Journal of Personality and Social Psychology
1993, Vol. 64, No. 5, 740-752

0022-3514/93/$3.00

Beyond Simple Pessimism: Effects of Sadness and Anger on Social Perception

Dacher Keltner, Phoebe C. Ellsworth, and Kari Edwards

In keeping with cognitive appraisal models of emotion, it was hypothesized that sadness and anger would exert different influences on causal judgments. Two experiments provided initial support for this hypothesis. Sad Ss perceived situationally caused events as more likely (Experiment 1) and situational forces more responsible for an ambiguous event (Experiment 2) than angry Ss, who, in contrast, perceived events caused by humans as more likely and other people as more responsible. Experiments 3, 4, and 5 showed that the experience of these emotions, rather than their cognitive constituents, mediates these effects. The nonemotional exposure to situational or human agency information did not influence causal judgments (Experiment 3), whereas the induction of sadness and anger without explicit agency information did (Experiments 4 and 5). Discussion is focused on the influence of emotion on social judgment.

The idea that emotions influence human thoughts, judgments, and decisions is as old as literature, and probably older. Most obviously, one's thoughts about the person or event that caused the emotion are affected; when someone has angered us, our judgment of that person's character is likely to emphasize vices and faults. Somewhat less obviously, while the emotion lasts, our interpretation of new events—even those unrelated to the source of the emotion—may be altered. For example, a person angered in the morning by a quarrel at home may find subsequent experiences to be more irritating: The bank teller or grocer seems a little more sluggish than usual, the boss more finicky, and the other drivers on the highway more thickheaded. Some residue of the prior emotion influences the person's perception of the events that follow.

There is considerable evidence that global positive and negative moods have residual effects on cognition. In fact, positive and negative moods have been shown to influence a wide range of judgments, including evaluations of personal efficacy, Thematic Apperception Test scenes, and social performance (see Forgas & Bower, 1987, for a review), as well as judgments of satisfaction with consumer items (Isen, Shalker, Clark, & Karp, 1978), political figures, and general life circumstances (Forgas & Moylan, 1987; Keltner, Locke, & Audrain, 1993; Schwarz & Clore, 1983). Positive moods result in a more optimistic, positive outlook and negative moods a more pessimistic, negative one.

Dacher Keltner, Department of Psychology, University of Wisconsin—Madison; Phoebe C. Ellsworth, Department of Psychology, University of Michigan; Kari Edwards, Department of Psychology, Brown University.

We are grateful to Alexandra Gross for her contributions of new items for the questionnaire in Experiment 3 and to Norbert Schwarz and one anonymous reviewer for their comments on a draft of this article.

Correspondence concerning this article should be addressed to Dacher Keltner, Department of Psychology, Brogden Hall, 1202 West Johnson Street, University of Wisconsin, Madison, Wisconsin 53706.

But do different negative emotions influence judgments in more specific ways than by creating general pessimism? Research in related domains suggests that the influence of negative emotions on judgments may be more differentiated. For example, studies of hopelessness depression have found that responses to negative events produce a depression that manifests in the selective interpretation of subsequent events (Abramson, Metalsky, & Alloy, 1989). Scholars studying the role of attribution in producing emotion (e.g., McFarland & Ross, 1982; D. Russell & McAuley, 1986) have likewise speculated about an attribution–emotion–attribution sequence in which emotions brought about by certain attributions influence subsequent attributions. And perhaps most relevant, research has shown that compared with positive moods, negative moods guide cognitive processing by narrowing people's attention and prompting a more analytic search for causes (for review, see Schwarz, 1990). In reviewing the literature on mood and cognitive processing, Schwarz proposed that "a particular emotion's cognitive effects can be predicted on the basis of an analysis of the meaning structure that underlies that emotion" (1990, p. 553).

Research within the mood and judgment tradition, however, has rarely examined specific effects different emotions may have on judgments. For example, in one of the only attempts to explore specific effects of mood on judgment, Johnson and Tversky (1983) found that a negative mood induced by reading newspaper accounts of the death of a young man made people perceive other, unrelated negative events as more likely, whereas a positive mood had the opposite effect. This effect operated at a very general level, such that the negative mood enhanced the perceived likelihood of a wide range of negative events. There was no evidence, however, of more specific effects: Target events similar in subject to that for the emotion induction (e.g., a newspaper account about leukemia and a target event involving cancer) were seen as no more probable than dissimilar target events (e.g., death by fire).

Research on the effects of mood on judgment has been limited to examining general emotional antecedents and general

cognitive consequences. On the antecedent side, the "emotions" investigated are typically points on a simple positive–negative dimension: The experimenter compares a good, pleasant mood with a bad, unpleasant mood, occasionally adding a no-treatment control group to represent a middle point on the same dimension. On the cognitive consequence side, most of the influences that moods have been shown to exert on judgment can be characterized as simple optimism or pessimism.[1]

Although the overall positive or negative quality of feelings is fundamental to most emotional experience (Osgood, Suci, & Tannenbaum, 1957; J. A. Russell, 1979; Zajonc, 1980), few current theorists believe that it is the only dimension that differentiates among emotions. Most theorists regard emotional experience as considerably more complex, whether they take a categorical approach (Ekman, 1984; Tomkins, 1962) or a more componential approach (Frijda, 1986; Roseman, 1984; Scherer, 1984; Smith & Ellsworth, 1985; Weiner, 1985). Those who take a componential approach generally treat each emotion as the outcome of a particular set of interpretive appraisals of the current situation and have specified, with considerable success, the patterns of cognitive appraisal characteristic of a fairly large number of emotions.

Smith and Ellsworth (1985), for example, in a study of 15 emotions, found that although the dimension of pleasantness–unpleasantness accounted for the largest proportion of the variance, relative pleasantness was quite unimportant in differentiating among the positive or negative emotions. That is, once a person feels bad, degrees of "badness" are of little use in predicting whether the emotion will be sadness, anger, fear, guilt, or some other negative emotion. Instead, perceptions of agency assume central importance (Ellsworth & Smith, 1988). When people perceive some other person to be the cause of their misfortune, they feel angry; when people perceive impersonal circumstances beyond human control to be the cause of their misfortune they feel sad; and when they perceive themselves to be the cause of their misfortune they feel guilty.

So far, research on the role of cognitive appraisal in the differentiation of emotions has been concentrated primarily on the link between the appraisals and the elicitation of emotions (Roseman, 1984; Scherer, 1984; Smith & Ellsworth, 1985). Little attention has been paid to the link between elicited emotions and appraisals of subsequent events. If sadness and anger are produced by different appraisals of a situation, do they in turn have different effects on judgments of subsequent events, or do they both produce the same general pessimistic bias characteristic of more global moods?

The research reported here is a first attempt to bring together the mood-and-judgment and cognitive appraisal traditions and to extend them both by asking whether specific negative emotions influence social judgment in ways that go beyond the usual pessimistic bias, and in directions that correspond to their underlying dimensions of appraisal. A basic principle of most appraisal theories is that different negative emotions (or different positive emotions, for that matter) are the result of different combinations of appraisals, which are therefore especially available for the interpretation of subsequent events. The specific influence an emotion has on ensuing judgments should correspond to the pattern of appraisal that characterizes that emotion. Because the agency dimension clearly differentiates among negative emotions, we chose to begin with this dimension, predicting that sadness and anger would result in different interpretations of the causes of unrelated ambiguous and negative events.[2] The salience of other people that is characteristic of anger should incline angry people to give more weight to other people as causal agents in new situations, whereas the salience of situational forces that is characteristic of sadness should incline sad people to give more weight to situational factors.

We can envision at least two ways that such an influence might manifest itself. First, following the logic of Johnson and Tversky (1983), people feeling a particular emotion should perceive events with causes matching those of the emotion as more likely than events with different causes. For example, events caused by other people should seem more likely when people feel angry than whey they feel sad. Experiment 1 was designed to test this hypothesis. Second, when faced with a new situation that allows for several possible interpretations, angry people should focus on the actions and intentions of other people and sad people on impersonal, situational forces. Experiment 2 was designed to test this hypothesis.

Experiment 1: Effects of Sadness and Anger on Judgments of the Probability of Future Events

In Experiment 1 we asked whether anger and sadness affect people's estimates of the likelihood of events caused by other people and events caused by situational factors. We predicted that when compared with one another, angry people would judge humanly caused events as more likely and that sad people would judge situationally caused events as more likely. The rationale for this prediction is straightforward. People perceive an event to be more likely when it is easy to imagine (Kahneman & Tversky, 1982; Tversky & Kahneman, 1973). When an event is easy to imagine, it is also easy to envisage its causes. Compared with sad people, angry people, for whom the actions of others are salient, should find it easy to imagine events caused by other people and judge these events to be more likely. By the same logic, sad people should find it easier to imagine events produced by situational factors and judge them as relatively more probable.

According to this reasoning, the same event (e.g., missing a plane or buying an appliance that does not work) should be judged as more likely by angry people when the event is seen as caused by some other person and more likely by sad people when the event is seen as caused by circumstances beyond anyone's control. The aim of the first experiment was simply to test this hypothesis to determine whether different negative emotions have cognitive biasing effects more specific than general pessimism. Our main hypothesis predicted that sadness and

[1] A relevant exception is the work of Clore and colleagues (Clore, 1991; Clore & Parrott, 1991).

[2] The effects of sadness and anger on positive events were also explored, although no hypotheses were advanced. Our view is that negative emotions motivate the individual to attend to circumstances that are most related to their current emotion. Following this reasoning, one would expect the effects of negative emotions to be most pronounced on events that are negative or ambiguous.

anger would differentially affect causal judgments of negative events. In an exploratory vein, we also included some positive events. We induced subjects to experience either sadness or anger by imagining themselves in sad or angry situations. We then asked them to estimate the likelihood of 10 future events, some of which were negative and some positive, some caused by other people and some by impersonal forces.

Method

Subjects. Forty-eight subjects recruited from the introductory psychology pool at Stanford University participated in the experiment. Subjects were tested individually in sessions lasting about 20 min. Subjects were randomly assigned to one of four conditions defined by a 2 (type of emotion) × 2 (questionnaire version) factorial design.

Emotion inductions. Subjects were first told that the purpose of the experiment was to investigate the way people imagine hypothetical events and then given a packet containing an emotion induction and a "life events questionnaire." The emotion induction was either an anger scenario or a sadness scenario written in the second person. The scenarios were divided into five paragraphs to which subjects devoted 2 min each. In the sadness induction, subjects imagined the death of their mother, who died for unexpected and inexplicable reasons. In the anger induction, subjects imagined receiving an extremely low grade from an unfair and unreasonable teaching assistant. Subjects were asked to try to experience the event as vividly as possible by imagining what they would feel like and think about and to imagine people they knew as characters in the episode. Because it has been shown that labeling emotions reduces their impact on judgment (Keltner et al., 1993), subjects did not rate their emotions after the induction. Rather, these inductions were developed in pretesting so that each one had high ratings of the intended emotion and low ratings of the other emotion. The texts for the sadness and anger inductions as they were presented to subjects are printed below.

Sadness

1. It is nearing the end of fall quarter and you are really looking forward to Christmas vacation. The quarter has been a little hectic, and you are happy that you will have some time relaxing with your family. The Sunday two weeks before finals week you get up early to catch up on your courses. You are in the shower thinking about what you will study when your roommate pulls you out of the shower, telling you you have a phone call from your sibling. The minute you talk to your sister (brother) you know by her (his) strained voice that something is wrong. She (he) tells you that your mom is sick in the hospital, and that they don't know what it is. Without finding out more you say you'll fly there immediately.

2. The flight home is confusing, and you feel dizzy in trying to come to some understanding of what is happening. You constantly reassure yourself that your mom is OK and that it is nothing serious. Funnily, it seems as though people on the plane sense your distress and act sympathetically toward you.

3. Upon arrival you quickly take a cab to the hospital and once there find your mom's room. In entering your mom's room, you see the rest of your family there with their pale drained faces and teary eyes. They are huddled around your mom, who looks weakened and frail, with yellowed skin. You are overwhelmed by how much you love your mom and how pained she looks.

4. You go to your mom's bed and kneel beside her, holding her legs. Her face rocks semi-consciously, flinching from time to time, and sometimes whimpering at the pain in her body. She looks up at you and the rest of your family, seeming to cry and smile at the same time. She raises her arms a little under the sheets as if to reach out to you and says "you're all here." "Of course we are" you reply and then she says, somewhat hesitantly, "It is sort of strange being in this place isn't it?" You all reassure her that she'll be all right, but she closes her eyes and tells you that she feels like she is spinning around. She then closes her eyes and dies.

5. You can't believe what is happening and you crouch over and hug your mom. You feel like everything is gone and will never be the same.

Anger

1. You are enrolled in a course that is a prerequisite for your intended major. In general you are finding the course quite interesting and enjoyable, and you feel that you've chosen the right major. However you don't get along with your T.A., who is consistently seen by you and the other students as dogmatic and condescending. In your discussion section you often disagree with what he (she) says, and he (she) is highly critical of and frequently scoffs at your comments. Recently you wrote a big paper for the class that your T.A. graded. You were really interested in the paper topic, and you wanted to show that you knew what you were talking about. So, you researched the topic very carefully, and put a lot of effort into writing what you believe is one the best papers you'd ever written. Today at the end of your discussion section the T.A. hands the papers back, and you see that he (she) has given you a "C-".

2. After section you seek out your T.A. to find out why you got such a bad grade, and to see if he (she) would consider regrading the paper. The T.A. says that you received the grade you did because the research was shoddy, and the paper was poorly written and thought out. Further, he (she) says he (she) took special care in grading your paper the first time and will not look at it again.

3. During the next discussion section, the T.A. says that he (she) received a number of questions about what he (she) was looking for in the papers. Therefore, to clarify things, he (she) passes out copies of two of the papers, one good and one bad, and proceeds to critique them in detail. Your paper is handed out as the "bad" example, and the T.A. has nothing good to say about it. Although you aren't mentioned by name, it's obvious by his (her) frequent looking at you who wrote the paper, and you feel like everyone is staring at you.

4. You can't believe that the T.A. has done this to you. You don't think that there's any reason for the T.A. to single you or your paper out like this. You don't believe that your paper was anywhere near the worst one in the class. At one point during the section you ask what exactly was wrong with a certain passage, and the T.A. says that he (she) will gladly discuss that with you after class, as if the question wasn't worth spending section time on it.

5. You decide to drop the class, despite knowing that it is offered once a year and will throw your fulfilling of your major's requirements somewhat out of sequence.

Estimates of the likelihood of future events. Following the emotion induction, subjects were given a filler task asking for estimates of the likelihood of different events. This task was described as a separate investigation of risk perception. (The combination of several short experiments in one session was very common at Stanford at that time, so subjects were not at all skeptical of the multiple-experiment rationale.) Subjects filled out one of two life events questionnaires, for which they assessed the likelihood of each of 10 events by giving a probability estimate between 0 and 1. The two questionnaires included the same 10

events, but the causes of each event varied on the two forms. If an event was described as the result of human agency on Form 1 ("I will be late to the airport because of a careless cab driver"), it was described as the result of situational factors on Form 2 ("I will be late to the airport because of unusually bad traffic"). Four events on Form 1 had causal descriptions involving situational factors (2 positive and 2 negative), and 6 had descriptions involving other people (2 positive and 4 negative). On Form 2 this ratio was reversed. The 10 events presented on the two forms and their human and situational causes are listed in Table 1.

Results and Discussion

For each subject, mean probability estimates were calculated for negative events with situational and human agency and for positive events with situational and human agency. Because no main effects or interactions were found for subjects' gender, the data were collapsed across this factor. Subjects' four mean probability estimates were first analyzed in an analysis of variance (ANOVA), with emotion (sadness vs. anger) and questionnaire (Form 1 vs. Form 2) as between-subjects factors and agency of event (situational vs. human) and valence (negative vs. positive) as within-subject factors. This analysis yielded a main effect for form, $F(1, 47) = 12.30$, $p < .001$, and agency, $F(1, 47) = 30.29$, $p < .001$ (situational agency events were judged as more likely than human agency events). Our hypothesis was that emotion would interact with agency (sad subjects would perceive situational agency events as more likely than angry subjects, whereas the converse would be true for perceptions of human agency events). This two-way interaction was not significant, $F(1, 47) = 0.37$, $p > .10$, but the three-way interaction among emotion, agency of judgment, and form was, $F(1, 47) = 5.62$, $p < .02$, partially confirming the hypothesis. This three-way interaction as well as the significant effect for form suggested that the responses to each form be examined separately. Table 2 presents sad and angry subjects' probability estimates for the events on the two forms.

Contrast analyses tested the expected interaction between emotion and agency of event on each form separately, first for negative events and then for positive events. The weights in each comparison were +1 when the agency matched the emotion (i.e., sadness with situational agency and anger with human agency) and −1 when the agency of the event did not match the emotion. For Form 1, this interaction was significant for negative events, $F(1, 22) = 5.21$, $p < .05$, but not for positive events, $F(1, 22) = 1.45$, $p > .15$. For Form 2, the contrast analysis approached significance for negative events, $F(1, 25) = 2.46$, $p = .12$, but was not significant for positive events, $F(1, 25) = 1.23$, $p > .25$. The interaction between emotion and agency of event after combining the estimates for the two forms is represented in Figure 1.

The results from Experiment 1 provide partial support for the hypothesis that sadness and anger have different effects on subsequent causal judgments. Sad subjects perceived situationally caused negative events as more likely than angry subjects, whereas the converse was true for perceptions of negative events caused by people. This effect was statistically significant on one form and approached significance on the other, and was most pronounced in sad and angry subjects' judgments of humanly caused events. Sad and angry subjects did not reach different judgments of the positive events.

Experiment 2: Effects of Sadness and Anger on Causal Judgments of an Ambiguous Situation

In Experiment 1, sadness and anger influenced likelihood estimates of future misfortunes with specified human or situational causes. Most interesting social situations, however, can be interpreted in more than one way. The inherent complexity of human social interaction suggests another way in which sadness and anger may affect people's judgment: In interpreting the causes of an ambiguous social situation, sad people should emphasize situational factors, whereas angry people should emphasize the behavior of other people. It may be that complex social situations provide more leeway for the influence of emotion on cause-and-effect reasoning than the clear-cut stimuli used in Experiment 1.

Two other issues were explored in Experiment 2. First, we examined whether other themes that are characteristic of sadness and anger would be differentially salient to sad and angry people, respectively, in their judgments of an ambiguous event. Specifically, we expected sad people to view the situation as hopeless (e.g., Abramson, Metalsky, & Alloy, 1989) and angry people to perceive others' actions as unfair (Ellsworth & Smith, 1988; Roseman, 1984; Smith & Ellsworth, 1985). A neutral con-

Table 1
Events Used in Experiment 1

	Causal description	
Target event	Human agency	Situational agency
You miss an important flight	Terrible cab driver	Bad traffic
You receive extra financial aid	Helpful advisor	Policy change
You meet your loved one	Through a friend	Randomly
Your new car is a lemon	Dishonest salesman	Factory problem
You lose most of your money	Negligent advisor	Depression
A friend dies in a plane crash	Pilot error	Lightning
Your house burns down	Arson	Brush fire
You suffer health problems	Doctor's error	Health faltering
You get a great job	Friend's help	Job market
A health problem is corrected	Doctor's insight	On its own

Table 2
Likelihood Estimates for Angry and Sad Subjects

Event	Angry subjects	Sad subjects
Questionnaire Form 1		
Negative		
Situational agency	.20	.22
Human agency	.31	.17
Positive		
Situational agency	.33	.34
Human agency	.37	.35
Questionnaire Form 2		
Negative		
Situational agency	.23	.28
Human agency	.34	.28
Positive		
Situational agency	.75	.74
Human agency	.37	.34

Note. Numbers refer to subjects' mean probability estimates.

trol condition was also included in Experiment 2 to assess the direction in which sadness and anger shift causal judgments.

Method

Subjects. Subjects were 84 Stanford University undergraduates who participated in the experiment as part of an introductory psychology course requirement. Subjects were tested individually in sessions lasting 20–30 min. Subjects were randomly assigned to one of three conditions: sadness, anger, or neutral.

Emotion inductions. Subjects were told that they were participating in an experiment investigating the way people imagine themselves in different situations. The experimenter first gave the subjects an experimental packet containing an emotion induction or the control task, the target situation, and the questionnaire for evaluating the target situation. Subjects in the emotional conditions were informed that the first situation (the emotion induction) was a warm-up to acquaint them with the experimental task, and that following this warm-up they would spend 10 min imagining themselves in the second situation (the target situation) and then proceed to the questionnaire. Subjects in the experimental conditions imagined themselves in either the angry or sad situation used in Experiment 1 and were given the same instructions as to how to do so. Subjects in the neutral condition estimated the viability of different international businesses and then went on to imagine the target situation.

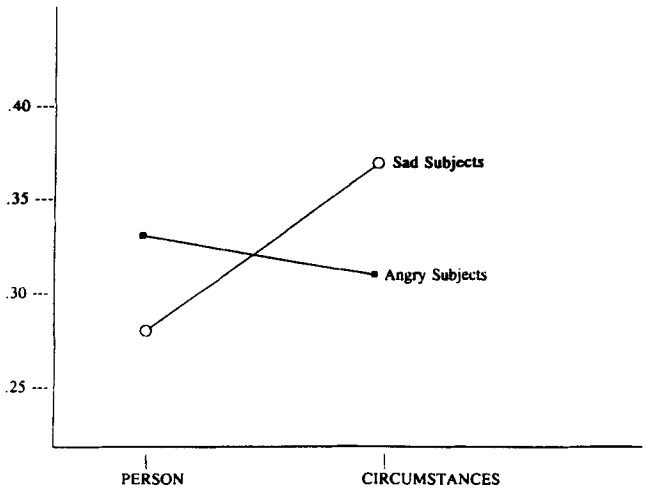

Figure 1. Mean probability estimates for events caused by human agents or circumstances: Experiment 1.

Target situation. In the target situation, subjects imagined a social event that begins with a promise of romance and ends with the protagonist abashed. The target situation was designed to be ambiguous in that subjects could easily imagine themselves (in the role of the protagonist), other people, or situational factors as the cause of the mishap. The story was divided into five 2-min sections, which are written below.

1. You have decided to have a small get-together at you and your house-mates' house and have invited about 10 people. Included among the invites is someone you have just met at the coffee house. He (she) had shown particular interest in you, and was delighted to be invited to your get-together. You have just met this person and are particularly excited about the prospects of getting to know him (her).

2. You have even told your house-mates Dave and Yvonne about this person, hoping that they would make him (her) comfortable and feel like part of the gang.

3. Most of your friends arrive on time, and after a few beers are talking and laughing freely about shared experiences and good times. You, somewhat distracted, wonder where your new acquaintance is, when suddenly the doorbell rings. You open the door, to see your new friend with a boyfriend/girlfriend at his/her side yet happy to see you. To make things worse, your new friend's companion is a good friend of some of your friends and someone with whom you're acquainted.

4. A hush befalls your friend, and out of the silence you hear Dave and Yvonne chuckle "so there's the new love." This phrase seems to hover in the air and in the minds of everyone present for the next 15 minutes. You feel as though everyone knows your private feelings and motives. Your new friend is silent and his/her companion seems quite upset, acting as if he/she wants to leave, while the rest of your friends keep glancing at you three, seeming to wonder what's going to happen.

5. You ineffectively try to create a more relaxed atmosphere, although not quite certain what you should do. You finally decide to serve the meal, and as you walk to the kitchen you hear your new friend and his/her friend uncomfortably whispering to each other, as Dave and Yvonne entertain everyone else.

Judgments of the target situation. Subjects were asked to judge the causes of the target situation, its hopelessness, the fairness of others' actions, and the emotions the situation would evoke. Regarding the target situation's causes, subjects rated how responsible "other people were for the mishap" (human agency) and "uncontrollable, impersonal forces were for the mishap" (situational agency). To assess the hopelessness of the situation, subjects were asked "to what extent could anything be done to improve the situation?" Subjects also rated "how fair other people had been in the situation." Finally, subjects rated how sad, angry, guilty, contemptuous, happy, and proud they would feel in the target situation. All ratings were made on 9-point scales (9 = *extreme endorsement of the item*).

Results and Discussion

Because there were no main effects or interactions involving subjects' gender, the following analyses are collapsed across

gender. The mean ratings on the four measures relevant to our hypotheses are presented in Table 3.

Subjects' judgments of situational and human agency were analyzed in a two-way ANOVA with one between-subjects factor (type of emotion) and one within-subject factor (judgment of agency). Overall, subjects perceived other people to be more influential than situational factors in causing the mishap, $F(1, 81) = 26.04$, $p < .01$. As expected, however, type of emotion interacted with judgment of agency, $F(2, 81) = 6.61$, $p < .01$. Planned contrasts compared sad and angry subjects' judgments on the different items (the neutral group was weighted 0). As expected, sad subjects were more likely than angry subjects to attribute the mishap to situational forces, $t(54) = 2.97$, $p < .01$, whereas angry subjects were more likely than sad subjects to blame the mishap on other people, $t(54) = 3.03$, $p < .01$. Sad subjects saw the situation as more hopeless than did angry subjects, $t(54) = 3.38$, $p < .01$, whereas angry subjects tended to imagine other people to have been less fair than did sad subjects, $t(54) = 1.79$, $p < .09$. Subjects' emotional ratings of the target situation did not differ across condition, all $ps > .15$. Subjects' primary emotional response to the situation was anger, and secondarily, sadness.

In sum, when interpreting a new, ambiguous situation involving a social mishap, sad and angry subjects inferred quite different causes. Sad subjects imagined impersonal circumstances and the actions of others as about equally responsible for the imbroglio and saw the situation as irremediable. Angry subjects blamed the mishap on other people and judged their actions as unfair. Post hoc analyses (presented in Table 3) found that neutral subjects blamed others less than did angry subjects (and most resembled sad subjects in this judgment) and assigned less importance to impersonal forces than did sad subjects (and most resembled angry subjects in this judgment) providing further evidence that specific emotions make particular kinds of appraisals salient in judging new events (Ellsworth & Smith, 1988). Interestingly, sad and angry subjects had similar emotional evaluations of the target event, suggesting that they did not simply label the new situation on the basis of their present emotions and then interpret the causes accordingly.

Cognition, Emotion, Or Both: Overview of Experiments 3, 4, and 5

Our aim in Experiments 1 and 2 was to discover whether different emotions of the same valence exert predictably different effects on cognitive processing. The results showed that sadness and anger do result in different causal judgments of unrelated events, consistent with our belief that the effects of emotions on judgment may be far more various and distinct than the research on global positive and negative moods suggests. The explanation we favor is that each emotion is the resultant of a particular pattern of appraisals, that these appraisals are activated when the emotion is experienced, and that they are therefore especially available when the person is assessing new events and circumstances.

In both Experiment 1 and Experiment 2, however, we induced emotions by asking subjects to read a sad or angry story and imagine themselves as the protagonist. The stories were effective in creating the intended emotional state. In the sad story the mother dies for inexplicable reasons that seem to be beyond anyone's control; in the angry story the teaching assistant's behavior is clearly the source of the problem. It could be argued that the explicit emphasis on situational forces in the sad story and on human agency in the angry story was itself sufficient, independent of felt emotion, to make the corresponding appraisals of agency available for subjects' judgments of subsequent events (Higgins & Bargh, 1987; Higgins, Rholes, & Jones, 1979; Wyer & Srull, 1984). Having read a story in which human agency is salient, subjects are more likely to see human agency as playing a causal role in new events; having read a story in which situational forces are emphasized, situational interpretations of new events seem plausible. According to this view, there is no necessary mediating role for experienced emotion.

Experiments 3, 4, and 5 represent three approaches to disentangling this confound between explicit agency information and experienced emotion. None of the experiments is definitive in and of itself, but together they offer converging evidence that would enhance our confidence in the causal role of emotional experience in influencing judgment. In Experiment 3 we attempted to replicate Experiment 1, adding two emotionally neutral conditions in which appraisals of human or situational agency were made salient by repeatedly attributing relatively nonemotional events to one or the other, thus making the appraisals available for use in subsequent judgments without eliciting the emotion. In Experiment 4 we took the opposite approach, making the emotion salient but not the appraisals, by attempting to induce the experience of sadness and anger without mentioning agency. We did this by having subjects pose their faces into typical sad or angry expressions (Ekman, Levenson, & Friesen, 1983). In Experiment 5 we attempted to vary the relative intensity of the subjects' emotional response to the recollection of a past sad or angry event by using a technique suggested by Strack, Schwarz, and Gschneidinger (1985), who found that subjects became emotional when asked how a past emotional experience occurred, but did not become emotional when asked why such an event occurred.

Table 3
Perceptions of a Social Mishap for Angry, Sad, and Neutral Subjects

Target judgment	Condition		
	Anger	Sadness	Neutral
Other people responsible	6.50_a	4.70_b	5.70_b
Impersonal factors responsible	2.70_a	4.50_b	3.42_a
Situation hopeless	3.12_a	4.80_b	4.28_b
Roommates unfair	7.13_a	5.92_b	7.10_a

Note. All ratings were done on 1 to 9 Likert scales (1 = *low*, 9 = *high*). Means that do not share subscripts differ at $p < .05$ in the Tukey comparison.

Experiment 3: Effects of Nonemotional Agency Information on Judgments of the Probability of Future Events

Experiment 3 was designed to discover whether the effects of sadness and anger on likelihood estimates found in Experiment 1 could be duplicated by simply making the relevant agency

appraisals salient in a relatively unemotional context. If subjects in the first two experiments overestimated the effects of agency simply because they had been sensitized to situational or human agency by the sad and angry stories, then the role of the felt emotion on future judgment would be questionable. The first of our three attempts to differentiate cognitions of agency from feelings of emotion involved the manipulation of agency in a nonemotional context. If the appraisals alone produce effects of direction and magnitude comparable with those produced by the emotional inductions, the independent effect of emotion on judgment would be cast into doubt.

Method

Subjects. Eighty undergraduate students (40 men and 40 women) at the University of Michigan took part in this experiment and each received $4 for their participation. Subjects were tested individually in experimental sessions that lasted approximately 20 min. Subjects were randomly assigned to one of four induction conditions: sadness, anger, situational agency, and human agency. In addition, as in Experiment 1, subjects filled out one of two life events questionnaires. Each version contained a mix of humanly and situationally caused events, which were presented in one of two orders. Thus, the design was a 4 (type of induction) × 2 (questionnaire version) × 2 (order) factorial design.

Inductions. The instructions and general procedure were a replication and extension of those in the first experiment. Subjects were told that the purpose of the experiment was to investigate people's ability to imagine hypothetical events. All subjects were given 10 min to read a vignette and were asked to try to imagine themselves experiencing the same events as vividly as possible. Subjects in the sadness and anger conditions were given the same emotional stories used in Experiment 1. Subjects in the agency conditions received stories that were approximately the same length (10 min) as the inductions used in the emotion conditions. Subjects in the agency conditions read about a sequence of events in a day in the life of a typical college student and were asked to imagine themselves experiencing those events. The two passages were identical except that in the situational agency condition, the events were depicted as the result of situational forces with the protagonist as a passive instrument of fate or luck, whereas in the human agency condition, these same events were described as caused by human agents—the protagonist himself, his friends, or people represented in the media. The events described were minor pleasures and troubles, with the protagonist or other human agents explicitly mentioned as causal agents in the human agency condition, and the sun, clocks, calculator batteries, other objects, and chance as causal agents in the situational agency condition.

For example, the human agency story read as follows:

> You wake at 6:53 a.m., seven minutes before your alarm. You twist and turn, looking for a comfortable position. You get out of bed. Your bedroom is just the way you left it last night—books scattered all over the place and an empty Coke can on the night-stand. You wander into the shower, turn the water on full blast, and rid yourself of yesterday's heat and humidity. After you dry yourself off, you get yourself a bowl of cereal and turn on the TV. You become engrossed in a story about a very successful team of rescue workers who have succeeded in saving hundreds of earthquake victims. Your roommate comes in and reminds you that you're likely to be late for class. You grab your books, throw them into your backpack, and fly out the door.

The situational agency version reads,

> The early morning light wakes you, ... The bed is uncomfortable, no matter what position you're in. When you're out of bed, your room is the same mess it was last night... the water streaming full blast over your body sweeps away yesterday's heat and humidity,

and so on. The earthquake news story is described (natural disaster) but not the rescue workers. The clock, not the roommate, reminds you to go to class.

Both stories continue through the school day, including classes, a pop quiz, lunch, studying, a run, and an evening barbecue. In the human agency version the protagonist or other people initiate the events; in the situational agency version, the same events "just happen" by luck or without explanation.

Pilot testing of nonemotional stories. To assess the salience of situational and human agency of the nonemotional scenarios, each scenario was given to a group of 24 subjects, who were asked, as in our emotion inductions, to spend 10 min imagining themselves experience the events in the scenario. For specific events that occurred in the initial, middle, and late stages of the passage, subjects rated the extent to which each event was caused by human or situational causes (1 = *caused by others,* 4–5 = *mixture of situational and human causes,* and 9 = *caused by situational factors*). The three events were the subjects' imagined performance on the pop quiz, their discovery that their calculator batteries were dead, and their getting invited to a barbecue. Subjects also rated how sad, angry, and happy they felt while reading the scenario (1 = *no emotion,* 7 = *extreme emotion*). For each subject, the average of the agency ratings for the three events was calculated. As expected, the situational and human agency scenarios resulted in different beliefs about the causes of the events in the scenario (situational agency $M = 5.22$, human agency $M = 4.21$), $t(47) = 3.13$, $p < .001$. The scenarios elicited little sadness (situational agency $M = 2.04$, human agency $M = 1.64$) or anger (situational agency $M = 2.08$, human agency $M = 1.75$), and moderate happiness (situational agency $M = 3.22$, human agency $M = 3.36$). There were no differences in the emotion elicited by the two scenarios (all $ps > .15$). Thus, the human and situational agency scenarios made different perceptions of agency salient without eliciting different emotions.

Estimates of the likelihood of future events. After the inductions, all subjects completed a questionnaire in which they estimated the probability of various events in the future. As in the first experiment, subjects were led to believe that this questionnaire was part of another investigation. Subjects received one of two life events questionnaires and were asked to estimate the likelihood of each of 13 events by giving a probability estimate between 0 and 1. The theme and outcome of the events were held constant across both forms of the questionnaire, whereas the cause of each of the events (person or situation) was varied. On Form 1, seven events were described as caused by other people, and six as caused by situational factors. On Form 2 this ratio was reversed. The order of the items was counterbalanced. The list of events overlapped with the items used in Experiment 1, but some of the items from Experiment 1 were dropped and new ones were added. Items were dropped because (a) they had shown floor or ceiling effects in Experiment 1, (b) they were local to Stanford University, or (c) pretesting showed wildly different baseline probability estimates in the University of Michigan and Stanford University samples (e.g., brush fires were regarded as likely in California but arson as very unlikely; the reverse was true in Michigan). New items were developed on the basis of intuition. The 13 events and their human and situational causes are presented in Table 4.

Results and Discussion

Subjects' estimates of the negative human and situational agency events and positive human and situational agency events were averaged to yield four mean probability estimates for each subject. Subjects' probability estimates were first subjected to

Table 4
Events Used in Experiment 3

Target event	Causal description	
	Human agency	Situational agency
You are injured in an accident	Drunken driver	Icy roads
You get a great job	Teacher's help	Job market opening
You miss buying a rare album	Person buys it	Not available
You recover from an allergy	Doctor's help	Spontaneous
A planned activity is ruined	Relative cancels it	Sudden storm
You don't see a favorite group	Friend forgets tickets	Concert canceled
You go to Hawaii over Christmas	Parent's treat	Special promotion
You room with your best friend	Friend's efforts	Lottery luck
You miss an important flight	Bad cab driver	Bad traffic
A friend dies in a plane crash	Pilot error	Lightning
Landlord does not raise the rent	Roommate's complaint	Rent control
Food in refrigerator spoils	Someone left door open	Refrigerator broke down
While sailing the boat capsizes	Friend's error	Wind changed direction

an ANOVA with induction (sadness vs. anger vs. situational agency vs. human agency), questionnaire form (Form 1 vs. Form 2), and order as between-subjects factors and agency (situational vs. human) and valence (negative vs. positive) as within-subjects factors. A main effect for form was observed, $F(1, 64) = 6.35$, $p = .01$. A significant Induction × Form interaction was observed, $F(3, 64) = 4.87$, $p < .01$, and agency likewise interacted with induction, $F(3, 64) = 8.12$, $p < .01$, form, $F(1, 64) = 67.67$, $p < .01$, and order, $F(1, 64) = 5.97$, $p < .01$. No other interactions or main effects were significant. Because of the main effect for form and the interactions with form, comparisons between the induction conditions were carried out for each questionnaire form. Table 5 presents subjects' mean likelihood estimates for the four kinds of events on the two forms.

Our hypothesis was that sad subjects would perceive situationally caused events as more likely than angry subjects, whereas the converse would be true for perceptions of humanly caused events. We also expected that there would be no differences in the estimates of subjects in the human agency and situational agency conditions. We tested these hypotheses with a series of contrasts that compared (a) sad subjects with angry subjects, (b) subjects in the situational and human agency conditions, and (c) sad subjects with subjects in the situational agency condition and angry subjects with subjects in the human agency condition. In each contrast, the weights were +1 and −1, depending on the agency of the item. The contrast analyses of the negative events yielded results that were consistent with the hypothesis. In comparing sad and angry subjects, sad subjects perceived situationally caused negative events as more likely on Form 1, $t(36) = 3.19$, $p < .01$, and Form 2, $t(36) = 4.89$, $p < .03$, whereas angry subjects judged humanly caused negative events as more likely on Form 1, $t(36) = 4.01$, $p < .01$, and on Form 2, $t(36) = 5.40$, $p < .01$. In contrast, subjects in the situational agency condition did not judge situationally caused negative events as more likely than subjects in the human agency conditions (in fact, the opposite was true for events on Form 1, $t(36) = -2.82$, $p < .01$). Nor did subjects in the human agency condition judge humanly caused events as more likely than did subjects in the situational agency condition (on Form 2 the opposite was the case, $t(36) = -2.30$, $p < .03$). And providing further evidence for the role of experienced emotion in influencing judgment, sad subjects judged the situationally caused negative events to be more likely on Form 1 than the situational agency subjects did, $t(36) = 4.89$, $p < .01$, and angry subjects saw negative humanly caused events as more likely on Form 1, $t(36) = 2.39$, $p < .02$, and on Form 2, $t(36) = 2.19$, $p < .03$, than human agency subjects did. The same between-condition comparisons on the positive events, as in Experiment 1, yielded no significant effects. The mean likelihood ratings for events caused by human and situational forces are presented in Figure 2.

Table 5
Likelihood Estimates for Subjects in Four Conditions

Event	Condition			
	Anger	Sadness	Situational agency	Human agency
Questionnaire Form 1				
Negative				
Situational agency	.58	.79	.47	.66
Human agency	.46	.39	.33	.36
Positive				
Situational agency	.45	.52	.44	.50
Human agency	.49	.41	.39	.46
Questionnaire Form 2				
Negative				
Situational agency	.39	.45	.47	.40
Human agency	.60	.43	.60	.37
Positive				
Situational agency	.35	.31	.40	.47
Human agency	.53	.46	.50	.49

Note. Numbers refer to subjects' mean probability estimates.

The results of Experiment 3 support the hypothesis that the influence of sadness and anger on likelihood estimates of future events is mediated by the experience of those emotions rather than by the explicit salience of the appraisals of human and situational agency in the stories used to induce the emo-

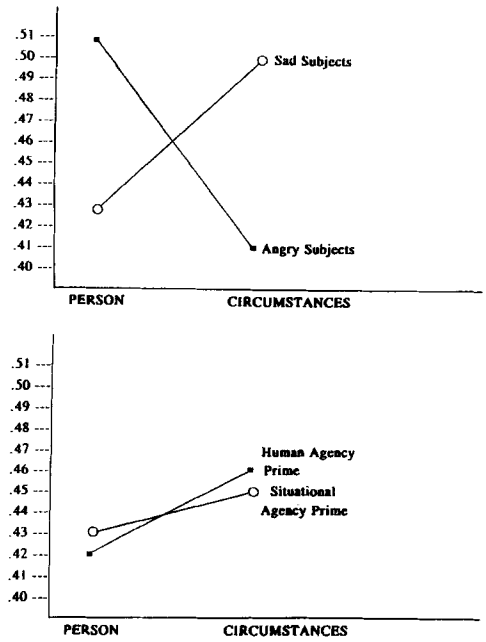

Figure 2. Mean probability estimates for events caused by human agents or by circumstances: Experiment 3.

tions. The salient appraisals of situational and human agency in the nonemotional day-in-the-life-of-a-student story had no systematic effects on likelihood estimates. The effects of the emotional stories were strong and replicate those found in Experiment 1: Anger led people to perceive future events caused by other people as more likely and events caused by impersonal circumstances as less likely, whereas sadness had the opposite effect.

Experiment 4: Effects of Physical Inductions of Emotion on Judgments of Agency

In Experiment 3, we attempted to make the appraisals of agency highly salient in a nonemotional context to determine whether the cognitive appraisals alone were sufficient to influence causal judgments of future events. They were not. In Experiment 4 we took the opposite approach: We attempted to induce the emotions of sadness and anger without implicating human or situational agency at all, by directing subjects to pose their faces and posture to conform to the nonverbal concomitants of those emotions (Ekman, Levenson, & Friesen, 1983; Izard, 1977; Tomkins, 1962). If judgments of agency are influenced by this relatively noncognitive physical induction of emotion, then we would have greater confidence that the results of the first three experiments were not simply due to the explicit exposure to the cognitive constituents of emotion.

Some subjects were made to feel sad or angry by assuming the physical manifestations of the emotion and recalling a time when they had experienced the emotion. In these conditions the instructions to recall a sad or angry event may possibly have served as an indirect manipulation of agency appraisals, like the emotional stories in the first three experiments, but with more room for individual variation. The remaining subjects were made to feel sad or angry through the physical inductions only, with no mention of past experiences of the relevant emotion or of the relevant appraisals. Subjects were then asked to estimate the extent to which their general life circumstances and future possible setbacks and opportunities would be caused by the actions of others or by impersonal factors. We hypothesized that sad subjects would attribute future problems and general life circumstances more to situational causes, whereas angry subjects would attribute them to other people. Furthermore, contrary to a strict cognitive salience account, we anticipated that this effect would occur with or without additional information that might make the relevant appraisals salient (i.e., memory of the emotional event).

Method

Subjects. Subjects were 68 undergraduates at the University of California at Berkeley who participated in the experiment as part of a requirement for an introductory psychology course. Subjects, tested individually, were randomly assigned to one of four conditions, defined by a 2 (recall of emotional event or not) × 2 (anger or sadness pose) factorial design.

Emotion inductions. On their arrival at the laboratory, subjects were told that they were participating in an experiment on mental imagery and physical sensation. The experimenter then attached a microphone to the subjects' collars and went to an adjacent room where he could see the subjects on a video monitor and communicate with them over intercom. The experimenter then read one of two sets of instructions to the subjects. In the physical pose (or no recall) conditions, subjects were told that they would first pose their face and body until "they felt a clear change in their physical sensations, such as in their heart rate or overall muscle tension," then report the change in physical sensations to the experimenter, and then as part of a rest period before the next experiment fill out a questionnaire. In the physical pose plus recall (recall) conditions, the instructions given were the same with one addition: Before the physical pose exercise, subjects were told that they would first relive an emotional experience.

Once these instructions were clear to subjects, the experimenter began the emotion induction. Subjects in the recall conditions were first asked to think of the last time that they felt either intensely sad or intensely angry and to describe the experience to the experimenter. Subjects were then asked to reexperience the event by focusing on the feelings they had when the event originally took place. Subjects were given 3 min to relive the event. At this point subjects in all conditions received either the sadness or anger physical pose instructions, which were based on previous research and theory on the behavioral concomitants of sadness and anger (Ekman, Friesen, & Ellsworth, 1982; Frijda, 1986). Subjects who previously recalled a sad event were given sad pose instructions; subjects who previously recalled an angry event were given angry pose instructions. Subjects in the no-recall conditions were assigned to sad or angry pose instructions at random. For the sad pose, subjects were asked to (a) raise the inner corners of their eyebrows, (b) move the corners of their lips down, (c) move their lower lip up, (d) raise their cheeks up, (e) gaze down, and (f) slouch and relax their muscles. For the angry pose, subjects were asked to (a) pull their eyebrows down, (b) raise their upper eyelids, (c) move their lower lip up and press their lips together, and (d) clench their hands and teeth. Once subjects had achieved the pose, they were instructed to hold it until they felt changes in physical sensations, at which time they were to report these changes to the experimenter. Subjects in the recall conditions were also asked to focus on the feelings from the recalled event as they held the pose.

Judgments of agency of life events. Once subjects had reported feeling physical sensations, they filled out the life events questionnaire. In this questionnaire, subjects judged the causes of (a) their general life circumstances, the problems they would encounter in (b) their career and (c) their personal lives, and the successes they would encounter in (d) their career and (e) their personal lives. Subjects rated the causes of each set of events on 9-point scales with 1 labeled *completely due to the actions of others,* 9 labeled *completely due to impersonal factors,* and 5 labeled *a mixture of both.*[3] Subjects then assessed how angry and sad the induction exercise made them feel (9 = *extremely sad or angry*). When they had completed the questionnaire, subjects were thanked for their participation and asked to rest before the next trial in the experimental session.

Results and Discussion

Manipulation check. The physical pose inductions elicited sadness and anger at equivalent intensities in both the recall and the no-recall conditions. In the anger conditions, the average level of anger was 5.1 and average sadness 3.3, whereas in the sadness conditions the average anger was 4.6 and average sadness 5.2.[4]

Judgments of agency. Subjects' agency judgments for the two kinds of problems (career and personal life) and for the two kinds of success (career and personal life) were averaged to yield agency judgments of negative and positive events. Table 6 presents the means of these two composites as well as subjects' mean ratings of the causes of their general life circumstances.

It was hypothesized that sadness and anger would result in different causal judgments of future events regardless of whether the induction involved the conscious recollection of a sad or angry event (and potentially communicated the associated agency appraisals). This hypothesis was first tested with a three-way ANOVA, with emotion pose (sadness or anger) and instructions (recall or recall plus pose) as between-subjects factors and valence of personal event (positive or negative) as a within-subject factor. Consistent with our main hypothesis, the effect of emotion was significant, $F(1, 41) = 4.32$, $p < .05$. There was also a marginally significant trend for instruction, $F(1, 41) = 4.02$, $p < .06$. In addition to these main effects, the interaction between emotion and valence of personal event, $F(1, 41) = 3.66$, $p < .07$, and the three-way interaction among emotion pose, instructions, and valence of personal event, $F(1, 41) = 3.55$, $p < .07$, were marginally significant. To examine these effects further, separate ANOVAs were conducted on the two dependent measures (because we predicted main effects, contrast analyses were not run). As expected, sad subjects ($M = 5.26$) across conditions believed more often than did angry subjects ($M = 4.28$) that negative events (in their careers and personal lives) would be more likely to be caused by situational factors, $F(1, 41) = 7.13$, $p < .01$. There was no main effect of emotion on subjects' judgments of positive events, $p > .10$, but there was a main effect for instruction, $F(1, 41) = 4.84$, $p < .05$. Subjects who received only the physical pose induction felt that positive events would be more due to situational factors ($M = 5.23$) than subjects who also recalled emotional events ($M = 4.42$). The two-way ANOVA of subjects' causal beliefs about their general life circumstances found a significant Emotion × Instruction interaction, $F(1, 41) = 4.33$, $p < .05$. Sad and angry subjects who only received the physical pose induction were more polarized than those who also recalled an emotional event, with sad subjects believing their general circumstances to be more the result of situational forces, and angry subjects the result of other people's actions (significant at $p < .05$ in the Tukey comparison).

Table 6
Judgments of Agency of Life Events by Condition

	Condition			
Target judgment	Anger recall + pose	Anger pose only	Sadness recall + pose	Sadness pose only
Future problems	4.25_a	4.30_a	4.86_a	5.62_b
Future successes	4.12_a	5.51_b	4.72_a	5.04_b
Life circumstances	5.10_a	4.50_b	4.40_b	5.20_a

Note. Judgments were made on 1 to 9 scales (1 = *completely due to people's actions,* 9 = *completely due to impersonal forces*). Means that do not share superscripts differ at $p < .05$ in the Tukey comparison.

The results of this experiment are mixed, but one finding emerges quite clearly: Sadness and anger affect appraisals of the role of human versus situational causes of future negative events even when the emotions are induced without mention of the relevant appraisals, and without suggesting an actual experience that might call these appraisals to mind. Sadness and anger induced by facial and bodily behavior alone affected agency judgments of future negative events. In fact, posing the behavior of emotion without recalling an emotional event influenced agency judgments of negative events and general life circumstances more than the posing-plus-recall inductions. This may be due in part to competing appraisals from the remembered incidents. A person may add or modify appraisals of the causes of an emotional incident after the fact, and thus the current appraisal patterns for the most recent occurrence of sadness or anger may be different from, possibly more complex than, the appraisals that induced the emotion in the first place.

Experiment 5: Effects of Emotional and Nonemotional Memories on Judgments of Agency

Experiment 3 showed that the nonemotional salience of the relevant agency appraisals was not sufficient to produce the predicted effects of sadness and anger on judgments of agency, and Experiment 4 showed that the elicitation of sadness and anger was sufficient to influence judgments of agency even when the corresponding appraisals are absent from the induction. In Experiment 5, we followed up on themes from the

[3] For exploratory purposes, subjects also evaluated the fairness of the conditions of the "underclass" and Black people in South Africa. These questions provided pilot data for subsequent research and will not be discussed in this article.

[4] Please note that because of procedural error, subjects in the physical pose and recall conditions did not rate the nontarget emotion. The mean anger rating for subjects in the sad conditions and mean sadness rating for the anger conditions are only based on ratings of subjects in the physical pose conditions.

preceding two experiments by directing subjects' attention to a recent emotional event either in a manner that encouraged the reexperiencing of emotion or in a manner that encouraged relatively unemotional recall. Our prediction was that the effects of sadness and anger on judgments of agency would occur only when the emotions themselves were elicited.

We asked subjects to recall a time when someone did something unfair to them (anger) or when, through no one's fault, they lost something of value (sadness). Following a procedure introduced by Strack et al. (1985), subjects either wrote about how the event occurred or about why it occurred. Strack and colleagues found that describing how an event occurred elicits affect, because it prompts people to relive the event, whereas describing why an event occurred does not, because it prompts people to look on the causes of the event in a more analytical, abstract way.

Method

Subjects. Subjects were 42 undergraduates at San Jose State University who participated in the experiment as part of an introductory psychology course requirement. Subjects were run individually in sessions lasting about 20 min. Subjects were randomly assigned to one of four conditions, defined by a 2 (sad vs. angry event) × 2 (hot or cold recollection) factorial design.

Emotion inductions. On their arrival, subjects were told that the experiment was designed to collect a sample of personal episodes in college students' lives. The experimenter then gave subjects an experimental packet that contained the emotion induction, the manipulation check, and the life events questionnaire, and explained that they would first write about a personal experience, and then as part of another investigation, indicate their beliefs about the causes of different events. All subjects were instructed to first recall the most recent time they felt either sad or angry. To recall a sad event, subjects recalled "the most recent time you felt sad because impersonal, situational factors caused you to lose, or fail to gain, something important to you." To recall an angry event, subjects recalled "the most recent time you felt angry because someone did something unfair to you." Thus, the relevant appraisals were fairly salient in both the sad and angry inductions. Subjects then were told to describe the event in one of two ways. In the emotion elicitation (hot cognition) conditions, subjects were asked to write three sentences about "how the situation came about." In the minimal emotion elicitation (cold cognition) conditions, subjects were asked to write three sentences about "why the situation came about." Subjects then filled out the same life events questionnaire used in Experiment 4 and also rated on 9-point scales (9 = *extreme endorsement*) how emotional, sad, and angry they felt in recalling the emotional event.

Results and Discussion

Manipulation check. A two-way ANOVA, with emotion (sadness vs. anger) and induction (hot vs. cold recollection) as between-subjects factors and rated emotion (sadness or anger) as a within-subject factor, indicated main effects for induction, $F(1, 38) = 9.02$, $p < .01$, and rated emotion, $F(1, 38) = 7.43$, $p < .01$. Subjects' mean self-reported emotion was greater in the hot cognition conditions ($M = 5.2$) than in the cold cognition conditions ($M = 3.8$), and across conditions, anger was rated as more intense ($M = 5.0$) than sadness ($M = 4.1$). Rated emotion (sadness or anger) interacted with induced emotion as expected, $F(1, 38) = 8.14$, $p < .01$, and with induction, $F(1, 38) = 6.50$, $p < .02$. Within-condition contrasts showed that hot cognition angry subjects experienced more intense anger ($M = 7.20$) than cold cognition angry subjects ($M = 3.20$), $t(38) = 2.54$, $p < .01$, and than hot cognition sad subjects ($M = 5.01$), $t(38) = 2.76$, $p < .01$. Hot cognition sad subjects did not report experiencing more intense sadness ($M = 4.99$) than cold cognition sad subjects ($M = 4.81$), $t(38) = .01$, $p > .10$, but did experience greater sadness than hot cognition angry subjects ($M = 3.60$), $t(38) = 2.32$, $p < .05$.

Judgments of agency. Table 7 presents the mean ratings for subjects' agency judgments across the four conditions. A two-way ANOVA with emotion (sadness or anger) and induction (hot vs. cold cognition) as between-subjects factors and valence of event (positive or negative) as a within-subject factor was first conducted. The expected interaction between emotion and induction was significant, $F(1, 38) = 6.10$, $p < .02$. No other effect was significant. As a closer examination of the interaction, planned contrasts (weights = 0, 0, +1, and −1) first tested the differences between sad and angry subjects in the hot cognition conditions and then between subjects in the cold cognition conditions. Sad and angry subjects in the hot cognition conditions differed in the expected manner in their perceptions of negative events, $t(38) = 2.49$, $p < .02$, but did not differ in the cold cognition conditions, $t(38) = 1.01$, $p > .15$. Sad and angry subjects did not differ, however, in their judgments of positive events in either the hot, $t(38) = 0.4$, $p > .15$, or the cold, $t(38) = 1.02$, $p > .15$, cognition conditions. A pattern similar to that observed in subjects' judgments of negative events was observed in their judgments of general life circumstances. Namely, sad and angry subjects differed in the hot cognition condition, $t(38) = 2.16$, $p < .05$, but not in the cold cognition condition, $t(38) = .86$, $p > .15$. As seen in Table 7, in the hot cognition conditions, sad subjects saw negative events and general life circumstances as more the result of situational causes, whereas angry subjects saw the same events as caused by other people.

Thus, the results of Experiment 5 lend further support to the idea that the experience of emotion itself is required for sadness and anger to influence causal judgments. Considering a past episode of sadness or anger in a relatively unemotional way was not sufficient to influence judgments of agency.

General Discussion

Although a great deal of recent research has dealt with the effects of emotion on various forms of cognitive processing, most of the research within the mood and judgment tradition has been restricted to a comparison of global positive states with global negative states: good moods and bad moods. The research presented here shows that our judgment may be colored by our emotions in a much more richly differentiated manner. Two different emotions, both negative, influenced judgments of the likelihood of future events caused by human beings or impersonal circumstances, of the responsibility for an embarrassing social mix-up, and of the sources of one's own future problems and general life circumstances. Our predictions were based on appraisal theories of emotion, particularly that of Smith and Ellsworth (1985; Ellsworth & Smith, 1988),

Table 7
Judgments of Agency of Life Events by Condition

	Anger		Sadness	
Target judgment	Hot cognition	Cold cognition	Hot cognition	Cold cognition
Future problems	4.10_a	4.35_a	5.46_b	3.81_a
Future successes	4.31_a	4.55_a	4.55_a	3.85_a
Life circumstances	3.80_a	4.50_b	5.40_c	3.46_a

Note. Judgments were made on 1 to 9 scales (1 = *completely due to people's actions,* 9 = *completely due to impersonal forces*). Means that do not share subscripts differ at $p < .05$ in the Tukey comparison.

who have consistently found that the appraisal that other people are responsible for one's misfortune is central to the experience of anger, whereas the appraisal that one's misfortunes are due to impersonal circumstances beyond anyone's control is central to the experience of sadness. Thus, we predicted that the perceptions of other people as responsible would be highly salient and readily available when subjects felt angry, as that perception is an important component of the experience of anger. Likewise, the perception of uncontrollable impersonal events should be highly salient to the sad subjects. When asked to evaluate new events with various possible causes (human and situational), people's judgments are influenced by the salient attributional appraisals characteristic of their current emotional state.

Experiments 1 and 2 were initial tests of the hypothesis. Experiments 3, 4, and 5 demonstrated that the arousal of the specific emotion is the important causal variable. The salience of agency appraisals in an unemotional context was not sufficient to bias perceptions of causality (Experiment 3); the induction of emotion without reference to the component appraisals was sufficient (Experiment 4); and focusing people's attention on the emotional aspects of a sad or angry episode was sufficient, whereas focusing people's attention away from the emotional aspects of the situation eliminated the effect (Experiment 5). The differential effects of sadness and anger on causal judgments were observed across the five experiments, which used different manipulations and measures. Also, our emotional inductions were relatively weak, compared with many real-world elicitors, and stronger emotions may have stronger effects on subsequent judgments. When we are angry, our colleagues, friends, loved ones, and children seem lazy, manipulative, and intentionally obtuse; when we are sad we may see the same behaviors as signs of overwork, real need, or genuine misunderstanding.

Our effects were quite consistent for estimates of the causes of negative events and, except in Experiment 4, of general life circumstances. There was very little evidence, however, showing that sadness and anger influence agency judgments of positive events. Why might emotions only influence judgments of circumstances or events of the same valence as the emotion? One account, consistent with functional views of the effects of emotion on cognition (e.g., Schwarz, 1990), is that it is only the negative events, both current and anticipated, that are relevant to a sad or angry individual's needs. This valence-specific effect of emotion on cognition may also in part account for why negative emotions are so readily enduring and the related difficulty of extricating oneself out of negative moods.

Appraisal Patterns: The Content of the Influence of Emotion on Judgment

The findings from the current investigation contribute to the growing literature on the ways negative emotions predispose the individual to perceive his or her environment. The basic premise in this research is that negative emotions orient the individual to perceive the environment in a way that identifies the causes of emotional distress and the possibilities of adaptive response. Thus, research has shown that the influences negative moods exert on cognition, for example, in prompting the search for causes or the narrowing of attention (see Schwarz, 1990). Our findings reveal what the exact nature of that causal search is for two negative emotions, and what features of a situation sadness and anger will lead people to concentrate on: namely, situational and human factors, respectively.

The approach we are advocating—to locate the effects of emotion on cognition in the emotion's pattern of appraisal—would account for why specific, or "local," effects of emotional states on judgment have proved elusive (e.g., Johnson & Tversky, 1983). In particular, attempts to find local effects due to the thematic similarity between the story that produced the emotion and the items to be judged have been unsuccessful (Johnson & Tversky, 1983).

Our findings suggest that more specific influences of emotion on judgment are likely to be determined by the similarity between the underlying appraisal patterns of the emotion and the target judgment. According to this view, two people might both be angry but for reasons that differ thematically—one having been unjustly fired and the other having been stood up by a friend—yet these different experiences, because they share a potentiated appraisal of human agency, would have similar influences on subsequent judgments, making salient the role of other people in causing negative events and perhaps events in general. Conversely, two people might encounter the same problem and appraise it differently, and consequently show different emotional influences on judgment. For example, two researchers might both have trouble getting an experiment completed. One researcher blames his collaborators and gets angry, and the other views the problem as an accumulation of extraneous demands and bad luck and gets depressed. The two would not only end up feeling different emotions; the differ-

ences in their appraisal along the agency dimension would differentially influence their perceptions of new events.

Secondary Qualities of Emotion: The Coloring of the Subjective World

Some theorists have viewed emotions as evanescent and stimulus bound, usually lasting a few seconds and closely linked to the eliciting circumstances (e.g., Ekman, 1984). Of course, this definition of emotion hinges on what aspect of emotion is the object of study: the subjective experience, the physiological response, or the expressive behavior. Some components of emotional experience clearly linger, however, persisting longer than a few seconds and influencing the perception of situations unrelated to the event that elicited them (Zillman, 1983). Furthermore, these lingering components of emotion clearly serve a function for the individual: to examine the environment tuned to the themes and requirements of the underlying emotion. These influences on judgment, of which we have documented one kind, might be thought of as secondary qualities of emotion and offer insight into the origins of mood states, the aftereffects (or persistence) of emotions, and how people judge their social worlds.

References

Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review, 96,* 358–372.

Clore, G. L. (1991). Cognitive phenomenology: Feelings and the construction of judgment. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgment.* Hillsdale, NJ: Erlbaum.

Clore, G. L., & Parrott, W. G. (1991). Moods and their vicissitudes: Thoughts and feelings as information. In J. Forgas (Ed.), *Emotion and social judgment.* Elmsford, NY: Pergamon Press.

Ekman, P. (1984). Expression and the nature of emotion. In K. Scherer & P. Ekman (Eds.), *Approaches to emotion.* Hillsdale, NJ: Erlbaum.

Ekman, P., Friesen, W. V., & Ellsworth, P. C. (1982). What emotion categories or dimensions can observers judge from facial behavior? In P. Ekman (Ed.), *Emotion in the human face* (pp 39–55). Cambridge, England: Cambridge University Press.

Ekman, P., Levenson, R. W., & Friesen, W. V. (1983). Autonomic nervous system activity distinguishes among emotion. *Science, 221,* 1208–1210.

Ellsworth, P. C., & Smith, C. A. (1988). From appraisal to emotion: Differences among negative feelings. *Motivation and Emotion, 12,* 271–308.

Forgas, J. P., & Bower, G. H. (1987). Affect in social and personal judgments. In K. Fiedler & J. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 184–208). Toronto: Hogrefe International.

Forgas, J. P., & Moylan, S. (1987). After the movies: Transient mood and social judgments. *Personality and Social Psychology Bulletin, 13,* 478–489.

Frijda, N. (1986). *The emotions.* Cambridge, England: Cambridge University Press.

Higgins, E. T., & Bargh, J. A. (1987). Social cognition and social perception. *Annual Review of Psychology, 38,* 369–425.

Higgins, E. T., Rholes, W. S., & Jones, C. R. (1979). Category accessibility and impression formation. *Journal of Experimental Social Psychology, 13,* 141–154.

Isen, A. M., Shalker, T. E., Clark, M., & Karp, L. (1978). Affect, accessibility of material in memory, and behavior: A cognitive loop? *Journal of Personality and Social Psychology, 36,* 1–12.

Izard, C. E. (1977). *Human emotions.* New York: Plenum Press.

Johnson, E. J., & Tversky, A. (1983). Affect, generalization, and the perception of risk. *Journal of Personality and Social Psychology, 45,* 20–31.

Kahneman, D., & Tversky, A. (1982). The simulation heuristic. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases* (pp. 201–210). Cambridge, England: Cambridge University Press.

Keltner, D., Locke, K. D., & Audrain, P. C. (1993). The influence of attributions on the relevance of negative feelings to personal satisfaction. *Personality and Social Psychology Bulletin, 19,* 21–30.

McFarland, C., & Ross, M. (1982). Impact of causal attributions on affective reactions to success and failure. *Journal of Personality and Social Psychology, 43,* 937–946.

Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). *The measurement of meaning.* Urbana, IL: University of Illinois Press.

Roseman, I. (1984). Cognitive determinants of emotion: A structural theory. In P. Shaver (Ed.), *Review of personality and social psychology. Vol. 5: Emotions, relationships, and health* (pp. 11–36). Beverly Hills, CA: Sage.

Russell, D., & McAuley, E. (1986). Causal attributions, causal dimensions, and affective reactions to success and failure. *Journal of Personality and Social Psychology, 50,* 1174–1185.

Russell, J. A. (1979). Affective space is bipolar. *Journal of Personality and Social Psychology, 37,* 345–356.

Scherer, K. (1984). On the nature and function of emotion: A component process approach. In K. S. Scherer & P. Ekman (Eds.), *Approaches to emotion* (pp. 293–318). Hillsdale, NJ: Erlbaum.

Schwarz, N. (1990). Feelings as information: Informational and motivational functions of affective states. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition* (Vol. 2, pp. 527–561) New York: Guilford Press.

Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology, 45,* 513–523.

Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology, 48,* 813–838.

Strack, R., Schwarz, N., & Gschneidinger, E. (1985). Happiness and reminiscing: The role of time perspective, affect, and mode of thinking. *Journal of Personality and Social Psychology, 49,* 1460–1469.

Tomkins, S. (1962). *Affect, imagery, consciousness* (Vol. 1). New York: Springer Verlag.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology, 5,* 207–232.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92,* 548–573.

Wyer, R. S., & Srull, T. R. (1984). *Handbook of social cognition* (Vol. 1). Hillsdale, NJ: Erlbaum.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35,* 151–175.

Zillman, D. (1983). Transfer of excitation in emotional behavior. In J. T. Cacciopo & R. E. Petty (Eds.), *Social psychophysiology: A sourcebook* (pp. 215–242). New York: Guilford Press.

Received August 7, 1991
Revision received July 7, 1992
Accepted November 10, 1992 ■