

Hot Cognition in Investigative Judgments: The Differential Influence of Anger and Sadness

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Abstract The authors predicted that the cognitive appraisal tendencies associated with sadness and anger would exert different influences on investigators' crime-related judgments. Supporting evidence was found in an experiment with 61 experienced criminal investigators. First, when judging the reliability of a witness statement, sad participants relied on their perception of both witness and situational variables, whereas angry participants relied only on their perception of witness variables. This corresponds to the emphasis placed on situational and individual control in the appraisals associated with sadness and anger, respectively. Second, when making judgments of the case, sad participants were sensitive to the consistency of a witness statement with the central hypothesis of the investigation, indicating substantive processing, whereas angry participants were unaffected by statement-hypothesis consistency, indicating heuristic processing. The findings suggest that the process of reliability assessment can be better understood by consulting theories of attribution and information processing.

Keywords Emotion · Anger · Sadness · Criminal investigation · Judgment · Cognition

Few professional groups encounter transgressions of moral norms as frequently as those working within the legal system. The law has evolved as a manifestation of culturally shared moral principles, resulting in an overlap between socially unacceptable behaviors and illegal acts. It follows from the intimate relation between moral and legal principles that exposure to crime should be associated with emotional experiences. For instance, child sexual abuse is not such an engaging issue simply because it defies the law, but mainly because it also violates commonly shared human values and provokes strong affective reactions. Hence, negative emotional reactions should arguably be a common element in the working life of legal professionals.

Although feelings are often considered an integral part of judicial decision-making (see Bandes, 1999; Maroney, 2006), very few studies have tried to disentangle the precise consequences of distinct emotions in legal settings by experimental means. In contrast, non-applied research in social psychology has successfully demonstrated the different cognitive and behavioral consequences of specific emotions. The present research is an attempt to apply some

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of the theoretical principles developed in social psychological research on emotions to the study of judgments made by legal professionals. Specifically, we focus on judgments made by criminal investigators at an early stage of the criminal justice process. Furthermore, we contrast two emotions that are likely to be elicited by criminal events—anger and sadness.

Cognitive consequences of anger and sadness

Modern theories of emotion have moved away from viewing negative and positive feelings as homogeneous classes of emotions. Today, distinct emotions are typically considered separately, with an emphasis on their unique cognitive components rather than their shared valence (Keltner, Ellsworth, & Edwards, 1993; Lerner & Keltner, 2000). This development is largely due to the discovery that different emotions are associated with different *appraisal patterns*; that is, cognitions corresponding to an emotion's core meaning (Ortony, Clore, & Collins, 1988; Smith & Ellsworth, 1985; Weiner, 1986). Anger, for instance, is characterized by the appraisals that someone other than the self is responsible for a negative event, that the event was under the individual's control, and a certainty about what happened (Lerner & Keltner, 2000; Lerner & Tiedens, 2006). Thus, people who feel angry typically perceive a specific person to be the cause of some unwanted event. Sadness, in contrast, is associated with a focus on situational causes outside an individual's control and a greater sense of uncertainty (Ellsworth & Smith, 1988; Smith & Ellsworth, 1985). Hence, the experience of sadness does not typically entail blaming someone for what occurred, but rather a notion that it happened because of uncontrollable forces. The attribution tendencies accompanying specific emotions have been found to influence not only the interpretation of the emotion-evoking event, but also appraisals of unrelated situations (Keltner et al., 1993). For instance, Quigley and Tedeschi (1996) showed that anger may transcend situations and increase blame attributions in subsequent contexts completely irrelevant to the anger-provoking event.

In addition to different attribution tendencies, different emotions stimulate varying levels of information processing. According to several emotion theories, negative affective states in general lead to more thorough, systematic processing of information compared with positive states (e.g., Bless, 2000; Schwarz, 1990). However, this view appears to be oversimplified, given evidence that positive affect in several contexts facilitates flexible, creative, and thorough thinking (Isen, 1999). In addition, recent research suggests that anger, although traditionally viewed as a negative emotion, in fact triggers more shallow thought than other negative and even some positive emotions (Bodenhausen, Sheppard, & Kramer, 1994; Tiedens, 2001). To account for this finding, Tiedens and Linton (2001) suggested that it is more useful to consider the appraisals associated with different emotions rather than valence. Because the experience of uncertainty is known to produce systematic thinking (Pelham & Wachsmuth, 1995; Weary & Jacobson, 1997), feelings that involve appraisals of uncertainty (e.g., sadness) should stimulate more deep processing than feelings that involve appraisals of certainty (e.g., anger). In a series of experiments, Tiedens and Linton (2001) showed that the certainty associated with an emotion carried over to influence certainty in a subsequent, unrelated situation. These certainty appraisals, in turn, influenced the depth of processing engaged in when participants made judgments in the subsequent situation. Consequently, anger produced more shallow processing than did other negative emotions, such as fear and worry.

Implications for investigative judgments

Criminal investigation is a largely theory-driven enterprise. That is, investigators form tentative hypotheses regarding the likely chain of events pertaining to the investigated crime (Innes,

2003). These hypotheses, in turn, guide the search for new evidence and the interpretation of encountered information (Wagenaar, van Koppen, & Crombag, 1993). The reliance on such “case theories” is essential. The vast amount of information pertaining to even the most trivial offense necessitates some degree of selectivity in order to avoid information overload. In addition, unless investigators have a preliminary understanding of the crime, it is impossible to make meaningful interpretations of subsequently encountered information. On the other hand, if used excessively as a basis for judgments and decisions, case theories pose a significant threat to the objectivity of investigations. For instance, if overly focused on obtaining supportive evidence for a focal hypothesis, investigators risk becoming blind to the possibility that alternative hypotheses may better account for the facts of the case. In addition, they run the risk of becoming insensitive to information that runs counter to the hypothesis. In other words, a case theory may be the starting point for an investigative confirmation bias (Ask & Granhag, 2005).

The portrait of the criminal investigator as an evaluator of hypotheses largely parallels the image of lay people as social hypothesis testers, found in the social psychology literature (see Trope & Liberman, 1996). This body of research further underscores the risk that investigators may become overly focused on hypothesis confirmation. For instance, people tend to engage in hypothesis-consistent testing, primarily seeking evidence that is consistent with a focal hypothesis rather than diagnostic with regard to alternatives (e.g., Snyder, 1981; Snyder & Swann, 1978). In addition, when confronted with ambiguous evidence, people tend to interpret it in terms consistent with the hypothesis under consideration (e.g., Trope, 1986). It seems that only under optimal conditions—with high motivation, abundant cognitive resources, and alternative hypotheses readily accessible—do people engage in truly diagnostic hypothesis testing (Trope & Liberman, 1996).

In a recent study, Ask and Granhag (in press) examined the role of cognitive processing in investigative hypothesis testing. They manipulated criminal investigators’ motivation and ability to systematically process criminal evidence by varying time pressure. Participants working under high or low time pressure were first presented with preliminary findings from the investigation of a homicide case, and were asked to indicate their perception of the case (e.g., the probable guilt of the prime suspect). Subsequently, participants read a witness statement that was either consistent or inconsistent with the hypothesis that the suspect was guilty. Finally, they once again indicated their perception of the case. A comparison of the ratings obtained before and after the witness statement showed that time pressure moderated the pervasiveness of investigators’ initial belief regarding the case. Specifically, whereas participants working without time pressure were sensitive to the content of the witness statement and adjusted their perception of the case accordingly, those working under time pressure were unaffected by the statement and maintained their initial standpoint.

Previous studies comparing anger with sadness, worry, or neutral emotion have shown that angry participants make more stereotypic judgments (Bodenhausen et al., 1994), rely on fewer diagnostic cues (Lerner, Goldberg, & Tetlock, 1998), make greater use of chronically accessible scripts (Tiedens, 2001), and pays more attention to superficial cues and less attention to the argument quality of persuasive messages (Tiedens & Linton, 2001). Hence, just as time pressure did in the study of Ask and Granhag (in press), anger is likely to make criminal investigators rely on superficial processing, and hence base their judgments more on preexisting expectations and beliefs, compared with emotions that prompt deep processing.

Semmler and Brewer (2002) demonstrated the impact of negative emotion on mock-jurors’ processing of a witness testimony. They manipulated sadness (vs. neutral emotion) through the presence or absence of emotional expressions in the statements of two witnesses, and through the inclusion or exclusion of details of the physical and psychological harm suffered by the victims of a serious road accident. Indicative of increased processing depth, sad jurors were better able

to detect testimonial inconsistencies than were jurors in a neutral mood. They also observed that jurors experiencing higher levels of anger were somewhat less likely to accurately report inconsistencies, in line with the idea that anger reduces substantive processing. The latter finding does however not establish causality, since anger was not manipulated in the experiment but only measured via self-reports. Moreover, the emotion manipulation was built into the stimulus material, so that sad and neutral jurors were to make judgments with regard to slightly different information. Further research is warranted to circumvent these issues. Also, it is crucial to examine whether the findings of Semmler and Brewer (2002) generalize to other actors within the legal system, such as criminal investigators.

Another effect of anger and sadness on investigative judgments is that they can direct investigators' attributional focus towards personal and situational causes, respectively (Keltner et al., 1993). One way this may manifest itself is by affecting the perception of causes responsible for the behavior of a perpetrator or the consequences for a victim. Preliminary support for this idea comes from the study of Lerner et al. (1998; see also Goldberg, Lerner, & Tetlock, 1999), who found that angry participants were more likely to blame the defendant responsible for an accident than were neutral participants (see Feigenson & Park, 2006, for further discussion of this type of influence). However, since attributional tendencies have a very general influence on human cognition (Lerner & Keltner, 2000), they may also influence the attributions that investigators make when assessing the reliability of eyewitness statements. The sources of statement reliability can be sorted into two categories: (a) witness variables, which pertain to the characteristics of the witness as a person; and (b) situational variables, which include witnessing conditions and other factors external to the witness (see Brewer, Weber, & Semmler, 2005, for a similar distinction). In other words, a person assigning a certain level of reliability to a statement may do this because of his or her perception of either personal factors pertaining to the witness (e.g., a trustworthy character), situational conditions outside the witness' control (e.g., favorable viewing conditions), or a combination of both. Conceptualized this way, reliability assessment is a form of causal attribution. Accordingly, it would be predicted that investigators experiencing anger—who are predisposed to focus on personal causes—attach relatively great weight to witness variables in their reliability judgments. Conversely, sad investigators—oriented towards the influence of the situation—would let situational variables make a greater contribution to their judgments.

The present research

In this study, we examined the above predictions by experimentally inducing anger or sadness in experienced police investigators and observing the differential impact on investigative judgments. These particular emotions were chosen for this study primarily because they are probable reactions to some of the events (i.e., moral violations and wrongdoings) that legal professionals encounter on a day-to-day basis. In addition, the two emotions have been contrasted previously in both theoretical treatments (e.g., Lerner & Keltner, 2000) and basic empirical research (e.g., Keltner et al., 1993), and thus afford a natural first step in testing the relevance of emotion theory in criminal investigations. We intentionally avoided the comparison between one positive and one negative emotion (e.g., happiness vs. sadness) in order not to confound potential effects of valence with the effects of cognitive appraisals.

To simulate the conditions under which police officers normally operate, investigators' judgments were made with regard to a case material with information typically found in a case file. Of particular interest were participants' judgments of two witnesses who had given statements with relevance to the investigated crime, and participants' perception of the case as a function of the statements. While the first witness statement was identical for all participants, the statement

of the second witness was slightly manipulated, such that in one version it was consistent with the focal hypothesis (i.e., that the prime suspect was guilty) and in another version it contradicted the hypothesis.

Three specific hypotheses were formulated: First, because of the difference in processing intensity, sad (vs. angry) participants will be more sensitive to the content of the witness statements, and hence the consistency of the second statement with the central hypothesis of the investigation will have a greater impact on their judgments of the case. Second, due to the different causal attribution tendencies associated with anger and sadness, angry (vs. sad) participants will base their judgments of statement reliability more on factors internal to the witness (witness variables) and less on factors external to the witness (situational variables). Third, in line with the findings of [Ask and Granhag \(in press\)](#), participants will rate the inconsistent (vs. consistent) witness and its statement more negatively in terms of reliability, trustworthiness, witnessing conditions and weight as evidence, despite the fact that the presented information relevant to these judgments does not differ between statement versions.

Method

Participants

Sixty-one experienced police officers from three urban regions in Sweden participated in the experiment as part of two-week advanced training courses. The sample consisted of 39 male and 22 female participants, with ages ranging from 35 to 60 years ($M = 46.3, SD = 7.0$). The average time serving as a police officer was 23.7 years ($SD = 7.9$), and none of the participants had less than 10 years of policing experience. The mean self-rated experience (1 = *No experience at all*, 9 = *Very great experience*) from working with specific types of crime was 6.4 ($SD = 2.1$) for assault, 5.9 ($SD = 2.5$) for domestic violence, and 3.3 ($SD = 2.1$) for murder. Participants were randomly assigned to one of four conditions defined by a 2 (emotion: anger vs. sadness) \times 2 (statement consistency: consistent vs. inconsistent) factorial design.¹

Emotion induction

Participants were first told that they were to take part in two separate studies, the first of which examined people's emotional reactions to different types of events, and the second of which studied judgment and decision-making in investigative settings. In reality, however, the first "study" served as an emotion induction procedure, the effects of which were investigated in the second "study". Participants were instructed to recall an event, encountered in their service as police officers, which caused them to experience either anger (anger condition) or sadness (sadness condition). They were told to imagine the situation as vividly as possible. When they had clearly visualized the event, participants were asked to describe the situation in writing, including an explanation of what it was about the situation that had made them angry/sad. The text was to be written in a designated blank space in a booklet, but there were no requirements or constraints regarding the amount of text to be produced or the time to be spent describing the event. The technique of self-reporting emotional events has previously been shown to effectively re-establish the intended affective state (Lerner & Keltner, 2001; Westermann, Spies, Stahl, & Hesse, 1996).

¹ Limited availability of eligible participants precluded the inclusion of a neutral control condition on the Emotion factor.

Manipulation check

To measure the effectiveness of the emotion induction, participants were asked to rate the extent to which they experienced each of six basic emotions while thinking back on the reported event. The rated emotions were happiness, anger, fear, sadness, disgust, and surprise, and each was rated on nine-point scales (1 = *not at all*, 5 = *moderately*, 9 = *extremely strongly*).

Stimulus materials

A one-page summary of an assault case was created by the authors. The summary conveyed: (1) Observations made by the police patrol first to arrive at the crime scene; in the living room of an apartment, a boy in his teens was found unconscious, severely battered. (2) The physical state of the victim; the boy (who turned out to be 15 years old) was rushed to the hospital, where doctors confirmed a serious fracture of the skull, haemorrhages in the diaphragm, and fractures of the jaw. (3) The social background of the victim; the victim's mother explained that her ex-husband, who was also the father of the victim, had acted threatening towards her son and herself on previous occasions. Since the couple separated, the father had indulged in severe drug abuse and spent four years in prison for the possession of narcotics. His use of drugs occasionally made him very aggressive and rash. (4) Potential motive; recently, the father had contacted the victim and his mother, urging them to lend him money. He claimed that the mother had savings, which the mother herself denied. The mother knew that the father was financially indebted to a number of people. Despite search efforts, the father had not been apprehended after five days.

Following the case summary, the statements of two witnesses were summarized. The first witness (Witness A), an upstairs neighbor of the victim, reported meeting the victim's father in the staircase shortly prior to the offense. The second witness (Witness B), a next-door neighbor of the victim, claimed to have heard two quarreling voices and thuds from the victim's apartment, prompting her to call the police. The statement of Witness B was created in two versions, varying its consistency with the hypothesis that the victim's father was guilty of the offense. In the consistent version, the witness recognized the quarreling voices as the victim and his father. In the inconsistent version, the witness recognized only the voice of the victim. The other voice allegedly did not belong to the victim's father, because it sounded much too young. All other aspects (e.g., statement content, witness characteristics, witnessing conditions) remained constant between the consistent and inconsistent statements.

Dependent measures

The dependent measures included witness ratings and guilt judgments. First, both witnesses A and B were to be rated on nine-point scales in terms of perceived statement reliability (1 = *not at all reliable*, 9 = *very reliable*), perceived trustworthiness of the witness (1 = *not at all trustworthy*, 9 = *very trustworthy*), the perceived favorableness of the witnessing conditions (1 = *very poor*, 9 = *very good*), and the weight to be assigned to the witness as evidence (1 = *very little weight*, 9 = *very great weight*). These ratings were collected immediately following each of the two witness statements. Hence, Witness A was rated before participants had read the statement of Witness B. It was explicitly stated that trustworthiness referred to the witness as a person, and that witnessing conditions had to do with situational circumstances surrounding the witnessed event.

Second, participants' global impression of the case was assessed via two measures related to the guilt of the victim's father. Participants were asked to indicate the probability that the father

was guilty of the investigated crime (1 = *not at all probable*, 9 = *very probable*). They then rated the strength of the evidence against the father (1 = *very weak*, 9 = *very strong*).

Results

Manipulation check

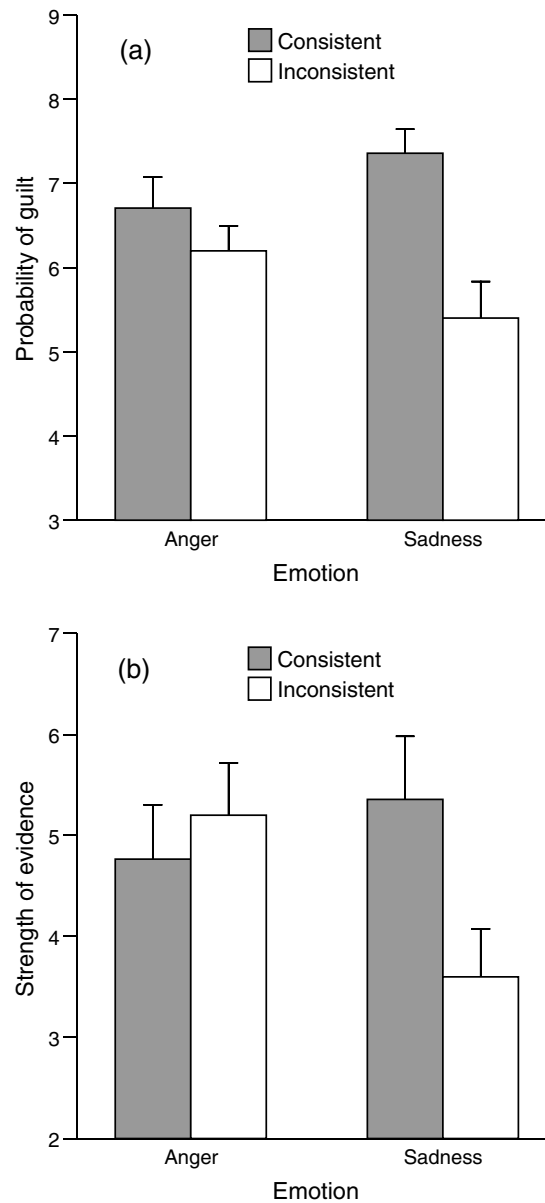
To examine the effectiveness of the emotion induction, participants' self-rated anger and sadness were compared between the emotion conditions. As expected, participants in the anger condition felt significantly stronger anger ($M = 5.47$, $SD = 1.68$) than did participants in the sadness condition ($M = 2.93$, $SD = 2.84$), $t(59) = 4.29$, $p < .001$, Hedges's $g = 1.10$. Conversely, the self-rated sadness was considerably higher in the sadness condition ($M = 6.90$, $SD = 1.08$) than in the anger condition ($M = 1.69$, $SD = 1.79$), $t(59) = 13.61$, $p < .001$, $g = 3.49$. The two groups did not differ in terms of self-rated happiness, fear, or disgust (all $ps > .05$). Unexpectedly, however, the anger group expressed somewhat more surprise ($M = 2.47$, $SD = 2.90$) than the sadness group ($M = 1.03$, $SD = 1.80$), $t(59) = 2.29$, $p = .025$, $g = 0.59$. In sum, the data show that the emotion induction successfully created two groups that differed in terms of anger and sadness, although failing to leave all other emotions unaffected. However, this side effect seems to be of little consequence for the study; including surprise as a covariate in the main analyses did not significantly alter the nature of the results. Hence, self-rated surprise was disregarded in the analyses that follow.

Guilt judgments

Participants indicated their general perception of the case in terms of the probable guilt of the suspect and the strength of the evidence against the suspect. These ratings are represented in Fig. 1. As would be expected, there was a main effect of statement consistency on the ratings of probable guilt, $F(1, 57) = 11.85$, $p < .01$, partial $\eta^2 = .17$. Participants who read the consistent statement of Witness B found it more likely that the suspect was guilty ($M = 7.00$, $SD = 1.37$) than did participants who read the inconsistent statement ($M = 5.80$, $SD = 1.47$). This effect was qualified by the predicted emotion \times statement-consistency interaction, $F(1, 57) = 4.11$, $p < .05$, partial $\eta^2 = .07$. As evident from Fig. 1a, the ratings of sad participants were influenced by the consistency of the witness statement to a larger extent than those of angry participants. This pattern was confirmed by simple-effects analyses. Sad participants having read the consistent statement were significantly more convinced of the suspect's guilt ($M = 7.36$, $SD = 1.08$) than those having read the inconsistent statement ($M = 5.40$, $SD = 1.68$), $F(1, 57) = 14.28$, $p < .001$, $\eta^2 = .20$. Angry participants, on the other hand, did not differ between the consistent ($M = 6.71$, $SD = 1.53$) and inconsistent ($M = 6.20$, $SD = 1.15$) conditions, $F(1, 57) = 1.05$, $p = .310$, $\eta^2 = .01$. There was no main effect of emotion, $F(1, 57) < 1$.

As for the rated strength of the evidence against the suspect, there was no main effect of either emotion, $F(1, 57) < 1$, or statement consistency, $F(1, 57) = 1.49$, $p = .23$, partial $\eta^2 = .03$. Importantly, however, the analysis revealed the expected interaction between emotion and statement consistency, $F(1, 57) = 4.09$, $p < .05$, partial $\eta^2 = .07$. The pattern of means in Fig. 1b largely mirrors that found for the ratings of probable guilt; sad participants were responsive to the consistency of the statement, whereas angry participants showed little consideration of this factor. Simple-effects analyses once again confirmed the predicted pattern. Thus, sad participants having read the consistent statement perceived stronger incriminating evidence ($M = 5.36$, $SD = 2.34$) than those having read the inconsistent statement ($M = 3.60$,

Fig. 1 Effects of emotion and statement consistency on mean judgments (+SE) of (a) probability of guilt and (b) strength of evidence

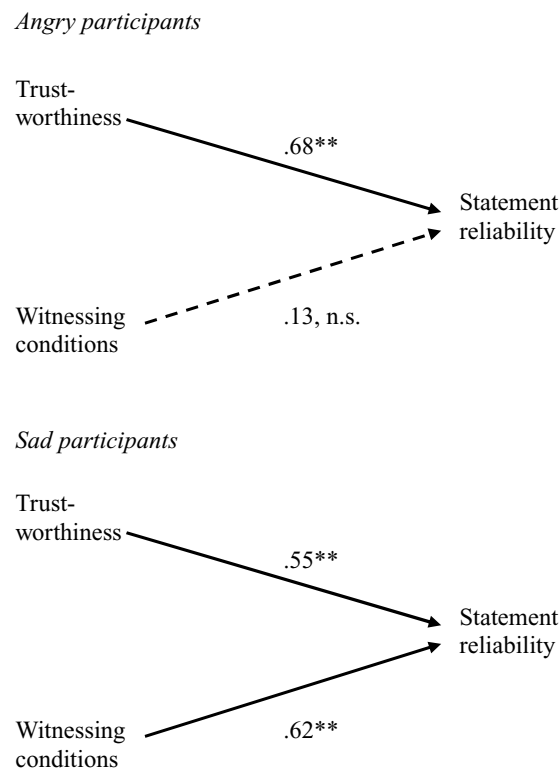


$SD = 1.84$), $F(1, 57) = 5.01$, $p < .05$, $\eta^2 = .08$. In contrast, within the anger condition there was no difference between the consistent ($M = 4.76$, $SD = 2.22$) and inconsistent ($M = 5.20$, $SD = 2.01$) statement conditions, $F(1, 57) < 1$.

Attribution tendencies

It was hypothesized that participants would base their reliability judgments differently on witness variables (trustworthiness) and situational variables (witnessing conditions) as a function of

Fig. 2 The influence of perceived trustworthiness and witnessing conditions on reliability judgments as a function of emotion



Note. $**p < .01$; n.s. = not significant

emotion. The influence of trustworthiness was expected to be larger among angry than among sad participants, whereas the opposite was expected with regard to witnessing conditions. To test this prediction, participants' reliability judgments for the statement of Witness A ($M = 7.02$, $SD = 1.42$) were regressed on their ratings of trustworthiness ($M = 7.02$, $SD = 1.34$) and witnessing conditions ($M = 7.20$, $SD = 1.42$) for the same witness. Emotion and two product terms representing its interactions with trustworthiness and witnessing conditions were included in the analysis. The predicted interaction between emotion and witnessing conditions bordered on significance, $b = -0.42$, $t(55) = -2.00$, $p = .051$, partial $r^2 = .07$. As illustrated in Fig. 2, more favorably perceived witnessing conditions was associated with higher judgments of statement reliability, but only for sad participants ($r = .62$, $p < .001$). Angry participants ($r = .13$, $p = .472$) appeared not to account for this factor in their reliability judgments. A comparison of the Pearson correlations, using the Fisher r -to- z transformation, revealed a significant difference, $z = 2.20$, $p < .05$. The predicted interaction between emotion and trustworthiness judgments was not significant, $b = 0.31$, $t(55) = 1.35$, $p = .18$, partial $r^2 = .03$. Accordingly, there was no significant difference in the extent to which rated trustworthiness predicted reliability judgments among angry ($r = .68$, $p < .001$) and sad ($r = .55$, $p < .01$) participants, $z = 0.78$, $p = .44$. In sum, the results supported the predicted attributional differences with regard to the reliance on situational but not witness variables.

Table 1 Mean ratings for Witness B as a function of emotion and statement consistency

	Anger		Sadness	
	Consistent statement	Inconsistent statement	Consistent statement	Inconsistent statement
Statement reliability	6.47	6.53	6.57	5.47
Trustworthiness	6.82	6.53	7.50	6.33
Witnessing conditions	5.47	5.00	5.21	4.13
Weight as evidence	6.06	5.73	5.79	4.47

Note. All ratings were made on 9-point scales.

Witness ratings

Our third hypothesis predicted that participants would perceive the inconsistent witness more negatively than the consistent witness on dimensions related to statement reliability. These ratings are presented in Table 1. In order to reduce error variance due to individual differences, participants' corresponding ratings of Witness A were included as a covariate when analyzing the ratings of Witness B. The analyses of covariance (ANCOVA) were conducted with both emotion and statement consistency as independent variables.

Statement reliability

The predicted main effect of statement consistency was not significant for the ratings of statement reliability, $F(1, 56) = 2.29, p = .136$, partial $\eta^2 = .04$. In line with the hypothesis, however, the inconsistent witness statement ($M = 6.00, SD = 1.58$) was seen as somewhat less reliable than the consistent witness statement ($M = 6.52, SD = 1.31$). No other significant effect came out of the analysis, $ps > .05$.

Trustworthiness

As for witness trustworthiness, the only significant effect was the hypothesized main effect of statement consistency, $F(1, 56) = 5.62, p < .05$, partial $\eta^2 = .09$. As predicted, participants perceived the witness whose statement contradicted the focal hypothesis of the investigation ($M = 6.43, SD = 1.25$) to be less trustworthy than the consistent witness ($M = 7.13, SD = 1.28$). All other $ps > .25$.

Witnessing conditions

No significant effect emerged from the analysis of the witnessing-condition ratings, but there was a non-significant trend associated with statement consistency, $F(1, 56) = 2.56, p = .115$, partial $\eta^2 = .04$. The means displayed the predicted pattern, indicating that the exact same witnessing conditions were seen as less favorable when pertaining to the inconsistent statement ($M = 4.57, SD = 1.70$) than when pertaining to the consistent statement ($M = 5.35, SD = 2.06$). The other effects did not approach significance, $ps > .25$.

Weight as evidence

Statement consistency significantly affected participants' perceived evidential weight of the statement, $F(1, 56) = 4.30, p < .05$, partial $\eta^2 = .07$. Once again, the inconsistent witness

statement ($M = 5.10$, $SD = 1.58$) was rated lower than the consistent witness statement ($M = 5.94$, $SD = 1.61$), in support of our hypothesis. The analysis revealed no other significant effect, $ps > .05$.

Discussion

The present study is, to our knowledge, the first to examine the effects of specific negative emotions in the context of criminal investigation. We used the Appraisal Tendency Framework (Lerner & Keltner, 2000, 2001) as a basis for our predictions. Specifically, we expected anger and sadness to cause different levels of cognitive processing and different use of individual and situational factors in behavioral attributions, which in turn would affect investigators' judgments with regard to a criminal case.

Processing tendencies

Our results indicate that sad investigators engaged in more thorough processing of the case material than did angry investigators, and were therefore more susceptible to the content of the witness statements. Specifically, sad participants saw it as more likely that the suspect was guilty and perceived stronger incriminating evidence when having read a witness statement confirming the guilt of the suspect, compared to when having read an exonerating statement. Angry participants, in contrast, were unaffected by the content of the statement.

The conclusion that these findings indicate differences in processing rests on the well-established relationship between degree of elaboration and level of information integration (see Chaiken & Trope, 1999, for a review). A series of studies by Tesser, for instance, showed that people's impressions of social targets were less influenced by relevant information when processing capacity was limited (Tesser, 1976; for similar findings, see Tesser & Conlee, 1975). More recently, Bodenhausen et al. (1994) found that angry participants processed the content of a persuasive message less thoroughly than sad and neutral participants, thus relying more on peripheral cues (e.g., the credibility of the communicator) rather than the central elements of the message. The present results concur with this line of findings, showing that emotionally produced differences in processing depth can influence the extent to which specific pieces of criminal evidence are integrated with the general perception of a case.

The practical implications of this result are significant. In essence, the emotional state of an investigator may, in part, determine how open-mindedly a crime investigation is conducted. As a result of reduced processing depth, an angry investigator may rely overly on preexisting beliefs and expectations, and insufficiently on subsequently encountered information, when forming a mental representation of an investigated crime. Another problematic consequence is that anger gives greater leeway for stereotypes to color reliability and guilt judgments (cf. Bodenhausen et al., 1994). For instance, frustration and anger towards an uncooperative suspect may serve to bias the interrogator's impression of the suspect. Under such circumstances, any stereotypical association with criminality or dishonesty may inadvertently serve as a cue that the suspect is in fact guilty.

In addition, anger may have grave consequences in so-called "suspect-driven" investigations (Wagenaar et al., 1993), where investigative actions are strongly focused on a particular suspect, but where substantive evidence is lacking. Given that the suspicions are incorrect, anger may heighten the threshold for the amount of exonerating evidence needed for the investigator to abandon the suspicions. This is because the relatively shallow processing may make him or her less susceptible to the actual implications of the evidence. Furthermore, the interpretation of ambiguous evidence may be biased in favor of the suspicions, since the evidence is likely to be

assimilated with the preexisting assumptions. The latter possibility lends preliminary support from the findings of [Ask and Granhag \(in press\)](#), who showed that reduced processing capacity increases the influence of investigators' prior expectations and beliefs, and reduces the impact of subsequent evidence, on their perception of a case.

Attribution tendencies

Investigators' emotional state was found to influence their use of information when judging witness reliability. Specifically, sad participants took account of the conditions present in the situation where the critical event was witnessed, whereas angry participants did not. This finding indicates that situational influences were more salient and/or readily available as a predictor of memory reliability for sad than for angry investigators. Appraisal theories of emotion (e.g., Lerner & Keltner, 2000; Smith & Ellsworth, 1985) are well suited to account for this: The appraisal that situational forces are responsible for observed outcomes is central to the experience of sadness, whereas attributions to internal, personal causes are inherent in the experience of anger. The Appraisal Tendency Framework of Lerner and Keltner (2000, 2001) holds that these appraisals have the potential to carry over to situations unrelated to the emotion-eliciting event. In the present study, sad participants' emphasis on situational causes may thus have transferred from the emotion induction procedure to the subsequent investigative task. Hence, previous findings of attributional tendencies in non-applied studies (e.g., Keltner et al., 1993) seem to generalize to the applied context of criminal investigation. The prediction that anger, relative to sadness, would increase the use of personal, witness-related influences as a basis of reliability judgments was not supported by the data. One potential explanation for this failure is that the emotion induction did not create differences in participants' self-rated anger of the same magnitude as the differences in sadness.

The present research shows that the distinction between witness variables and situational variables (see e.g., Brewer et al., 2005) is not merely a useful classification tool, but also has psychological validity. That is, the two sources are given different weight by human perceivers depending on the psychological context (i.e., emotional state) in which a reliability judgment is made. This relates to some well-documented findings in attribution research, such as the actor-observer effect (Jones & Nisbett, 1972) and the fundamental attribution error (Jones & Harris, 1967; Ross, 1977), in which the balance between situational and internal/dispositional attributions also is central. These similarities suggest that reliability judgments are compatible with the traditional view of social judgments, and that the area may benefit from further application of attribution theory.

Although our findings are merely initial evidence that emotional appraisal patterns may influence reliability judgments, potential implications for actual criminal investigations can be outlined. Perhaps the most serious consequence is that certain emotions (e.g., anger) may blind investigators to the impact of the situation when assessing the value of witness information. For instance, salient personal characteristics of a witness, such as age, gender, and ethnicity, may override any influence that external conditions, such as lighting and viewing distance, should ideally have on investigators' assessments of reliability. Situational variables are often more predictive of accuracy than witness variables (Fahsing, Ask, & Granhag, 2004), and overlooking the situation may produce serious misjudgments.

Asymmetrical skepticism

As in the study by [Ask and Granhag \(in press\)](#), participants were more skeptical towards a witness when it contradicted, as opposed to confirmed, the investigated hypothesis. This pattern

emerged even though the information with relevance to these judgments was identical for the two statement versions. Thus, participants' perception of the witness as a person and the situation was altered by a slight manipulation in the content of the statement. In other contexts, it has been repeatedly demonstrated that sources of information that runs counter to a preexisting belief or a desired conclusion is subjected to more scrutiny than sources of congenial information (e.g., Ditto & Lopez, 1992; Lord, Ross, & Lepper, 1979). The present findings, combined with the results of Ask and Granhag (in press), suggest that the mechanism of asymmetrical skepticism generalizes to the context of criminal investigation.

Limitations and future directions

When interpreting the present findings it should be kept in mind that the experiment did not include a control condition—i.e., a group that did not receive a manipulation of emotion. The implication is that one cannot conclude whether it is the judgments of angry or sad investigators (or both) that differ from judgments made dispassionately, only that anger and sadness produce different judgments. The question is obviously one of practical interest and should be pursued in future studies. Still, however, the mere finding that the emotional state of an investigator does affect crime-related judgments in ways that are predicted by basic emotion theory is an important first step in documenting the relevance of feelings in the investigative context. A natural development of this research, in addition to conducting experiments with neutral control conditions, is to examine the effects of emotions other than those studied here. Feelings such as fear, surprise, and disgust may also arise in the course of an investigation, and may exert an influence predictable by cognitive appraisal theories.

The sample in the present study consisted of investigators with at least ten years of policing experience. Perhaps it could be expected that such experienced officers have developed coping mechanisms that dampen their experience of emotions in criminal investigations.² If so, the leeway for emotions to color judgments in actual investigations may be rather restricted. To fully elucidate this possibility, future research should compare the strength of emotional reactions of senior investigators with those of less experienced colleagues. The issue has, to our knowledge, not been addressed in previous research, but there are indications that mere experience may not be sufficient to counteract emotional reactions at work. Kohan and Mazmanian (2003) found that police officers at different stages of their career were equally likely to react negatively to hassles encountered on a day-to-day basis. Mitchell and Hogg (1997) concluded that the length of service is not in itself protective against the negative emotional impact of collecting crime evidence. Finally, in the present data, there was no significant correlation between officers' length of experience and the emotional impact of self-reporting a previous negative work experience.³

The interpretations of the present findings build on assumptions about underlying mechanisms (i.e., processing strategies, attribution tendencies) that were inferred rather than measured directly. Anyone pursuing this line of research would benefit from employing such measures. For instance, the time spent analyzing a witness statement, or the number of spontaneously generated thoughts, might serve as an indicator of the amount of cognitive effort expended in the task. The relative salience of personal and situational attributions could also be measured via

² We are grateful to the anonymous reviewer who raised this possibility.

³ Pearson correlation between years of experience and self-rated sadness in the sadness condition, $r = -.15$, $p = .42$; Pearson correlation between years of experience and self-rated anger in the anger condition, $r = -.07$, $p = .71$.

a thought-listing technique, or by having participants rate the likelihood of events being caused by either controllable or uncontrollable forces.

Conclusion

In sum, the present findings show that an understanding of the processes involved in legal professionals' reliability assessments requires the incorporation of social-cognitive principles, such as those found in attribution theory and information-processing models. This approach may also help in developing safeguards against unwanted emotional influence. For instance, because emotions are transient and tend to decay after a period of time (Schwarz & Clore, 1996), it would be recommended to avoid making judgments in immediate connection to an anger-provoking event, such as the interrogation of an uncooperative suspect. In addition, it may be useful for investigators to consult the opinion of colleagues who are not personally involved in the particular case, since their judgments are less likely to be tainted by strong feelings. With further research, the feasibility of these recommendations will be established.

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