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Why Do Bad Moods Increase Self-Defeating Behavior? Emotion, Risk Taking, and Self-Regulation

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Increased risk taking may explain the link between bad moods and self-defeating behavior. In Study 1, personal recollections of self-defeating actions implicated bad moods and resultant risky decisions. In Study 2, embarrassment increased the preference for a long-shot (high-risk, high-payoff) lottery over a low-risk, low-payoff one. Anger had a similar effect in Study 3. Study 4 replicated this and showed that the effect could be eliminated by making participants analyze the lotteries rationally, suggesting that bad moods foster risk taking by impairing self-regulation instead of by altering subjective utilities. Studies 5 and 6 showed that the risky tendencies are limited to unpleasant moods accompanied by high arousal; neither sadness nor neutral arousal resulted in destructive risk taking.

Failure, misfortune, and suffering occur for a broad variety of reasons, many of which cannot fully be prevented or avoided. The most preventable forms of suffering would presumably be the self-inflicted ones. Yet in many ways people persist at becoming the authors of their own misfortunes. Self-defeating (also called *self-destructive*) behavior is generally regarded as the most paradoxical form of human behavior because it runs contrary to the pursuit of self-interest—and that pursuit is the main hallmark of rationality.

In a review of the personality and social psychology literatures on self-defeating behavior, Baumeister and Scher (1988) observed that unpleasant emotional states were implicated in many of the patterns. Yet the effects of these emotional states did not conform to traditional, psychodynamically based theories of self-hatred or wish for punishment (cf. Piers & Singer, 1971). Indeed, Baumeister and Scher explicitly rejected the view that self-defeating behavior among nonclinical populations is generally derived from any motivation to fail or suffer. The causal process or mechanism by which negative affect leads to self-defeating behavior therefore emerged as one of the central unresolved questions in the theory of human irrationality.

In the present article we propose and test one theory about how negative affect can lead to self-defeating responses. Our hypothesis is that negative affect causes people to make choices in a way that leads to nonoptimal courses of action: Specifically, one that may indeed hold out the chance of some highly positive outcome but also carries substantial risks or costs. More precisely, when people are upset, they tend to choose high-risk, high-payoff options. They presumably choose these options in the hope of gaining the high payoff, but in many cases the risk will materialize, leading to an aversive and costly outcome.

Two patterns of findings in previous work lend credence to our reasoning. First, the suggestion that people come to grief while seeking a positive outcome would be consistent with many forms of self-defeating behavior. Baumeister and Scher (1988) found that about half of the varieties of self-defeating behavior involved *trade-offs,* in which the self-destructive costs were linked to sought-after positive outcomes. Thus, for example, alcohol abuse is well-known to have dangers of addiction and illness as well as frequently disruptive effects on close relationships, but the consumption of alcohol is often driven by the quest for positive, pleasant sensations (e.g., Golding, Burnam, Benjamin, & Wells, 1992; McCollam, Burish, Maisto, & Sobell, 1980). Likewise, self-handicapping offers protection against the implications of possible failure and enhancement of the credit for success, but at the cost of decreased chances for success (Berglas & Jones, 1978; Jones & Berglas, 1978; Tice, 1991). Along the same lines, the shy avoidance of parties and other social gatherings protects one against the anxieties of possible rejection but brings a long-term risk of social isolation (Jones, Freemon, & Goswick, 1981; Jones, Rose, & Russell, 1990; Leary, 1990a, 1990b, 1993).

Second, research by Isen and her colleagues has shown that positive affect makes people risk averse. Isen and Patrick (1983) showed that inducing positive affect caused people to increase the amount they bet when the likelihood of winning was high—but caused them to bet less if there was high probability of losing. Isen and Geva (1987) found that inducing positive affect caused people to be less willing to gamble unless there was a very high likelihood of winning. Isen, Nygren, and Ashby (1988) showed that positive affect made people extra sensitive to the possibility of losing so that they preferred to minimize their possible loss instead of maximizing possible gain, even when the likelihood of winning and losing was held constant at .5.

It would seem that our hypothesis regarding negative affect is simply the mirror image of the finding that positive affect makes people risk averse. Yet findings regarding *positive* affect are un-

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reliable guides as to what *negative* affect will elicit. In an influential literature review, Isen (1984) concluded that negative affect has effects that are often far more complex than those of positive affect, partly because the subjective response is often an attempt to escape from negative affect (whereas positive affect produces no such escapist response). Nor can one simply assume that negative affect always induces escapist responses. Erber and his colleagues have shown that mood repair efforts may or may not occur, depending on the situational context (e.g., people move toward neutral moods in preparation for social interactions with strangers; Erber, 1995; Erber & Erber, 1994; Erber & Tesser, 1992).

Indeed, sometimes positive and negative affect have similar rather than opposite effects. For example, Cialdini, Darby, and Vincent (1973) have proposed that both positive and negative affect states can lead to increased helping, for example. Manucia, Baumann, and Cialdini (1984) confirmed that pattern, yet they also showed that the causal pathway from affect to helping is quite different for positive as opposed to negative affect, even though the result from the recipient's point of view may be the same. The need to investigate both affective patterns separately was aptly summed up by Isen (1987): "The finding that positive affect produces a certain effect does not necessarily imply that negative affect will give rise to its opposite, as is often assumed" (p. 205).

Thus, past work provides some encouragement for suspecting that negative affect might increase risky behavior, but careful consideration of both theory and data will be necessary. We found two main reasons for making that prediction. One had to do with risk appraisal, the other with self-control failure. These two are not incompatible and indeed it is plausible that both are correct to some degree. Still, they can be formulated as separate, distinct mechanisms, and in any case, the emphasis would be different. We turn now to outline these possible causal processes.

Change in Subjective Utility Value

The first and clearest basis for predicting that negative affect would lead to risk-seeking behavior was that negative affect alters the subjective utility value of the possible outcomes. This reasoning runs parallel to what Isen et al. (1988) identified as an important mechanism linking positive affect to risk aversion. They said that a possible loss seems worse to a happy person than to someone in a neutral state, presumably because the loss would bring not only its financial cost but also the destruction of the good mood. Indeed, some researchers might have made the opposite prediction about good moods and risk taking on the basis of the assumption that happy people become all the more confident and optimistic (cf. Johnson & Tversky, 1983), and so they should be more willing to gamble and take risks. The results of the studies by Isen and her colleagues were clearly inconsistent with the view that happy optimism would lead to risk seeking: Positive affect makes people prefer to avoid risks when possible. Despite their optimism, happy people seem to think carefully about the possibility of loss and misfortune (see Isen & Geva, 1987), and they find it a most unappealing prospect. In plain words, happy people want to stay happy, so they shun risk.

In a parallel fashion, one might propose that people who feel bad would be all the more willing to take a chance. One assumes they would like to change their emotional state, and so they might prefer options that offer the chance of such an extreme, positive outcome.

In a sense, then, the emotional state alters the subjective utility value of the outcomes. To the person in a good mood, a high payoff is less desirable because he or she is already feeling good and will not necessarily feel much better if something else good happens. However, the impact of a significant bad experience would be amplified because—in addition to the pragmatic consequences—one's current, pleasant mood would be ruined.

In contrast, and more to the point, a person in a bad mood might downplay the costs of a bad outcome because the fact of being already in a bad mood reduces the affective loss one would suffer. Crucially, the benefits of a large payoff would be increased because (in addition to the pragmatic rewards) one might escape from the bad mood into a good mood.

The usual alternative to the high-risk, high-payoff option is to play it safe, which may mean a low-risk, low-payoff option. This would be fine to the person who is in a good mood because the good mood will be preserved by another payoff regardless of its size. However, a low payoff may be inadequate to pull a distressed person out of his or her bad mood. Hence the subjective utility value of a safe, small-payoff option would be reduced by being in a bad mood.

Self-Regulatory Failure

The second basis for predicting that negative affect would increase risk-seeking behavior is far less cognitive than the first. The change in subjective utility view (described in the Change in the Subjective Utility Value section) seems to suggest that people engage in some sort of rational calculation of how possible outcomes would alter their subjective states. Somehow they figure out that they would be better off if they take a risk in pursuit of a large reward because they have less to lose and more to gain.

It may be, however, that people who are upset and distressed simply ignore such rational calculations. Keinan (1987), for example, found that people who were suffering through an aversive stress experience tended to cut their cognitive processing short, such as by neglecting to review all of the possible options in a multiple-choice task. Instead, they simply chose the first option they encountered that seemed minimally acceptable. Wegener and Petty (1994) showed that negative affect apparently inhibits people from considering the affective consequences of possible actions. More generally, Baumeister and Scher (1988) concluded that self-defeating patterns of behavior often involve making poor choices in situations in which there is a short-term versus a long-term payoff or situations in which optimal choice would require proper assessment of probabilities.

These patterns of findings can be translated into the language of self-regulatory failure: The person becomes unable or unwilling to restrain the immediate impulse in favor of what will in the long run be most conducive to rational self-interest. This line of reasoning gains some plausibility from the evidence that

emotional distress contributes to a broad range of failures of self-regulation (see Baumeister, Heatherton, & Tice, 1994).

Thus, if negative affect deters people from engaging in a thorough consideration of how best to pursue long-term, rational self-interest, then it could well increase the willingness to engage in risky behaviors. In many situations, people may feel an impulse to pursue a large reward. People in neutral and positive states might override this impulse if the chances of gaining the reward are slim while the risks and costs are substantial. However, perhaps people who are upset or distressed would not be deterred by such sobering drawbacks.

As a result, behavior during emotional distress could take on an impulsive nature. It would be marked by the simple preference for appealing options without full regard for the risks and costs involved. Emotionally distraught people might prefer a high-risk, high-payoff course of action because they do not think about it any farther than recognizing the appeal of the high payoff.

Present Research

The present series of studies is presented in the following fashion. The hypothesis was that negative affect would lead to a tendency to choose risky courses of action. In Study 1 we used an autobiographical narrative approach, which has high external validity but may lack some experimental control. The goal was to ascertain whether people's accounts of self-defeating courses of action contained evidence of both negative affect and risky decisions. Study 2 was a laboratory experiment in which people were put in an anxious, embarrassed state, a happy state, or a neutral one. They were then asked to choose between two lotteries, as a measure of preference for risk. One lottery involved a relatively high probability of a modest win while the other contained a slight chance of winning a large amount of money. With both lotteries, losing meant having to undergo an aversive experience. Study 3 induced an angry, frustrated state in participants who were then confronted with a similar choice between a safe but small win and a long shot. In Study 4 we sought to distinguish between the two hypothesized mechanisms for the effect, namely the change in subjective utility value view and the self-regulatory failure view. In Studies 5 and 6 we addressed the role of arousal in leading to risky choices: We sought to disentangle negativity from arousal by including a low-arousal negative affect (sadness) and a neutral or positive form of arousal (from physical exercise).

Study 1

The first study was designed to provide preliminary support for the hypothesized links between negative affect, risk taking, and self-defeating behavior. In contrast to the subsequent studies, which involve laboratory experiments, this study used autobiographical narrative. That is, participants were asked to furnish accounts of actual events from their own lives in which their actions led to bad consequences that they later regretted. For a comparison group, participants were also asked to furnish accounts of events in which their actions had produced positive, desirable consequences.

It is generally acknowledged that the autobiographical narrative method is less effective than laboratory experiments for testing causal hypotheses. On the other hand, they have several advantages, including high external validity, fidelity to the subjective experience of individual participants, and potential for exploring issues that cannot readily be simulated in the laboratory (e.g., Baumeister, Stillwell, & Wotman, 1990; Harvey, Flanary, & Morgan, 1988; Harvey, Orbuch, & Weber, 1992; Harvey, Weber, & Orbuch, 1990; Heatherton & Nichols, 1994; Katz, 1988; McGraw, 1987; Tangney, 1992; Tangney, Wagner, Fletcher, & Gramzow, 1992).

The purpose of Study 1 was to see whether people would spontaneously mention negative affect and risk taking in their accounts of their past self-defeating actions. An additional interest was whether these allusions would correspond to the change in subjective utility pattern or the loss of self-control pattern.

Method

Participants. Participants were 129 students in introductory psychology classes, and their participation was one option for satisfying part of a course requirement. Male and female participants took part in equal numbers, and the mean age was 18.9 years. Two participants each contributed only one of the two stories requested.

Procedure. Participants took part in the study in groups of five. Each participant was given a questionnaire form. Each form requested two autobiographical narratives. One of them specified that the participant should describe an incident from his or her own life during which he or she had acted in a way that led to bad consequences, such as loss, harm, suffering, or failure, and that the person regretted because of the misfortune that the event had brought upon the self. The other story asked for an incident in which the participant's actions had led to good consequences such as gain, pleasure, or success. The instructions for both stories included a request to describe the states that the participant found himself or herself in before, during, and after the event, as well as what may have been learned as a result of what had happened. The order was counterbalanced so that half of the participants first described the good consequences incident, and half wrote first the bad consequences incident.

A final questionnaire asked participants to describe the role that mood played in each story. This was administered after the stories were written so that the researchers' interest in mood would not bias the content of the stories. In addition, self-esteem had been measured for nearly all participants in a group testing session earlier in the semester by using Fleming and Courtney's (1984) revision of Janis and Field's (1959) scale.

Reliability of coding. All stories were coded for references to risk taking, prior good or bad moods, consideration of subjective utilities, and loss of control by two coders, one of whom was fully unaware of all hypotheses. Interrater reliabilities were computed separately for the stories participants wrote first and for the ones they wrote second. Interrater agreements ranged from 90% to 98%, which indicates that codings were highly reliable.

Results

Risky choices. Our hypothesis was that bad moods or unpleasant emotional states would lead to risky courses of action, which in turn would produce bad consequences. Our first analysis therefore compared the stories about bad consequences against the stories with good consequences in terms of the tendency to choose risky behavior. The coding criteria consisted

of explicit reference to risk taking or some indication that the participant had chosen the most risky alternative available. To guard against the chance that order effects might have occurred, and to avoid the problem of comparing multiple stories by the same participant (which violates the assumption of the chi-square technique), we analyzed the first stories and the second stories as separate sets. This allowed us to check whether our findings replicated, although at some cost of statistical power.

We began with the first story contributed by each participant. The results are summarized in Table 1. These reports indicated that the participant had chosen the riskiest course of action in 92% of the stories about bad consequences, as opposed to merely 51% of the stories about good consequences, $\chi^2(1, N = 129) = 26.29, p < .001$. A similar pattern (85% vs. 42%) was found in the second stories written by participants, $\chi^2(1, N = 127) = 25.02, p < .001$. Thus, people's accounts of their regretted and self-defeating actions tended to emphasize choosing a risky course of action, as compared with accounts of acts that led to positive outcomes.

Prior emotional states. Next, we examined the role of positive versus negative affects. This analysis was restricted to the accounts that had been coded as involving risky courses of action. In the first stories about bad consequences, bad moods were mentioned as preceding the risky decision in over half (55%) of the cases, whereas prior good moods were mentioned in only 19% of the cases. A repeated-measures analysis of variance (ANOVA) confirmed that these were significantly different, $F(1, 55) = 110.20, p < .001$. In other words, when people were describing risky choices that led to bad consequences, they were significantly more likely to mention bad moods than good moods. A similar pattern was found in the second stories, in which 64% (of stories involving risky choices and bad consequences) mentioned prior bad moods but only 18% mentioned prior good moods, $F(1, 54) = 163.21, p < .001$. These results thus fit the hypothesized pattern: They suggest that bad moods tend to lead to risky decisions.

An alternative explanation, however, would be that bad moods were simply mentioned by participants as antecedents to self-defeating behaviors and bad consequences in general. Possibly writing a story about bad consequences serves as a cue to reconstruct the event as having been initiated by a bad mood. Indeed, mentioning a bad mood as a causal factor could well be an a priori theory held by many individuals that could shape and alter the construction of a memory narrative (see Ross, 1989; Ross & Holmberg, 1990). One way to examine that hypothesis would be to see if participants emphasized good moods in the stories leading to good consequences, even if risky actions had been involved. Contrary to the alternative explanation, we found that bad moods were commonly mentioned as antecedents of risk even in the stories about good consequences. Among the first set of stories about good consequences, and restricting the analysis to those that indicated a risky course of action, 51% made reference to prior bad moods, whereas only 24% referred to a prior good mood. A repeated-measures ANOVA showed that this difference was significant too, $F(1, 33) = 4.61, p < .05$. In the second set of stories, this difference failed to replicate ($F < 1$, *ns*). Still, the significant effect in the first set of stories suggests that people's accounts often tend to link negative affect with risk taking, regardless of whether they are describing desirable or undesirable outcomes.

Mediating process. Finally, we examined the stories for evidence about the two hypothesized mediating processes. Given the nature of these data, these findings must be regarded as especially tentative and exploratory. People may often be unaware of the intrapsychic reasons and processes by which they reach certain conclusions (Nisbett & Wilson, 1977), and, indeed, efforts to report on such reasons can be misleading to the individual (Wilson, Dunn, Bybee, Hyman, & Rotondo, 1984).

The first theory was that bad moods would alter the subjective utility value of possible outcomes, making high-risk courses of action more appealing. We coded the stories for evidence that participants reported having considered the possible benefits and payoffs of risky acts. The vast majority of accounts involving positive consequences indicated some such consideration, whereas slightly below half of the accounts involving bad consequences did. This difference was significant among the first stories, $\chi^2(1, N = 102) = 21.64, p < .001$, and it was replicated in the second set of stories, $\chi^2(1, N = 93) = 23.66, p < .001$. Thus it appears that people are less prone to report having considered the subjective utility value of possible outcomes when they are describing bad as opposed to good consequences. Still, nearly half of the stories about bad consequences did report such consideration, so there does appear to be partial or tentative support for the view that change in subjective utility can make a difference and lead to self-defeating outcomes.

A more focused and perhaps more telling analysis strategy would be to limit the sample to stories involving both risk and bad consequences because the theoretical interest concerned whether subjective utility mediated between bad moods (or emotional distress) and destructive risk taking. To do these analyses, we combined the two sets of stories to keep our sample large enough (after excluding all good consequences and nonrisk stories). Subjective utility considerations were reported in 66% of these stories in which there was no reference to prior bad mood (but in which there was evidence of risk taking and bad consequences); whereas they were mentioned in only 46% of the cases in which bad moods were mentioned, and this difference approached significance, $\chi^2(1, N = 84) = 3.02, p = .08$. This difference is in the opposite direction to what the subjective utility hypothesis would predict. Thus, if anything,

Table 1
Results of Study 1

Condition	%
Stories about bad consequences	
Risky decision	91.9
Prior bad mood	54.5
Prior good mood	19.3
Stories about good consequences	
Risky decision	50.7
Prior bad mood	52.9
Prior good mood	23.5

Note. These results are based on the first story contributed by each participant. The prior mood analyses are limited to stories that had indicated risky decisions.

these data suggest that bad moods decreased the consideration of subjective utility.

The second theory was that a lapse in self-regulation would lead to the preference for risky acts and regrettable outcomes. References to loss or abandonment of control were far more common among the stories about bad consequences than in stories about good consequences. This was significant in the first set of stories, $\chi^2(1, N = 102) = 27.20$, $p < .001$, and was replicated in the second set of stories, $\chi^2(1, N = 93) = 25.42$, $p < .001$. When we restricted the analysis to stories that reported both risk taking and bad consequences, we found that bad moods appeared to increase the propensity to take such risks. The majority of stories (60%) linking bad moods to destructive risk taking referred to some loss of self-control, as compared with only a minority of cases (38%) in which no bad mood or distress was reported but risk taking and bad consequences were included. This difference was significant, $\chi^2(1, N = 84) = 3.88$, $p < .05$.

Although these analyses must be regarded as preliminary and suggestive, they do offer initial evidence for helping to choose among the two hypothesized mediating processes. Lapses in self-regulation and self-control appear to be commonly mentioned as mediating between bad moods and risk taking, and indeed bad moods seem to increase the likelihood that destructive risk taking will follow from some such lapse. Meanwhile, considerations of subjective utility appear to be decreased under conditions of bad moods or emotional distress, at least according to people's accounts of destructive risk taking. These results therefore appear to favor the self-regulation hypothesis over the subjective utility hypothesis.

Self-esteem. We conducted a series of analyses involving trait self-esteem. No significant effects were found.

Discussion

The results of this study provided preliminary support for the main hypotheses. People's accounts of self-defeating acts tended to feature prior bad moods and emotional distress, followed by choosing a risky course of action, which then had costly consequences that were later regretted. Thus, people tend to describe their self-defeating actions in terms of risky decisions emerging from bad moods. Of course, there may be plenty of bad moods that do not lead to risky and self-destructive consequences, but when self-destructive risks are found, people's accounts frequently show evidence of prior bad moods.

The broad hypothesis of this investigation therefore gained some plausibility. These data do not prove that people actually felt bad before making risky choices because it is plausible that the stories were revised to conform to a priori theories by the participants (e.g., Ross, 1989; Ross & Holmberg, 1990). On the other hand, it is encouraging to see that even when people were describing acts that led to positive, desirable consequences, they still tended to link risk taking with prior negative affect. Presumably the a priori theories about positive outcomes would be quite different from those pertaining to self-defeating acts, and so the converging evidence lends credence to the view that bad moods do promote risk taking.

Our supplementary analyses provided some preliminary distinction between the two theories about mediating processes. Our initial view was that bad moods altered the subjective utility of possible outcomes, such as by making it seem more desirable to take a chance on a high payoff and by reducing the aversiveness of losing. This theory was not well supported by the present data, and indeed bad moods seemed to decrease the tendency to make such calculations of subjective utility. Our second theory was that bad moods might impair self-regulation and foster a loss of self-control, and the pattern of stories was consistent with that hypothesis. Specifically, references to loss of control were especially common in stories about risk taking that led to destructive consequences.

Thus, first-person accounts of actions that were later regretted often indicated the causal sequence we proposed. In people's minds and memories, at least, self-defeating acts are often the result of being upset and choosing a risky course of action. It therefore seemed appropriate to turn from the complexities of the real world (as filtered through personal accounts) to the controlled setting of the laboratory to conduct experimental tests of the hypothesis.

Study 2

Study 1 thus provided some encouraging support for the hypothesis that one route to self-defeating behavior begins with emotion, which leads to risky decision making, which by definition will often yield costly and destructive outcomes. Of course, despite the value of autobiographical narrative methods, they are not the preferred means of testing causal hypotheses, and it is plausible that the results of Study 1 tell more about motivated reconstructions of memory and a priori beliefs than about the true causes of self-defeating behavior.

Study 2 was designed to provide a direct test of the hypothesis that bad moods induce a preference for high-risk, high-payoff choices. We induced emotional distress by a randomly assigned manipulation: Specifically, we led some participants to expect a highly embarrassing, anxiety-provoking experience, whereas others were put into a more pleasant or left in a neutral mood.

To measure preference for high-risk behavior, we confronted participants with a choice between two lotteries. One was a relatively safe bet that involved a fairly large chance of winning a small reward ($2). The other was a long shot, involving a very slight chance of winning a large reward ($25). In both cases, losing the lottery would cause the participant to be subjected to an unpleasant experience, namely exposure to noise stress. The prediction was that people who anticipated the embarrassing, anxious experience should feel distressed and should therefore be most likely to choose the long shot.

Our interest was in self-defeating behavior, and some critics might object that pursuing a long-shot option is not necessarily self-defeating. It does offer the chance of a large reward, which may be far more worthwhile than a small one, even if the odds are longer. There is after all some dispute about how a purely rational individual would choose between a safe bet and a long shot, when the latter offers a much bigger payoff. This is particularly true if the expected gain calculations for the two lotteries are equal. These calculations can be done by multiplying each possible outcome's size times its probability and adding up all of these products for each outcome.

To give the choice a clearer resemblance to self-defeating be-

havior, therefore, we made the expected gains for the two lotteries unequal. More precisely, we set up the payoff schedule such that the long-shot option had the lower expected value (in terms of the probability of winning times the amount one would win). Thus, a wholly rational being would presumably approach the choice presented in this study by calculating the expected values and concluding that the cautious option was the better one in this case. It is worth adding that the simple calculation of cash outcomes ignores the additional cost of losing (exposure to noise stress). Because the odds of this unpleasant outcome were much greater with the long shot, the long shot was actually a quite poor choice. The difference between the two lotteries was therefore considerably greater than would be suggested by the simple calculation of expected values of cash outcomes alone.

Many researchers who have tried to study negative affect have reported multiple difficulties with putting participants into such a state, and we are no exception. In pilot studies we repeatedly found that most efforts to induce negative moods were unevenly successful and at best transitory. For the present study, we borrowed an embarrassment procedure developed by Brown and Garland (1971), in which participants are required to sing a corny song without accompaniment. (Accomplished and avid singers are screened out from the procedure.) In pilot testing, we found that most male participants found this quite aversive and embarrassing, but unfortunately they seemed to feel so much relief on completing the song that the bad mood had largely vanished by the time we measured their risk-taking proclivities. Accordingly, we modified the procedure in the following way. First we described the embarrassing task in detail and had the participant listen to a tape of the song while reading the words. Then, just as the participant was about to start singing (and presumably would be at the height of negative affect), we feigned a technical problem that required a brief delay. Then we administered the risk-taking measure. This procedure eliminated the problem of participants feeling relieved on completing the embarrassing task because they were still anticipating the embarrassing experience when they responded to the risk-taking measure.

Method

Participants. Participants were 48 male students from introductory psychology courses who participated under the same terms as in Experiment 1. Data from 3 participants were discarded. One of them reported being annoyed by the good mood manipulation. Two others reported a positive reaction to the bad mood manipulation (specifically, they said they liked to sing and looked forward to the opportunity). Participants took part in the experiment on an individual basis. They were greeted by the experimenter, given an initial overview of the procedures, and asked to sign an informed consent form.

Neutral mood condition. In the neutral mood condition, the participant was seated at a table with a video monitor. The experimenter explained that the study was concerned with personality and reactions to various types of stimuli. The participant was told that he would react to and evaluate a videotape followed by an audiotape. The experimenter continued that the video contained advertisements of various products. The experimenter then ostensibly discovered that she had brought the wrong video to the experiment. She explained that she would need to go across the hall for the correct one, which would only take a few moments, but so as not to waste time she suggested that the participant could move on to the selection process for the second half of the experiment.

Risk-taking measure. At this point she gave the participant the measure of risk taking, which involved choosing between two possible lotteries. The sheet of paper described the two lotteries in terms of possible outcomes. Lottery A promised a 70% chance of winning a $2 prize. Lottery B offered a 4% chance of winning a $25 prize. For both lotteries, losing entailed being subjected to a noise stress manipulation, which was described as listening to a 3-min tape of the (amplified) sound of fingernails scratching across a blackboard. The experimenter explained that the participant should choose one or the other lottery in which to participate and that his choice constituted a form of random assignment to condition, so he should feel free to choose either one. The participant was asked to mark which lottery he chose and also to indicate his degree of preference on a 7-point scale that was anchored at each end by one of the lotteries. The experimenter also said that the money was from a research grant in order to dispel any concerns (or desires) the participant may have had about taking the experimenter's money.

The experimenter left the room for 1 min and then returned with a videotape in her hand, which she placed into the VCR while covertly checking the participant's progress. As soon as he had indicated a preference for one or the other lottery, he was told that the experimental procedure was ended. The experimenter administered a brief questionnaire containing a mood measure and then proceeded to debrief the participant, including apologies for the deception. She then thanked and dismissed him.

Good mood condition. The procedure for the good mood manipulation began in the same way as the neutral mood procedure, but instead of describing the video as a composite of advertisements, the experimenter said that it contained two skits from a comedy show (*Saturday Night Live;* Broadway Productions, 1986). The participant then actually watched the two skits. Pilot testing indicated that most participants found these amusing and entertaining and that they were in a good mood after watching them.

The experimenter left the participant alone to watch the video. When she heard the tape end, she returned and administered the risk-taking measure. This was the same measure as used in the neutral mood condition, involving a choice between one lottery with a 70% chance of winning $2 and another that had a 4% chance of winning $25. After the participant indicated his choice and degree of preference, he was given the postexperimental questionnaire and was then debriefed, thanked, and dismissed, just as in the neutral mood condition.

Bad mood condition. The bad mood condition involved a manipulation of anticipated embarrassment and evaluation apprehension. The experimenter explained that she had taught classes at a neighboring university and had noticed an odd pattern involving the tendency of people with soft voices to gravitate toward the back seats in classrooms, in contrast to the louder students who tended to sit in front. Most participants spontaneously concurred with this impression. She speculated briefly as to whether this indicated personality types or characteristics, and some participants also entered into the speculation. The experimenter then said that the present study was concerned with the relationship between certain personality traits and voice patterns.

The participant was told that the procedure would involve making a recording of his voice. Ostensibly, to get a better indication of vocal range, the tape would involve singing rather than just talking. The experimenter said that the stimulus song being used in the study was "My Way," which had been selected on the basis of its use of the full male voice range. (In fact, the song was chosen because its lyrics struck most participants as unbearably corny and egotistical so that they would feel very awkward and embarrassed about singing it. The song was written for Frank Sinatra late in his career and is essentially a narcissistic recitation in which the singer claims to have defied conventional wisdom, overcome various obstacles, and achieved great success by dint of his

own individuality and immense talent. Sinatra fans may believe that this is a fair statement for him, but for an undergraduate male to say such things would be outlandish.) She then played a tape of Frank Sinatra singing this song, after giving the participant a sheet with the lyrics. The participant was also informed that he would sing this song without musical accompaniment.

The participant listened to the entire song while following along on the lyrics. Many indicated by means of facial expressions and other nonverbal signals that they found the prospect of singing this song embarrassing and distasteful. When it ended, the experimenter commented that the microphone in her tape recorder was somewhat weak and so it would be necessary for her to sit directly in front of the participant and hold the cassette recorder up in front of his face while he sang to get a good recording. This was done to increase the aversive and embarrassing prospect because the participant would have to perform his singing task with an experimenter looking directly in his face.

The experimenter picked up a tape to put into the tape recorder but then ostensibly noticed that it was already full of data. She said that it would be necessary to retrieve a fresh tape from across the hall. As she got up to leave, she said (just as in the neutral condition) that to save time she would have the participant make his selection for the next part of the experiment. She then administered the same lottery choice measure as in the other conditions.

Expected outcomes of lottery. The two lotteries were deliberately set up so as to have different expected outcome values, as noted in the introduction, because of our interest in self-defeating behavior. Precise calculation of the discrepancy is difficult because possible outcomes involved both cash and exposure to an unpleasant experience. Focusing only on the monetary outcomes, Lottery A emerges as a rather cautious and safe choice, with an expected gain of $1.40 (i.e., a .7 chance of $2 plus a .3 chance of nothing). Lottery B, in contrast, can be regarded as a long shot, with an expected gain of only $1.00 (i.e., a .04 chance of $25 plus a .96 chance of nothing). These numbers may understate the subjective difference because most decision theorists assume that marginal increases for additional dollars have less subjective impact. Moreover, the difference between the two lotteries becomes greatly increased if one were to include the noise stress manipulation in the possible outcomes. Lottery A involved only a .30 likelihood of having to suffer through this aversive experience, whereas Lottery B entailed a .96 probability of it. Thus a rational decision process would dictate that all participants should choose Lottery A, for both financial and hedonic reasons.

Results

Manipulation check. The postexperimental questionnaire asked participants to report how they had felt after the first part of the experiment (i.e., after the mood manipulation). All but 3 participants gave reports that corresponded to the mood manipulation they had received. As indicated in the *Method* section, the data from these 3 participants were deleted. (In the neutral mood control condition, all answers were acceptable and so no participants were discarded.) It appears that the manipulation was generally successful, and all participants included in the analyses had actually reported the appropriate mood.

Risky choices. The main dependent measure was the choice of lottery. There was significant variation among the three conditions as to which lottery people chose, $\chi^2(2, N = 45) = 7.18, p < .05$. Thus, across the experiment, the three different induced moods led to significant differences in risk taking. As shown in Table 2, participants in the bad mood condition had the strongest preference for the long shot (i.e., Lottery B), followed by the control condition; whereas participants in the good mood condition tended to reject that lottery and prefer the relatively safe but low-payoff option.

Table 2
Preference for Long Shot, Study 2

Induced mood	%
Embarrassment	86.7
Neutral	66.7
Good mood	40.0

Note. Numbers represent the percentage of participants who chose the high-risk, high-payoff lottery.

Follow-up analyses were conducted to examine pairwise differences between the three mood conditions. The difference between the good mood and bad mood conditions was significant, $\chi^2(1, N = 30) = 7.03, p < .01$. The difference between the bad mood and the neutral mood control condition did not, however, reach significance, $\chi^2(1, N = 30) = 1.68$, *n.s.*

Likewise, the 7-point scale measure of lottery preference (with 4 as neutral point indicating no preference) yielded significant variation among conditions, $F(2, 42) = 3.49, p < .05$. Tukey's honestly significant difference (HSD) test for pairwise comparisons (which is conservative and does not presuppose a significant F overall) indicated that the good mood ($M = 2.80$) and bad mood ($M = 4.64$) conditions were significantly different. The neutral mood condition ($M = 3.31$) did not differ from either of the others.

Discussion

These results provide further support for the hypothesis that negative affect leads to risk taking. Participants who anticipated an embarrassing experience (and who reported unpleasant emotional states in connection with this anticipation) overwhelmingly chose a high-risk, high-payoff option over a low-risk, low-payoff one. In contrast, participants who were put into a good mood tended to show the opposite preference. In the control condition, participants received no mood manipulation, and they were about equally divided in their preferences. Unfortunately it emerged that a number of the control condition participants were in a bad mood (i.e., they had arrived at the experiment already feeling that way). A conceptual replication that corrected this problem was therefore desirable.

Study 3

Study 2 thus provided initial evidence that negative affect leads to an increased preference for risky behavior. Still, several questions remained, and so we conducted Study 3 with a similar design but with several changes. We altered the odds on the lottery to increase the discrepancy in expected value. In Study 3, the expected gain from the safe choice was almost triple that of the risky option, so it seems reasonable to say that the risky choice was nonoptimal and self-defeating.

One main issue was whether the results of Study 2 were specific in some way to embarrassment. Our hypothesis applied generally to negative affect, but embarrassment may be a special

case in several ways, particularly because it is recognized as a self-conscious emotion (see Tangney & Fischer, 1995; see also Miller, 1992, 1995). Therefore, one crucial change in Study 3 was to use anger instead of embarrassment as the manipulation of negative affect.

Another problem was that although Study 2 yielded a significant effect overall, the pairwise comparison between the negative affect and the neutral condition did not reach significance. Inspection of manipulation checks suggests that part of the problem was that a sizable minority of participants arrived at the laboratory already in bad moods, and the neutral mood control condition did not do anything to change that. Study 3 therefore involved a manipulation designed to put participants in a neutral mood. In other words, we abandoned our naive assumption that participants would generally be in a neutral mood as long as we did nothing to put them into a different mood.

An additional goal was to show that bad moods could lead to risk taking in both sexes. The embarrassment manipulation of Study 2 was designed specifically for men, and indeed pilot testing found that male participants were much more embarrassed by singing a corny song than were female participants. The anger and frustration manipulation of Study 3 was not tailored to either sex, and so we used both male and female participants.

Method

Participants. Participants were 41 students (19 male and 22 female) from introductory psychology courses who took part under the same terms as in the previous studies. Three were discarded from the analyses: One reported being annoyed (instead of amused) by the film in the good mood condition, and 2 participants were unable to comply with the bad mood manipulation because they could not recall a situation that had angered them.

Participants took part individually and were randomly assigned among the three mood conditions (neutral, bad, or good). An initial explanation was given regarding the procedure, and participants signed an informed consent form.

Neutral mood condition. In the neutral mood condition, the experimenter explained that the study was concerned with personality and reactions to certain types of stimuli. They were told they would react to and evaluate a videotape followed by an audiotape. Each participant then watched a 6-min segment of a nature show from educational television (Public Broadcasting Service, 1993). The experimenter left the room during the screening.

When the experimenter returned after the film, she told the participant that the questionnaire would follow after the second half of the experiment. She then placed a sheet on the paper detailing the lottery procedure. This was similar to what was used in Study 2, except that the odds had been altered to increase the discrepancy between the two lotteries. The cautious choice, Lottery A, now offered a 70% chance of winning $2, whereas the long-shot selection, Lottery B, contained only a 2% chance of winning the $25 prize. In both cases, losing would entail being subjected to a 3-min stressful audiotape of fingernails scratching across a blackboard. As in Study 2, the experimenter said that this was an accepted means of "randomly" assigning participants among conditions so that the participant should feel free to choose whichever lottery he or she wanted. The participant was asked to read carefully the choices and to mark his or her preference on both the simple choice format and the 7-point preference scale.

As soon as the participant had made a selection and recorded a preference, the experimenter announced that the procedure was concluded. A short questionnaire was administered, followed by a full debriefing. The questionnaire contained a manipulation check on the mood manipulation as well as ratings of both desire to win and subjective probabilities of the various possible outcomes for both lotteries.

Good mood condition. The procedure for the good mood condition was identical to that of the neutral mood condition, except that the humorous skits from the comedy show were used instead of the nature show.

Anger condition. A somewhat different procedure was used to generate the bad mood because pilot participants were not uniformly angered by merely watching a videotape. The experimenter began with the same cover story used in Study 2 concerning the classroom seating distribution of loud versus soft voices and the need to study possible links between voice patterns and personality traits. This time, however, she said that the current project was interested in studying the angry voice. The participant would therefore be asked to make a tape describing an incident that produced anger. She said she would then attempt to relate personality patterns (which had been measured in a group testing session) to sounds on the tape.

Each participant was then asked to recall an incident in which someone had caused him or her to become very angry. Once an incident was selected, the experimenter instructed the participant to sit with eyes closed and attempt to relive that incident, including experiencing the anger once again. Participants were told that the more they could get in touch with their anger, the better their tape would be in expressing it. They were told to picture the setting of the incident in their minds and to smell and feel everything again. They were told to feel that anger welling up in them again. They were asked to spend another minute (with eyes closed) concentrating on that anger.

Next, the experimenter said that the participant should regard the tape recorder as the other person who had provoked the anger—except that this person was in a condition in which he or she could not answer back. This was therefore to be the participant's chance to say everything that he or she might have wished. Participants were encouraged to yell, to use whatever language was appropriate, and to express the full depth of their feelings. They were invited to jot down a few notes on a piece of paper to get them started; about half of the participants did this.

The experimenter then started the tape, and the participant began what was usually a hostile, emotional diatribe aimed at the tape recorder. The experimenter allowed about 1 min until it was clear that the participant was showing emotions that were quite expressive and angry. She then interrupted the participant and told him or her to stop, ostensibly because the tape recorder did not seem to be working properly. She suggested that she would rewind the tape and start over. Most participants responded to this suggestion with incredulity, as if reluctant to believe that she would calmly instruct them simply to go back and start over on this emotional outburst. Nonetheless, the experimenter acted as if this were a perfectly reasonable request, and the participants complied. Typically it took a bit longer for the participant to become fully emotional the second time around, and so the experimenter allowed about an extra 30 s before interrupting again to say that the tape was still not working right. This time she proposed that she would try it with a different cassette tape and perhaps that would work better. She said she would have to go across the hall to get a fresh tape.

The intention of this procedure was to induce a state of frustrated anger in the participant. Recalling a past incident of anger was a helpful start, and being asked to express these feelings in an evocative fashion seemed likely to intensify the feelings. The double interruptions were intended to frustrate the participant and possibly create feelings of anger and exasperation directed toward the apparatus (and possibly toward the experimenter too). In other words, both remembered anger and fresh frustration were invoked.

Just before leaving the room, ostensibly in search of a blank audiotape, the experimenter suggested that the participant fill out the form

for the second part of the procedure. She justified this request by saying that it would save time, which was desirable because of the delay. The participant was given the same lottery choice measure used in the other conditions. After this, the experimenter again indicated that the procedure was now complete and gave the same postexperimental questionnaire.

The debriefing was more careful and sensitive in this condition than in the others to dissipate any angry mood or frustrated feelings. Apologies were made for the deception, and the rationale was carefully explained.

Expected outcomes of lottery. As in Study 2, the lotteries were deliberately set up so as to have different expected outcome values. In Study 3 we increased the discrepancy between the two lotteries. By focusing only on monetary outcomes, it is apparent that Lottery A was the better choice. Its expected gain was still $1.40 (i.e., a .7 chance of winning $2 plus a .3 chance of winning nothing). Lottery B had been altered so that the expected cash gain was only .50 (i.e., a .02 chance of winning $25 plus a .98 chance of winning nothing). Thus, Lottery A was better by nearly a dollar of expected gain. The discrepancy in likelihood of receiving the bad outcome (entailing an aversive experience of noise stress) would further differentiate the two lotteries, with Lottery A again being more attractive. In short, rational analysis would strongly dictate a choice of Lottery A.

Results and Discussion

Manipulation check. The postexperimental questionnaire asked participants to rate how they had felt at the beginning of the session. An ANOVA on these ratings found no significant differences, indicating that the three groups had started out in roughly the same mood.

The questionnaire also asked participants to rate how they had felt after the first part of the experiment, which meant the mood manipulation. An open-ended question of "How do you feel?" elicited different answers in the three conditions. In the good mood condition, responses emphasized feeling happy (71%), amused (22%), or pleasant (7%). In the neutral mood condition, most responses indicated feeling neutral, nothing, or relaxed (85%), although a few suggested feeling content or happy (15%). In the anger condition, most responses involved feeling angry (79%) or frustrated (14%), although a few (7%) said they felt indifferent.

On a scale with responses ranging from +10 (*extremely good*) to −10 (*extremely bad*), the mean mood rating in the anger condition was −4.8, in the neutral condition it was +2.2, and in the good mood condition it was +5.0. An ANOVA confirmed that these were significantly different from each other, $F(2, 37) = 23.43$, $p < .001$. It appears, then, that the mood manipulation was generally successful.

Risky decisions. Preliminary omnibus analysis indicated that there was significant variation in lottery preference among the three conditions, $\chi^2(2, N = 38) = 7.95$, $p < .02$. The most important analysis for this experiment compared lottery choice in the angry versus neutral mood conditions. This yielded a significant difference, $\chi^2(1, N = 25) = 7.67$, $p < .01$, confirming that angry participants were more likely to choose the risky, long-shot lottery than control participants. Table 3 presents these results.

It is noteworthy that the neutral mood participants were almost uniformly uninterested in the risky lottery, unlike the more mixed preference of neutral condition participants in Study 2. One difference is undoubtedly that in Study 3 we used an actual manipulation to induce a neutral mood, thereby presumably changing the mood of participants who arrived at the experiment in a bad mood. It is also plausible that many people prefer to avoid risks to preserve a neutral mood, particularly when further social situations are anticipated (Erber, 1995).

Table 3
Preference for Long Shot, Study 3

Induced mood	%
Anger–frustration	61.5
Neutral	8.3
Good mood	30.8

Note. Numbers represent percentage of participants who chose the high-risk, high-payoff lottery.

The 7-point preference scale responses were analyzed with a one-way ANOVA, which again showed significant variation overall, $F(2, 37) = 5.29$, $p < .01$. These results confirmed the chi-square analyses on lottery choice. Again, the most important finding was that angry participants ($M = 4.46$) showed a much stronger preference for the long-shot lottery than did the neutral mood participants ($M = 2.75$), which was confirmed as significant by using the highly conservative Tukey's HSD technique (Kirk, 1982).

These findings confirm and extend the results of the preceding study. Like embarrassed participants, angered participants showed a strong preference for the long-shot lottery (unlike participants in the good mood condition, who preferred the low-risk option). Moreover, the risky choices of angry participants were significantly different from the responses of control participants, who had been put into a neutral mood. This rules out the alternative explanation that the significant results of Study 2 were wholly due to the effect of good moods making people risk averse (as shown by Isen et al., 1988). We did indeed replicate Isen et al.'s findings, but we have also shown that negative affect makes people risk prone.

Subjective utility. The final questionnaire asked participants about their desire to win each lottery, their subjective estimate of the likelihood of winning each lottery, and whatever else. A series of ANOVAs was conducted on these ratings to search for evidence of changes in subjective utility caused by the different moods—that is, we wanted to find whether the bad mood altered either the subjective probability or the desirability of any of the outcomes. No significant differences were found. Thus, in Study 3 we failed to find any support for the view that changes in subjective probability occur as a result of negative affect.

Study 4

The findings of Studies 1–3 provided support for the view that negative affect leads to a tendency to choose risky courses of action. Study 4 had two purposes. First, it sought to provide replication of the experimental findings that anger increases risky behavior. Second, and more important, it was designed to elucidate the inner causal process leading to this result.

Earlier in this article, we outlined two possible processes by which negative affect could lead to risky choices. One was that emotional distress alters the subjective utility value of the possible outcomes, such as by making losing less costly (because one already feels bad) or increasing the appeal of a big win (because it would likely cure one's bad mood). The other possible process was that negative affect produces a self-regulatory breakdown by causing people to cut short the thoughtful consideration of long-term outcomes.

In Study 4 we sought to distinguish between these two theoretical mechanisms by using an additional condition in which people were first angered but then were instructed to give careful and thoughtful consideration to the various possible outcomes in the lottery. The two theories would make contrasting predictions about how this instruction to think carefully should affect the basic pattern of unpleasant emotion leading to risky choices. If the change in subjective utility value hypothesis is correct, then thinking longer should confirm or intensify the pattern because people will be all the more likely to appreciate the altered subjective utility values. If the self-regulation view is correct, however, then thinking longer should reduce or eliminate that pattern. The self-regulation view is that people simply make a quick, impulsive decision, whereas the subjective utility theory requires that (at least at some level) people must engage in enough cognitive processing to appreciate the change in subjective value.

We also included a condition in which people were instructed to make a quick decision. In a sense, this might be regarded as a mirror image of the condition in which people were instructed to think carefully. Still, whether people could possibly engage in the subjective calculations rapidly is unclear, and so findings in this condition would not necessarily contradict the subjective utility change hypothesis. If a rapid decision eliminated the preference for the long shot, however, this would argue against the self-regulation hypothesis.

Method

Participants. Participants were 50 students from introductory psychology courses. Three were dropped from the sample. Two of these were unable to complete the procedure because they allegedly could not recall any situation in which they had been angry. One other was dropped because he spent the experimental session trying to decipher the purpose of the study, and he reported at the end that he had not taken any part of the procedure seriously.

Participants took part in the experiment on an individual basis and were randomly assigned among the four experimental conditions. Each person was given a brief overview of the procedure and was asked to sign an informed consent form. After this, he or she was given several personality scales, including the Fleming and Courtney (1984) measure of self-esteem and the Affect Intensity Scale (Larsen & Diener, 1985). After they finished, the mood manipulation was administered.

Neutral mood condition. Participants assigned to the neutral mood condition were asked to turn toward a video monitor on one side of the room. The experimenter explained that the study was concerned with personality and reactions to certain types of stimuli, and so the procedure would involve reacting to and evaluating a videotape followed by an audiotape.

Each participant then viewed a 6-min segment of a nature show (Public Broadcasting Service, 1993). The experimenter left the room during the film, explaining that she would return when the time was up. The participant was allowed to adjust the volume to a comfortable level.

When the experimenter returned, she said that the questionnaire part would follow the second half of the experiment. She then placed a lottery choice sheet on the table in front of the participant. As in Experiment 3, it offered a choice between Lottery A with a 70% chance of winning $2 and Lottery B with a 2% chance of winning $25. In both cases, losing entailed listening to a 3-min stress tape described as an amplified recording of fingernails scratching across a blackboard. The experimenter said that offering the participant this choice constituted a form of random assignment to condition. The participant was told to look at the choices carefully and to mark his or her preference on the sheet, including the 7-point degree of preference scale. The same measure was used for all conditions of this experiment.

As soon as the participant responded to these measures, he or she was told that the experiment was completed. The experimenter apologized for any deception. She also asked the participant to fill out one more short questionnaire before leaving. This consisted of Likert scale ratings of mood (as a check on the manipulation) and ratings of perceived desirability and subjective probability of the various possible outcomes of the two lotteries. Participants were then debriefed, thanked, and dismissed.

Aversive mood conditions. Participants assigned to any of the three aversive mood conditions were told to sit facing the tape recorder. The experimenter began with the same cover story used in the anger condition in Study 3 regarding voice differences. The procedure then repeated what was done in the anger condition in Study 3, including having participants recall an angering incident, relive it, and begin taping a hostile, angry outburst that was then interrupted twice by technical difficulties, with the result that the participant was told to start over each time. Just before the experimenter left the room (ostensibly to fetch a new tape, after the second interruption), she suggested that the participant should fill out the lottery choice form now "to save time because of the delay." At this point, the three versions of this condition diverged.

In the simple anger condition, the lottery choice was presented with exactly the same instructions as in the neutral mood condition. The participant responded to the measure while the experimenter pretended to busy herself with obtaining a fresh blank audiotape and inserting it into the tape recorder. When the participant finished marking the lottery choice measure, the experimenter explained that the procedure was now completed, apologized for the deceptions, administered the final questionnaire, and debriefed the participant just as in the neutral condition.

In the quick decision condition, the experimenter added some further instructions while giving the participant the lottery choice measure. The experimenter told the participant to make a choice as quickly as possible. The participant was told to try to finish the measure by the time the experimenter got back with the fresh tape from across the hall, and, in fact, she returned within 45 s as a cue to the need for rapidity. If the participant had not finished, he or she did so while the experimenter placed the new tape in the tape recorder. The remainder of the procedure was identical to the other conditions.

In the thoughtful decision condition, the experimenter also added further instructions while administering the lottery choice measure. Stressing the need to make a careful choice, she gave the participant a worksheet on which the advantages and disadvantages were to be listed for each of the options. She told the participant to consider carefully the different lotteries while she (the experimenter) went across the hallway to get a new tape, and she stayed out of the room for several minutes to ensure that the participant had ample time to think about the various possibilities. When she returned, she told the participant to fill out the lottery choice measure, and the rest of the procedure conformed to that of the other conditions.

Results and Discussion

Manipulation checks. The first question on the final questionnaire asked participants to recall how they felt on arrival at

the laboratory. Responses to the open-ended question indicated that 65% arrived feeling happy or content, 15% neutral, and 20% stressed or nervous. No differences among the four conditions were found in ratings of pleasantness of initial mood, $F(3, 46) = 2.32$, *ns*, suggesting that participants began the experiment in approximately the same mood state. (Nonsignificant trends in the data suggested that the neutral mood participants actually started off in the least pleasant mood.)

The second question was the main manipulation check, insofar as it asked people how they felt "after the first part of the experiment," which was intended to refer to how they felt after the mood manipulation. Unfortunately it became clear that some participants were interpreting this item to refer to how they felt after filling out the trait scales but before the mood manipulation. Once the experimenter realized this, she made sure to indicate to each individual participant that the question referred to how he or she felt after the taping part of the experiment. An ANOVA on these participants confirmed that the manipulation was successful, as indicated by significant variation in positivity of mood among the conditions, $F(3, 30) = 4.52$, $p < .05$. Participants exposed to the anger manipulation felt less pleasant than those exposed to the neutral mood manipulation. Responses to the open-ended question about how the participant felt elicited the following pattern of responses. In the neutral mood condition, participants said they felt calm or relaxed (77%) or neutral (23%). In the three anger conditions, all participants described their mood as angry, annoyed, or frustrated, except for 1 participant in the quick decision condition who said he felt "relieved."

Risky choices. The design of the present study involved one control and three experimental conditions. On the crucial measure of lottery choice, therefore, the most important analyses involved computing separate chi-square analyses to compare each of the three anger conditions against the neutral mood condition. Still, we began with an omnibus test for overall significance. There was indeed significant variation among the four conditions in terms of risk-taking propensity, $\chi^2(3, N = 47) = 9.22$, $p < .05$.

The main results of the study, in terms of affective state and risky decision, are presented in Table 4. The first analysis compared the simple anger condition with the neutral mood condition. Angry participants showed a marked preference for the long shot (Lottery B), whereas neutral mood participants mostly chose the safe bet (Lottery A). The difference was significant, $\chi^2(1, N = 25) = 6.84$, $p < .01$. This finding replicated the main finding of Study 3: Anger fosters risk.

Next, we compared the thoughtful decision condition against the control condition. The results for these two conditions were nearly identical, $\chi^2(1, N = 24) < 1$, *ns*. This suggests that instructing participants to think carefully about their decision eliminated the tendency for anger to produce risky choices. To confirm this, we also compared the thoughtful decision condition with the simple anger condition. The difference was significant, $\chi^2(1, N = 23) = 5.50$, $p < .02$. Thus, people who were angered but were then instructed to think carefully about their decisions did not respond like other angry people—rather, they responded like people who had not been angered.

These results of the thoughtful decision condition are the most important findings of Study 4. In both Studies 3 and 4, we found that anger produced a preference for the risky (long-shot) lottery. Apparently, though, when angry participants are instructed to think carefully about their decision, the tendency to make risky decisions is eliminated. Simply, angry participants make risky choices, but when angry participants weigh their options thoughtfully they choose relatively safe, low-risk options. This contradicts the prediction made based on the subjective utility hypothesis but confirms the prediction based on the self-regulation hypothesis.

Table 4
Preference for Long Shot, Study 4

Condition	%
Simple anger	66.7
Neutral mood	15.4
Thoughtful decision	18.2
Quick decision	45.4

Note. Numbers represent percentage of participants who chose the high-risk, high-payoff lottery. $N = 11$, 12, or 13 per cell.

The fourth condition involved instructing participants to make a rapid decision. As Table 4 shows, the results of this condition show that participants were about evenly divided in their preferences for the two lotteries. This condition did not differ significantly from any of the others. Although the results of this condition seem inconclusive, the final questionnaire shed substantial light on their decision processes, as the *Decision process* subsection indicates.

Decision process. At the end of the session, participants responded to a questionnaire that asked them why they had made the decisions they had made. They were asked both about the reason for their decision and the process by which they had made it. The reasons were generally the same in all conditions, but the process responses differed.

In the thoughtful decision condition, of course, participants had gone through an elaborate process of making their selection. In the simple anger and neutral mood conditions, their questionnaire responses suggested a somewhat abbreviated version of a similar process, namely, reviewing the options and considering the possible outcomes.

In the quick decision condition, however, responses suggested that participants merely considered one aspect of the dilemma and made their choice on that basis. Simply put, they looked either at the money or the odds. Five of the 6 who chose the safe bet indicated that they had simply considered the odds. (The other said he or she did not want to be exposed to the noise.) Four of the 5 who chose the long shot said they had only considered the size of the payoff. (The other said, somewhat ambiguously, that he or she had not weighed the options very seriously and did not think the bad outcome would be too unpleasant.)

It appears that when a decision had to be made quickly, participants directed their attention to one or the other of the salient considerations: either the odds or the payoff. Those who consulted the odds chose the cautious choice (which indeed had much better odds of winning). Those who considered the payoffs chose the long shot, given its much higher payoff.

Thus, the lottery choice behavior of the participants in the simple anger condition most closely resembled that of the par-

ticipants in the quick decision condition who looked only at the possible payoffs. Although it is speculative to suggest that the same inner process was involved, that reasoning is the most plausible and parsimonious view. The present results seem to suggest that angry participants followed a decision process in which they merely considered the desirability of possible outcomes (while overlooking the contingencies, probabilities, and potential risks) and chose on the basis of the maximum possible gain.

Study 5

Although the preceding studies showed that destructive risk taking increases during some states of negative affect, certain questions remained. The possible role of arousal was of particular interest because embarrassment and anger (the emotions used in Studies 2–4) both involve high levels of arousal. Would sadness or other low-arousal states of unpleasant emotion likewise cause destructive risk taking?

Indeed, a contrary prediction could be made based on work by Clore, Schwarz, and Conway (1994). Their review of several studies on effects of mood concluded that depressed affect increases the use of all information on social judgment tasks but decreases the use of information on nonsocial judgment tasks. In particular, persuasion studies have found greater elaboration of messages under negative than under positive affect (see also Schwarz, 1990). Such a response should tend to dissuade people from making the mistake we observed in Studies 2–4, namely, choosing the high-risk option. Moreover, they found that sad people tend to use their own sad moods as a source of information that is input into judgment tasks, which could well lead to a reluctance to experience further negative outcomes—and hence a preference for the less risky choice. Clore et al. have also cautioned that specific emotions have very localized effects on judgments, and so it is not safe to generalize from one unpleasant emotion to another.

Method

Participants. Thirty-three students in an introductory psychology course took part in the study. These included 14 male and 19 female participants, 91% White, 6% Asian, and 3% Black, with a mean age of 19.27 years.

Procedure. The control (neutral affect) condition was the same as in Studies 3 and 4. Participants watched an emotionally neutral video of winter scenes in Yellowstone Park.

A sadness condition was created by having participants watch a 4.5-min clip from the 1979 movie *The Champ* (Metro-Goldwyn-Mayer, 1979). The excerpt included the movie's final scenes in which the champion is leaving the boxing ring with the help of his trainer, he is then lying on the dressing room table with blood flowing from his facial injuries while he is speaking to his 8-year-old son, then he is dying in this position. The boy is shown crying for his dad to wake up. Finally, others try to pull the boy away and tell him his father is dead.

A simple arousal condition was created by having participants run in place for 3 min. These participants were told that the experiment concerned the link between personality traits and patterns of behavior under various circumstances, the first of which was exercise. They were told that their running in place would be videotaped and that these would be analyzed by an observer who was not familiar with the rest of the experiment. Each participant was supposedly filmed for 30 s while standing still with an identifying number, and then he or she ran in place for 3 min. Participants were instructed to "really pick up your knees" while running, ostensibly to enable the judge to see that they were exercising. After the taping, there was a 15-s still period, following which the lottery choice measure was administered. The lottery choice measure was the same as in Study 4. A brief postexperimental questionnaire containing manipulation checks was then given.

Results and Discussion

Manipulation check. The postexperimental questionnaire asked all participants to name and to rate how they had felt at the beginning of the session. There was no difference in pleasantness of mood before the manipulations, $F(2, 32) = 1.04$, *ns*.

The questionnaire also asked participants how they felt after the first part of the experiment (i.e., the videotaped exercise or the viewing of the mood-inducing tape). In the arousal condition, responses included sweaty or warm (30%), curious (37%), strange or silly (12%), and exhilarated (12%). The mean pleasantness in this condition was 0.18, which is almost precisely in the middle of the scale with responses ranging from +10 (*extremely pleasant*) to −10 (*extremely unpleasant*). In the sadness condition, participants described their moods as sad and depressed (90%) or tired or bored (10%) and gave a mean pleasantness of −1.18. In the neutral condition participants described their moods as relaxed, peaceful, or pleasant (73%); diverted (11%); and bored (16%), with a mean pleasantness of 4.64. A one-way ANOVA showed that these mood ratings differed significantly, $F(2, 32) = 7.49$, $p < .01$. Using Tukey's HSD technique (which is a very conservative pairwise comparison procedure; see Kirk, 1982), we found each of the three conditions to differ significantly from each of the others. Thus, the mood manipulations effectively produced significant differences in mood, with the neutral mood being more pleasant than the exercise condition, and the sadness condition being least pleasant. Also, an ANOVA on change scores (computed by subtracting the premanipulation mood from the postmanipulation mood) showed significant variation among conditions, $F(2, 32) = 5.05$, $p < .01$. The sadness and simple arousal conditions both showed mean changes toward less pleasant moods (means of −3.45 and −3.73, respectively); whereas the neutral affect manipulation produced a slight improvement in mood (+1.82).

Risky decisions. Preliminary omnibus analysis indicated that the three conditions differed significantly in lottery choices, $\chi^2(2, N = 33) = 6.82$, $p < .05$, and in lottery preference, $F(2, 32) = 5.82$, $p < .01$. The results are summarized in Table 5. Pairwise comparisons using the Tukey's HSD method indicated that the simple arousal condition differed from each of the others, which did not differ from each other.

These results suggest that arousal may indeed be relevant to the pattern we identified in the earlier studies. Sadness did not yield the pattern of risky choice that we found earlier for embarrassment and anger. Meanwhile, physical exercise, which had an arousing but mildly unpleasant effect on most participants, did elicit a preference for the high-risk option.

It was also noteworthy that not all participants described the exercise procedure as unpleasant. Indeed, 1 participant said it gave her a "runner's high," and she chose the low-risk option, saying she "didn't want to lose the good feeling she had." Thus,

Table 5
Preference for Long Shot, Study 5

Induced mood	%
Simple arousal	64
Neutral	11
Sadness	11

Note. Numbers represent the percentage of participants who chose the high-risk, high-payoff lottery.

it is possible that arousal can produce risk avoidance when it is pleasant. We conducted a sixth and final study to investigate the possibility that individual differences in subjective pleasantness of exercise would moderate the subsequent preference for risky choices.

Questionnaire responses. The postexperimental questionnaire asked participants how much they wanted to win the lottery, in case different moods altered people's desire to win. No differences in desire to win were found ($F < 1$, *ns*).

Then a series of eight questions asked the participant to rate his or her perceived likelihood of winning each of the lotteries and his or her feelings if he or she would win each of the lotteries. ANOVAs on these responses yielded one significant and one marginally significant difference. There were significant differences on the perceived likelihood of losing the safe-bet lottery, $F(2, 32) = 4.86, p < .05$, with participants in the simple arousal expressing the highest mean likelihood. There was also a marginally significant variation in response to the item about how the participant would feel if he or she lost the safe-bet lottery, $F(2, 32) = 2.80, p = .07$. Participants in the sadness condition expressed the worst anticipated feelings over this possibility. Also, follow-up analyses that included only the sadness and simple arousal conditions showed that these differed significantly on both of those items. The apparent implication is that aroused participants thought the likelihood of losing the supposedly safe lottery was higher than sad participants thought, but sad participants expected to be more upset if they did lose that lottery. This reaction seems consistent with the findings and theorizing of Schwarz (1990) and Clore et al. (1994), who have argued that sad people use their own sadness as input into their judgment and decision processes.

A final question asked participants why they made the particular choice that they did. These were coded as to whether the reason had to do with the motivation to win or the motivation to avoid losing. The majorities in both the simple arousal (9 of 11) and the control (8 of 11) conditions expressed their reasons in terms of wanting to win; whereas the majority in the sadness condition (8 of 11) expressed reasons that involved avoiding losing. The difference was significant, $\chi^2(2, N = 33) = 7.87, p = .02$.

These findings suggest that sadness may resemble happiness in that it makes people sensitive to the possibility of losing and makes them risk averse (cf. Isen et al., 1988). As Schwarz (1990) proposed, sad people consider their own moods to guide their decisions, and their sadness apparently intensified the undesirability of losing the lottery (which would result in the noise stress experience) and therefore an increased motivation to avoid losing. In contrast, arousal that was induced by exercise made people focus on the possibility of winning and made them choose the long shot, whereas sad people avoided the long shot and apparently chose on the basis of not wanting to lose. Sadness thus does seem to differ from the high-arousal forms of unpleasant emotion.

Study 6

An unexpected technical problem that occurred in Study 5 was that people had very different subjective reactions to what we had envisioned as an affectively neutral manipulation of arousal, namely, running in place. A few participants reported that they felt good after running in place, but the mean response was a change toward a more negative mood. Because of the potential theoretical importance of understanding how arousal moderates the link between mood and risk taking, we conducted a final study to examine risk preferences in relation to individual differences in subjective pleasantness of exercise. This had the added advantage that the same manipulation was used for all participants, which would rule out alternative explanations based on special features of our negative affect manipulations (e.g., they involved active responses, whereas good moods were passively induced by watching a film).

Method

Participants were 33 students from an introductory psychology course. The procedure was the same as the simple arousal condition of Study 5: Everyone ran in place for 3 min and then filled out the lottery choice measure, followed by a questionnaire.

Individual differences in pleasantness of mood following exercise were established on the basis of the 21-point scale in which a priori criteria were used, which, fortunately, yielded groups of nearly equal size. We classified bad moods as ratings from −10 to −2 on the scale, neutral moods were ratings from −1 to +1, and positive moods consisted of ratings from +2 to +10.

Results and Discussion

Manipulation check. Because responses to the pleasantness rating were used to classify participants into the three groups, it is hardly surprising that the three groups differed very significantly, $F(2, 30) = 50.69, p < .001$. On the scale with responses ranging from +10 to −10, the pleasant arousal group rated their pleasantness at a mean of +5.08, the unpleasant arousal group furnished a mean of −4.60, and the neutral arousal group had a mean of −0.18.

Risky choices. The pleasantness of mood apparently had a significant impact on risky choice, as can be seen in Table 6. The variation among the conditions in absolute choice was significant, $\chi^2(2, N = 33) = 8.18, p < .05$, although the continuous scale ratings yielded only a marginally significant difference, $F(2, 32) = 2.72, p = .08$. Unpleasant arousal led to a clear preference for risky choices, whereas affectively neutral arousal led to risk avoidance. Arousal combined with positive mood resulted in mixed preferences. These results suggest that arousal alone is not responsible for the pattern of risky choice, but unpleasant arousal emerges as the apparent cause of such destructive risk taking. Combined with the findings of Study 5, these

Table 6
Preference for Long Shot, Study 6

Valence of arousal	%
Pleasant	42
Neutral	18
Unpleasant	80

Note. Numbers represent the percentage of participants who chose the high-risk, high-payoff lottery.

results indicate that neither negative affect nor arousal alone produces the self-defeating pattern of risky choice. Apparently, both negativity and arousal are necessary.

Questionnaire responses. The same postexperimental questionnaire was used as in Study 5. One-way ANOVAs comparing the three levels of arousal yielded no significant differences on any of the questions. Apparently, the subjective pleasantness of an arousal state did not alter the perceived likelihood or desirability of winning or losing either of the lotteries.

General Discussion

The present investigation began with a question about the link between emotional distress (or bad moods) and self-defeating behavior. We proposed that people in an aversive affective state may come to grief because they choose high-risk courses of action, which, by definition, will often produce costly or harmful outcomes. It is not necessary to invoke psychodynamic or similar hypotheses (e.g., desire for punishment or death wish) to explain the link between emotion and self-defeat. Rather, we proposed that emotionally distraught people may bring failure or misfortune on themselves by making poor, nonoptimal choices and by taking unwise risks.

The present series of studies offered support for this view. Study 1 showed that people's autobiographical narratives of self-defeating actions—that is, things they had done that they later regretted because of harmful or costly consequences—tended to include references to risk taking and to prior bad moods or emotional distress. Such allusions were more common than in a comparison group of accounts of acts that had led to good, desirable consequences. In Study 2 we found that people who were confronted with an expectation of an embarrassing, anxiety-producing experience were more likely than others to choose a high-risk, high-payoff option instead of a relatively safe one. Studies 3 and 4 showed that people who were induced to feel angry and frustrated were likewise prone to choose a high-risk, high-payoff option. In Study 6 we found that when people felt unpleasantly aroused after brief exercise they again made risky choices. In all these studies the high-risk option had the lower expected value and was objectively the poorer choice.

These findings suggest that a preference for high-risk courses of action (which also tend to contain the possibility of a high payoff) may be an important mediator of the link between bad moods and self-defeating behavior. Of course, choosing a risky course of action does not guarantee a destructive outcome, but it makes it significantly more likely, and so researchers who focus on destructive outcomes—ranging from traffic accidents to financial loss to suicide—may tend to find an excess of negative affect implicated. Had we actually carried out the lottery, an occasional individual would have won the $25 prize and very likely been cheered up by this good outcome. Still, the majority of people who chose that lottery would have ended up with an aversive outcome. In Studies 3–6, the odds were such that 98% of the people who chose the long shot would have lost and been subjected to the noise stress experience.

These results suggest how a cycle of negative affect and destructive actions may develop. People who feel upset may be prone to pursue high-risk courses of action. Occasionally one of these risks may turn out well, thereby getting the rare individual off the cycle; most of the time, however, the downside of the risk will materialize, yielding then something else about which to feel bad. If the laboratory scenario in our investigations had been a real experience with continuing consequences, most of the people who were put into a bad mood would have (by their own choice) brought a further unpleasant experience on themselves, which would have confirmed their bad mood or even made them feel worse. These bad feelings might then have inclined them to take another risky option if one were to present itself, and the cycle could continue.

Not all bad moods produce the risk-seeking tendencies we found. Study 5 showed that sadness left people risk averse. Sadness is of course marked by low arousal, whereas embarrassment and anger both involve high arousal. The role of arousal was further confirmed in Studies 5 and 6, in which we sought to make some participants aroused by having them run in place for a brief time. Many participants had a negative reaction to this exercise and its accompanying arousal state, and they too chose the risky option. Arousal alone was not the explanation, however, because people who felt aroused without feeling bad at the same time did not choose the long shot.

The most appropriate conclusion from all of these findings is apparently that the combination of a subjectively unpleasant state and high arousal leads to risky choices. Neither arousal alone (such as from emotionally neutral exercise) nor negativity alone (such as sadness) is sufficient to produce the preference for risky decisions. It is apparently just the people who are both upset and aroused who become self-destructive by way of making risky choices.

Thus, our results suggest that risk taking is indeed one likely mediator of the link between some forms of emotional distress and self-defeating behavior. A second focus of our investigation was what mediates the mediator—that is, precisely why do people lean toward risky choices when they are upset?

We proposed two possible answers. One was that emotional distress alters the subjective utility value of the possible outcomes. According to this view, when one feels bad, small wins become trivial while losses seem unimportant (because from a hedonic standpoint the person who already feels bad has little to lose). Only a major victory or success would be sufficient to make the person feel better. When we began this research, we favored this hypothesis, partly because it would constitute the mirror image of the findings of Isen and her colleagues (e.g., Isen et al., 1988) regarding positive affect, which makes people risk averse, apparently by making them recognize that bad out-

comes would be extra bad because they would spoil the good mood.

Unfortunately there was relatively little support for the hypothesis that change in subjective utility mediated the link between negative affect and risk taking. Personal recollections of self-defeating behavior suggested a negative association between emotional distress and calculations of subjective utility: If anything, bad moods decrease the rational consideration of possible outcomes. Likewise, in our laboratory studies, the measures of subjective utility generally failed to yield significant differences between conditions. For example, people in bad moods consistently declined to say that they were more or less likely to win either lottery or that certain outcomes were more or less desirable, as compared with people in neutral or good moods. The only exception was the sad people in Study 5, who did show some changes in subjective utility—but who did not then choose the risky options, which again weakens the view that risky choices are mediated by such changes. Finally, and most important, when we asked participants to think carefully about their decision (in Study 4), the tendency for bad moods to produce risky choices was eliminated. If bad moods made risky behavior more desirable in some rational sense, then this desirability should have been all the more apparent when people thought rationally about the decision—but it was not.

The second answer we proposed was that bad moods impaired self-regulation, in the sense that people who were upset may be less likely to make a rational choice at all. Instead, they may be more likely to yield to an impulse. Several findings from these studies supported this view. As already noted, in Study 4, the risky preference of angry people was eliminated when they stopped to think about their decision, which suggests that the risk-prone response depends on an absence of careful, rational thought—in other words, it is an impulsive pattern. In addition, in that same study, the participants whose choices most resembled those of the angry participants were those who were instructed to make a hasty decision and who then focused on the size of the possible outcomes (as opposed to focusing merely on the probabilities of winning). Meanwhile, Study 1 provided ample evidence of impulsive actions, in the sense that people alluded to losing or abandoning self-control when they were describing past acts that had led to regretted consequences. Those autobiographical accounts were quite consistent with the view that bad moods increase risky behavior by undermining self-control.

The goal of our investigation was to show that risk taking mediated between negative affect and self-defeat rather than to show what mediated between negative affect and risk taking, and so our conclusions on the latter issue are less firm. Still, the present set of studies does offer some fairly clear indications. These studies have provided reasonably convincing evidence linking negative affect to decrements in self-regulation, which foster a tendency to choose risky options, which in turn increase the likelihood of costly outcomes. In plain terms, people who are upset seem merely to seek out the best possible outcome and grab for it, without being deterred by rational cost–benefit calculations or even by the prospect of possible unpleasant consequences.

The alternative view, that change in subjective utility may mediate between negative affect and risk-prone behavior, should not however be fully rejected on the basis of these findings. As noted, there were a few findings consistent with that view, and, moreover, it is plausible that it may be found in other circumstances.

Still, our results confirm the wisdom of Isen's (1987) thesis that one cannot expect the effects of positive and negative affect to be mirror images of each other. At first glance, our results do suggest a mirror image pattern because we found that negative affect increases risk taking; whereas she found (and we replicated) that positive affect reduces it. Yet that simple opposition may conceal important differences in the mediating processes. The risk aversion of happy people does seem to be mediated by a change in subjective utility value of possible outcomes. The risk proneness of upset people, however, seems to derive from an abandonment of self-regulatory composure and rational calculation. Also, of course, sad people (unlike embarrassed or angry people) made risk-avoiding choices similar to happy people.

Implications

Our findings suggest an alternative to the traditional but poorly supported view that bad moods lead to self-destructive behavior by creating an actual wish to suffer or fail. There is no need to assume the existence (which has not been documented) of such a positive wish for suffering. The present studies likewise do not indicate any such wish. There was no indication of it in the autobiographical accounts of self-defeating behavior in Study 1. The laboratory studies' results can all be explained without positing any such wish. Some theorists might wish to argue that distressed participants chose the long shot because they were hoping to lose, but there was no sign of such hope or desire in any of their ratings of the desirability of various outcomes, and indeed we found that distressed people reported about the same desire to win and the same reluctance to lose as did everyone else in the study. Some unpublished data from our laboratory also argue against the hypothesis that bad moods made people choose the long-shot lottery because they wanted to lose. Stillwell and Baumeister (1993) conducted one study in which the expected values were biased in favor of the long shot (i.e., so that the long shot was the rational, statistically preferable choice), and people in bad moods showed approximately the same rate of preference for it as they did in the present studies. Thus, upset people seem to lean toward the risky option regardless of whether rational, statistical analysis makes it the better choice or the worse choice. They do not choose it because it is the worse choice and they want to lose.

Can we claim that the present laboratory procedures are an effective means of studying self-defeating behavior? Ethical and practical constraints limit the extent to which laboratory research participants can be induced to engage in self-destruction. Still, we think the present procedures do qualify, even though our termination of the procedures prevented any participants from actually suffering from the results of their choices. The choice between the two lotteries was deliberately set up such that one was a better, more rational choice than the other. The cautious selection (Lottery A in the procedures) offered a relatively good chance of winning a small amount of money and of avoiding the noise stress experience. In contrast, the statistically

expected gain from the long shot was appreciably lower, and the likelihood of the noise stress experience was considerably higher. Another encouraging sign was that our study of autobiographical accounts of self-defeating behavior yielded similar, parallel findings.

Still, it requires a long stretch to generalize from a laboratory selection among lotteries (and personal accounts of typically moderate-to-minor acts of self-defeat) to catastrophic financial risks, impulsive violence, or suicide. Readers who believe that major self-defeating behaviors do not conform to the same patterns and principles as small-scale ones may wish to interpret our results as reflecting nonoptimal behavioral choices instead of self-destructive acts. Thus, emotional distress seems to undermine the rational selection of optimal courses of action.

Another set of implications is relevant to the debate about positive illusions (Taylor, 1989; Taylor & Brown, 1988, 1994; cf. Colvin & Block, 1994). According to Taylor and Brown (1988), it is adaptive for people to exaggerate their good points and to overestimate their abilities. One direct payoff of such positive illusions is affective: People feel better when they think well of themselves. Against this benefit, however, Baumeister (1989) and others have proposed that there would be practical risks and dangers associated with overconfidence and overcommitment that could result from overestimating oneself. Yet experimental studies by Baumeister et al. (1993) found that high self-esteem led to overcommitment only when people were put into bad moods by means of an ego threat. Under favorable circumstances, in contrast, people with high self-esteem set appropriate goals and commitments and performed well, consistent with the view that such flattering views of self are beneficial and adaptive.

The present results suggest how these seemingly disparate views can be reconciled. High self-esteem did not seem to lead to overconfidence in general—it only did so in response to an ego threat (Baumeister et al., 1993). This may be because of the affective benefits of positive illusions. Feeling good does not seem to lead one to taking chances. Instead, people who feel good seem to make sensible, cautious choices that avoid dangers and self-defeat. The danger associated with egotism may be that ego threats produce a strong negative mood state, which in turn fosters risk taking and consequently self-defeating behavior (see also Blaine & Crocker, 1993). Emotional reactions may thus be crucial mediators of the adaptive and the maladaptive consequences of various self-appraisals (see also Baumeister, Smart, & Boden, 1996).

A last issue concerns the relationship between affect and cognition. Our findings suggest that some forms of emotional distress suppressed cognitive activity, at least to the extent that highly upset people were less likely to consider the costly side of some risky options. Although this pattern is consistent with some previous findings (Keinan, 1987), it seems contradictory to some work that has suggested that negative affect increases cognitive consideration of negative possible outcomes (see Schwarz, 1990).

Resolving the question of how negative affect alters cognitive processes is beyond the scope of this article (cf. Wegener & Petty, 1994), but we do suggest that the most likely explanation for the seeming discrepancies lies in the possibility that different negative emotions have different consequences. Our procedures found that anger, embarrassment, and simple unpleasant arousal led to risky choices, apparently because of a failure to think things through. Meanwhile, past work on persuasion and social judgment has often found that sadness led to the opposite pattern of thinking all the more about possible bad outcomes (e.g., Clore et al., 1994). In our own Study 5 we found this too: Sad people differed from others in assessing the probability of losing the safe lottery, in the subjective impact of that possible loss, and in the degree to which they made their decision on the basis of not wanting to lose. Thus, the broad pattern may be that sadness and possibly other low-arousal forms of negative affect cause people to think about possible bad outcomes, whereas high-arousal forms of emotional distress cause people to ignore them.

Concluding Remarks

For centuries, writers and playwrights have depicted human tragedy as resulting from a tragic flaw inside the individual that leads to his or her downfall. Several generations of psychological theory have provided different views about the nature of these tragic flaws, such as deep, dark urges for one's own destruction (Menninger, 1966).

The present results offer a view of human self-destructiveness that may not be deep and dark but that does involve a tragic flaw. When people become upset, they take risks that seem ill-advised, at least in light of rational analysis. Furthermore, it appears that being upset causes people to abandon that very light of rational analysis in making such decisions. Undoubtedly the capacity for such rational analysis is one of the greatest treasures of human nature, and it is sad to realize how easily emotional distress can induce people to spurn that treasure—often with costly and tragic results. The combination of high arousal and unpleasantness appears to be crucial: Neither feeling bad nor feeling aroused was alone sufficient to elicit such irrational, self-defeating patterns of choice. These aroused, bad moods cut short rational consideration of options, promote risky choices, and hence leave people at the mercy of long odds. When they are upset, they seem not to recognize that they are stacking the deck against themselves.

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