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Motivated Prediction of Future Feelings: Effects of Negative Mood and Mood Orientation on Affective Forecasts

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This article examines the role of motivational factors in affective forecasting. The primary hypothesis was that people predict positive emotional reactions to future events when they are motivated to enhance their current feelings. Three experiments manipulated participants' moods (negative vs. neutral) and orientation toward their moods (reflective vs. ruminative) and then assessed the positivity of their affective predictions for future events. As hypothesized, when participants adopted a reflective orientation, and thus should have been motivated to engage in mood-regulation processes, they predicted more positive feelings in the negative than in the neutral mood condition. This pattern of mood-incongruent affective prediction was not exhibited when participants adopted a ruminative orientation. Additionally, within the negative mood condition, generating affective forecasts had a more positive emotional impact on reflectors than on ruminators. The findings suggest that affective predictions are sometimes driven by mood-regulatory motives.

Keywords: affective forecasting; mood regulation; mood incongruence; reflection; rumination

When people imagine themselves in the future, they do more than simply envision the external events and outcomes that they are likely to encounter. People also frequently contemplate how they will feel when particular events take place. They may consider the kinds of emotions they will experience, the intensity of their emotional reactions, and how long those feelings will last. Such affective forecasts have important implications because they guide people's choices, decisions, and social behavior, and thus researchers have begun to examine factors that influence this type of self-prediction (for reviews, see Loewenstein & Schkade, 1999; Wilson & Gilbert, 2003). Our research examines a self-regulatory function that may be served by people's predictions concerning their future feelings. We propose that individuals sometimes use affective forecasts to regulate their current affective states. In particular, to the extent that people are currently experiencing unpleasant moods and are motivated to elevate their feelings, they may be inclined to predict relatively positive reactions to an upcoming event.

THE ROLE OF MOTIVATION IN AFFECTIVE FORECASTING

Most of the emerging research on affective forecasts focuses on assessing their accuracy and suggests that affective forecasts are prone to systematic error. The most prevalent of these is the impact bias, wherein people overestimate the impact of future events on their emotional reactions (Wilson & Gilbert, 2003). The research has also shed considerable light on cognitive processes underlying prediction, in that the degree of bias has been linked to the kinds of information people consider and neglect when generating their predictions. Affective forecasts are more prone to bias to the extent that people focus exclusively on the target event itself rather than on other events that will also affect their feelings (i.e., focalism; Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000), underappreciate their ability to cope with negative events (i.e., immune neglect; Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998) or their tendency to make positive events seem ordinary and understandable (i.e., ordinization neglect; Wilson & Gilbert, 2003), base their predictions on faulty intuitive theories (Igou, 2004), or construe events in idealized or extreme ways (Buehler & McFarland, 2001; Wilson & Gilbert, 2003).

Another cognitive source of error in affective forecasts has been documented in research examining hot–cold empathy gaps (Loewenstein, 1996; Loewenstein & Schkade, 1999). People often fail to anticipate factors that will influence their future reactions (including visceral, emotional, and motivational states) if those factors are not impinging on them when they make their forecasts. People in cold states have difficulty estimating how they will respond when they are later in hot states (e.g., when hungry, in pain, or sexually aroused). These hot–cold empathy gaps suggest that forecasters do not place sufficient weight on states that they are not currently experiencing.

Although previous research has identified several cognitive determinants of affective forecasts, it has paid relatively little attention to motivational processes that may influence prediction. This is not to suggest that the affective forecasting literature has ignored motivation, as it has emphasized possible motivated processes quite heavily in other ways. For example, researchers have explored motivational processes that intervene between prediction and actual experience (e.g., coping mechanisms that mitigate the impact of negative events; Gilbert et al., 1998; motivational states that influence people's actual emotional reactions; Loewenstein, 1996; Loewenstein & Schkade, 1999) and thereby contribute to error. However, to date, the research has not explored the influence of motivation on the affective predictions themselves.

Our proposal is that people's affective forecasts are sometimes driven by current self-regulatory motives. In particular, people may be inclined to generate more positive affective forecasts when they are motivated to elevate their current moods. Imagine a person who has just received some sad or distressing news and is consequently motivated to alleviate her distress. As her thoughts turn toward upcoming events and activities—summer vacation, the concert this weekend, or even a hot bath after work—she may exaggerate the pleasure that she will derive. Emphasizing the pleasure that she will experience in the future may help to alleviate her current distress. In sum, people may sometimes generate positive affective forecasts for upcoming events as a mood-regulation strategy in an attempt to elevate their current moods.

This proposal is consistent with research on mood-regulation processes (Thayer, Newman, & McClain, 1994), indicating that people engage in a variety of cognitive strategies to repair negative moods, including the recruitment of positive memories and self-evaluations (e.g., Dodgson & Wood, 1998; Joormann & Siemer, 2004; McFarland & Buehler, 1997; Rusting & DeHart, 2000). It seems plausible that people's thoughts about themselves in the future, and particularly thoughts involving emotion, could also serve a mood-regulation function. Indeed, theory and research suggest that the anticipation of positive experiences can enhance people's current feelings (Bryant, 2003; Elster & Loewenstein, 1992; MacLeod & Conway, 2005; Oettingen & Mayer, 2002). For example, Elster and Loewenstein (1992) have explicated the process of savoring future events, wherein people derive pleasure from the anticipation of desirable events. Given that contemplating desirable future events can produce positive emotional reactions, it seems plausible that people might sometimes exploit their predictions of future feelings to repair current unpleasant feelings.

It is important to note that we are not offering a motivational account for the impact bias in affective forecasts. Our research cannot address issues of bias and accuracy directly because we did not assess actual affective reactions to the target events. Rather, our primary concern was to understand factors that influence the positivity of affective predictions and how these predictions may be used to regulate current affect. Affective predictions can have important psychological consequences whether they turn out to be accurate or not. They have been theorized to influence people's choices, behaviors, and current feelings (Loewenstein & Schkade, 1999; Wilson & Gilbert, 2003) even before the target event occurs. Thus, research exploring motivational determinants and consequences of affective predictions has important implications.

EFFECTS OF NEGATIVE MOOD AND MOOD ORIENTATION

A common paradigm for demonstrating that a judgment is motivationally driven involves inducing a negative motivational state (e.g., generating a negative mood, threatening self-esteem) and examining whether the degree of positivity in judgment increases (e.g., Brown & Gallagher, 1992; Dunning, Leuenberger, & Sherman, 1995; McFarland & Alvaro, 2000). If it does, this suggests that the phenomenon is motivationally driven—that people generate positive judgments in an attempt to alleviate the negative state. The current studies used a variant of this research approach by examining the effects of negative mood on affective predictions.

Previous research indicates that people react to negative mood states in one of two ways. Often, a mood-congruent response pattern is revealed, wherein negative moods prompt more negative self-relevant thoughts than, neutral or positive moods. This pattern has been prevalent for many kinds of judgments (for a review, see Sedikides, 1992), including outcome predictions (e.g., Johnson & Tversky, 1983; Kavanagh & Bower, 1985; Salovey & Birnbaum, 1989). Mood-congruency effects appear to occur because moods prime similarly valenced associations, memories, and self-evaluative thoughts (Bower, 1981). On some occasions, however, a mood-incongruent response pattern is revealed, wherein negative moods prompt more positive self-relevant thoughts than neutral or positive moods do. This pattern provides evidence of motivated reasoning because it suggests that people attempted to cope with negative feelings by actively generating positive cognitions (e.g., Dodgson & Wood, 1998; Forgas & Ciarrochi, 2002; McFarland & Buehler, 1997; Sanna, Turley-Ames, & Meier, 1999).

It is important to note that although mood-incongruency effects have emerged for several types of self-relevant judgments (e.g., social comparisons, memories, self-evaluations), they have not yet been documented in studies pertinent to prediction. Research examining effects of mood on outcome predictions (i.e., predictions of the types of events that are likely to occur) has consistently revealed mood-congruency effects (e.g., Johnson & Tversky, 1983; Kavanagh & Bower, 1985; Lyubomirsky & Nolen-Hoeksema, 1995; Salovey & Birnbaum, 1989; Sedikides, 1992). Even closer to home, the research examining hot–cold empathy gaps, which concerns the degree of correspondence between people's current feelings states and the state being predicted (Loewenstein, 1996; Loewenstein & Schkade, 1999) implies that people's affective forecasts tend to be congruent with their current states. For example, people who are currently hungry or sexually aroused tend to predict a stronger impact of hunger or sexual arousal in the relevant future situation. The consistent evidence of mood congruency in the domain of prediction may seem puzzling given the emerging evidence of mood incongruency in other domains. A possible explanation, however, is that the research on prediction has not revealed mood-incongruency because it has not yet explored the moderating role of mood-regulatory motives.

Previous research in our lab (McFarland & Buehler, 1998) has shown that one factor that predicts people's mood-regulation efforts is the type of orientation (ruminative vs. reflective) that they adopt toward their feelings. A ruminative orientation is characterized by a sense that one's feelings are confusing, a sense of feeling compelled or driven to focus on feelings, an inclination to focus repetitively on the causes and consequences of one's distress, and a perceived inability to repair moods (e.g., Nolen-Hoeksema, 1991; Wood, Saltzberg, Neale, & Stone, 1990). A reflective orientation, in contrast, is characterized by a sense that one's feelings are clear, an openness to exploring negative feelings, a desire to distract oneself from overanalyzing feelings, and a perceived capacity to repair moods (e.g., Mayer & Salovey, 1997; Salovey, Hsee, & Mayer, 1993; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995).

The distinction between mood orientations is central the present research because it allowed us to determine when people would be most motivated to alter their current moods—and thus most likely to generate positive affective forecasts in response to a negative affective state. Specifically, when people adopt a reflective orientation to their moods, they should generate more positive affective forecasts when they are experiencing negative moods than when they are experiencing neutral moods (i.e., a mood-incongruency pattern). This pattern would provide evidence of motivated prediction. When people adopt a ruminative orientation, they should not exhibit this pattern; indeed, research on rumination suggests that they will generate less positive affective forecasts when they are experiencing negative moods than when they are experiencing neutral moods (i.e., a mood-congruency pattern). Our own previous research on motivated memory offers preliminary support for these hypotheses (McFarland & Buehler, 1998). Participants who were subtly induced to adopt a reflective orientation recruited mood-incongruent memories, whereas those induced to adopt a ruminative orientation recruited mood-congruent memories.

It is worth noting that our second hypothesis—that a ruminative orientation would elicit mood-congruent prediction—was not the central concern in this research because we were most interested in identifying motivated processes. Nevertheless, given previous evidence that ruminating on negative affect prompts mood-congruent cognitions (Lyubomirsky & Nolen-Hoeksema, 1995), it seemed plausible to expect mood-congruent affective predictions.

THE PRESENT RESEARCH

The main goal of our research was to examine whether people's affective predictions are used to regulate their current moods. The studies were based on the research paradigm used previously to study motivated memory (McFarland & Buehler, 1998). We manipulated participants' mood (negative vs. neutral mood) and mood orientation (reflective vs. ruminative orientation) and then asked them to predict their affective reactions to future events. The primary hypothesis was that participants in the reflective orientation condition would generate mood-incongruent affective predictions (i.e., more positive predictions in the negative mood condition than in the neutral mood condition). The secondary hypothesis was that participants in the ruminative orientation condition would generate mood-congruent predictions (i.e., less positive predictions in the negative mood condition than in the neutral mood condition). Thus we expected to find an interaction between mood and mood orientation wherein mood-incongruent predictions are generated only by individuals who adopt a reflective orientation.

For the sake of convergent validity, across studies we varied the type of mood-induction procedure and the valence of the target events. In addition, in Study 2 we assessed participants' feelings in response to generating affective forecasts. Our mood-regulation hypothesis would receive further support if participants in the negative mood condition who were induced to adopt a reflective focus—and thus to generate relatively positive predictions—reported more positive responses to their affective predictions than did those induced to adopt a ruminative orientation.

STUDY 1

Study 1 provided an initial test of our hypotheses concerning the effects of mood and mood orientation on affective forecasts. To manipulate mood, participants received either negative or relatively neutral performance feedback (Forgas, 1995; Nummenmaa & Niemi, 2004). To manipulate mood orientation, participants were presented with statements concerning people's thoughts about their moods and were asked to identify statements that captured their own current thoughts. The statements varied across participants and were designed to elicit either a reflective or ruminative mood orientation. Participants were then presented with a list of mildly positive future events, and they predicted the feelings they would experience when each event occurred. We expected that participants who adopted a reflective orientation would generate mood-incongruent affective predictions, whereas those who adopted a ruminative orientation would generate mood-congruent affective predictions.

Method

Participants

Participants were 38 university students (27 women and 11 men) ranging in age from 18 to 31 years ($M = 19.50$, $SD = 2.47$) enrolled in introductory psychology. They participated in individual sessions and received course credit.

Procedure

Participants were informed that the study was examining how gender and personality traits influence various psychological attributes, including social perceptiveness, cognitive style, and self-relevant predictions. Accordingly, they would first complete a social perceptiveness test and then a questionnaire assessing these attributes.

Manipulation of mood. Participants first completed the social perceptiveness test and received feedback that constituted the mood manipulation. The social perceptiveness test was ostensibly a well-validated test that measured the ability to make accurate judgments of people. The test involved reading about events in a woman's life and answering multiple choice questions about her. Participants were given 10 minutes to complete the test, after which the experimenter collected the test and left the room. She returned after a brief delay and presented participants with a feedback sheet that displayed ratings on six scales pertaining to aspects of social perceptiveness (1 = *very poor*; 5 = *average*; 9 = *very good*). Participants were randomly assigned to receive either below-average ratings (negative mood condition ratings ranging from 1 to 4) or slightly above-average ratings (neutral mood condition ratings ranging from 5 to 7).

After participants examined the feedback, the experimenter returned with the questionnaire that was purportedly assessing the relevant psychological attributes and assured participants of anonymity. Participants first rated the feelings they were experiencing in reaction to the test feedback (1 = *extremely positive feelings*; 5 = *neutral feelings*; 9 = *extremely negative feelings*). This question ensured that participants were focused on their mood reactions and provided a manipulation check.

Manipulation of mood orientation. Participants were then informed that the researchers were interested in the types of thoughts that people have about their current feelings. Accordingly, they were provided with a list of 12 statements that described such thoughts and were asked to select the two statements that best captured their current thoughts. To subtly manipulate the type of mood orientation that participants adopted, we randomly assigned them to two different lists of statements (see Table 1). One list (reflective orientation)

TABLE 1: Mood Orientation Manipulation: Reflection and Rumination Lists

Reflection List
 1. I don't want to dwell on my feelings.
 2. I feel like I want to do something to make myself feel better.
 3. I feel like distracting myself from these feelings.
 4. I feel like doing something that I have enjoyed in the past.
 5. I find my feelings clear and easy to label.
 6. I can't deny I'm feeling something.
 7. I find I can acknowledge any negativity I have.
 8. I am willing to attend to my feelings.
 9. My feelings can be controlled.
10. I believe I can change and improve my feelings.
11. If I know what I feel I can alter my moods.
12. I can think positively to eliminate any negativity I feel.
Rumination List
 1. I find myself focused on my feelings.
 2. I feel passive and fatigued.
 3. I find myself wondering why I feel the way I do about myself.
 4. I tend to dwell on my feelings after imagining experiences such as this.
 5. I wonder why I always react to things in the same way.
 6. I find myself ruminating somewhat about my mood.
 7. I want to be by myself and analyze my reactions more.
 8. I feel focused on myself, like I'm observing myself.
 9. I find myself thinking about what my reactions imply about the kind of person I am.
10. My feelings are mixed and not easy to label.
11. It isn't easy to change or improve my mood.
12. I am aware of my feelings but I'm not sure what to do about them.

consisted of thoughts indicating (a) an ability to clearly label one's feelings (Item 5), (b) a willingness to attend openly to one's feelings (Items 6, 7, 8), (c) a desire to distract oneself from obsessive thoughts about causes and consequences of mood (Items 1, 2, 3, 4), and (d) a perceived capacity to repair moods (Items 9, 10, 11, 12). The other list (ruminative orientation) consisted of thoughts indicating (a) a sense of confusion about feelings (Item 10), (b) an inclination to feel compelled to dwell passively on feelings (Items 2, 4, 8, 1, 6), (c) an inclination to focus repetitively on causes or consequences of mood (Items 3, 5, 7, 9), and (d) a perceived inability to repair one's mood (Items 11, 12). These specific items were derived from scales measuring rumination (Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Nolen-Hoeksema, Parker, & Larson, 1994) and reflective meta-mood experience (Salovey et al., 1995). We selected this manipulation of mood orientation because it has been shown to alter the orientation people take toward their moods without simultaneously altering the strength of their current moods (McFarland & Buehler, 1998).[1]

Affective predictions. After the mood orientation procedure, participants were presented with a list of five mildly positive events that would likely occur in the next few weeks: eating a nice meal, seeing friends or family members that you care about, drinking alcoholic beverages (or other beverages that you enjoy), watching your favorite television program, and going shopping for desired items. They predicted how they would feel when they experienced each event (1 = *extremely negative feelings*; 6 = *neutral feelings*; 11 = *extremely positive feelings*). Participants then completed a personality survey and were debriefed.

Results and Discussion

Manipulation Check

A 2 (mood: negative vs. neutral) × 2 (mood orientation: reflective vs. ruminative) analysis of variance (ANOVA) performed on participants' postfeedback feelings revealed only a main effect of mood. Participants reported more negative feelings in the negative ($M = 6.50$, $SD = 0.99$) than in the neutral mood condition ($M = 5.13$, $SD = 1.41$), $F(1, 30) = 9.50$, $p < .01$, indicating that the mood manipulation was effective.

Affective Predictions

To test the primary hypothesis, we created an index of the overall positivity of affective predictions by averaging across the five prediction items ($\alpha = .57$) and submitted this index to a 2 (mood: negative vs. neutral) × 2 (mood orientation: reflective vs. ruminative) ANOVA.[2] A significant main effect of mood indicated that the affective predictions were more positive in the negative ($M = 8.58$, $SD = 1.03$) than in the neutral condition ($M = 7.93$, $SD = .92$), $F(1, 34) = 4.75$, $p < .05$. More important, this effect was qualified by a significant Mood × Mood Orientation interaction, $F(1, 34) = 4.29$, $p < .05$ (see Table 2). As expected, reflectors predicted more pleasant affective reactions in the negative ($M = 8.78$) than in the neutral mood condition ($M = 7.52$), $t(34) = 3.01$, $p < .01$. Predictions generated by ruminators, in contrast, did not differ across the negative ($M = 8.33$) and neutral mood conditions ($M = 8.33$), $t(34) = .01$, *ns*.[3]

Thus the results provide initial support for the primary hypothesis. Participants who were subtly induced to adopt a reflective orientation generated more positive affective forecasts in the negative than in the neutral mood condition. This mood-incongruency effect suggests that people's affective predictions are sometimes driven by a desire to elevate current moods. Participants induced to adopt a ruminative orientation did not reveal this mood-incongruency effect. They also did not reveal a mood-congruency effect, which is somewhat surprising in light of previous evidence that ruminating on negative affect elicits negative cognitions (Lyubomirsky

TABLE 2: Positivity of Affective Predictions for Positive Events as a Function of Mood and Mood Orientation (Study 1)

| | Mood Orientation | |
Mood	Reflective	Ruminative
Neutral		
M	7.52_a	8.33_{ab}
SD	0.86	0.82
n	10	10
Negative		
M	8.78_b	8.33_{ab}
SD	0.81	1.26
n	10	8

NOTE: Higher values indicate more positive affective predictions. Within columns and rows, means that do not share a common subscript letter differ significantly ($p < .05$).

& Nolen-Hoeksema, 1995; McFarland & Buehler, 1998). However, several limitations of Study 1 (e.g., small sample size, low internal consistency among the forecasting items) may have reduced its power to detect effects, and thus the null effect should be interpreted cautiously.

STUDY 2

The main purpose of Study 2 was to provide convergent tests of the hypotheses that a reflective orientation will induce mood-incongruent prediction whereas a ruminative orientation will induce mood-congruent prediction. We thus used the same basic design but introduced several modifications. We manipulated mood using a visual imagery procedure rather than performance feedback. The study included a larger sample size and more prediction items, thus increasing its ability to detect effects. We also added measures to assess the emotional impact of generating affective forecasts. Participants rated the extent to which they were experiencing positive emotions as a result of generating their affective predictions. We expected that, in general, people who made more positive affective forecasts would report experiencing more positive reactions. We also had a more specific hypothesis for the participants within the negative mood condition: Participants who adopted a reflective orientation (and consequently generated relatively positive affective forecasts) would report a more positive impact of the predictions than would those who adopted a ruminative orientation. Furthermore, this effect of mood orientation should be mediated by the positivity of the affective forecasts. This pattern of emotional responses would lend further support to the idea that participants who adopted a reflective orientation were using their affective forecasts to improve their current feelings.

Note that the effect of mood orientation on reactions to affective forecasts was not expected for participants within the neutral mood condition because they would not be as motivated to improve their current feelings. We also did not have specific hypotheses concerning the effects of mood on emotional reactions to prediction within each mood orientation condition. For example, we did not predict that reflectors would experience more positive emotional reactions in the negative condition than in the neutral condition. Even if reflectors generate relatively positive affective predictions in the negative mood condition, their subsequent emotional responses may be no more positive than those of participants in the neutral condition, who were not feeling bad in the first place. In sum, the most relevant test of our mood-regulation hypothesis was to compare the emotional impact of the affective forecasts for reflectors versus ruminators within the negative mood condition.

Method

Participants

Participants were 78 introductory psychology students (55 women and 23 men) ranging in age from 17 to 31 years ($M = 19.60$, $SD = 1.65$) who participated for course credit.

Procedure

Participants were recruited for a study that purportedly examined how people's personalities related to their visual imagery and thoughts about future events. Accordingly, participants completed an anonymous questionnaire that asked them to visualize an event from their past, make predictions, and complete a personality survey.

Manipulation of mood. Participants first completed a visual imagery task that constituted the mood manipulation. They were instructed to visualize and describe either a particularly unpleasant event (negative mood condition) or a particularly neutral or mundane everyday event (neutral mood condition) that occurred in the past 2 years. Participants then rated the event's pleasantness (1 = *extremely pleasant*; 9 = *extremely unpleasant*), the vividness of their imagery (1 = *not at all vivid*; 9 = *extremely vivid*), and their current feelings (1 = *extremely positive*; 9 = *extremely negative*). This last question served as the manipulation check for the mood induction and ensured that participants were focused on their current feelings.

Manipulation of mood orientation. Participants were then randomly assigned to either the reflective or ruminative

orientation condition using the same procedure as in Study 1. That is, participants were provided with either the reflective or ruminative orientation list and selected two statements that best captured their current thoughts about their moods.

Affective predictions. Participants were then asked to generate affective predictions concerning seven mildly positive events. The events were those used in Study 1 as well as two additional items (going to an anticipated entertainment or social event and spending time listening to music). Participants predicted how they would feel when they experienced each event (1 = *extremely negative feelings*; 6 = *neutral feelings*; 11 = *extremely positive feelings*).

Emotional reactions to affective predictions. Participants were then asked to indicate how making their affective predictions influenced their current feelings. They rated their emotional response to the predictions on four dimensions (happy, satisfied, pleased, proud) using a scale ranging from 1 (*not at all*) to 7 (*extremely*). Note that we asked participants about their emotional response to making predictions rather than their general affective state because general affect may be influenced by many factors, whereas we were interested specifically in the emotional impact of generating the affective predictions. Participants then completed a personality survey and were debriefed.

Results and Discussion

Manipulation Checks

Participants' ratings of the vividness and pleasantness of the imagined event and their mood after the imagery task were each submitted to a 2 (mood: negative vs. neutral) × 2 (mood orientation: reflective vs. ruminative) ANOVA. There were no significant effects on vividness. However, as instructed, participants visualized events that were more unpleasant in the negative ($M = 7.85$, $SD = 1.16$) than in the neutral mood condition ($M = 4.41$, $SD = 1.79$), $F(1, 74) = 101.07$, $p < .001$. They also reported more negative feelings in the negative ($M = 6.87$, $SD = 1.53$) than in the neutral mood condition ($M = 4.31$, $SD = 1.81$), $F(1, 74) = 44.94$, $p < .001$. Thus the mood manipulation was effective. There were no significant effects involving mood orientation.[4]

Affective Predictions

We again created an index of the overall positivity of affective predictions by averaging across the seven items

TABLE 3: Positivity of Affective Predictions for Positive Events as a Function of Mood and Mood Orientation (Study 2)

| | Mood Orientation | |
Mood	Reflective	Ruminative
Neutral		
M	8.21$_a$	9.14$_b$
SD	0.96	0.58
n	19	20
Negative		
M	8.89$_b$	8.20$_a$
SD	0.86	1.13
n	19	20

NOTE: Higher values indicate more positive affective predictions. Within columns and rows, means that do not share a common subscript letter differ significantly ($p < .05$).

($\alpha = .67$). A 2 (mood: negative vs. neutral) × 2 (mood orientation: reflective vs. ruminative) ANOVA performed on this prediction index yielded a significant Mood × Mood Orientation interaction, $F(1, 74) = 15.62$, $p < .001$ (see Table 3). Consistent with the hypothesis, reflectors predicted more positive affective reactions in the negative than in the neutral mood condition ($Ms = 8.89$ and 8.21, respectively), $t(74) = 2.32$, $p < .05$. Ruminators predicted less positive affective reactions in the negative than in the neutral mood condition ($Ms = 8.20$ and 9.14, respectively), $t(74) = 3.29$, $p < .01$.[5]

Emotional Reactions to Affective Predictions

An index reflecting participants' emotional responses to their affective predictions was created by averaging across the four ratings ($\alpha = .89$). As anticipated, participants who generated more positive affective predictions reported experiencing more positive emotional reactions, $r(76) = .57$, $p < .001$. Moreover, a 2 (mood: negative vs. neutral) × 2 (mood orientation: reflective vs. ruminative) ANOVA performed on the emotional responses yielded a significant interaction effect, $F(1, 74) = 4.71$, $p < .05$, that supported the hypothesis. Within the negative mood condition, participants reported more positive emotional reactions when they had adopted a reflective orientation ($M = 5.13$, $SD = 1.20$) rather than a ruminative orientation ($M = 4.18$, $SD = 1.44$), $t(74) = 2.47$, $p < .05$. Within the neutral mood condition, there was not a significant difference between the emotional responses of reflectors ($M = 4.77$, $SD = 1.20$) and ruminators ($M = 5.00$, $SD = 0.84$), $t(74) = .17$, *ns*.

Within the negative mood condition, we conducted regression analyses to determine whether the effect of

mood orientation on participants' emotional responses was mediated by the positivity of their affective forecasts. The emotional responses were first regressed on mood orientation and then also on the index of affective forecasts. The effect of mood orientation on emotional responses was initially significant, $\beta = .34$, $t(37) = 2.21$, $p < .05$, and became nonsignificant when the affective forecasts were entered, $\beta = .17$, $t(36) = 1.21$, ns. The effect of the affective forecasts on emotional responses was significant after controlling for mood orientation, $\beta = .50$, $t(36) = 3.47$, $p < .001$. This pattern of effects suggests that the effect of mood orientation on emotional responses was mediated by the positivity of the affective forecasts ($z = 1.85$, $p = .06$ by Sobel test).[6]

In summary, this study provided converging support for our hypothesis concerning the effects of negative mood on affective forecasts. The mood-incongruency effect observed in Study 1 was replicated using a different mood induction, additional prediction items, and a larger sample. This effect suggests that affective forecasts were driven by the motivation to regulate current affect. Further support for this interpretation was revealed by participants' emotional responses to their affective forecasts. Within the negative mood condition, participants who adopted a reflective orientation—and thus generated relatively positive affective forecasts—reported experiencing relatively positive emotional responses. Mediational analyses suggested that adopting a reflective orientation prompted participants to generate relatively positive affective forecasts that, in turn, produced relatively positive emotional responses.

As hypothesized, participants who adopted a ruminative orientation generated mood-congruent affective predictions. It is not entirely clear why this mood-congruency effect was obtained in the present study but not in Study 1, although we do note that several features of the present study (e.g., larger sample size, more reliable prediction index) increased its power to detect effects. The finding is consistent with previous evidence that ruminating on negative affect elicits negative self-relevant predictions (Lyubomirsky & Nolen-Hoeksema, 1995).

One unexpected aspect of the results merits comment. Within the neutral mood condition, participants adopting a ruminative focus predicted more positive future feelings than did those adopting a reflective focus. We can only speculate, but perhaps when people have ruminative thoughts in the absence of sad feelings, they are better able to recognize the maladaptiveness of this style of thinking and may attempt to stop it by generating positive thoughts (see also McFarland & Buehler, 1998). We should note, however, that this effect was obtained in only one of our studies and thus should be interpreted cautiously.

Although our primary hypothesis was again supported, a potential alternative interpretation for the mood-incongruency effect is that it reflects the extremity rather than the positivity of the affective forecasts. In predictions for positive target events, extremity and positivity are confounded (i.e., more extreme predictions are also more positive). Thus cognitive processes that heighten the extremity of affective predictions would also increase their positivity. One cognitive process known to heighten the extremity of affective forecasts, independent of valence, is the tendency to focus attention narrowly on the target event itself, neglecting other factors that might temper emotional responses (Buehler & McFarland, 2001; Wilson et al., 2000). It is possible, then, that the manipulations of mood and mood orientation combined to affect the extremity of prediction by altering the degree of focus on the target event.

Consistent with this alternative account, previous research suggests that aversive motivational states narrow the scope of attention to central as opposed to peripheral cues (e.g., Derryberry & Tucker, 1994; Friedman & Förster, 2005). This research suggests that negative mood inductions could prompt forecasters to focus narrowly on the target event rather than on peripheral events and circumstances. Conceivably, a reflective orientation heightens this effect. Reflectors are open to exploring their feelings in great depth and thus may be more inclined than ruminators to understand, appreciate, and acknowledge their distress. Thus, when reflectors encounter threatening mood states, they may focus attention very narrowly on the target event, resulting in extreme predictions. According to this account, the mood-incongruency effect is attributable to cognitive processes that increase the extremity of prediction rather than to motivational processes that increase the positivity of prediction. The next study addressed this alternative account.

STUDY 3

Study 3 examined affective forecasts for negative target events. Examining negative events not only extends the generalizability of the findings but also addresses the alternative cognitive interpretation raised above. For negative events, extremity and positivity are placed in direct opposition (i.e., more extreme predictions are less positive), and thus it is possible to disentangle their role in affective forecasting. According to the cognitive, extremity account, conditions that prompt more positive predictions for positive events should prompt more negative (i.e., more extreme) predictions for negative events. In contrast, our position is that people generate positive predictions when they are motivated to regulate their current

moods. When faced with the prospect of negative events, these individuals would be inclined to minimize the emotional impact of the events (i.e., "it won't be so bad"). According to this motivational account, then, the conditions that prompt more positive predictions for positive events should also prompt more positive (i.e., less negative) predictions for negative events. Thus, the interaction pattern observed in the first two studies, wherein reflection is more likely to induce mood-incongruent prediction than is rumination, should generalize to affective predictions for negative target events.

Method

Participants

Participants were 82 introductory psychology students (53 women and 29 men) ranging in age from 18 to 26 years ($M = 19.27$, $SD = 1.08$) who received course credit for participation.

Procedure

The procedure was identical to that of Study 2 up to the point where participants generated their affective predictions. To recap, participants first completed the visual imagery task that constituted the mood manipulation (negative vs. neutral), followed by the manipulation of mood orientation (reflective vs. ruminative). Next, participants predicted their affective reactions to seven unpleasant events that could plausibly occur (having something of value stolen, discovering that a close friend wants to end your friendship, having to clean your entire house or apartment, having a serious conflict with your parents, getting a grade much lower than anticipated on an important exam, not getting invited to a desired social event that the rest of your friends will be attending, and receiving news that you have been fired from your job). Participants were asked to consider each event happening to them several months in the future and to predict the feelings that they would experience (1 = *extremely negative feelings*; 6 = *neutral feelings*; 11 = *extremely positive feelings*). Participants then completed a personality survey and were debriefed.

Results and Discussion

Manipulation Checks

Participants' ratings of the vividness and pleasantness of the imagined event and their moods after the imagery task were each submitted to a 2 (mood: negative vs. neutral) × 2 (mood orientation: reflective vs. ruminative) ANOVA. There were no significant effects on vividness. As instructed, participants visualized events that were

TABLE 4: Positivity of Affective Predictions for Negative Events as a Function of Mood and Mood Orientation (Study 3)

| | Mood Orientation | |
Mood	Reflective	Ruminative
Neutral		
M	2.79$_a$	3.13$_{ab}$
SD	0.67	1.18
n	21	21
Negative		
M	3.59$_b$	3.19$_{ab}$
SD	0.62	0.71
n	20	20

NOTE: Higher values indicate more positive affective predictions. Within columns and rows, means that do not share a common subscript letter differ significantly ($p < .05$).

more unpleasant in the negative ($M = 7.98$, $SD = 1.16$) than in the neutral mood condition ($M = 4.05$, $SD = 1.65$), $F(1, 78) = 152.03$, $p < .001$. The mood ratings indicated that the manipulation was again effective (negative $M = 6.70$, $SD = 1.36$; neutral $M = 4.24$, $SD = 1.72$), $F(1, 78) = 51.79$, $p < .001$. There were no significant effects involving mood orientation.

Affective Predictions

A 2 (mood: negative vs. neutral) × 2 (mood orientation: reflective vs. ruminative) ANOVA performed on the affective prediction index ($\alpha = .69$) yielded a significant Mood × Mood Orientation interaction, $F(1, 78) = 3.97$, $p < .05$ (see Table 4). Consistent with the hypothesis, reflectors predicted more positive affective reactions in the negative than in the neutral mood condition ($Ms = 3.59$ and 2.79, respectively), $t(78) = 3.06$, $p < .01$. The predictions of ruminators did not differ across the negative and neutral mood condition ($Ms = 3.19$ and 3.13, respectively), $t(78) = .27$, ns.

In summary, the study yielded an interaction pattern similar to those in the first two studies. The reflectors again generated mood-incongruent affective forecasts, predicting that they would react more positively to negative target events when they were in a negative mood rather than a neutral mood. This effect is consistent with the view that reflectors are motivated to put a positive spin on the future—at least as positive as possible when contemplating future misfortunes—as a means of regulating their current negative feelings. When faced with the prospect of a negative event, they appeared to minimize its likely impact and conclude that "it won't be so bad." The study did not yield support for the alternative extremity account, which implied that reflectors would generate more negative (i.e., more extreme) predictions in the negative than in the neutral mood condition.

This study extends the generalizability of the effects to a wider range of target events. One noteworthy feature of the events was that, in addition to being negative, they also appear to be somewhat less likely to occur than those in the previous studies. By replicating the pattern of effects, the study suggests that the phenomenon is robust to such differences in likelihood. This conclusion is further supported by the finding that individual prediction items (which appear to vary considerably in likelihood) yielded parallel findings (see Note 2).

GENERAL DISCUSSION

People's predictions of their future emotional reactions may sometimes be driven by their current needs and concerns. In particular, people may be inclined to generate positive affective forecasts when they are motivated to elevate their current moods. Three studies provided convergent support for this hypothesis. Individuals who were subtly encouraged to adopt a reflective orientation—and thus should have felt particularly inclined to regulate their current feelings—predicted that they would experience more positive reactions to future events when they were in a negative mood than when they were in a neutral mood. This pattern of mood-incongruent prediction suggests that participants' affective predictions were influenced by a motivation to elevate their current moods.

Although we can never rule out entirely the possibility of nonmotivational interpretations, we note that mood-incongruent judgments are typically attributed to motivated processes (e.g., mood repair or self-enhancement goals; Dodgson & Wood, 1998; Sanna et al., 1999; Sedikides & Green, 2001) and that several features of our findings are consistent with the proposed mood-regulation account. First, the mood-incongruency effect was restricted to the very individuals who should have been most inclined to repair their current moods. This specificity is important: If mood-incongruent predictions had been found among all participants, the finding could have been interpreted as a perceptual contrast effect (i.e., in contrast to their current negative moods, people's positive future emotions seemed particularly strong). However, a perceptual contrast effect does not account readily for the interaction between mood and mood orientation found in each study, given that participants were experiencing equally negative moods in both mood-orientation conditions. Second, the mood-incongruency effect emerged for negative events as well as for positive events, suggesting that it is not attributable to cognitive processes that increase only the extremity of prediction. Third, measures of the emotional impact of affective forecasts suggested that, among participants experiencing an initial unpleasant

mood, generating positive affective forecasts did indeed serve to improve subsequent emotions. Finally, a manipulation check revealed that the mood orientation manipulation produced differences in participants' reflective (vs. ruminative) tendencies, including their general desire and perceived capacity to improve current feelings. Taken as a whole, then, the findings support the conclusion that participants generated mood-incongruent predictions because they were motivated to enhance their current feelings.

One possible alternative account that merits further comment involves participants' motivation to correct for mood-related bias in their judgments. People sometimes exhibit mood incongruent judgment because they attempt to correct for contaminating influences of mood, and they over-adjust (Wegener & Petty, 2001; Wyer, Clore, & Isbell, 1999). Given that participants in a reflective state are characterized by clear feelings and openness to feelings, they may have been more likely than ruminators to recognize the potential for mood-related bias and to engage in correction processes (McFarland, White, & Newth, 2003). It is worth noting, however, that mood-correction processes are most likely when individuals both have the capacity to correct (e.g., when extraneous moods are made salient, when they are not distracted) and are highly motivated to make accurate judgments (e.g., when evaluating another person in a context where the evaluations have important consequences; McFarland et al., 2003; Wyer et al., 1999). It seems unlikely that participants would have experienced high accuracy motivation when generating anonymous affective predictions for the kinds of target events used in our research. Nevertheless, future researchers could attempt to directly measure or manipulate mood-repair and mood-correction goals to explore their roles in producing mood-incongruent prediction.

Although each study supported the primary hypothesis concerning mood-incongruent prediction, only Study 2 supported the additional hypothesis that ruminators would generate mood-congruent prediction. We can speculate as to why the mood-congruency effect in ruminators was not more reliable. It may be that the effect of rumination on prediction is stronger in situations in which people engage in full-blown rumination (e.g., Lyubomirsky & Nolen-Hoeksema, 1995). The adoption of a ruminative approach to one's moods (having certain momentary thoughts about one's feelings) is related to but not identical to a lengthy rumination episode in which one is compelled to obsessively fixate on the causes and consequences of one's mood. More generally, it may be relatively difficult to induce participants to ruminate on negative moods because it goes against a natural tendency in most people (Taylor, 1991) to think positively. Note, however, that in each

study the mood-incongruency effect exhibited by reflectors was completely eliminated in people who adopted a ruminative orientation. Thus, at least in comparison to the robust pattern of mood-incongruent prediction, the ruminative orientation did prompt predictions that were *relatively* congruent with people's current moods.

An aspect of the research paradigm that merits further comment is the multifaceted nature of the mood-orientation manipulation. The reflective focus incorporates thoughts regarding clarity of moods, openness to approaching moods, an inclination to distract oneself from analyzing moods, and an inclination to repair moods, whereas the ruminative focus reflects an absence of these factors. This manipulation was derived from theoretical models of rumination (Nolen-Hoeksema et al., 1993, 1994) and reflection (Salovey et al., 1995), and we assumed, based on prior theorizing in this area, that the components would act in unison to determine people's motivation to repair negative moods. That is, it seemed plausible that people must attend to their feelings before they can know precisely what they are feeling, and they need to know what they are feeling before experiencing an inclination to change their feelings (e.g., Salovey, Woolery, & Mayer, 2001). Given that the primary purpose of the manipulation within our research was to create conditions in which people would be motivated to repair their current feelings, we chose to include all components. Future research could attempt to isolate the components and assess their contributions to the overall effects.

Another avenue for future research is to explore the precise mechanism through which mood orientation affects people's predicted feelings. As noted previously, past research indicates that mood orientation does not appear to influence people's cognitions by altering the intensity of their moods (McFarland & Buehler, 1998). However, further research is needed to explicate the specific processes that mediate the effects. It is possible that mood orientations affect people's intention to adopt a specific goal and corresponding plan to improve their moods or their expectancies of achieving this goal if it is adopted (Heimpel, Wood, Marshall, & Brown, 2002).

Although previous research has illustrated that people use many cognitive strategies to regulate their moods (Thayer et al., 1994), we believe there is value in studying mood-regulation processes within the particular domain of affective prediction. In doing so, the present research serves to integrate two literatures—one examining mood effects on judgment and one examining affective prediction—and makes a theoretical contribution to each. The research sheds light on a theoretical puzzle concerning the effects of mood on prediction. Previous research examining the effects of

extraneous moods on prediction has yielded consistent evidence of mood congruency despite emerging evidence of mood-incongruent judgment in other domains. The present findings not only provide a clear demonstration of mood-incongruent prediction but also identify a factor (mood orientation) that may determine whether mood-congruency or mood-incongruency effects prevail.

The studies extend research on affective forecasting by focusing on motivational determinants of prediction. To date, the research has focused primarily on cognitive determinants of accuracy and bias (Loewenstein & Schkade, 1999; Wilson & Gilbert, 2003). The present work also extends a small body of research that has explored consequences of affective forecasts for people's decisions and for their emotional reactions to the pertinent events. For example, experiments have shown that predicting more positive reactions to a future event can lead people to experience more positive reactions when the event occurs (e.g., Klaaren, Hodges, & Wilson, 1994; Wilson, Lisle, Kraft, & Wetzel, 1989). Similarly, a daily-diary study examined predicted and actual affect repeatedly across time and found that positive affective predictions were associated with subsequent improvements in mood (Totterdell, Parkinson, Briner, & Reynolds, 1997). The present findings expand researchers' understanding of the emotional consequences of affective forecasts by showing that people can derive immediate affective benefits, even before the target event occurs, from positive affective predictions.

Along similar lines, it is interesting to consider whether the positive affective predictions that people generate to improve their current moods have consequences that endure after people's moods change. Long-term consequences may seem unlikely because mood by definition is a transitory state, thus effects of momentary moods on cognition are short-lived. Yet it is possible that even momentary influences on affective predictions could have enduring consequences if the predictions guide people's choices and decisions. For example, a woman who momentarily exaggerates the pleasure of her upcoming vacation to elevate her current mood may decide to extend her stay for an additional week. Her decision, although guided by a temporarily elevated affective prediction, could well have long-term emotional, social, and behavioral consequences. More generally, we see no reason to expect that affective predictions will be less impactful (in terms of guiding subsequent thoughts, feelings, and behaviors) when they are generated in the service of mood repair, although this hypothesis awaits an empirical test.

We do not mean to imply that positive affective forecasts are necessarily adaptive. Even when positive predictions are effective in elevating people's moods, they may

have other undesirable consequences, especially when they are inaccurate. Given that people base choices and decisions on affective forecasts, there can be serious costs associated with misprediction (Loewenstein & Schkade, 1999; Wilson & Gilbert, 2003). These costs would be exacerbated by any motivational factors that increase bias. Although our studies did not assess the degree of accuracy or bias in affective prediction, it seems plausible that a motivation to predict positive future feelings could sometimes heighten the impact bias for positive events. Thus, the question of whether positive affective forecasts are adaptive is a complex one, and it may involve weighing the immediate affective benefits of positive forecasts against potential costs of misprediction.

It is important to emphasize that the current findings do not contradict cognitive explanations for bias in affective forecasting (Loewenstein & Schkade, 1999; Wilson & Gilbert, 2003). Indeed, we hope that our findings will stimulate further research that explores interrelations between motivational forces and the cognitive processes identified in previous research. A plausible hypothesis derived from models of motivated reasoning (e.g., Kunda, 1990) is that the impact of motivation on people's affective forecasts may be mediated by the cognitive processes they adopt (see also Buehler, Griffin, & Macdonald, 1997). For example, a desire to predict positive future feelings may prompt individuals to engage selectively in the very cognitive processes that have been shown previously to produce highly positive affective predictions (e.g., focusing narrowly on the target event; construing the target event favorably). Future research could also explore a wider range of motivational forces. Although we focused on mood-regulatory motives, positive affective predictions could serve many other motives (e.g., task performance, self-presentation).

Finally, this research can be situated within broader literatures on mood regulation, coping, and emotional functioning. Our findings suggest that affective forecasts are a means by which people can generate positive emotions and hope in the wake of negative events, and recent research indicates that such emotions contribute to effective coping (Tugade, Frederickson, & Barrett, 2004). The findings are also related to the growing body of work that explores the relation of emotional intelligence to mood regulation (Mayer & Salovey, 1997; Salovey et al., 2001; Salovey, Stroud, Woolery, & Epel, 2002). We found that individuals who were subtly induced to adopt a reflective orientation—arguably an emotionally intelligent approach to their feelings—were able to generate affective predictions that served to regulate their moods. Future research could examine interventions that encourage people explicitly to focus on their future feelings and explore potential implications for the treatment of affective problems in clinical, counseling, educational, and work settings.

NOTES

1. A frequency analysis of the item selections in this study and subsequent studies revealed no clear favorites: Each item was selected by less than 30% of the participants.

2. Given the low internal consistency of the composite index, in this study and subsequent studies we also conducted analyses that treated the individual prediction items as levels of a repeated measures factor. These mixed-model analyses of variance allowed us to determine whether the manipulations had a similar pattern of effects across the individual prediction items. In each case, the analyses yielded the same effects and significance levels as those performed on the composite index. There were no interactions involving the item factor (ps > .20), which suggests that the individual prediction items tended to reveal comparable effects. For ease of presentation, we report the analyses performed on the composite index.

3. In this and subsequent studies, preliminary analyses included gender as a factor. There were no significant gender effects, and thus, this factor is not discussed further.

4. We conducted an independent study to provide a manipulation check for mood orientation. Participants ($n = 61$) were first exposed to the negative mood induction and mood orientation manipulation (reflection, rumination, control). Next they read brief descriptions summarizing key components of both the reflective orientation (clear feelings, openness to feelings, motivation and perceived ability to change feelings) and the ruminative orientation (confused feelings, dwelling on feelings, lack of motivation and perceived ability to change feelings) and rated their agreement that these descriptions captured their current thoughts (1 = *strongly disagree*, 7 = *strongly agree*). An index of current reflective tendency (reflection–rumination ratings) was affected by the manipulation, $F(2, 58) = 3.37, p < .05$. Participants' reflective tendency was significantly greater in the reflection condition ($M = 2.06$) than in the rumination condition ($M = 0.26$), $p < .01$, and was intermediate in the control condition ($M = 1.00$). Thus the study yielded convergent evidence for the validity of the mood orientation manipulation.

5. To further explore the effects obtained in the main study, we recruited an additional sample of 40 introductory psychology students to serve as a control group. Control participants were randomly assigned to either the negative or neutral mood condition, but they were not induced to ruminate or reflect before generating their affective predictions. Their affective predictions did not differ across the negative ($M = 8.59, SD = 0.87$) and neutral mood conditions ($M = 8.42, SD = 1.01$), $t(38) = .55$, *ns*. Thus, with the inclusion of this additional control group, the study reveals a mood-incongruency effect in the reflective condition, a mood-congruency effect in the ruminative condition, and no mood effect in the control condition. The findings imply that the natural or pre-existing mood orientation, at least in this research context, included a mixture of reflective and ruminative tendencies and that the manipulation heightened one of these tendencies through selective focus.

6. The mediation analysis was performed within the negative mood condition because, as hypothesized, the effect of mood orientation was specific to this condition. Further analyses performed on the full sample indicated that the Mood × Mood Orientation interaction on participants' emotional responses was also mediated by the positivity of the affective forecasts (i.e., mediated moderation; $z = 3.22$, $p < .001$ by Sobel test).

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