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Alternative Reference Points and Outcome Evaluation: The Influence of Affect

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Two studies examined the effect of affective states on decision outcome evaluation under the presence or absence of salient alternative reference points. Alternative reference points exist when there are 2 possible referents from which an outcome can be evaluated, and the outcome is judged as good from the perspective of one referent and bad from the perspective of the other. The results support a motivational process of evaluating outcomes in which individuals select the reference point that allows them to maintain positive mood or improve negative mood. Mood measurements taken before and after the task revealed that those in positive moods maintained their mood whether or not they had alternative reference points in the evaluation of their outcomes. Those in negative affective states improved their mood only when there was an alternative reference point that allowed the outcome to be compared favorably; when there was no such alternative reference point, they maintained their negative mood.

Keywords: mood maintenance, alternative reference points, outcome evaluation, reverse outcome bias, decision making

Every day, people make decisions and later often reflect on those decisions and evaluate their outcomes. This evaluation does not occur in a vacuum; rather, it is a context-dependent process (Kahneman & Tversky, 1979; Loewenstein, Thompson, & Bazerman, 1989). A decision option is likely to be evaluated in the context of other available choice alternatives, based on the knowledge of other outcomes that might have been received had a different choice been made (counterfactual alternatives), and whether the alternative choice outcome is better or worse than the one that actually occurred (Boles & Messick, 1995; Sullivan & Kida, 1995).

It is often the case that more than one reference point exists from which outcomes can be evaluated, and these different reference points may provide conflicting information about the "goodness" of the outcome. That is, from the perspective of one reference point, the outcome will be evaluated positively, but from the perspective of another, it will be evaluated negatively. For example, consider a situation in which individuals are faced with two options that vary in terms of risk. If they choose the more risky option and receive a negative outcome, they may consider what might have been had they chosen the less risky option, where a negative outcome would not have been as bad as the ones they actually received. In this case, decision makers are disappointed in the negative outcomes they received, and they may also evaluate their decisions even more negatively knowing that they would have been better off had they chosen the less risky option. Thus, the alternative outcome serves as a reference point by which people may retrospectively evaluate their decisions.

In a series of studies, Boles and colleagues (Boles & Messick, 1995; Larrick & Boles, 1995) clarified the conditions under which one reference point will be more focal than another in the decision evaluation process. They found that an alternative reference point is likely to carry greater weight in the evaluation process when (a) there is certainty that the counterfactual alternative would have been received had another choice been made, (b) salient others receive the alternative outcome, or (c) the alternative outcome is qualitatively different than the outcome received (i.e., the alternative outcome is better or worse than the one received).

We add to this stream of research by considering the influence of affective states (mood, emotions) on the post hoc evaluation of decision outcomes when the decision maker has alternative reference points. Mano (1992) considered the impact of decision makers' affective states on the decision process and its outcomes "one of the most important new frontiers facing the study of judgment and choice" (p. 216). Other authors have also encouraged work integrating research paradigms from the emotion and decision-making areas in an effort to better understand the interplay between emotion and behavior (e.g., W. W. van Dijk & Zeelenberg, 2002). To date, however, most of the research connecting affect with decision making has focused on how emotions affect the decision itself (i.e., which option decision makers choose) and neglected to consider people's subsequent emotions after the de-

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cision has been made. In this article, we fill this gap in the literature by examining (a) how decision makers' initial affective states influence their decision evaluations and (b) how these evaluations influence their subsequent affective states.

Affect and Decision Making

The last two decades have seen a burgeoning interest in the relationships between decision-making processes and affective states. Many of these studies have investigated these relationships by examining the influence of decision makers' mood on risk-taking behavior. Regarding risk-taking behavior, one of the most consistent findings in the decision-making literature is prospect theory's notion that losses loom larger than gains (Kahneman & Tversky, 1979). This is explained by an S-shaped value function that is convex (and steeper) in the loss domain and concave in the gain domain, with the decision maker's reference point at the center of the S. Decisions among options above the reference point are in the gain domain, and decisions below the reference point are in the loss domain. People tend to be risk-averse when considering potential gains and risk-seeking when faced with potential losses. In other words, to avoid a loss, decision makers are often willing to embrace riskier options than they would if the outcomes of the decision only involved gains.

The evidence from studies by Isen and colleagues, however, suggests that in high-risk situations, positive mood is associated with more risk-averse behavior than is neutral or negative mood, whereas in low-risk situations, a reversal often occurs and positive mood is associated with increased risk-seeking behavior (Isen & Geva, 1987; Isen, Nygren, & Ashby, 1988; Isen & Patrick, 1983). Thus, the general prediction of prospect theory appears to be moderated by decision makers' affective states. Decision makers in positive moods may be more willing to choose riskier options when faced with low-risk situations involving potential gains, and may be less willing to choose riskier options when faced with high-risk situations involving potential losses.

A motivational explanation of this behavioral pattern is offered by mood maintenance theory (e.g., Mittal & Ross, 1998). Mood maintenance theory suggests that affect motivates behavior and that people often engage in mood management strategies (Thayer, 1996; Watson, 2000), such that those who are experiencing positive affect are motivated to maintain their positive affective states. Mood maintenance theory can be incorporated into a broader theory of mood management, which proposes that when choosing among alternatives, people take into consideration the possible impact of their choices on their subsequent mood (Loewenstein, Weber, Hsee, & Welch, 2001).

Mood management theory suggests that people experiencing positive affective states will be motivated to engage in behaviors and cognitions that have the highest potential for *maintaining* their positive affective states, whereas people experiencing negative affective states will be motivated to engage in behaviors and cognitions that have the best potential for *repairing* their negative affective states. According to this theory, people in positive affective states will not take high risks due to their affectively enhanced sensitivity to losses (Isen et al., 1988), but people in negative affective states will take high risks in order to obtain the higher potential associated gains that would allow them to repair their negatively valenced mood (Mittal & Ross, 1998). Expanding mood management theory to cognitive evaluation processes would lead one to expect that people evaluate their decisions and the outcomes of those decisions in ways that enable them to maintain their positive or repair their negative affective states.

Study designs for testing mood management theory typically involve inducing positive or negative affect and then presenting decision makers with choices of gambles involving differing levels of risk. If decision makers in negative moods chose riskier options and those in positive moods choose safer options, this was considered supportive of mood management theory. Specifically, if decision makers in negative affective states chose riskier alternatives, it was assumed that they used a mood-repairing strategy consistent with mood management theory. The natural follow-up question, largely overlooked by previous research, is: Does the mood repair strategy work? Do people in negative moods indeed improve their mood by using this strategy?

Outcome Bias and Decision Affect Theory

To answer these questions, we must consider the outcomes of the decisions. If people in negative moods choose riskier alternatives and have a positive outcome, then naturally one would expect their mood to improve. In contrast, if decision makers have negative outcomes, one would expect their negative moods to continue or even worsen. This is consistent with research on the outcome bias (Baron & Hershey, 1988), which suggests that people evaluate their decisions positively if they receive a positive outcome, and negatively if they receive a negative outcome. But over repeated choices with high risk, winning outcomes will occur less frequently than losing ones. It follows that if the only way to repair negative affective states is to receive a winning outcome, and winning outcomes are received less frequently than losing ones, this mood-repairing strategy, on average, will not work. How, then, can decision makers in negative moods more successfully repair their moods?

We suggest that in certain situations, choosing the less risky alternative will repair decision makers' moods regardless of the outcome they receive. That is, when alternative reference points are available for evaluating outcomes, both positive and negative outcomes of less risky options may improve decision makers' moods. Those who experience negative outcomes may actually improve their mood by cognitively distorting the valence of the loss they received by evaluating it from a different reference point. Research has shown that when alternative possible outcomes are made salient, people do indeed take the alternative outcomes into consideration when evaluating their actual outcomes (Boles & Messick, 1995). In fact, Boles and Messick documented a reverse outcome bias, which is the tendency to evaluate a decision as good when the outcome is bad, and bad when the outcome is good. Participants rated the quality of a decision leading to loss that was smaller than the loss for an unchosen alternative higher than they rated the quality of a decision that led to a gain that was smaller than the gain for an unchosen alternative.

These findings are consistent with decision affect theory, which suggests that individuals take into account the emotions that they anticipate they would experience as a result of the outcomes of their decisions (Mellers, 2000; Mellers & McGraw, 2001). Indeed, Mellers and McGraw (2001) replicated the reverse outcome bias using different research designs, suggesting that "comparison ef-

fects are powerful enough to make an imagined loss that is the better of two losses more pleasurable than an imagined gain that is the worse of two gains" (p. 211). In other words, people engage in counterfactual thinking when they consider what outcome they would have received had they chosen the other option, and compare it with the outcome they actually did receive.

The research described above suggests that the availability of multiple reference points gives decision makers the option to differentially evaluate their decisions by focusing on a particular reference point as the basis of their evaluations. When alternative evaluation strategies are available, decision makers are likely to choose ones that enable them to maintain positive affective states or repair negative affective states. To test this, we used a paradigm used previously by Boles and Messick (1995) that provides two possible reference points from which to evaluate outcomes. One is the status quo before the decision (having won or lost nothing), and the other is an alternative outcome that would have been received with certainty had the decision maker chosen the other option. This paradigm involves a set of two gambles, and the decision maker can choose to play only one. Both gambles have the same probability of winning (.25) and losing (.75), but one (Gamble B) has more variance in potential gain and loss than the other (Gamble A). In Gamble B, participants either win $500 or lose $100, whereas in Gamble A, participants either win $100 or lose $0. Gambles A and B are contingent on the same event (the drawing of a ball from an urn), and thus decision makers always know what they would have received had they chosen to play the other gamble instead.

Those who choose Gamble B, whether they win or lose, should respond the way the outcome bias literature suggests when they evaluate their outcomes. They will evaluate their outcome positively if they win (because the winning outcome is better than the alternative winning outcome of Gamble A) and negatively if they lose (because the losing outcome is worse than the alternative losing outcome of Gamble A). Thus, Gamble B choosers will have no opportunity to cognitively distort the valence of the outcome they receive. Those who choose Gamble A, however, have salient alternative reference points that they can use for evaluating their outcomes. The winning outcome is good but not as good as the alternative winning outcome of Gamble B; the losing outcome may be disappointing, but is better than the alternative losing outcome of Gamble B. Thus, Gamble A choosers can use a strategy of focusing on the reference point that allows them to evaluate either winning or losing outcomes in a positive way.

Using this paradigm, we examined four ways that decision makers evaluate their outcomes—two that are affective and two that are primarily cognitive. On the basis of the affect-as-information (Clore, Gasper, & Garvin, 2001) and affect infusion models (Forgas, 1995), we suggest a conceptual sequencing between these outcomes in which the affective outcomes inform the cognitive ones.[1] First, a discrete emotion that is most closely associated with evaluating decision outcomes is regret, a negative emotion that arises when one realizes that had an alternative been chosen, the outcome would have been better (E. van Dijk & Zeelenberg, 2005). Regret diffuses into general affective tone (positive or negative), and these affective states then serve as information for decision makers as they evaluate their satisfaction with their outcomes and the quality of the decisions they made.

Mood management theory predicts that people in both positive and negative affective states will evaluate past decisions and the outcomes of those decisions positively if possible, in order to maintain their positive moods or repair their negative moods. When alternative reference points exist that allow people to interpret a negative outcome as not as negative as it could have been (in this example, when Gamble A is chosen, played, and lost), people will focus on the reference point that enables them to evaluate their decisions and their outcomes positively (they lost $0 but could have lost $100 had they chosen Gamble B). When they win, they will focus more on the fact that they won and less on the fact that they could have won more by choosing Gamble B. As a result, decision makers in positive moods are likely to maintain their positive moods, and decision makers in negative moods are likely to repair their negative moods.

Hypothesis 1: Regardless of the outcome they receive, decision makers in both positive and negative moods will evaluate their decisions positively when salient alternative reference points are available, in terms of (a) regret, (b) satisfaction, and (c) decision quality.

Hypothesis 2: Regardless of the outcome they receive, decision makers in positive moods will maintain their positive moods, and decision makers in negative moods will repair their moods when salient alternative reference points are available.

Study 1a

Method

Participants. One hundred five undergraduate business students at a midwestern university received partial course credit for their participation. Fifty-two percent of the sample was female; the mean age was 20.5 (SD = 2.14), and participants were randomly assigned to experimental conditions.

Procedure and experimental design. Participants received the first of three separate stimulus packets, which collected demographic information and included the mood manipulation. The mood manipulation asked participants to "write two to three paragraphs about a very sad (or happy) event that has happened to you. You should describe the event briefly and then talk about why it made you feel sad (happy)." In the control condition, participants were asked to "write about an ordinary everyday event that has happened to you. You should describe the event briefly and then talk about why you chose the event." Forty-four people were in the positive mood condition, 39 were in the negative mood condition, and 22 were in the neutral mood condition.

Once the first packet was completed, participants were given a second packet that included the mood manipulation check. Positive mood was measured with the adjectives *happy* and *pleased*, and negative mood with the adjectives *unhappy* and *sad*. Participants indicated on a 7-point scale (where 0 = *not at all* and 6 =

[1] We note that we do not empirically test this conceptual sequencing, but rather use it as a heuristic for understanding the decision evaluation process. Although many scholars support a sequencing like ours, in which regret precedes satisfaction (e.g., Zeelenberg & Pieters, 2004), others see it differently. For example, Tsiros (1998) did not conceptualize satisfaction as following regret, but rather thought they were independent of each other.

extremely) the extent to which each adjective described how they were feeling at that moment. The internal consistencies (α) of the positive and negative mood scores were .68 and .73, respectively. Because the theories on which we built our hypotheses are relevant to decision makers' affective tone (i.e., positive affective tone means high positive mood and low negative mood), and in the interest of parsimony, a scale was developed that assesses participants' affective tone on a single dimension by subtracting the negative mood scores from the positive mood scores (α of the combined scores was .75, and the positive and negative mood scores correlated −.47).

Participants then read about a game of chance that had two versions from which they could choose. Gamble A had a 25% chance of winning $100 and 75% chance of losing $0. Gamble B had a 25% chance of winning $500 and a 75% chance of losing $100. Because the outcome of these gambles were described as being contingent on the same event (the drawing of a ball from an urn), the player would know with certainty what he or she would have received had the other gamble been chosen instead. After reading about these gambling choices, participants were asked to choose which gamble they would like to play.

When participants had made their choice, they then received the outcome information, the dependent variable measures, a second mood adjective checklist, and a final manipulation check to ensure they understood the contingency structure of the gambles. Gambling outcomes (win/lose) were randomly assigned to participants on the basis of their choice of gamble. If they chose Gamble B, they were equally likely to receive outcome information that said that they had won $500 or lost $100, and if they chose Gamble A that they had won $100 or lost $0.[2] After receiving this outcome information, participants responded to the dependent variables: how satisfied they were with the outcome, how much regret they felt about their choice, and how they rated the quality of their decision (i.e., the decision to play Gamble A or B), and then they reported their mood. The first two outcome evaluation items were on 7-point scales that ranged from 1 (*not at all*) to 7 (*extremely*), and the last item was also on a 7-point scale that ranged from –3 (*a terrible decision*) to 3 (*an excellent decision*), with 0 as the midpoint of the scale. These dependent measures were identical to those used in Boles and Messick (1995). The mood adjective checklist contained the same items as at Time 1, but in a different random order. The internal consistency reliability coefficients for the positive and negative mood dimensions for this measurement were .75 and .83, respectively.

Results and Discussion

Manipulation checks. Decision makers' affective tone was affected by the mood manipulation, $F(2, 102) = 6.64$, $p < .01$. Participants in the positive mood condition had a mean rating of 4.55, those in the control condition a mean of 3.91, and those in the negative mood condition a mean of 1.51. Post hoc least significant difference tests revealed that the positive and negative mood conditions differed from one another ($p < .01$) and that the negative condition differed from the neutral condition ($p < .05$), but the neutral condition and positive mood conditions did not differ from one another. We excluded the control participants ($n = 22$) from further analysis, which led to a 2 (positive or negative mood) × 2 (winning or losing outcome) factorial analysis.

To test the hypotheses of interest in this study, only the responses of A choosers are relevant. If B choosers were included in the analysis, it would confound the results as the alternative reference point information is qualitatively different for B choosers than for A choosers. This omission of the few B choosers ($n = 13$) does not mean they are uninteresting, just that they were not the population of interest in this study. Choosing B was not influenced by mood condition, $\chi^2(1, N = 83) = .004$, *ns*, and as expected B choosers were supremely satisfied if they won ($M = 6.38$) and dissatisfied if they lost ($M = 2.17$), expressed less regret if they won ($M = 1.30$) than if they lost ($M = 3.50$), and showed the typical outcome bias by rating the quality of their decision as better if they won ($M = 2.62$) than if they lost ($M = 1.50$).

With B choosers excluded, the final data analysis included 70 participants; 37 in the positive mood condition, 33 in the negative mood condition; 38 who won the gamble ($100), and 32 who lost the gamble ($0). We used a 2 × 2 multivariate analysis of variance (MANOVA) to analyze the dependent variables: satisfaction with the outcome, regret, decision quality, and a change in affective tone. We computed the change in affective tone score by subtracting the affective tone score at Time 1 from the affective tone score at Time 2. The multivariate MANOVA was significant for the mood manipulation, $F(4, 63) = 3.44$, $p < .05$, partial $\eta^2 = .18$; for outcome, $F(4, 63) = 12.09$, $p < .01$, partial $\eta^2 = .43$; and for the interaction between the two, $F(4, 63) = 3.87$, $p < .01$, partial $\eta^2 = .20$. Univariate tests are discussed below, and the means for each condition can be found in Table 1.

Regret. There was a main effect of outcome on regret, such that winners experienced more regret ($M = 3.63$) than losers ($M = 1.34$), $F(1, 66) = 44.38$, $p < .01$, partial $\eta^2 = .40$. There were no main effects for mood and no interaction between mood and outcome for regret. In general, these results do not support Hypothesis 1(a) but show the reverse outcome bias found by Boles and Messick (1995), such that A choosers experienced more regret over a positive outcome (winning) than over a negative outcome (losing), due to the salient alternative reference point.

Satisfaction. There were no main effects for either mood or outcome on satisfaction. The fact that, across outcomes, those in positive mood were not more satisfied than those in a negative mood suggests that a simple mood-congruency effect is not supported by the data (i.e., that people evaluate their outcomes to be consistent with their moods). There was a significant interaction between mood and outcome, $F(1, 66) = 6.87$, $p < .01$, partial $\eta^2 = .09$, such that those in positive moods who lost were more satisfied ($M = 5.88$) than those in negative moods ($M = 4.47$), but those in positive moods who won were less satisfied ($M = 4.40$) than those in negative moods ($M = 5.11$). It appears from these results that those in positive moods were more sensitive to the alternative reference point information than those who were in negative moods. That is, the knowledge that a better outcome could have been achieved given another choice reduced their

[2] Because for analysis purposes we wanted as close to equal numbers in each condition as possible, we provided outcome information that reflected a 50-50 chance of winning or losing, rather than the 25-75 chance described in the materials. No participant provided any insight into this discrepancy at the time he or she received outcome information, and all were fully debriefed about the manipulation after their participation.

Table 1
Study 1 Condition Means and Standard Deviations

Condition	Study	Regret	Satisfaction	Decision quality	Initial affective tone	Subsequent affective tone
Negative mood						
Lose	1a	1.53 (1.36)	4.47 (2.07)	2.40 (0.91)	2.27 (4.53)	3.80 (3.00)
	1b	1.92 (1.32)	3.23 (1.59)	2.23 (0.83)	1.38 (2.72)	1.69 (3.77)
	1c		2.22 (1.37)		−0.38 (2.48)	−0.37 (2.09)
Win	1a	3.78 (1.70)	5.11 (1.37)	1.67 (1.03)	0.83 (3.62)	3.61 (2.64)
	1b	1.92 (1.56)	6.50 (0.80)	2.42 (0.67)	1.00 (4.24)	4.17 (4.26)
	1c		5.83 (1.58)		−0.19 (2.67)	1.95 (2.05)
Positive mood						
Lose	1a	1.18 (0.39)	5.88 (1.65)	2.35 (1.00)	5.71 (3.27)	6.24 (2.61)
	1b	1.33 (0.65)	3.75 (1.29)	2.25 (0.96)	5.17 (2.66)	5.00 (3.10)
	1c		2.21 (1.35)		2.46 (1.95)	1.16 (1.83)
Win	1a	3.50 (1.73)	4.40 (1.67)	1.85 (1.04)	4.55 (3.94)	3.80 (3.99)
	1b	1.53 (0.74)	6.40 (1.59)	2.33 (0.90)	5.13 (3.20)	4.40 (5.29)
	1c		6.37 (1.06)		2.42 (2.10)	3.81 (1.99)

Note. $N = 70$ for Study 1a, $N = 52$ for Study 1b, and $N = 185$ for Study 1c. Standard deviations are in parentheses.

satisfaction with a winning outcome, and knowing a worse outcome was avoided increased their satisfaction with a losing outcome more than it did for those in a negative mood. Overall, these results support Hypothesis 1(b).

Decision quality. There was a main effect for outcome on ratings of decision quality, $F(1, 66) = 6.61$, $p < 01$, partial $\eta^2 = .09$, which also replicates the reverse outcome bias. Losers rated themselves as having made better quality decisions ($M = 2.38$) than did winners ($M = 1.76$). It is worth noting that this reverse outcome bias occurred even when people were rating the quality of their own decisions (the prior findings for the reverse outcome bias occurred when judging others' decisions). There was no main effect for mood and no interaction between mood and outcome on ratings of decision quality. As with regret, these results do not support Hypothesis 1(c), but rather reflect the reverse outcome bias (Boles & Messick, 1995).

Change in affective tone. A main effect for mood was found for change in affective tone, $F(1, 66) = 10.69$, $p < .01$, partial $\eta^2 = .14$. People in positive moods changed their mood less from Time 1 to Time 2 ($M = -0.16$) than those in negative moods ($M = 2.21$). These results indicate that those in positive moods maintained (but did not improve) their mood whether they won or lost (neither of the means for change in affect for positive mood participants were different from zero or from one another), whereas those in negative moods improved their mood whether they won or lost (the improvement in mood for negative affect people was not significantly different whether they won or lost). These findings provide strong support for Hypothesis 2. Considered together with the satisfaction ratings, these findings suggest that even though people in positive and negative moods both find reasons to be satisfied with their outcomes (the mean level of satisfaction between positive and negative mood participants did not differ), those in negative moods appear to incorporate this information into their affective states to a greater extent than do those in positive moods.

An alternative explanation for our experimental results could be that over time, people who are put into negative moods in an experimental situation such as ours may simply improve their mood regardless of the intervening task. This phenomenon could account for the pattern of change in affective tone observed in the experimental condition data. Thus, we designed a second study to rule out this explanation.

Study 1b

The pattern of the change in affective tone from Study 1a showed that when people won, those in negative moods appeared to focus on the positive component of winning more than on the negative component of receiving an outcome that was worse than the alternative. When they lost, however, they took into account that even their losing outcome is better than the alternative. But because positive mood people overall maintain (but do not improve) their mood, and negative mood people improve their mood in both outcome conditions, one might reasonably wonder whether the improvement in mood may be due solely to the fact that negative moods are aversive and temporal and would improve regardless of the reference point used to evaluate the outcome.

To rule out this possible explanation, in the second study the alternative outcome information was not linked in a causal way to the winning and losing outcomes that decision makers received, thus rendering it inappropriate as an alternative reference point. That is, decision makers chose between the same two gambles that were used in Study 1a, but were explicitly told that the outcome of the gambles would be based on two separate events (two separate draws from an urn). If one chooses Gamble A and wins $100, one cannot know what would have occurred had Gamble B been chosen instead, because that game is not played and its outcome is unknown. Thus, the alternative outcome information that leads to regret or rejoicing should no longer be a component of the evaluation of the outcome received. Only the winning or losing dimension should affect decision makers' satisfaction with the outcome and their change in affect, if any.

In this study, Gamble A choosers should exhibit striking differences from the results of the experimental condition in Study 1a; we expect that Gamble A choosers will not experience the positive effects of counterfactual thinking, but instead their satisfaction, regret, decision quality, and mood will be driven solely by the main effects of mood manipulation and the gamble outcome. If our

hypotheses are correct, we would expect to see those in a positive mood maintain their mood regardless of outcome as in Study 1a, and those in a negative mood to improve their mood if they win, but not if they lose. If those in a negative mood improve their mood regardless of outcome, then the change in mood can be attributed to a general tendency for those in a negative mood to improve their mood over time.

Method

Participants. Participants were 66 undergraduate business majors in a midwestern university who participated as part of a class exercise. The 26 female and 40 male participants had a mean age of 22.89 years ($SD = 2.23$).

Procedure and design. The method, procedure, and dependent variables were identical to those used in Study 1a, but two aspects of the design differed from Study 1a. One was that there was no control condition for the mood manipulation. The second was that the outcomes of the chosen and unchosen gambles were not contingent on the same event. Specifically, decision makers were told: "The gamble not chosen will never be played and its outcome will not be known." The design of this study was a 2 (positive or negative mood) × 2 (winning or losing outcome) factorial design.

Results

Manipulation check. The Affective Tone scale revealed that those who wrote happy stories were in a more positive mood ($M = 4.94$) than those who wrote sad stories ($M = 0.94$), $F(1, 64) = 19.28$, $p < .01$, partial $\eta^2 = .23$. For the first mood assessment, the internal consistency of the positive and negative mood scales were .69 and .76, respectively; for the second assessment, the internal consistency values were .72 and .89 for positive and negative mood, respectively.

As in Study 1a, we analyzed separately the judgments of Gamble B players who experienced either the best overall outcome (when they won $500) or the worst overall outcome (when they lost $100) and did not include them in the final analysis. There were 14 individuals who chose Gamble B. Although 10 of these 14 individuals were in a negative mood, a chi-square comparing frequencies of positive and negative mood participants who chose A or B was not significant, $\chi^2(1, N = 66) = 2.41$, *ns*. Gamble B choosers were more satisfied when they won ($M = 6.00$) than when they lost ($M = 3.43$), $t(12) = 2.58$, $p < .05$; experienced little regret overall but were more regretful if they lost ($M = 1.86$) than if they won ($M = 1.00$), $t(12) = 3.29$, $p < .01$; and showed a typical outcome bias with winners rating the quality of their decision higher than losers ($M = 2.29$ vs. $M = 0.57$), $t(12) = 2.22$, $p < .05$.

The final analysis, then, was a 2 × 2 MANOVA on the remaining 52 participants who chose Gamble A. Multivariate analyses were significant for outcome, $F(4, 45) = 18.69$, $p < .01$, partial $\eta^2 = .62$, and for mood, $F(4, 45) = 2.91$, $p < .05$, partial $\eta^2 = .21$, but not for the interaction between mood and outcome, $F(4, 45) = 1.07$, *ns*. The means for each condition can be found in Table 1, and the univariate tests for the dependent variables are discussed below.

Regret. There were no main effects or interactions on ratings of regret. This result is as expected as there was no alternative outcome information available to contribute to feelings of regret. The mean regret rating across conditions was 1.62 (on a 1–7 scale).

Satisfaction. A main effect occurred for outcome on ratings of satisfaction, $F(1, 48) = 59.46$, $p < .01$, partial $\eta^2 = .55$. Winners rated themselves as much more satisfied ($M = 6.44$) than losers ($M = 3.48$). There were no main effects for mood or interactions with mood on ratings of satisfaction.

Decision quality. There were no main effects for outcome or mood on ratings of quality of the decision, and the interaction term was also not significant. The typical outcome bias was not observed, and, on average, those who chose Gamble A whether they won or lost felt that they had made a high-quality decision by choosing the less risky gamble ($M = 2.31$ on a –3 to + 3 scale).

Change in affective tone. We found a main effect for mood on change in affective tone, $F(1, 48) = 6.37$, $p < .05$, partial $\eta^2 = .12$. Those in negative moods improved their mood more ($M = 1.68$) than those in positive moods ($M = -0.48$). However, this main effect was qualified by a significant Mood × Outcome interaction, $F(1, 48) = 3.90$, $p < .05$, partial $\eta^2 = .08$, which addresses the question this second study was designed to test. This interaction shows that only winners who were in a negative mood improved their mood ($M = 3.17$), whereas losers in a negative mood maintained their negative mood ($M = 0.31$). That is, those in a negative mood improved their mood only when they won. Thus, the transitivity of affect can be ruled out as an explanation for the change in affective tone for those in a negative mood in Study 1a.

Study 1c

On the basis of a reviewer's recommendation, we conducted a study with additional participants to serve as a second comparison condition that was designed to examine whether participants in the less risky condition would respond in similar ways if they did not have the opportunity to choose their gamble. One hundred eighty-five upper level undergraduate business students from a university in the northwest United States participated in this study; 55% were female, and their mean age was 21.9 years old. Participants were not given a choice of gambles; all played the hypothetical Gamble A where they could win $100 or lose nothing. Participants were randomly assigned to mood condition and to outcome. Mood and satisfaction were measured in the same manner as described above (regret and decision quality could not be measured because participants did not make a decision).

Results indicated that the mood manipulation was effective; those in the positive mood condition had a significantly more positive affective tone ($M = 2.45$) than those in the negative mood condition ($M = -0.32$), $F(1, 183) = 69.09$, $p < .01$, $\eta^2 = .27$. MANOVA omnibus results for the effects of mood manipulation and outcome (win/lose) on change in affective tone and satisfaction showed a significant main effect for the mood manipulation, $F(2, 178) = 13.82$, $p < .01$, partial $\eta^2 = .06$, and gamble outcome, $F(2, 178) = 155.44$, $p < .01$, partial $\eta^2 = .64$, and like those who played Gamble A in Study 1b, the interaction term was not significant, $F(2, 178) = 1.00$, *ns*. The univariate test results follow, and the means for each condition can be found in Table 1.

The univariate test for satisfaction was not significant for the mood manipulation, $F(1, 179) = 1.43$, *ns*, but was significant for outcome, $F(1, 179) = 302.89$, $p < .01$, partial $\eta^2 = .63$, and the

interaction between mood and outcome was not significant, $F(1, 179) = 1.58$, *ns*. The univariate test for the effects of mood manipulation and outcome on change in affective tone revealed main effects for mood manipulation, $F(1, 181) = 9.36$, $p < .01$, partial $\eta^2 = .05$, and outcome, $F(1, 181) = 51.25$, $p < .01$, partial $\eta^2 = .22$, but again the interaction was not significant, $F(1, 179) = 0.92$, *ns*. These results show that the participants in this study who were in initial negative moods improved their moods only when they won, unlike the participants in Study 1a who improved their moods regardless of the outcome. Additionally, the participants in this study indicated higher satisfaction only when they won, unlike the Study 1a participants, who reported higher satisfaction regardless of the outcome. As a whole, these results suggest that the Study 1a participants responded the way they did due to counterfactual thinking about "what might have been" had they chosen the alternative gamble and that the results were not due to something about the nature of the gamble itself.

Study 1 Post Hoc Analyses

A reviewer suggested that although the data for Studies 1a–c were collected at different times, it would be interesting to compare results across these three studies by combining all of the data and treating "study" as a substantive variable. This would allow more direct and rigorous tests of whether the participants in Study 1a differed from participants in Studies 1b and 1c in their evaluations and moods. The key differentiator between the studies should be the reactions of participants to winning or losing: In Study 1a, where the alternative reference points were salient, participants should show the hypothesized effects for winning and losing, but in Studies 1b and 1c, the effects should not be found. Thus, the Study × Outcome interaction should be significant if our hypotheses were supported.

Because the sample sizes varied across study (and thus the cell sizes of the experimental conditions were not equal), we tested this using multiple moderated regression, specifying an equation for each of the four dependent variables. For each equation, we included main effects for both experimental manipulations and two dummy coded variables for study (Study 1a was the comparison group), and each of the two-way interactions terms. For change in affective tone and satisfaction, we were able to include data from Study 1c; because we did not measure regret and decision quality in Study 1c, the tests for these variables only included Studies 1a and 1b.

The results of these regression equations can be found in Tables 2 and 3. Of the six interaction terms capturing the moderating effect of study on the effect of winning or losing on each of the four dependent variables (Model 2 of each equation), five are significant. This indicates that the effect of winning and losing generally varied across the three studies and, in particular, that the effect of winning and losing was different in Study 1a than in Studies 1b and 1c. Overall, the participants who lost in Study 1a (who had salient alternative reference points) reported lower regret, higher decision quality, higher satisfaction, and higher improvement in affective tone compared with losing participants in the other two studies (who did not have salient alternative reference points). Taken together, these results provide further—and more rigorous—support for our hypotheses.

Study 2

By ruling out the alternative explanations that negative mood participants improve their moods regardless of the intervening task and that participants report high satisfaction without using alternative reference points, Studies 1b and 1c strengthened our conviction that the observed pattern of change in affective tone is indeed caused by mood management. In Studies 1a–c, however, participants were presented with a hypothetical scenario, where they were asked to imagine the outcomes they received. Thus, it is possible that the results we found were merely artifacts of the simulation and would not hold when participants were playing for actual money. To rule out this alternative explanation, we conducted an additional study in which participants played the game with real outcomes.

Method

Ninety-three students from a different large midwestern university who were enrolled in an upper level management course

Table 2
Study 1: Regression of Regret and Decision Quality on the Experimental Manipulations and Study

	Regret			Decision quality		
Variable	1	2	3	1	2	3
Study 1b[a]	−.27**	.11	.12	.13	−.04	−.09
Outcome[b]	.42**	.69**	.70**	−.16	−.35*	−.39*
Mood manipulation[c]	−.13	−.12	−.11	.02	.02	−.03
Study 1b × Outcome		−.56**	−.58**		.33*	.40
Study 1b × Mood		−.04	−.06		−.05	.03
Mood × Outcome		.04	.02		.04	.11
Study 1b × Mood × Outcome			.03			−.12
F	14.44**	11.89**	10.11**	1.79	1.71	1.48
ΔR^2	.27**	.11**	.00	.04	.04	.00

Note. $N = 122$.
[a] Dummy coded where Study 1a = 0, Study 1b = 1. [b] Lose = 0, Win = 1. [c] Negative = 0, Positive = 1.
* $p < .05$. ** $p < .01$.

Table 3
Study 1: Regression of Change in Affective Tone and Satisfaction on the Experimental Manipulations and Study

	Change in affective tone			Satisfaction		
Variable	1	2	3	1	2	3
Study 1b[a]	−.05	−.14	−.17	.02	−.28**	−.21*
Study 1c[b]	−.10	−.39**	−.27*	−.21**	−.64**	.49**
Outcome[b]	.26**	.08	.22	.56**	−.06	.14
Mood manipulation[c]	−.30**	−.33**	−.18	−.03	.10	.32**
Study 1b × Outcome		.12	.17		.44**	.33**
Study 1b × Mood		.01	.05		−.01	−.11
Study 1c × Outcome		.33**	.12		.74**	.50**
Study 1c × Mood		.16	−.05		−.04	−.29*
Mood × Outcome		−.14	−.36*		−.06	−.38**
Study 1b × Mood × Outcome			−.07			.15
Study 1c × Mood × Outcome			.30*			.32**
F	15.90**	9.47**	8.71**	56.75**	45.63**	39.33**
ΔR^2	.17**	.05**	.02*	.43**	.15**	.01**

Note. $N = 305$.
[a] Dummy coded. [b] Lose = 0, Win = 1. [c] Negative = 0, Positive = 1.
* $p < .05$. ** $p < .01$.

participated in the study in exchange for course credit. Fifty-four percent of the sample was female; the mean age was 22.2 years ($SD = 4.00$). The procedure mirrored Study 1a, with three exceptions. First, we did not include a control condition for the mood manipulation. Second, participants played for real money, where those who chose Gamble A could win $1.00 or lose nothing, and those who chose Gamble B could win $5.00 or lose $1.00. Third, mood was measured using the 20-item Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). Participants indicated on a Likert-like scale (where 0 = *not at all* and 6 = *extremely*) the extent to which each adjective described how they were feeling at that moment. Principal components analysis indicated two components corresponding to positive and negative affect, with coefficient alphas at pretest and posttest of .87 and .72, respectively, for positive affect, and .85 and .84, respectively, for negative affect. As in Study 1, we created one scale of affective tone using positive and negative affect scores.

Results

A manipulation check revealed that participants' affective tone was significantly affected by the mood manipulation, with those in the positive mood condition having higher positive affective tone ($M = 2.09$) than those in the negative mood condition ($M = 1.13$), $F(1, 91) = 9.74$, $p < .01$, $\eta^2 = .10$. Unlike the first two studies with imaginary outcomes, a much larger percentage of the decision makers chose to play Gamble B (34%). We suspect that this was because the valence attached to a potential loss of $1.00 if they played Gamble B was much less than the corresponding loss of $100 in the first two studies, even though the outcome was only simulated. Because of the higher frequency of decision makers who chose Gamble B, we did not exclude them from the analyses as in Studies 1a and 1b.

Multivariate MANOVA results indicated main effects for mood, $F(4, 81) = 3.44$, $p < .05$, partial $\eta^2 = .15$; gamble choice, $F(4, 81) = 2.89$, $p < .05$, partial $\eta^2 = .12$; and outcome, $F(4, 81) = 5.42$, $p < .01$, partial $\eta^2 = .21$. The two-way interaction between gamble choice and outcome was also significant, $F(4, 81) = 6.51$, $p < .01$, partial $\eta^2 = .24$. Univariate MANOVA results are below, and the means for each condition can be found in Table 4.

Regret. Neither the outcome nor the mood manipulation had a main effect on regret, but gamble choice was significant, $F(1, 84) = 6.46$, $p < .05$, partial $\eta^2 = .07$, such that A choosers

Table 4
Study 2 Condition Means and Standard Deviations

Condition	Mood	Outcome	Initial affective tone	Subsequent affective tone	Regret	Satisfaction	Decision quality
Gamble A	Negative	Lose	0.59 (1.90)	1.87 (1.32)	1.33 (0.77)	5.00 (1.75)	1.67 (0.91)
		Win	1.24 (1.36)	1.82 (1.56)	3.31 (1.75)	4.62 (1.76)	1.54 (1.16)
	Positive	Lose	2.03 (1.17)	1.90 (1.25)	1.08 (0.29)	4.75 (1.06)	2.50 (0.90)
		Win	2.01 (1.50)	2.42 (2.16)	2.71 (1.86)	4.82 (1.63)	1.29 (1.16)
Gamble B	Negative	Lose	1.70 (1.38)	1.91 (1.44)	1.44 (0.53)	3.22 (1.86)	1.00 (1.12)
		Win	1.74 (1.53)	3.84 (1.30)	1.00 (0.00)	6.40 (0.89)	2.80 (0.45)
	Positive	Lose	2.32 (1.43)	1.75 (1.26)	1.80 (1.42)	2.53 (1.25)	1.07 (1.44)
		Win	1.67 (0.35)	1.43 (0.35)	1.00 (0.00)	5.33 (1.53)	1.33 (2.89)

Note. $N = 93$. Standard deviations are in parentheses.

experienced more regret (2.10) than B choosers (1.50). This finding is qualified by the significant interaction between gamble choice and outcome, $F(1, 84) = 16.77$, $p < .01$, partial $\eta^2 = .17$, such that A choosers experienced more regret if they won ($M = 2.97$) than if they lost ($M = 1.23$), whereas B choosers experienced more regret if they lost ($M = 1.67$) than if they won ($M = 1.00$). Like Study 1a, these results do not support Hypothesis 1(a), but rather show the traditional outcome bias among B choosers, and the reverse outcome bias among A choosers.

Satisfaction. Similar to the results for regret, the mood manipulation had no effect on the satisfaction reported by the decision makers, and neither did gamble choice. Outcome did exert a main effect, however, $F(1, 84) = 13.62$, $p < .01$, partial $\eta^2 = .14$, such that those who won were more satisfied ($M = 5.00$) than those who lost ($M = 3.96$). This main effect was qualified by a significant interaction between gamble choice and outcome, $F(1, 84) = 16.77$, $p < .01$, partial $\eta^2 = .17$, such that B choosers were supremely satisfied if they won ($M = 6.00$) and dissatisfied if they lost ($M = 2.79$), whereas A choosers were equally satisfied whether they won ($M = 4.73$) or lost ($M = 4.90$). Neither of the other two-way interactions were significant, nor was the three-way interaction. These results provide further support for Hypothesis 1(b), in that participants with salient alternative reference points through which they could evaluate either outcome as positive (Gamble A) were equally satisfied with their outcome whether they won or lost, whereas those without salient alternative reference points (Gamble B) were only satisfied if they won.

Decision quality. There were no main effects for mood, gamble choice, or outcome on decision quality. The interaction between mood and outcome was significant, $F(1, 84) = 4.92$, $p < .05$, partial $\eta^2 = .06$, such that those in positive moods rated their decisions better if they lost ($M = 1.70$) than if they won ($M = 1.30$), whereas those in a negative mood rated their decisions better if they won ($M = 1.89$) than if they lost ($M = 1.44$). The interaction between gamble choice and outcome was also significant, $F(1, 84) = 8.34$, $p < .01$, partial $\eta^2 = .09$, such that A choosers rated their decisions better if they lost ($M = 2.00$) than if they won ($M = 1.40$), whereas B choosers rated their decisions better if they won ($M = 2.25$) than if they lost ($M = 1.04$). As with regret, these results do not support Hypothesis 1(c) but show the traditional outcome bias among B choosers and the reverse outcome bias among A choosers.

Change in affective tone. Similar to the results for Study 1a, there was a significant main effect of the mood manipulation on change in affective tone, $F(1, 84) = 13.21$, $p < .01$, partial $\eta^2 = .14$, such that people in positive moods changed their mood less ($M = -0.08$) than those in negative moods ($M = 0.96$). There were no significant main effects for gamble choice or outcome, nor any significant two-way interactions. The three-way interaction between the mood manipulation, gamble choice, and outcome, however, was significant, $F(1, 84) = 4.58$, $p < .05$, partial $\eta^2 = .05$. This effect showed that the A choosers who improved their mood most were those in negative moods who lost ($M = 1.28$), but winners who were in either positive ($M = 0.42$) or negative moods ($M = 0.61$) also improved their moods. In contrast, the only B choosers who greatly improved their mood were those in negative moods who won ($M = 2.10$). These results, like Study 1a, show strong support for Hypothesis 2, in that participants with salient alternative reference points (Gamble A) maintained their positive moods or repaired negative moods whether they won or lost, whereas those without alternative reference points through which they could evaluate either outcome as positive (Gamble B) only improved their moods if they won.

Discussion

In these studies, we examined the effect of being in a positive or negative mood on participants' evaluations of their decisions and on their subsequent moods. The outcomes had two possible reference points for evaluation: (a) the status quo and (b) a counterfactual alternative outcome that would have been received had the other option been chosen. Decision makers' satisfaction was affected by the interaction of their mood and their outcome. Those in positive moods were more satisfied with losing outcomes than they were with winning outcomes, which suggests that in making these evaluations, they focused more on the counterfactual alternative reference points (which were better than the winning outcome they received or worse than the losing outcome they received) than did negative mood participants. One should not interpret this finding, however, as evidence that negative mood participants are not sensitive to counterfactual alternative information. In fact, negative mood participants were equally satisfied with losing outcomes as winning ones, which indicates that counterfactual alternatives did play a role in their evaluations—just not as strong a role as for positive mood participants.

Regarding subsequent mood, participants in positive moods maintained their positive mood, and those in negative moods improved their mood whether they won or lost in both simulated (Study 1a) and real (Study 2) gambles. This effect is entirely consistent with our general interpretation of the results based on mood management motivation. That is, it shows that the participants used different reference points in the outcome evaluation process depending on whether they won or lost. Participants who won focused on the fact that they won, which allowed them to maintain positive moods or repair negative moods, whereas participants who lost focused on the fact that they did not lose as much as they could have had they chosen the other gamble, and also maintained positive moods or repaired negative moods. This finding is particularly clear when contrasting this result with participants who did not have alternative reference points that allowed them to evaluate both winning and losing positively. Supplemental analyses indicated that participants in Study 1b (who were told that the outcome of the unchosen gamble would not be known), Study 1c (who did not have the opportunity to choose their gamble), and Gamble B choosers in Study 2 all exhibited the well-known outcome bias (Baron & Hershey, 1988); they showed positive evaluations and improvements in mood only when they won the gamble.

One surprising finding in the supplemental analyses was that although there was a significant difference in subsequent affective tone between Studies 1a (salient alternative reference points) and 1c, this difference was not evident between Studies 1a and 1b. We suggest that this is the result of two methodological issues. First, the number of participants across these two studies was fairly small, and thus statistical power to find a significant three-way interaction was relatively low. Second, the initial affective tone of participants who were subject to the negative mood manipulation varied quite a bit across these two studies. Negative mood partic-

ipants in Study 1a who lost the gamble began with higher affective tone and had more variability across participants than did the participants in the same condition in Study 1b. The Study 1a participants did indeed improve their mood quite a bit when they lost, whereas the Study 1b participants did not. We suspect that had the Study 1a participants started at the same level of affective tone (and with the same variance) as the Study 1b participants, the difference in change in affective tone would have likely reached statistical significance.

Theoretical implications. We offer implications of our findings for four different theoretical streams. First, our results extend mood management theory by considering not only the decisions people make to manage their moods but also their post hoc evaluations of those decisions and their subsequent moods. Mood management theory suggests that people often make decisions with the goal of maintaining positive moods or repairing negative moods (Mittal & Ross, 1998). Although people in negative moods may choose more risky options in hopes of repairing their mood, our results suggest that this strategy often does not work. Instead, in situations in which alternative reference points are salient, choosing the less risky option is likely to repair their mood, regardless of the actual outcome of the decision.

Moreover, our findings suggest a possible cognitive mechanism by which people manage their moods. Whereas previous mood management research primarily focused on the decision itself (i.e., what options people choose to manage their moods), we examined individuals' evaluations of their decisions after they realized their outcomes. What we found was that when salient alternative reference points were available, people were motivated to use the reference point that provided the most positive interpretation of their decision. This reference point selection allowed them to rate their decisions as satisfactory regardless of whether they won or lost, and helped them maintain their positive mood or repair their negative mood. This extension of mood management theory, then, suggests that people engage in mood management processes not only before they make decisions but also after they receive the outcomes of those decisions. Reference point selection may be the cognitive mechanism that explains how people manage their moods postoutcome.

Second, our research has implications for prospect theory. As noted earlier, prospect theory holds that an individual's willingness to embrace risk follows an S-shaped value function, such that people grow exponentially more willing to choose risky options the farther into the loss domain they go, and exponentially less willing to choose risky options the farther into the gain domain they go (Kahneman & Tversky, 1979). The center of this value function is the individual's reference point, and individuals perceive values below the reference point as losses and above the reference point as gains. Research on reference points in prospect theory has revealed that reference points may shift due to various factors. Heath, Larrick, and Wu (1999) found that individuals' reference points shifted as a result of goals they had set; instead of using their normal behavior as reference points, they used their set goals as reference points. For example, a salesperson may set a goal for the next month that exceeds the usual amount sold. The sales goal now becomes the reference point, and if the salesperson exceeds the usual amount but does not reach the new goal (according to Heath et al.), this would be perceived as being in the loss domain.

Our research suggests that individuals engage in a motivational process for choosing their evaluation reference points after they know their outcomes. If a salient alternative reference point exists that allows individuals to evaluate the outcome of their decision more positively, they will likely choose that reference point. In the example provided in the above paragraph, our results suggest that this salesperson would tend to focus on previous performance as the reference point (rather than the set sales goal), as it would allow the salesperson to feel more satisfied with her or his performance. The implication for prospect theory, then, is that people appear to shift their reference points post hoc, redefining the gain and loss domains after they realize their outcomes.

Third, our research has implication for mood congruency theory. The basic mood congruency phenomenon is a tendency for people to perceive their environments and process information in ways consistent with their current mood (see Blaney, 1986, for a comprehensive review of mood congruency research). A number of studies in decision making have shown that people in good moods are more optimistic in their judgments and choices, whereas people in bad moods show more pessimism when engaged in the same tasks (Isen, Shalker, Clark, & Karp; 1978; Mayer, Gaschke, Braverman, & Evans, 1992; Wright & Bower, 1992). In our studies, no support was found for a mood congruency explanation for those in a negative mood. This theory would suggest that those in negative moods would be more likely to focus on the negative component of the outcome, but this clearly did not occur.

The affect-as-information model (e.g., Clore et al., 2001) offers a potential explanation for the lack of mood congruency effects. Because decision makers' initial moods were measured before they decided which gamble to play and before the gamble was played, mood was not tied to the outcome that was evaluated and thus did not have an associative effect of outcome evaluation. The fact, however, that initial mood did affect participants' satisfaction with the outcome through its interactive effect with outcome (win or loss) suggests a simpler explanation for the lack of mood congruency effects: Given the choice of two possible reference points for evaluating an outcome, people appear to be *motivated* to choose the reference point that allows them to either maintain their positive mood or improve their negative mood.

Finally, our findings have implications for research on the outcome bias. Outcome bias research has typically found that people evaluate their decisions as good if their outcome was good, and bad if their outcome was bad (Baron & Hershey, 1988). Boles and Messick (1995) documented a reverse outcome bias under certain conditions in which decision makers had salient alternative reference points. Our results found both types of bias, such that when no salient alternative reference point was available, our decision makers exhibited the typical outcome bias in their ratings of satisfaction, regret, and decision quality. In contrast, when a salient alternative reference point was available, our decision makers exhibited the reverse outcome bias in their ratings of regret and decision quality. Interestingly, however, their ratings of satisfaction did not reflect the reverse outcome bias in either of our studies. Instead, these decision makers selected the reference point that allowed them to evaluate their decision as satisfactory, regardless of the outcome. This suggests a more nuanced phenomenon that cannot be explained by either the typical outcome bias or the reverse outcome bias.

Practical applications. Research on happiness and overall well-being has revealed numerous practical applications that people can implement relatively easily to improve their moods (Ryan & Deci, 2001). The primary application of the present studies is relatively straightforward: When people face decisions with alternatives that vary in terms of risk, choosing the less risky option is likely to lead to higher decision satisfaction and improve their mood regardless of the outcome. Although our purpose was simply to examine whether taking risky strategies is effective for mood repair, we offer illustrative examples where the decision strategy of choosing less risky alternatives may be applied.

Recruitment and selection. Managers are sometimes faced with recruitment and selection decisions between candidates that would require different levels of investment. Imagine a situation in which a manager is choosing between offering a position to a "star performer" or to a "good performer." If the manager chooses to recruit and hire the star, he or she may expend significant organizational resources in recruiting costs and in a high compensation package. Although the performance of this star has been strong in the past, it is unclear whether it will continue to be so in the future (the high performance may have been due to opportunity or factors at the star's previous organization, or it may simply regress to the mean). Thus, the decision to offer the position to the star is a high-risk/high-reward one; if the star performs well in the future, it could pay off well for the organization, but if the star's performance declines, the organization experiences a large loss. However, offering the position to the good performer is a relatively safe bet; this person will likely not perform at as high a level as the star, but if he or she does not perform as well as expected, the organization experiences less of a loss. According to mood repair theory, a manager in a negative mood may select the star in a bid to make a big win, but if the strategy fails, the organization experiences a big loss. In contrast, if the manager selects the merely good performer, he or she may experience a small win or a small loss. Both of these latter outcomes would be perceived as being positive due to salient alternative reference points. This dynamic may reasonably be applied to sports positions as well. A professional sports coach who offers a position to a good performer at a relatively smaller salary than a star experiences a win if the player performs well, and less of a loss if the player performs poorly, relative to offering the position to a star.

Negotiation. Negotiating partners often have multiple reference points by which they can determine their negotiating strategies (e.g., reservation values or market prices; Blount, Thomas-Hunt, & Neale, 1996). These reference points can be affected by mood; for example, Carnevale (2008) found that negotiators in positive moods shifted their reference points into the gain side of the S-shaped prospect theory curve (Kahneman & Tversky, 1979), such that they were willing to make more concessions than negotiators who were not in positive moods. According to mood repair theory and the affect infusion model (Forgas, 1998), negotiators in negative moods would be likely to shift their reference points into the loss side of the curve and adopt risky strategies; because these strategies are more risky, however, they are less likely to be successful. A negotiator who adopts a more conservative strategy may not experience the big personal win that could be realized from a more aggressive/risky strategy, but will also not risk experiencing a big loss. For example, adopting a more aggressive (risky) strategy may result in a better personal outcome for the negotiator, but it may also result in no agreement, and moreover, the negotiating partner may even refuse to do business with our negotiator in the future due to his or her aggressive strategy. However, a less aggressive/risky strategy may not result in as large of a personal win but also would not risk severing the relationship with this negotiating partner. Thus, a more conservative strategy could be perceived as positive if an agreement is reached or not, relative to what could have happened using the more risky strategy.

Furthermore, our research suggests that negotiators may shift their reference points as they evaluate their outcomes after the negotiation is completed. For example, a seller may not have achieved market value in the negotiation, but did achieve an outcome higher than her or his reservation value. In this case, the seller is likely to use the reservation value as her or his reference point in evaluating her or his outcome, as it would allow the most positive evaluation of the outcome ("I may not have received market value, but I received a price much higher than my reservation value"). The seller would be motivated to use this alternative reference point because it would allow her or him to evaluate her or his outcome positively and maintain a positive mood or repair a negative mood.

Safety. Situations like the Deepwater Horizon oil spill in the Gulf of Mexico highlight the fact that employees often make decisions that have serious safety implications. A British government report on Transocean (the company that owned the platform) released 2 months before the incident indicated that on more than one occasion, rig managers engaged in "bullying, aggression, harassment, humiliation and intimidation" of the employees, and this had "potential safety implications" (Walt, 2010, para. 3). An academic advisory panel found that British Petroleum had "incentives that encourage cost-cutting and cutting of corners—that reward workers for doing it faster and cheaper, but not better" (McGregor, 2010, para. 3). In organizational environments like this, employees may be tempted to bypass safety procedures to gain a higher incentive—a risky strategy that potentially pays off for the employee but has serious consequences if it leads to an accident. Mood repair theory would suggest that this is particularly likely in a climate of negative employee–manager interactions like this one. A safer strategy of following guidelines may not pay off as well, but it is also less likely to result in disaster. Thus, employees who follow this safer strategy can evaluate their outcome positively even if they do not achieve an incentive ("I may not have received the incentive, but I know the rig is safe").

Investments. Investors make decisions involving risk any time they invest in (or divest) a particular holding. Imagine a situation in which investors are deciding which of two stocks to invest in: One is a relatively safe blue-chip stock, and the other is more risky. The relative performance of these two stocks, furthermore, is dependent on market movement; if the stock market as a whole improves, the riskier stock will realize higher gains. Conversely, if the market declines, the riskier stock will realize higher losses. Our research suggests that the investors will likely be more satisfied by investing in the less risky stock regardless of whether the market improves or declines. If the market improves, their investment pays off, and if the market declines, they lose less than they would have with the riskier stock.

Limitations and future research. In the first study, the gambles our participants chose among and the outcomes they

evaluated were hypothetical ones. To address this limitation, in the second study we had participants play the gambles for real money. However, the amounts of money involved in Study 2 were small, which may raise questions about whether the results generalize to evaluations of decisions involving more substantial amounts. We would expect that counterfactual alternatives play an even stronger role in the evaluation of more substantial outcomes, though perhaps more participants would choose the safe gamble when a substantial amount could be lost by losing the more risky gamble. However, these speculations need to be empirically substantiated by future research.

We propose that a complete model for studying affect and decision making should examine (a) how one's affective state influences risky choice, (b) how affect influences a decision maker's judgment and evaluation strategies, (c) how the employment of these strategies impacts the decision maker's subsequent affect, and (d) how the resulting affective state impacts subsequent decision making. Prior research has primarily addressed only the first part of this model. The studies reported here speak to the second and third parts of the model, and to how these parts are related to each other.

Future research should examine how the affect associated with various outcomes impacts future choice. One might ask, for example, whether decision makers' affect at Time n can predict behavior at Time n + 1, and how outcomes at n + 1 impact subsequent affect and then choice at n + 2. In addition, future research could examine the transitivity of affect across several trials and across a variety of outcomes. It would also be interesting to investigate whether, when individuals know there will be several trials, that information changes their mood management strategies. That is, do they use the strategy on a trial-by-trial basis, or do they in some way use a longer term strategy that considers the average outcome across a number of sequential trials? Improvements in computer technology make such questions related to sequential decision making easier to ask and answer, and this is a ripe area for future research.

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