyball game is ruined because players from the previous team broke the net. | Your outdoor volleyball game is ruined when an unexpected thunderstorm causes heavy rains. |
| 4 | A fire damaged your apartment because your roommate left a candle burning. | A fire damaged your apartment because lightning struck the outside of the apartment complex. |
| 5 | Your landlord raises your rent because he wanted to increase profits to build another apartment complex. | Rising property taxes cause your rent to be increased. |
| 6 | You break your leg while skiing when another skier cuts you off. | While skiing, icy slopes caused you to break your leg. |
| 7 | You lose most of your money when someone robs your apartment, stealing your wallet, checkbook, and credit cards. | You lose most of your money when the stock market falls due to a slowing economy. |
| 8 | You don't get a promotion at work because your colleague stole your idea and told your boss it was their idea. | You don't get a promotion at work because firm downsizing causes the position to be eliminated. |
| 9 | A friend dies in a plane crash because the pilot was intoxicated and crashed the plane. | A friend dies in a plane crash when the cabin depressurizes and the plane goes down. |
| 10 | Your high-risk surgery was not a success because the doctor removed the wrong kidney. | Your high-risk surgery was not a success because the cancer that was supposed to be removed has spread to inoperable areas. |

Participants were asked to type and rehearse 10 sentences with the goal of memorizing them. The sentences depicted negative events, which were adapted from Keltner, Ellsworth, and Edwards (1993).

treatment ($M = 4.60$) than did human-agency condition participants ($M = 5.57$), $t = 2.39$, $p < .05$, $d = .46$. These results indicated that for participants primed with situational-agency appraisals, their subsequent experience of anger, characterized by contrasting human agency appraisals, was blunted. See Figure 5 for all emotion self-reports by agency appraisal prime.

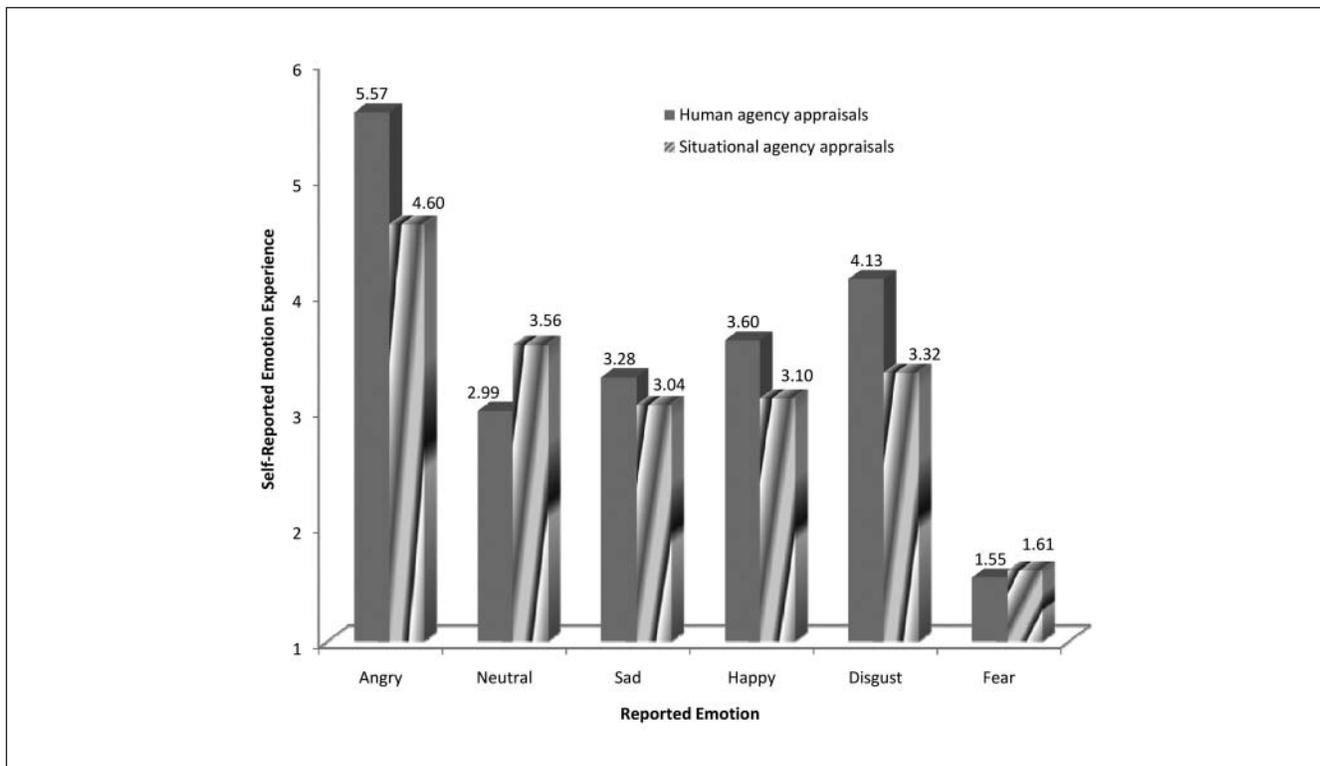


Figure 5. Effect of agency appraisal primes on subsequent self-reported emotion (Study 3)

Inferential analysis: Punitive attributions. We hypothesized that emotional blunting would carry over to influence punitiveness because of the blunted anger experience. Again, we tested the simple main effects of agency appraisal condition on punitiveness. Situational-agency condition participants were less punitive in their assessments of the vignettes ($M = 5.71$) than were human-agency condition participants ($M = 6.08$), $F(1, 108) = 4.66$, $p < .05$, $d = .42$, as theorized.

Study 3 provides two additional contributions. First, it provides additional insights into the role of contrasting appraisals in emotional blunting. By priming agency appraisals, we find that participants with a subsequent emotion treatment characterized by contrasting agency appraisals experience less of the subsequent emotion. Second, it demonstrates that emotional blunting carries over to cognitions other than optimistic risk estimates; individuals who have subsequent anger blunted because of situational agency appraisals are also less punitive in their judgments.

General Discussion

Providing insights into the temporal dynamics of emotional experiences, the present research has demonstrated that emotional blunting can occur through contrasting agency appraisals. Specifically, the studies revealed that experiencing

sadness, characterized by situational-agency appraisals, blunts the subsequent experience of anger, and experiencing anger, characterized by human-agency appraisals, blunts the subsequent experience of sadness. Consistent with our hypotheses, mediation analyses revealed that the blunting effects were indeed driven by agency appraisals.

Taken together, the present studies provide support for a hypothesized three-stage model in which an incidental emotion (e.g., sadness) blunts the subsequent elicitation of another emotion with opposing appraisals (e.g., anger) and then blunts the incidental emotion effects on subsequent judgments (e.g., risk estimates and punitive attributions). Thus, a single emotion experience may have far-reaching effects not only on subsequent emotion experiences but also on subsequent judgments.

Interestingly, the present research also revealed that individual differences interact with the process described previously. In Study 2, results revealed that behavioral approach and inhibition systems (Carver & White, 1994) moderated emotional blunting. Specifically, sadness blunted anger only for those with low BAS. This pattern makes sense given that anger has been associated with approach motivation (Harmon-Jones, 2003) and was correlated with the intensity of agency appraisals in the anger condition ($r = .22$, $p = .05$, one-tailed; $N = 60$). In addition, anger blunted sadness only for those

Table 5. Lay Intuition Items

| |
|--|
| If I were feeling sad, it would be difficult for me to become angry. (B) |
| If I were feeling angry, it would be difficult for me to become sad. (B) |
| When I'm sad, I usually don't experience other emotions. (B) |
| When I'm angry, I usually don't experience other emotions. (B) |
| If I was sad, I could easily feel angry. (A) |
| If I was angry, I could easily feel sad. (A) |

Items were randomly ordered. Items were ranked from 1 (*strongly disagree*) to 7 (*strongly agree*). B = blunting; A = augmenting.

with low BIS in Study 2. This pattern also makes sense in that sadness has been associated with withdrawal/inhibition (Carver & White, 1994) and was marginally correlated with the intensity of agency appraisals in the sadness condition ($r = .19, p = .07$, one-tailed; $N = 63$). These findings suggest that future research should examine dispositional tendencies with conceptual relations to agency appraisals.

Self-Awareness of Emotional Blunting

Stepping back from the present experiments, it is interesting to contemplate whether people have a meta-level awareness of these processes. If they do, it would stand to reason that it would be possible for them to exert control over these effects. To investigate this issue, we conducted a short posttest ($N = 150$ undergraduate students). Participants responded to six randomly ordered items describing emotional blunting (four items, $\alpha = .71$) and emotional augmentation (two items, $r = .42$; see Table 5). When asked whether it would be difficult to become angry when feeling sad (emotional blunting) or whether one could easily feel angry when sad (emotional augmentation), participants reported greater agreement with the emotional augmentation hypothesis than with the emotional blunting hypothesis ($M_s = 4.78$ vs. 3.10), $t(149) = 10.02, p < .01, d = 1.64$. These results suggest that laypeople may be unaware of how the agency appraisals of their current emotional state will affect their subsequent emotional experiences. Therefore, these results imply that correcting for such blunting effects will be rare and difficult.

Implications for the Study of Emotion and Judgment

Emotion is a widely studied construct in psychology and other disciplines, yet only limited research has considered the temporal dynamics of emotions. The present work draws on empirical research (Branscombe, 1985; Neumann et al., 2001) and conceptual propositions (Ellsworth, 1991) to elucidate the nuanced role of appraisals in emotion-specific emotional blunting. Specifically, this research demonstrates

that cognitive appraisals of agency may be influential in emotion transitions and, more broadly, affective chronometry (Tong et al., in press). Furthermore, these experiments show that emotion transitions, specifically emotional blunting, carry over to influence judgments.

Consistent with hypotheses, the ATF served as a useful basis for predicting effects. The present work extends the ATF in several ways. Most importantly, the present research finds that the appraisal tendencies of specific emotions carry over not only to subsequent emotional experiences but also to judgments following these subsequent emotional experiences (i.e., a three-stage process; see Figure 1). Therefore, the appraisal tendencies of specific emotions may have farther reaching effects on an individual's emotional experiences and judgments than the ATF previously documented.

Methodological Implications

These findings also suggest that researchers should pay attention to participants' emotional states before an emotion induction, when possible. Emotion and decision-making research often has presumed that a participant's emotional state before an emotion induction is inconsequential to subsequent emotions and cognitions (see Siemer et al., 2007, for an exception), yet this may not always be the case (see Note 6). For instance, if a participant arrives at an experiment feeling angry because she had trouble finding parking, she will be less likely to experience sadness from a sadness induction than will someone in a neutral state. Emotion research that does not assess participants' prior specific emotional experiences risks masking interesting findings or, more importantly, reporting significant results that are driven by unexamined, preexisting emotional states.

It is important to note that the present studies explored only emotions with contrasting agency appraisals. Given that appraisal theorists (Clore & Ortony, 2008; Ellsworth & Scherer, 2003; Lazarus, 1991; Roseman, 1984; Smith & Ellsworth, 1985) have identified several other cognitive appraisal dimensions, future research should consider whether contrasting appraisals of attention or certainty influence emotion transition, and specifically emotional blunting, to a greater or lesser extent than contrasting agency appraisals.

Practical Implications

Practical implications may be far-reaching. For example, consider how the appraisal processes of emotional blunting could affect legal judgments. As mentioned earlier, jurors experiencing sadness, perhaps intentionally elicited by the defense lawyer, may subsequently experience less anger than they would otherwise when considering the defendant's actions. More importantly, the blunted anger experience likely would lead the jury to hold the defendant less responsible for his or her actions and thus to recommend a lesser

penalty than they otherwise would. Alternatively, the prosecutor could elicit anger in the jury, which could subsequently prevent the jury from feeling sadness and acknowledging the situational factors associated with the case. This blunted sadness could thereby cause the jury to wrongfully condemn an innocent person for a crime. In this context, the order in which the prosecutor and defendant present evidence, question witnesses, and make opening and closing statements could have far-reaching implications.

It appears, therefore, that understanding the psychological mechanisms of emotional blunting should aid in understanding judgments and decisions in a variety of emotional domains. The need to understand such processes is made all the more pressing by the fact that most people are unaware of them. As our posttest on lay intuition clarified, people not only lack awareness of these effects but also deny their very possibility.

Conclusion

Sadness and anger are characterized by contrasting agency appraisals. As a result of these differences, people find that once they are sad, it is hard for them to be mad, and vice versa. We call this phenomenon *emotional blunting*.

Because individuals experience a myriad of emotion-eliciting situations throughout a single day, the effects of contrasting appraisal tendencies may be manifold; the present studies demonstrated, for example, that emotional blunting carries over to influence optimistic risk estimates and punitive attributions. Additional research is needed to understand emotion-specific transitions and their potentially profound impact on both experienced emotion and judgments.

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Notes

1. We recognize that augmentation, instead of blunting, could occur under certain circumstances, but exploring emotional augmentation is beyond the scope of this article because of space constraints.
2. Although emotions often arise from cognitive appraisals, research has found that emotions can be elicited in the absence of cognition. For instance, bodily feedback or unconscious priming can result in emotional experiences without cognitive appraisals (Berkowitz & Harmon-Jones, 2004; Keltner, Ellsworth, & Edwards, 1993). Importantly, the appraisals associated with the emotion will still be elicited when the emotion is experienced, which will result in judgments influenced by the appraisal tendencies (Lerner & Tiedens, 2006). See Figure 1 for an illustration.
3. Branscombe (1985) demonstrated that watching a positively (negatively) valenced film followed immediately by a second film of negative (positive) valence reduced the magnitude of the negative (positive) emotion experience relative to individuals who first watched either a negatively valenced film or no film (control condition). Consistent with Branscombe's findings, Neumann, Seibt, and Strack (2001) found that individuals in a negatively valenced state subsequently experienced less pride and less amusement than did those who were initially in a positively valenced state or a neutral state (control condition).
4. We appreciate the review team's suggestion that behavioral approach and inhibition systems may influence emotional blunting.
5. We thank the anonymous reviewers and Phoebe Ellsworth for suggesting that we test the bidirectionality of the emotional blunting hypothesis in a single study.
6. Including baseline reports of anger and sadness does not change the pattern of the results, such that the hypothesized effects remain when they are excluded from the analysis. However, controlling for baseline emotions does strengthen some of the hypothesized effects. Given our theorizing on the impact of current emotional experience on subsequent emotional experience, it is important to account for baseline emotions when possible.
7. For completeness, we conducted regression analyses for self-reported sadness, disgust, fear, and happiness after the subsequent emotion experience. We did not hypothesize that emotion induction and behavioral approach system (BAS) Drive would influence subsequent emotion experiences other than anger. However, if emotional blunting occurred based on contrasting agency appraisals, disgust could also be blunted by sadness because of its similarity to anger as characterized by human-agency appraisals (Smith & Ellsworth, 1985). Indeed, results indicated that the interaction between anger and BAS Drive predicted disgust, $\beta = .35 (.58)$, $t = 2.71$, $p < .05$. At low levels of BAS Drive, sadness condition participants reported less disgust than anger condition participants following the subsequent anger treatment, $\beta = -.53 (.86)$, $t = -2.72$, $p < .05$. This result for the emotional blunting of disgust, similar to that of anger,

provides additional support for our theorizing. No other effects were found for disgust, sadness, fear, or happiness.

8. As reported in Note 7, we conducted additional regression analysis on all reported emotions. Results indicated that sadness condition participants reported less disgust than anger condition participants following the subsequent anger treatment, $\beta = -.30 (.70)$, $t = -2.45$, $p < .05$. Consistent with our theorizing on the role of contrasting agency appraisals in emotional blunting, the elicitation of disgust was blunted by sadness. Emotion induction and BIS did not affect anger, fear, or happiness.
9. Pretest participants had difficulty thinking of situational agency for events, so participants memorized rather than created sentences, as in Neumann (2000).
10. Emotion self-report was not measured after agency appraisal primes to minimize (a) demand effects from multiple emotion self-reports and (b) the extent to which the appraisal carryover would be attenuated by drawing attention to the source of the potential carryover effect (Keltner, Locke, & Audrain, 1993; Schwarz & Clore, 1983). However, we expected that focusing on situational (human) agency for negative events would elicit sadness (anger). That is, the agency appraisal primes may also serve as a subtle emotion induction. To assess this effect, posttest participants ($N = 76$) were randomly assigned to either the human- or situational-agency appraisal prime. After typing the 10 sentences with the intent of memorizing them, participants reported how much, if at all, they felt each of 24 emotions on the same 9-point scale used in the main studies. The anger (angry, irritated, and mad; $\alpha = .88$) and sadness (sad, depressed, and downhearted; $\alpha = .96$) measures were of primary interest. As expected, results indicated that human-agency (vs. situational-agency) condition participants reported greater anger ($M_s = 2.92$ vs. 2.03), $t(74) = 2.10$, $p < .05$. In contrast, situational-agency (vs. human-agency) condition participants reported greater sadness ($M_s = 3.28$ vs. 2.35), $t(74) = 2.06$, $p < .05$, as anticipated. Thus, the situational- and human-agency appraisal primes elicited sadness and anger, respectively.

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