Emotion
2011, Vol. 11, No. 5, 1206–1222

1528-3542/11/$12.00 DOI: 10.1037/a0023983

Sad Mood Promotes Self-Initiated Mental Contrasting of Future and Reality

Heather Barry Kappes
New York University

Gabriele Oettingen
New York University and University of Hamburg

Doris Mayer
University of Hamburg

Sam Maglio
New York University

Self-regulation by mentally contrasting a positive future with negative reality leads people to differentiate in their goal commitments: They commit to goals when expectations of success are high and let go when expectations of success are low. On the contrary, when indulging in the positive future or dwelling on negative reality, people fail to consider expectations of success and do not form selective goal commitments (Oettingen, Pak, & Schnetter, 2001). Whereas prior research has examined the effects of experimentally induced mental contrasting, we address sad mood as a contextual influence promoting self-initiated mental contrasting. Across various mood inductions, sad moods—which are associated with problem solving strategies—facilitated self-initiated mental contrasting more than neutral moods (Studies 1, 5) or happy moods (Studies 2, 3, 4, 6). Importantly, mood did not affect the relation between mental contrasting and selective formation of goal commitment (Studies 5, 6). The results suggest that sad moods aid in self-regulation by making people self-initiate goal commitments that are sensitive to their expectations of success.

Keywords: goals, expectations, self-regulation, mood, mental contrasting, indulging

Successful self-regulation of goal pursuit requires both appropriate goal setting and effective goal striving. So far research has focused on the effects of mood on goal striving, but has largely neglected mood effects on how people form goal commitments. Selective goal commitment, which is committing to goals at which one is likely to succeed, is facilitated by using a self-regulatory mode of thought known as mental contrasting. The present research investigates mood effects on the use of mental contrasting.

Mood Effects on Self-Regulation

Research has identified several ways in which moods affect the self-regulation of goal pursuit. For example, positive moods may increase or decrease striving for set goals, depending on the source of the mood. A resource-based approach to self-regulation posits that a surplus of positive mood frees people to pursue goals other than mood enhancement (Aspinwall, 1998; Aspinwall & Taylor, 1997), and incidental positive mood (i.e., mood arising from sources incidental to goal pursuit) is found to increase people's striving for self-improvement goals, presumably because such positive mood signals that one's resources are adequate to handle the task (Trope & Neter, 1994; Trope & Pomerantz, 1998). On the other hand, a feedback-loop theory of self-regulation argues that positive mood arising from successful goal pursuit decreases striving for set goals, because positive mood provides feedback that one is exceeding standards for satisfactory progress, whereas negative mood signals that more effort is needed (Carver & Scheier, 1990).

Though these lines of research have shed light on how moods affect people's striving for set goals, relatively little research to date has investigated how mood influences the self-regulatory process of committing to goals. When goal-setting is defined as one's level of aspiration, positive mood may lead to goals of higher aspirations or standards than negative mood (Hom & Arbuckle, 1988; Saavedra & Earley, 1991). However, this research on level of aspiration does not speak to how mood affects goal commitment processes such as those underlying prioritization, when people decide which of many projects to pursue and how to allocate their resources. Framed this way, forming goal commitment can be conceived of as problem solving activity. Thus, research addressing mood influences on problem solving should provide insights into how mood affects the self-regulation of goal commitment.

This article was published Online First June 27, 2011.

Heather Barry Kappes, Psychology Department, New York University; Gabriele Oettingen, Psychology Department, New York University, and Department of Psychology, University of Hamburg, Hamburg, Germany; Doris Mayer, Department of Psychology, University of Hamburg; Sam Maglio, Psychology Department, New York University.

Preparation of this article was supported by the German Science Foundation Grant DFG 237/12-1 to Gabriele Oettingen. We are grateful to Torvi Abel, Valerie Brandt, Sandra Lahn, Jana Schrage, Anna Voss, Eric Wang, and Sandra Wittleder for their support with collection of the data. We thank the Motivation Lab at New York University for helpful comments on an earlier version of this article, and we greatly appreciate Willi Nagel's and Patrick Shrout's statistical advice.

Correspondence concerning this article should be addressed to Heather Barry Kappes or Gabriele Oettingen, Department of Psychology, New York University, 6 Washington Place, 7th Floor. New York, New York 10003. E-mail: heather.barry@nyu.edu or gabriele.oettingen@nyu.edu

Mood and Problem Solving

Mood influences problem solving because mood is a self-regulatory cue: sad mood signals a deficit whereas happy mood indicates a satisfactory state of affairs (Morris, 1989). In sad moods, people infer that some aspect of their current situation is problematic, and hence, adopt "a piecemeal, effortful, systematic processing style . . . which is functional for analyzing a problematic situation to determine adequate reactions" (Bohner & Weinerth, 2000, p. 219). For example, sad mood decreases reliance on general knowledge structures (e.g., sad participants made fewer errors of recognition after listening to a "going-out-for-dinner" story; Bless et al., 1996), and increases reliance on details (Gasper, 2004), suggesting that in a sad mood people are more careful and analytical. Sad mood has also been found to facilitate item-specific processing, in which items are more precisely attended to and encoded (Storbeck & Clore, 2005). Further, sad mood promotes analytic processing and the use of concrete rather than abstract descriptions as well as the perception of specifics rather than generalities (Beukeboom & Semin, 2006; Beukeboom & Semin, 2005). In sum, sad mood leads to careful, purposeful, and effortful processing that is effective for problem solving (Schwarz & Bless, 1991; Clore, Schwarz, & Conway, 1994). Thus, sad mood should support the use of a problem solving strategy leading to selective goal commitment.

Problem Solving and Self-Regulation of Goal Commitment

Selective goal commitment refers to prioritization of investing in various possible goals at hand. Prioritization of behavioral responses in general has been an important focus of research on self-regulation for more than 30 years (e.g., Mischel, 1973). More recent research has shown the merit of adjusting behavioral responses not only to changing consequences, but in line with one's perceived chances of success or expectation of success (Ajzen, 1991; Bandura, 1997; Heckhausen, 1991). Expectations of success are informed by previous experience and thus provide the individual with a summary judgment of his or her performance history (Bandura, 1997; Mischel, Cantor, & Feldman, 1996; Roese & Sherman, 2007). Expectations are updated in response to prior outcomes and offer a solid foundation for action. Strongly committing to goals when chances of success are high—and refraining from goal commitment when chances of success are low—ensures that people allocate their resources (e.g., time, effort, money) to tackle the most achievable goals rather than squandering resources on less achievable endeavors. Disengaging from pursuit of the unattainable and adjusting goal commitments to fit with one's capabilities is vital for achievement and well-being (Brandstädter & Greve, 1994; Brunstein, 1993; Janoff-Bulman & Brickman, 1982). The question is how people align their goal commitments with their expectations of success. One effective strategy is suggested by fantasy realization theory (Oettingen, 2000; Oettingen, Pak, & Schnetter, 2001): the mental contrasting of a positive future with the negative reality.

Mental Contrasting of Positive Future With Negative Reality

Mental contrasting is a self-regulatory mode of thought where people first imagine a positive future (e.g., improving one's performance) and then reflect on the negative reality that stands in the way of realizing the positive future (e.g., being easily distracted). Mental contrasting makes people perceive the reality as linked to the future in terms of being an obstacle to realizing the future. Thus, expectations of success are used as a guide to differentiating whether the obstacle can be overcome to realizing the positive future, and consequently, determine whether or not to commit to attaining the future. Specifically, when expectations of reaching the positive future are high, people will commit to realizing the positive future; when expectations are low, people will let go. On the contrary, one-sided thinking in the form of indulging in the positive future or dwelling on negative reality leaves expectations of success unconsidered. People will not use their expectations as a guide to determine whether to commit to realizing the positive future. Thus, people may squander resources chasing unattainable futures and invest insufficient resources pursuing futures that would be within their grasp.

Effects of mental contrasting. A series of experimental studies measuring goal commitment as the dependent variable supports these contentions (Oettingen, 2000; Oettingen et al., 2001; Oettingen et al., 2009; Oettingen, Mayer, & Thorpe, 2010a; Oettingen, Mayer, Thorpe, Janetzke, & Lorenz, 2005; Oettingen, Stephens, Mayer, & Brinkmann, 2010b; for an overview, see Oettingen & Stephens, 2009). In all experiments, participants were asked to consider an important positive future and to indicate their expectations of realizing the positive future. Thereafter, they had to list aspects related to achieving the wished for future (i.e., positive future), and aspects of the reality that stood in the way of realizing the future (i.e., negative reality). Finally, participants were randomly assigned to engage in one of three self-regulatory modes. They either elaborated (in writing) aspects of both the positive future and negative reality, beginning with the positive future (mental contrasting condition), only aspects of the positive future (indulging condition), or only aspects of the negative reality (dwelling condition). Subsequently, goal commitment was measured, using a variety of cognitive, affective, and behavioral indicators. In all experiments, participants who engaged in mental contrasting evinced a stronger link between their expectations and goal commitment than participants in the indulging and dwelling conditions. This pattern of results emerged, for example, in schoolchildren wishing to improve in mathematics or starting to learn a foreign language, in young adults wishing to solve an interpersonal concern, in students contemplating studying abroad, in students being offered the opportunity to get to know an attractive stranger, in health care professionals giving help, and in smokers trying to reduce cigarette consumption (Oettingen, 2000; Oettingen et al., 2001, 2005, 2009, 2010a, b). Taken together, the findings suggest that the self-regulatory mode of mental contrasting rather than indulging and dwelling fosters selective goal commitment.

Mental contrasting distinguished from reverse contrasting. The model of fantasy realization predicts that expectancy-dependence in goal commitment only emerges when the positive future is elaborated before the negative reality (Oettingen et al., 2001). Specifically, people must relate their reality to the previously elaborated positive future to understand that the reality is an obstacle to realizing the future. Elaborating the reality first (reverse contrasting) depicts the reality as unrelated to realizing the future and thus leads to expectancy-independent goal commitment just like indulging and dwelling (Oettingen et al., 2001, Study 3).

Mental contrasting as a problem solving strategy. Based on Newell and Simon's (1972) theory of problem solving, we posit that mental contrasting is a problem solving strategy. Newell and Simon's theory identifies two essential components of a problem: the objective problem space and the subjective problem space. The objective problem space is defined as the objective task demands posed by the environment; the subjective problem space as the individual's internal representation of the task demands. If the subjective problem space matches the objective problem space, the person is potentially able to solve the problem. Translated to the model of mental contrasting, the objective problem space of wish fulfillment entails that a person reaches the positive future by overcoming the negative reality. Mental contrasting then guarantees that the subjective problem space (internal representation) matches the objective problem space, because it represents the positive future to be reached and the negative reality to be overcome. Thus the subjective problem space allows either committing to overcome the obstacle to realize the future when expectations of success are high, or letting go when expectations of success are low. However, if the subjective problem space entails only part of the objective problem space, either only the positive future (indulging) or only the negative reality (dwelling), or else if the reality cannot be linked to the future (reverse contrasting), the person will not be able to solve the problem (i.e., reaching the future by overcoming the reality). From this perspective, mental contrasting—rather than indulging, dwelling, and reverse contrasting—is conceived of as a problem-solving self-regulatory mode of thought. We hypothesize that sad mood, as it facilitates problem solving, should foster mental contrasting.

The Present Research

We tested this hypothesis in six studies by inducing mood before measuring participants' use of self-regulatory mode of thought. We utilized various mood inductions. In the first three studies, participants read about an actual mood-inducing event (Study 1), wrote about a hypothetical event (Study 2), and experienced a real event (Study 3). Mood inductions also varied in modality: They were verbal (reading in Studies 1, 5; writing in Study 2) as well as nonverbal (music in Studies 4, 6).

Following mood induction, we measured self-regulatory mode of thought in Studies 1 and 2 by adapting the paradigm used for the experiments that manipulated mode of thought. Specifically, we first asked all participants to name their presently most important wish or concern in a given domain, to indicate the likelihood that the wish would be realized, and then to generate four aspects of wish fulfillment (i.e., positive future aspects), and four aspects standing in the way of wish fulfillment (i.e., negative reality aspects). Thus all participants had to list eight aspects—four positive future aspects and four negative reality aspects. In experimental research where self-regulatory mode of thought is manipulated, participants are next told which aspects to elaborate in writing and in which order. In the present research, departing from the experimental procedure, all participants instead freely chose the order in which they elaborated upon four (and only four) of these eight aspects. Finally, we classified participants according to their order of elaboration to distinguish between those who used mental contrasting, indulging, dwelling, or reverse contrasting.

Study 1: Reading the News

Method

Participants. Seventy-seven students (50 females)[1] at a large American university participated. Their mean age was 19.47 years ($SD = 0.95$), ranging from 18 to 23 years. Participants were tested one to 10 at a time using a paper-and-pencil format. They received credit for partial fulfillment of a psychology course requirement for their participation.

Procedure. Participants were told that the study concerned how people resume thinking about an important concern after an interruption. They were asked to name their presently most important interpersonal wish or concern (e.g., they named getting along with a roommate, solving a conflict with a partner). Then, they indicated their expectation of wish fulfillment by answering the following question: "How likely do you think it is that the named issue will come to a happy ending?" with a response scale of 1 (*not at all likely*) to 7 (*very likely*) ($M = 5.06$, $SD = 1.16$). Participants had to next list four aspects they associated with wish fulfillment (i.e., positive future aspects) and four aspects of reality that stood in the way of wish fulfillment (i.e., negative reality aspects).

We next asked participants to set aside their thoughts about the concern to read one of two newspaper articles about events in Latin America (designed to elicit sadness or neutral mood; adapted from Wegener & Petty, 1994). In the sad mood condition, the article described an earthquake that occurred in Peru on August 15, 2007.[2] In the neutral mood condition, the article described the history of agriculture in Latin America[3] (which was pretested to be devoid of affective valence). After reading, participants answered a series of factual questions about the article. Embedded in these questions was the one item that served as our manipulation check: the extent to which participants presently felt sad, on a scale ranging from 1 (*not at all*) to 7 (*very much*).

Next, we measured participants' use of self-regulatory mode of thought, using the following instructions:

> Please write down one of your named aspects. Think about this aspect and depict the respective events or experiences in your thoughts as intensively as possible. Choose the aspect that first comes into your mind. Let the mental images pass by in your thoughts and do not hesitate to give your thoughts free rein. Take as much time and space as you need to describe the scenario. If you need more space to write, please use the back of the page.

After elaborating the first aspect, participants again received the instruction above. However, instead of "one of your named aspects," the instruction now read "another of your named aspects." Altogether, participants elaborated four of the eight listed aspects. Expectations of wish fulfillment were measured a second time, using the same item described above, before debriefing and thanking participants.

---

[1] In Studies 1 and 3–6, gender did not lead to a difference in use of mode of thought, nor did it significantly interact with other variables presented. Gender effects cannot be tested in Study 2 because all participants are female. Gender is not addressed further.

[2] http://www.nytimes.com/2007/08/25/world/americas/25peru.html

[3] http://www.nytimes.com/2007/06/29/science/29squash.html

Identification of self-regulatory thought. Based on the existing experimental research, participants were identified as using mental contrasting when they chose to elaborate two positive future aspects and two negative reality aspects and started with a positive future aspect. Thus, the criteria were that elaborations had to be balanced between positive future and negative reality aspects and begin with a positive aspect. Participants who elaborated two positive future aspects and two negative reality aspects but started with a negative reality aspect were identified as reverse contrasting. Participants who predominantly elaborated aspects of the positive future or aspects of negative reality (i.e., three or four future or reality aspects) were identified as indulging or dwelling, respectively.

Results

Mood manipulation check. Participants who read the sad mood article ($n = 40$) reported being more sad, $t(74) = 20.42$, $p < .001$, $\eta^2 = .85$ ($M = 6.00$ vs. $M = 1.19$) than those who read the neutral article ($n = 37$).

Mood and use of self-regulatory thought. Our hypotheses apply to mood effects on mental contrasting versus other self-regulatory modes of thought. Across the six studies of the present paper, mood manipulations did not lead to consistent differences in the use of indulging, dwelling, or reverse contrasting. Therefore, we combined these three modes of thought into one category of nonmental contrasting mode of thought. However, descriptive statistics on the use of each mode of thought are presented in Table 1.

When comparing use of mental contrasting to the other modes of thought, binary logistic regression analyses showed that mood condition predicted the number of participants who used mental contrasting, $\chi^2(1) = 4.79$, $b = 1.09$, odds ratio = 2.97, $p = .03$, Nagelkerke $R^2 = 8.0\%$ (Figure 1a). Use of mental contrasting was more likely in the sad mood condition (45%) than in the neutral mood condition (22%). Further, the sad mood article led to a similar percentage of participants using mental contrasting (45%) versus other modes of thought (55%), $\chi^2(1) = .40$, $p = .50$, while the neutral mood article led to fewer participants using mental contrasting (22%) than the other modes of thought (78%), $\chi^2(1) = 11.92$, $p < .001$.

Potential alternative explanations. We next conducted several additional analyses to rule out potential alternative explanations. In the interest of conciseness and to allow the reader to more easily consider general trends, results of these additional analyses for all six studies are briefly addressed in this section.

First, we confirmed that sad mood did not result in more use of mental contrasting merely by leading participants to elaborate on more negative aspects. In Study 1, a one-way ANOVA showed that the number of negative aspects elaborated on did not vary by mood condition, $F(1, 75) = 1.82$, $p = .18$, $\eta^2 = .02$ ($M_{neutral} = 1.54$ vs. $M_{sad} = 1.75$). This finding was also observed in the subsequent studies that used elaboration of aspects as measure of mode of thought (i.e., Studies 2, 4, 5, 6; Fs ranged from .14 to 1.84, ps ranged from .17 to .71). Further, in this and the subsequent studies, the number of negative aspects elaborated on did not consistently correlate with the use of mental contrasting versus other strategies (rs ranged from $-.03$ to .42).

In order to verify that mood affected self-regulatory thought for both high and low-expectancy participants, in Study 1, we conducted a second logistic regression analysis adding expectations as a predictor. Adjusting for expectations, mood condition continued to predict use of mental contrasting, $p = .03$, and there was no interaction effect between mood condition and expectations of success, $p = .50$, implying that the mood effects pertained to participants with high and low expectations alike. This finding also applies to the studies reported below: No consistent interaction effects emerged between mood condition and expectations of success predicting use of mental contrasting.

Mood did not affect expectations of success: in Study 1, there were no differences between the two mood conditions on the final

Table 1
Use of Self-Regulatory Strategy In Studies 1–6

	MC	I	D	RC
Study 1 ($N = 77$)				
Sad Mood Condition ($n = 40$)	18 (45%)	15 (38%)	5 (13%)	2 (5%)
Neutral Mood Condition ($n = 37$)	8 (22%)	18 (49%)	1 (3%)	10 (27%)
Study 2 ($N = 108$)				
Sad Mood Condition ($n = 54$)	26 (48%)	18 (33%)	3 (6%)	7 (13%)
Happy Mood Condition ($n = 54$)	16 (30%)	25 (46%)	5 (9%)	8 (15%)
Study 3 ($N = 46$)				
Sad Mood Condition ($n = 21$)	18 (86%)	3 (14%)	0 (0%)	—
Happy Mood Condition ($n = 25$)	13 (52%)	8 (32%)	4 (16%)	—
Study 4 ($N = 143$)				
Baseline ($n = 143$)	52 (36%)	47 (33%)	16 (11%)	28 (20%)
Sad Mood Condition ($n = 68$)	29 (43%)	14 (21%)	13 (19%)	12 (18%)
Happy Mood Condition ($n = 75$)	20 (27%)	18 (24%)	14 (19%)	23 (31%)
Study 5 ($N = 116$)				
Sad Mood Condition ($n = 59$)	20 (34%)	13 (22%)	12 (20%)	14 (24%)
Neutral Mood Condition ($n = 57$)	10 (18%)	20 (35%)	9 (16%)	18 (32%)
Study 6 ($N = 144$)				
Sad Mood Condition ($n = 69$)	12 (17%)	24 (35%)	20 (29%)	13 (19%)
Happy Mood Condition ($n = 75$)	5 (7%)	12 (16%)	24 (32%)	34 (45%)

Note. Mental Contrasting (MC), Indulging (I), Dwelling (D), Reverse Contrasting (RC). Reverse contrasting was not an option in Study 3.

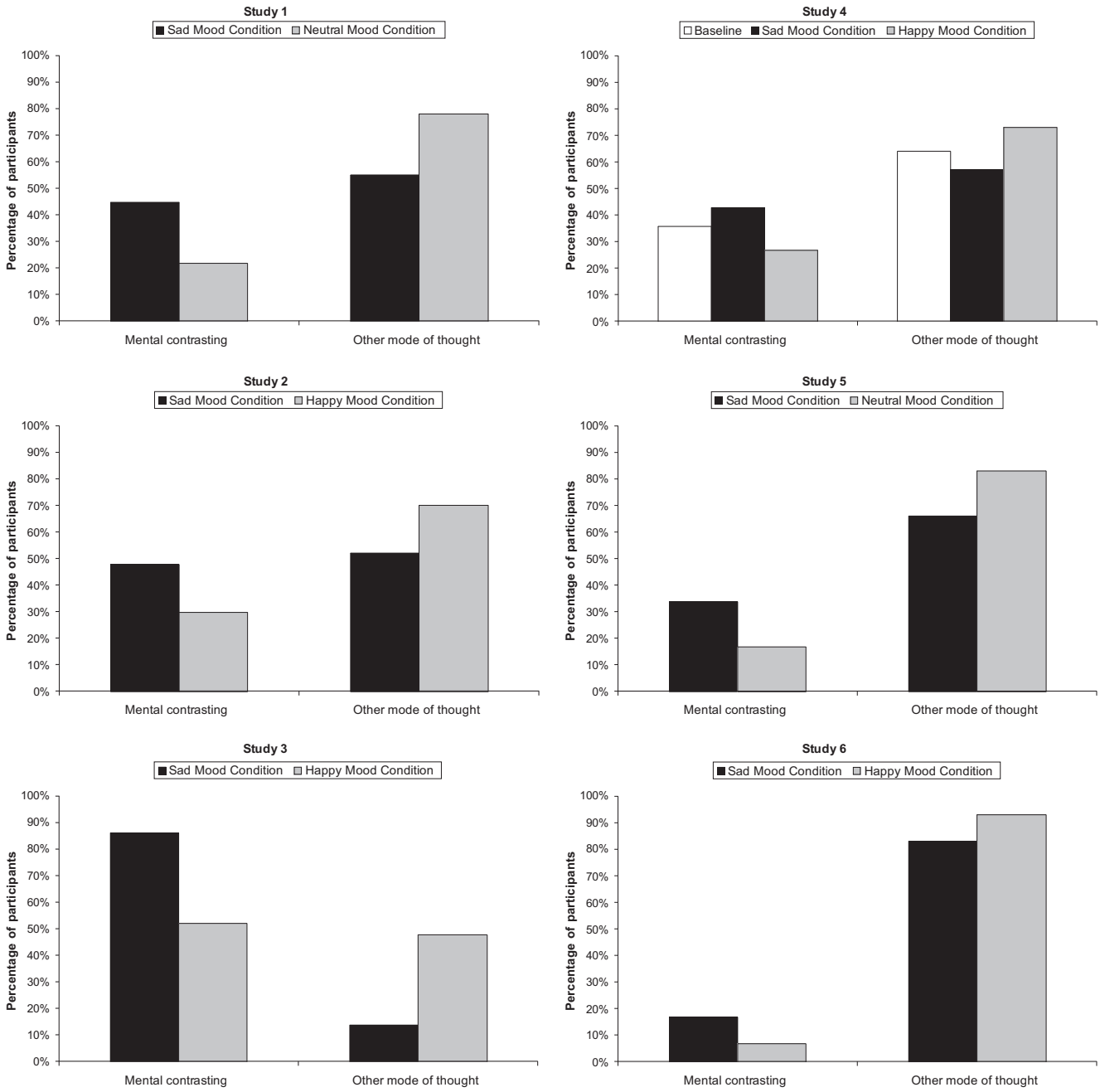

Figure 1. Percentage of participants using mental contrasting versus other modes of thought in Studies 1–6.

expectation measure or on the change from initial to final expectation measure, *t*s(75) $<$ 1.15, *p*s $>$ .25. These results were replicated in the subsequent three studies that measured expectations both before and after mood had been varied (Studies 4, 5, 6, *t*s ranged from .02 to 1.40, *p*s ranged from .18 to .99) as well as in Study 2, where expectations were measured only after mood was induced, $t(106) = .56$, $p = .57$.

Finally, we confirmed that like in previous research (Oettingen et al., 2005, 2010a), mode of thought did not differentially change expectations of success. In Study 1, an ANCOVA predicting final expectations from mode of thought (mental contrasting vs. other) and initial expectations confirmed that mode of thought did not differentially change expectations of success, $F(1, 74) = .13$, $p = .72$. This result was replicated in two of the three subsequent studies that measured expectations both before and after measuring mode of thought (Studies 4, 6, *F*s ranged from 1.11 to 1.90, *p*s ranged from .11 to .17). Only in Study 5 did participants who used mental contrasting have lower final expectations than participants who used other modes of thought, $F(1, 113) = 4.46$, $p = .04$.

Discussion

In Study 1, mood influenced self-initiated mental contrasting: participants in a sad mood were more likely to use mental contrasting than those in a neutral mood. One might suspect that this effect was driven by mood-induced changes in the number of negative reality aspects elaborated on or by mood-induced changes in participants' expectations of wish fulfillment. However, mood affected neither the total number of negative reality aspects elaborated nor expectations.

Study 2 addressed limitations of Study 1. Rather than reading about an event unrelated to the participants, as in Study 1, participants in Study 2 wrote about a hypothetical event that involved their own person, before completing the mode of thought measure. By making them write about a personal event, we ensured that participants indeed focused on the materials.

Furthermore, although the reading materials inducing mood in Study 1 were presented as being unrelated to the mode of thought measure, if participants saw them as connected, demand may have influenced the findings. For example, participants feeling sad after reading the article may have thought that the experimenter wanted them to elaborate their concern in negative terms. Therefore, in Study 2, we separated the mood manipulation from the mode of thought measure by presenting them as two separate studies.

As the mood manipulation in Study 1 was verified with self-report, we cannot exclude the possibility that the mood effect on self-initiated mental contrasting may have come about by participants being aware of their own mood state. That is, asking about mood (i.e., a manipulation check) makes people aware of their level of sadness, and awareness of mood state has the potential to influence participants' responses (Keltner, Ellsworth, & Edwards, 1993; Lerner & Keltner, 2000). Therefore, Study 2 induced mood without explicitly asking how participants felt. Instead, we pretested the materials to ensure they had the intended effect.

Additionally, in Study 2 we compared sad mood to happy mood (rather than neutral). Unlike sad mood, happy mood has not been found to promote the use of problem solving thought. Instead, it leads to activation of general knowledge structures rather than specific ones (Bless et al., 1996), relational rather than item-specific processing (Storbeck & Clore, 2005), abstract descriptions rather than concrete ones (Beukeboom & Semin, 2006), and perception of generalities rather than specifics (Beukeboom & Semin, 2005). For these reasons, and because more generally happy mood signals the absence of a particular problem (Schwarz & Bless, 1991), it promotes thinking that is not linked to effective problem solving. Therefore, we hypothesized that sad mood would lead to more mental contrasting than happy mood.

Study 2: Writing About a Hypothetical Event

Method

Participants. One hundred and eight female students at a large German university participated. Their mean age was 24 years ($SD = 2.26$), ranging from 20 to 34 years. Participants were tested alone, using a computer program. They were paid 5 Euros (about $7 U.S.) for participation.

Procedure. In the supposedly first study, participants had to imagine that they had gone on vacation and that one day they had decided to take a tour of a coal mine. Participants then read a vivid description of hearing an explosion and finding themselves trapped in the mine, alone and in darkness, desperately wanting to get out. They were told that on average, only one in five people survive similar accidents. We then established the two mood conditions by varying the continuation of the story. In the sad mood condition, participants read about continued misfortune (e.g., their flashlight going out; hearing the sound of water but being unable to find any). In the happy mood condition, participants read about more fortunate occurrences (e.g., their flashlight flickering but staying lit; hearing the sound of water and subsequently finding a puddle from which to drink). To ensure that they were sufficiently engaged in the manipulation, participants were asked to write one to three sentences after the description of each occurrence. There was no manipulation check for mood during the study, as described in more detail below. Materials were instead pretested with a different sample of university students, for whom they had the expected effects of eliciting relatively more sad mood after writing in response to the continued misfortune story and relatively more happy mood after writing about the fortunate occurrences story.

Use of self-regulatory mode of thought was measured in a supposedly second study on thoughts and images about everyday interpersonal life, using the same procedure as in Study 1. Participants named their currently most important interpersonal wish and indicated their expectation of wish fulfillment ($M = 4.67$, $SD = 1.71$). Next, they were asked to list four positive future aspects and four negative reality aspects. Like before, participants had to elaborate four of the eight listed aspects; they were identified as mental contrasting, indulging, dwelling, and reverse contrasting depending on the number and order of elaborated aspects. Finally, we debriefed and thanked participants for participation.

Results

Mood manipulation check. As a pilot test of the mood induction, the two versions of the mine story were presented to a separate sample of 74 German university students. After reading and writing about one version of the story, participants indicated from 1 (*not at all*) to 7 (*extremely*) how happy, depressed, elated, fearful, calm, angry, relaxed, and sad they presently felt. Participants who had read the sad mood story ($n = 37$) as compared to those who read the happy mood story ($n = 37$) reported being more sad, $t(71) = 2.24$, $p = .03$, $\eta^2 = .07$ ($M = 3.22$ vs. $M = 2.35$), more depressed, $t(72) = 2.16$, $p = .03$, $\eta^2 = .06$ ($M = 3.11$ vs. $M = 2.38$), less happy, $t(72) = 2.28$, $p = .03$, $\eta^2 = .07$ ($M = 2.86$ vs. $M = 3.73$) and less elated, $t(72) = 2.38$, $p = .02$, $\eta^2 = .07$ ($M = 2.89$ vs. $M = 3.81$). There were no differences between the two groups in their ratings for fearful, calm, angry, or relaxed, $ts < 1.55$, $ps > .12$.

Mood and use of self-regulatory thought. Binary logistic regression analysis showed that mood condition predicted use of mental contrasting versus other modes of thought, $\chi^2(1) = 3.93$, $b = .79$, odds ratio $= 2.21$, $p = .05$, Nagelkerke $R^2 = 4.8\%$ (Figure 1b). Use of mental contrasting was more likely in the sad mood condition (48%) than in the happy mood condition (30%). Further, the sad mood story led to a similar number of participants using mental contrasting (48%) versus other modes of thought

(52%), $\chi^2(1) = .07$, $p = .79$, while the happy mood story led to fewer participants using mental contrasting (30%) than the other modes of thought (70%), $\chi^2(1) = 8.96$, $p = .003$.

Discussion

The present study replicated the findings of Study 1, showing that a sad mood induction led comparatively more participants to use mental contrasting. Indeed, in both studies, sad mood yielded a similar number of participants using mental contrasting versus the other modes of self-regulatory thought (Figures 1a, 1b).

In Study 1, sad mood compared to neutral mood led to more participants mentally contrast; in Study 2, we found the same pattern of results for sad mood as compared to happy mood. Study 2 replicated the results of Study 1, though unlike in Study 1, participants did not self-report about their mood; instead, materials were pretested to ensure they had the desired effect. Thus, even without explicit awareness, sad mood still produced differential probability of mental contrasting. Finally, in Study 2, the mood induction and the measurement of self-regulatory thought were presented to participants as separate studies. Therefore, demand should not have accounted for the effect of sad versus happy mood on self-initiated mental contrasting.

However, Studies 1 and 2 cannot exclude the possibility that the negative tone of the mood inductions (reading about a deadly earthquake; writing about being trapped in a mine) primed problem solving directly as well as inducing sad mood. To address this possibility, in Study 3, we manipulated sad mood using materials that did not necessarily have a negative tone.

Self-verification theory (Swann, 1983) argues that people have a strong desire to confirm their self-views, because stable self-views "enable people to make predictions about their worlds, guide behavior, and maintain a sense of continuity, place, and coherence" (Kwang & Swann, 2010, p. 264). Accordingly, feedback that is inconsistent with people's existing self-view can induce sad mood, whereas consistent feedback can induce happy mood (Kwang & Swann, 2010; Wood, Heimpel, Newby-Clark, & Ross, 2005). Therefore, we manipulated mood in Study 3 by giving participants either inconsistent or consistent feedback. That is, we asked participants about the extent to which they saw themselves as very good leaders, and then provided inconsistent feedback by telling those who thought that they were very good leaders that they actually were not, and telling those who thought that they were not very good leaders that they actually were. The other two combinations of initial self-view and feedback comprised the consistent feedback condition. Because half of the participants in both conditions thus received negative feedback materials, Study 3 eliminated the possibility that negatively toned materials rather than sad mood leads to the use of mental contrasting. Furthermore, as in Study 2, we pretested the mood manipulation and did not include a manipulation check during the study, in order to exclude the possibility that effects were due to participants' conscious recognition of their mood state.

We modified the mode of thought measure in Study 3 to fit this mood induction. After providing leadership feedback, we asked participants to read excerpts describing the interaction styles of three mentors and to choose the one with whom they would like to speak about developing their leadership skills. The provided excerpts epitomized mental contrasting, indulging, or dwelling. Thus, Study 3 measures a preference for engaging in mental contrasting versus other modes of self-regulatory thought, rather than the use of a mode of thought. We hypothesized that participants induced into a sad mood via inconsistent feedback would prefer mental contrasting more than participants induced into a happy mood via consistent feedback.

Study 3: Experiencing a Real Event

Method

Participants. Forty-six students (39 female) at a large American university qualified for participation by having judged the likelihood of being a good leader as being low or high. Specifically, those who qualified for the study had marked either a 2 and below, or a 6 and above when answering the following question: "How likely do you think it is that you are a good leader?" on a 7-cm response scale with endpoints marked *likely* and *extremely likely*. Their mean age was 20 years ($SD = 1.24$), ranging from 19 to 24. Participants were tested in individual cubicles. They received credit for partial fulfillment of a psychology course requirement for their participation.

Procedure. Participants were told that the study concerned personality and the development of leadership potential. They completed a bogus leadership potential test. The test involved interpreting images from the Thematic Apperception Test (TAT; Murray, 1943) and solving critical-thinking puzzles.

In the sad mood condition, participants received feedback that was inconsistent with their existing self-view. Participants who had marked a 6 or above on the self-view item received a bogus feedback form indicating: "Out of a possible score of 31 points you have received *15* points. You are in the *40th* percentile of the (supposedly) 73 participants tested in this study until today. Your leadership potential is *somewhat below* average." For participants who had marked a 2 or below on the initial self-view item, the form indicated that participants had received 28/31 points, were in the 90th percentile of the 73 participants supposedly tested, and had leadership potential that was far better than average. There were 21 participants in the sad mood (inconsistent feedback) condition with 11 participants receiving negative feedback in light of a positive self-view and 10 participants receiving positive feedback in light of a negative self-view.

In the happy mood condition, participants received feedback that was consistent with their initial self-view. Participants who had marked a 6 or above on the self-view item received the positive feedback form, while participants who had marked a 2 or below received the negative feedback form. There were 25 participants in the happy mood (consistent feedback) condition with 10 participants receiving positive feedback in the face of a positive self-view and 15 participants receiving negative feedback in the face of a negative self-view. As mentioned above, the effectiveness of the mood manipulation was pretested with a different sample of university students (details below).

Preference for self-regulatory thought. Participants read three scripts representing the interaction styles of "Mentor A," "Mentor B," and "Mentor C," who were supposedly trained doctoral-level students. Participants were led to believe that they would actually meet with the mentor of their choice. After familiarizing themselves with the scripts that depicted what the mentors

had to say about their personal style of mentoring, participants were asked to choose which of the three mentors they would like to meet with. The mentors' scripts differed in mode of self-regulatory thought. Specifically, the mentor talked about how to further develop leadership qualities by either referring to both a positive future of successful leadership as well as the negative reality standing in the way of successful leadership (mental contrasting) or to either one exclusively (indulging and dwelling). Order of the scripts was randomized across participants. Depending on their choice of mentor, participants were identified as preferring mental contrasting, indulging, or dwelling. Specifically, they were identified as preferring mental contrasting when choosing the following mentor:

> . . . think about leading others in a positive way and being recognized by others as a great leader. But also think about the hardship that may prevent you from leading others in a positive way and being recognized by others as a great leader . . .

They were identified as preferring indulging if they chose the following mentor:

> . . . just imagine yourself being a great leader for a moment. Think about yourself making a difference to other people. Also think about leading others in a positive way and being recognized by others as a great leader . . .

They were identified as preferring dwelling if they chose the following mentor:

> . . . think for a moment about all the impediments that stand in the way of becoming a great leader. Think about the hardship that may prevent you from leading others in a positive way and being recognized by others as a great leader . . .

After they had chosen the mentor, we told participants that they would not actually be meeting with a leadership mentor, and debriefed them about the study, taking great care to explain that the leadership feedback was bogus feedback.

Results

Mood manipulation check. As a pilot test of the mood induction, a separate sample of 31 American university students completed the self-view item and the leadership test. Just as described above, in the inconsistent feedback condition ($n = 17$), participants with a self-view of 6 or above received negative feedback, and those with a 2 or below received positive feedback. In the consistent feedback condition ($n = 14$), participants with a self-view of 6 or above received positive feedback, and those with a 2 or below received negative feedback. After receiving feedback, participants indicated from 1 (*not at all*) to 7 (*extremely*) how sad, depressed, happy, and elated they presently felt.

Compared to those who received consistent feedback, participants who received inconsistent feedback reported being more sad, $t(29) = 2.54$, $p = .02$, $\eta^2 = .18$ ($M = 2.76$ vs. $M = 1.36$), more depressed, $t(29) = 2.50$, $p = .02$, $\eta^2 = .18$ ($M = 2.53$ vs. $M = 1.29$), less happy, $t(29) = 2.90$, $p = .007$, $\eta^2 = .22$ ($M = 3.18$ vs. $M = 5.07$) and less elated, $t(29) = 3.70$, $p = .001$, $\eta^2 = .32$ ($M = 2.12$ vs. $M = 4.00$).

Mood and preference for self-regulatory thought. Binary logistic regression analysis showed that mood condition predicted preference for mental contrasting versus other modes of thought, $\chi^2(1) = 6.24$, $b = 1.71$, odds ratio = 5.54, $p = .01$, Nagelkerke $R^2 = 17.7\%$ (Figure 1c). Participants were more likely to choose mental contrasting in the sad mood condition (86%) than in the happy mood condition (52%).

Discussion

In line with Studies 1 and 2, a sad mood manipulation resulted in greater likelihood of mental contrasting than a happy mood manipulation. This was true when mode of thought was measured via preference, just as it was in the earlier studies when mode of thought was measured via order of written elaborations. As in Study 2, the mood manipulation changed the likelihood of mental contrasting although there was no mood manipulation check during the study, implying that awareness of mood state is not necessary for this pattern to be observed.

Further, in Studies 1 and 2 the mood induction was unrelated to the wish to which the measure of mode of thought referred. Study 3 replicated the results though the mood induction was operationalized by feedback about the wish. Although more data would be needed to establish this point, these findings suggest that moods arising from the experience of goal pursuit itself (e.g., sad mood resulting from feedback that one's desired leadership potential is not as expected) may have effects similar to the incidental moods examined in Studies 1 and 2. Furthermore, in Study 3, an approximately equal number of participants in each mood condition received feedback materials that had a very negative tone. Thus, their corresponding difference in preference for mental contrasting cannot be due to negatively toned materials priming problem solving directly.

The mood manipulations so far pertained to reading about a past event unrelated to the self, writing about a hypothetical present event related to the self, and experiencing a real event. Across these different mood inductions, we observed the same pattern of results. Next we used a mood manipulation that neither described nor presented a problem. Adopting a content-free mood manipulation, in Study 4 we played music that has been shown to induce either sad or happy mood. The use of music to induce mood in Study 4 also implies that the mood manipulation and the measure of self-regulatory thought tap into different modalities. Contrary to Studies 1 and 2 where mood induction and assessment of mode of thought were both verbal (by reading stories and by writing down mental elaborations), we now induced mood nonverbally. We hypothesized that sad mood even when induced by a different modality than the measure of self-regulatory thought would facilitate mental contrasting.

In Study 4, we also sought to complement Studies 2 and 3 by showing that happy mood produces a decrease in mental contrasting. Happy mood has been found to result in less use of the effortful, purposeful, detail-oriented thinking that is effective for problem solving (Clore et al., 1994). For this reason, we expected that happy mood would decrease the probability of self-initiated mental contrasting, compared to baseline as well as compared to sad mood.

Thus, Study 4 measured use of mental contrasting twice: before and after the mood induction (sad vs. happy). Specifically, participants named two wishes, one academic and the other interpersonal. Before the mood induction, as a baseline assessment, par-

ticipants were to complete the mode-of-thought measure about one of the two wishes. After the mood induction, as a change assessment, participants were to complete the mode measure about the other of the two wishes. Order of the academic versus interpersonal wish was counterbalanced. This procedure allowed us to observe differences in use of mode of thought as a function of mood condition, as well as the differential change of mode from before to after the mood manipulations.

Finally, one might argue that in the studies so far, the findings of mode of thought following sad mood results from differential accessibility of positive future versus negative reality. As moods facilitate thoughts of similar valence (Bower, 1981; Bargh, Chaiken, Raymond, & Hymes, 1996), sad mood may have facilitated generating aspects of negative reality. This seems unlikely, as participants in the sad mood condition did not differ from those in the neutral or happy mood conditions in number of negative reality aspects elaborated. However, in Study 4 we directly tested whether sad mood influences use of self-regulatory thought via accessibility.

To do so, we allowed the mood induction to affect the listing of future and reality aspects, and measured how many of each type of aspects participants named. If sad mood increases accessibility of negative reality aspects, they should name more of these. Importantly, however, we hypothesized that over and above any differences in accessibility, sad mood would lead to more mental contrasting.

Study 4: Hearing Classical Music

Method

Participants. One hundred forty-three students (109 female) at a large American university participated. Their mean age was 19.5 years ($SD = 1.17$), ranging from 18 to 26 years. Participants were tested three to five at a time. They received credit for partial fulfillment of a psychology course requirement for their participation.

Procedure. Participants were told that the study concerned students' thoughts about their important wishes. They named their currently most important interpersonal concern as well as their currently most important academic concern. They indicated their expectation that each concern would have a good outcome, this time by marking a line with endpoints labeled 1 (*not at all likely*) to 6 (*extremely likely*), $M = 4.65$, $SD = .90$ for the relevant concern; (i.e., the one elaborated after the mood induction). Participants were randomly assigned to first elaborate on aspects related to either the academic or the interpersonal concern.

To measure mode of thought, we used the same procedure described in Studies 1 and 2, with one change. Instead of asking participants to name four positive future aspects and four negative reality aspects, we had them list all the positive future aspects that came to mind, to measure accessibility of these aspects. On the next page, they were asked to select the four most important from those they had named. Next, participants similarly listed all the negative reality aspects that came to mind and then turned the page and chose the four most important. This procedure left participants with a list of eight aspects—four positive future aspects and four negative reality aspects—as in the previous studies. It also provided a measure of accessibility of positive future and negative reality aspects. Subsequently, like before, participants elaborated four of the eight listed aspects, and were identified as using mental contrasting, indulging, dwelling, and reverse contrasting depending on the number and order of elaborated aspects. After elaborating, participants indicated their expectations of success a second time.

When participants had finished writing about their first concern, whether academic or interpersonal, they were told that before writing about the other named concern they would hear a few minutes of music to clear their heads. The experimenter then played five minutes of either Mahler's *Adagietto* or Mozart's *Eine kleine Nachtmusik.* Previous research found that these pieces were effective at inducing sad and happy moods, respectively (Niedenthal & Setterlund, 1994). At the conclusion of the music, participants were told that the researchers were thinking of using this music for an upcoming study and wanted to know how people felt after listening to it. They were asked to indicate from 1 (*not at all*) to 7 (*extremely*) how happy, depressed, elated, fearful, calm, angry, relaxed, and sad they felt.

Participants then elaborated upon their other previously named concern (academic or interpersonal) following the procedure described above. They were debriefed and thanked, and participants in the sad mood condition were offered the opportunity to hear the happy mood music if they wished.

Results

Mood manipulation check. Participants who had listened to the Mahler piece ($n = 68$) compared to those who had listened to the Mozart piece ($n = 75$) reported being more sad, $t(141) = 6.83$, $p < .001$, $\eta^2 = .25$ ($M = 3.07$ vs. $M = 1.57$), more depressed, $t(141) = 5.92$, $p < .001$, $\eta^2 = .20$ ($M = 2.99$ vs. $M = 1.72$), less happy, $t(141) = 4.88$, $p < .001$, $\eta^2 = .15$ ($M = 3.99$ vs. $M = 4.93$), and they tended to be less elated, $t(141) = 1.80$, $p = .07$, $\eta^2 = .02$ ($M = 3.10$ vs. $M = 3.56$). There were no differences between the two groups in their ratings for fearful, calm, angry, or relaxed, ts$(141) < 1.41$, ps $> .16$.

Mood and use of self-regulatory thought. Whether participants wrote about their academic concern first ($n = 65$) or interpersonal concern first ($n = 78$) did not affect the proportion of participants using mental contrasting on either the first concern, $\chi^2(1) = .68$, $p = .41$, or the second concern, $\chi^2(1) = .93$, $p = .34$. Thus, we combined across the order-of-writing conditions and compared only between mood conditions.

Binary logistic regression analysis showed that mood condition predicted the use of mental contrasting versus other modes of thought when elaborating the second (postmood induction) concern, $\chi^2(1) = 4.06$, $b = .72$, odds ratio $= 2.05$, $p = .04$, Nagelkerke $R^2 = 3.9\%$ (Figure 1d). Use of mental contrasting was more likely in the sad mood condition (43%) than in the happy mood condition (27%). Further, the sad mood music led to a similar percentage of participants using mental contrasting (43%) versus other modes of thought (57%), $\chi^2(1) = 1.47$, $p = .23$, while the happy mood music led to fewer participants using mental contrasting (27%) than the other modes of thought (73%), $\chi^2(1) = 16.33$, $p < .001$.

To compare use of mental contrasting before and after the mood induction, we conducted two one-tailed z approximation tests

comparing the percentage of participants using mental contrasting in the two conditions to the baseline percentage. In the happy mood condition, the observed percentage of 27% was marginally significantly smaller than the baseline percentage (36%), $p = .058$. In the sad mood group, the percentage increased to 43%, but the difference did not reach significance, $p = .16$.

Accessibility as alternative explanation. Participants in the sad versus happy mood conditions did not differ in the number of positive future aspects ($M = 5.96$, $SD = 2.53$ vs. $M = 5.71$, $SD = 2.50$) or negative reality aspects ($M = 5.96$, $SD = 1.97$ vs. $M = 5.75$, $SD = 2.19$) they listed, ts < 1. Further, adding the listed number of positive future and negative reality aspects as covariates in the logistic regression predicting use of mental contrasting did not improve the prediction, $\chi^2(2) = .93$, $p = .63$. Mood condition continued to predict use of mental contrasting versus other modes of thought, $\chi^2(1) = 3.91$, $p = .05$.

Discussion

Sad mood increased the use of mental contrasting across different means of mood induction: In the present Study 4, sad mood induced via listening to music resulted in more mental contrasting than did happy mood. That is, sad mood facilitated the use of mental contrasting even when the mood manipulation itself in no way referred to problem solving. The finding lends further support to our hypothesis that mood facilitates mental contrasting by its capability to initiate reliance on problem solving processes (Schwarz & Bless, 1991).

The design of Study 4 allowed us to compare a baseline mode of thought to that arising after a mood induction. The happy mood induction led to marginally less use of mental contrasting compared to initial probabilities, in line with the idea that happy moods decrease the use of problem solving thought (see overview by Clore et al., 1994). However, the sad mood induction did not significantly increase the use of mental contrasting compared to the baseline. It may be that the average mood of our student participants entering the lab was closer to sad than happy. This supposition is supported by findings that approximately 30% of university students experience some level of depression, and about 15% of a student body is experiencing clinical levels of depression at a given time (McLennan, 1992; Rosenthal & Schreiner, 2000). It also may be that the happy and even neutral mood manipulations used to establish the comparison groups in Studies 1–4 changed (i.e., heightened) participants' moods more than the sad mood manipulations dampened mood.

In the present study, the induction of different moods did not affect mode of thought via a change in the accessibility of positive future or negative reality aspects. Participants in the two mood conditions did not differ in the number of each type of aspect that they generated. Also, adjusting for the generated aspects in predicting mode of thought, the pattern of results was unchanged. This finding provides further evidence for the hypothesis that sad mood encourages the use of mental contrasting as an effective problem solving mode of thought.

In Study 1 and Studies 3 and 4, participants first listed positive future and then negative reality aspects before elaborating a total of four aspects. Thus, the self-initiation of mental contrasting in these studies may reflect participants' order of elaboration mirroring the order of listing these aspects. We addressed this limitation in Study 5 by counterbalancing the listing of aspects: either first positive future aspects and then negative reality aspects or first negative reality aspects and then positive future aspects.

We also turned to the question of whether mood influences the relation of mental contrasting to forming selective goal commitment. Although sad mood promotes the self-initiated use of mental contrasting, we did not expect it to change the relationship of mental contrasting to expectancy-dependent goal commitment. That is, regardless of their mood state, participants who self-initiate mental contrasting should have goal commitments more strongly in line with their expectations of success than participants who self-initiate other modes of thought. To test this hypothesis, Study 5 operationalized goal commitment as participants' self-reported energization, which is a proximal indicator of goal commitment (Klein, Wesson, Hollenbeck, & Alge, 1999; Locke & Latham, 1990). Allocating energy to pursue wishes and concerns in line with one's expectations of successfully realizing them reflects effective formation of commitment and yields successful goal pursuit. In previous research, experimentally induced mental contrasting fostered expectancy-dependent energization measured via self-report as well as via systolic blood pressure (Oettingen et al., 2009). Therefore, in Study 5 we hypothesized that self-initiated mental contrasting would be followed by a stronger relationship between expectations and energization than the use of the other modes of thought, and that this pattern would not be changed by mood condition.

Study 5: Mood, Mental Contrasting, and Goal Commitment

Method

Participants. One hundred sixteen students (85 females) at a large American university participated. Their mean age was 19.7 years ($SD = 1.18$), ranging from 18 to 24 years. Participants were tested one to 10 at a time using a paper-and-pencil format. They received credit for partial fulfillment of a psychology course requirement for their participation.

Procedure. As in Study 1, participants were told that the study concerned how people resume thinking about goals after an interruption; again, the purportedly unrelated interruption served as our mood manipulation. They named their currently most important academic wish or concern and indicated their expectation of wish fulfillment ($M = 5.32$, $SD = 1.11$). Half of the participants first listed positive future aspects and then negative reality aspects (as in Studies 1, 3, 4); the other half first listed negative reality aspects and then positive future aspects.

We asked participants to take the perspective of the protagonist while reading one of two vignettes (designed to elicit sad or neutral mood; adapted from Hemenover & Zhang, 2004; Mayer, Allen, & Beauregard, 1995). In the sad mood condition, the protagonist experienced the death of a pet; in the neutral mood condition, the protagonist compiled a grocery list, shopped for the items, and returned home. We tested whether the vignettes led to differences in sadness by having participants indicate from 1 (*not at all*) to 5 (*very much*) how sad, gloomy, down, angry, frustrated, irritated, annoyed, nervous, happy, and content they felt. As the first three items, sad, gloomy, and down, evinced strong internal consistency ($\alpha = .92$), we computed their mean to serve as an index of sadness.

To measure use of self-regulatory mode of thought, we then asked participants to elaborate four of the eight aspects they had listed beforehand. Like in the previous studies, participants were identified as mental contrasting, indulging, dwelling, and reverse contrasting depending on the number and order of elaborated aspects of future and reality.

Energization. Participants answered the following question: "How energized do you feel with respect to this concern?" with a response scale from 1 (*not at all*) to 7 (*very*), $M = 5.14$, $SD = 1.18$. Finally, we measured expectation of wish fulfillment a second time and then debriefed and thanked participants.

Results

Mood manipulation check. Participants in the sad mood condition were more sad than those in the neutral mood condition, $t(114) = 6.25$, $p < .001$, $\eta^2 = .26$ ($M = 2.55$ vs. $M = 1.43$). At the same time, they were less happy, $t(114) = 5.11$, $p < .001$, $\eta^2 = .19$ ($M = 2.14$ vs. $M = 3.14$), and less content, $t(113) = 4.22$, $p < .001$, $\eta^2 = .14$ ($M = 2.50$ vs. $M = 3.37$). There were no differences between the two groups in how angry, frustrated, irritated, annoyed, or nervous they felt, ts < 1.46, ps $> .14$.

Mood and use of self-regulatory mode of thought. Binary logistic regression analysis showed that mood condition predicted use of mental contrasting versus other modes of thought, $\chi^2(1) = 4.11$, $b = .88$, odds ratio $= 2.41$, $p = .04$, Nagelkerke $R^2 = .05$ (Figure 1e), in that the sad mood condition prompted greater usage of mental contrasting than the neutral mood condition (34% vs. 17%).

Counterbalancing and mode of thought. A binary logistic regression (mental contrasting vs. other) showed no difference in mode of thought between participants in the two counterbalanced orders of aspect keyword listing (i.e., future-first or reality-first), $\chi^2(1) = .08$, $p = .78$. As order did not influence mode of thought, our analyses above collapsed across order of aspect listing. Furthermore, an examination of the subset of participants who listed negative reality aspects first showed that even in this group, participants in the sad mood condition were more likely to engage in mental contrasting than those in the neutral condition, $\chi^2(1) = 6.98$, $p = .01$.

Energization. We first tested the hypothesis that self-initiated mental contrasting would predict the strongest expectancy-dependence in energization, just as experimentally induced mental contrasting does (Oettingen et al., 2009). We estimated a General Linear Model (GLM) with energization as the dependent variable, mode of thought (mental contrasting vs. other) as a fixed between-subjects factor, and the expectation measure as an independent variable entered in the first step; the interaction of mode of thought and expectation was entered as an independent variable in the second step (Hardin & Hilbe, 2001). We observed a main effect for mode of thought, $F(1, 110) = 6.33$, $p = .01$, and a main effect of expectation, $F(1, 110) = 14.82$, $p < .001$, which was qualified by the predicted interaction effect, $F(1, 110) = 5.97$, $p = .02$. We ran the analysis once with mental contrasting coded as the reference group, and a second time with other modes of thought as the reference group, in order to obtain regression coefficients representing the relationship between expectation and energization in each condition. The link between expectation and energization was stronger when participants used mental contrasting, $\beta = .57$, $p = .001$, than when they used other modes of thought, $\beta = .18$, $p = .11$.

Next, we tested whether the expectancy-dependent relation of mental contrasting to energization was moderated by mood condition. The GLM above was modified to include the mood condition variable, its interaction with expectation, and the three-way interaction of these two variables with mode of thought. None of these main or interaction effects reached significance, Fs $< .7$, ps $> .43$; the original expectancy-dependent pattern in the mental contrasting group stayed significant. These results imply that the expectancy-dependent goal commitment related to mental contrasting versus other modes of thought is observed regardless of mood condition.

Discussion

Just as in Studies 1 to 4, more participants used mental contrasting when sad mood had been induced. This was true in the present study even though order of initially listing aspects was counterbalanced. This finding implies that sad mood facilitates self-initiated mental contrasting regardless of the order in which participants initially list positive aspects of the future and negative aspects of reality.

Participants who used mental contrasting reported energization that was more strongly correlated with their expectations of success than those who used other modes of thought. For this proximal indicator of commitment, self-initiated mental contrasting related to goal commitment in a manner similar to when it is experimentally induced (Oettingen et al., 2009). Most importantly, this pattern of results was identical across mood conditions, indicating that sad mood does not compromise the predictive power of mental contrasting for forming selective goal commitment. In Study 6, we looked to replicate this finding using a behavioral rather than a self-report measure of goal commitment.

As discussed above, the modes of self-regulatory thought have differential effects on expectancy-dependent goal commitment even when goal commitment is measured by behavioral indicators. For example, mental contrasting yields a stronger link between expectations of success and the speed of initiating action to solve a personal problem, persistence and success in academic studying, and the quality of performance on an assigned speech than does use of the other modes of thought (Oettingen et al., 2001, 2009). Therefore, in Study 6, we manipulated mood and measured the relation between self-initiated mental contrasting and commitment using a behavioral indicator, persistence on a challenging task. We anticipated that self-initiated mental contrasting would predict a stronger relationship between expectations and persistence than the use of the other modes of thought, and that as in Study 5, this pattern would evince irrespective of mood condition.

As mood manipulation in Study 6, we returned to the music used in Study 4, but this time we did not include a mood manipulation check. Earlier studies utilized verbal mood inductions with (Study 1) and without (Studies 2–3) manipulation checks during the experimental session. They showed that the effect of sad mood on mode of thought does not depend on making participants aware of their own mood state. Inducing mood via music without manipulation check in Study 6 was done to ensure that the same is true of the nonverbal mood manipulation. This change also eliminated

demand characteristics that may have arisen from asking participants to report music effects on their mood in Study 4.

The measure of self-initiated mode of thought used in Studies 1, 2, 4, and 5 was based on the paradigm used when self-regulatory mode of thought is experimentally induced. However, being asked to elaborate a subset of previously named positive future and negative reality aspects may not fully reflect what people do during everyday life. To ensure that sad mood promotes self-initiated mental contrasting even when participants are not requested to elaborate future and reality in this specific way, we modified the measure in Study 6. Participants had to think about a wish or concern and freely elaborate on two discretionary aspects of it. Only later did we have them classify their elaborations as pertaining to either the positive future or negative reality. We predicted that following the sad mood induction, participants would be more likely to self-initiate mental contrasting by elaborating on the positive future followed by the negative reality.

Thus far, we have tested mood effects on the self-initiation of mental contrasting about participants' most important interpersonal (Study 1, 2, 4) and academic (Study 4, 5) concerns, as well as about being a good leader (Study 3). To ensure that these effects also apply to concerns that pertain to people's everyday lives, Study 6 was about students' wishes to improve their everyday study habits and time management.

Study 6: Freely Elaborating on an Everyday Concern

Method

Participants. One hundred forty-four students (115 female) at a large American university participated. Their mean age was 19.7 years ($SD = 1.05$), ranging from 17 to 23 years. Participants were tested individually in soundproof cubicles. They received credit for partial fulfillment of a psychology course requirement for their participation.

Procedure. All study materials were administered via computer. Participants were told that the study concerned factors relating to the way university students study and organize their time. They were asked to indicate how much they would ideally like to improve their study habits/time management, using a 1 (*not at all*) to 7 (*extremely*) scale. To indicate their relevant expectation of success, they answered the question, "How likely is it that you will improve your study habits/time management as much as you indicated?" using the same response scale ($M = 3.86$, $SD = 1.34$).

Next, participants read that one thing the experimenters were interested in was how music related to study habits, and that they would now hear a music sample. Participants then listened to one of the two music samples used in Study 4 (Mahler's *Adagietto* in the sad mood condition; Mozart's *Eine kleine Nachtmusik* in the happy mood condition). No manipulation check was included in the study. To support the cover story, participants subsequently answered several questions about their typical music preferences when studying.

To measure mode of thought, we used a procedure modified from the earlier studies. Participants were asked to write about aspects of improving their study habits/time management. They read, "Aspects are any different thoughts about this topic that come into your mind." The computer screen displayed two text boxes. Instructions above the first box read: "Think about improving your study habits/time management. What aspect of this situation comes most easily to your mind?" The remainder of the instructions was as described in the previous studies. Above the second text box, parallel instructions read: "Now, which aspect of this situation comes most easily to your mind?" again followed by the instructions described in the previous studies.

Identification of self-regulatory mode of thought. When participants had finished writing, they read, "When we think about wishes and concerns that are important to us, we may think about the best possible outcomes associated with these wishes coming true, and/or about obstacles that stand in the way or could prevent the wish from coming true." The two texts they had elaborated in writing were displayed again, and participants were asked to decide for each text whether it was more like the best possible outcome or more like an obstacle. Participants were identified as using mental contrasting if they had written about a best possible outcome followed by an obstacle; as reverse contrasting if they had written about an obstacle followed by a best possible outcome; as indulging if they had written about two best possible outcomes; and as dwelling if they had written about two obstacles.

Persistence. Participants were told that the experimenter would show them exercises that they could use to improve their study habits and time management, including the "Wrong Hand" exercise (Ruvolo & Markus, 1992). Instructions read: "Strengthening the connection between the two hemispheres of your brain could help you to improve your regulation skills and enhance your time management. This exercise will train your brain to make new connections." Participants received three pages with numbers that they should copy using their nondominant hand. Pilot testing showed that copying all the numbers took more than 10 minutes, and participants were told that they were free to stop whenever they thought they had done enough. Those who were still working on the exercise after seven minutes were stopped. All participants were debriefed and thanked, and sad mood condition participants were offered the opportunity to hear the happy mood music if they wished.

Results

Mood and use of self-regulatory thought. Binary logistic regression analyses showed that mood condition predicted the number of participants who used mental contrasting versus other modes of thought, $\chi^2(1) = 4.05$, $b = 1.08$, odds ratio $= 2.95$, $p = .04$, Nagelkerke $R^2 = 5.4\%$ (Figure 1f). Use of mental contrasting was more likely in the sad mood condition (17%) than in the happy mood condition (7%).

Persistence. As in Study 5, we tested the hypothesis that self-initiated mental contrasting would predict the strongest expectancy-dependence in goal commitment, independent of mood condition. This time, participants' persistence on the "wrong hand" exercise provided the measure of goal commitment. Ninety participants (64%) persisted on this exercise for seven minutes, and 50 participants (36%) did not; four participants were missing values due to computer error.

We estimated a Generalized Linear Model with robust standard errors with persistence as the binary dependent variable, mode of thought (mental contrasting vs. other) as a fixed between-subjects factor, and the expectation measure as an independent variable entered in the first step; the interaction of mode of thought and

expectation was entered as an independent variable in the second step. We observed no significant main effects for mode of thought, $\chi^2(1) = 2.09$, $p = .15$, or expectation, $\chi^2(1) = .80$, $p = .37$, but the predicted interaction effect approached significance, $\chi^2(1) = 3.04$, $p = .08$. Again, we ran the analysis twice to obtain regression coefficients representing the relationship between expectations and probability of persistence in participants who used mental contrasting and in participants who used other modes of thought. This relationship was stronger for participants who used mental contrasting, $b = 1.41$, $p = .08$, than for those who used other modes of thought, $b = -.01$, $p = .95$.

Given the small number of participants who used mental contrasting, we could not test whether these patterns interacted with mood condition. However, because the predicted interaction effect was marginally significant in spite of the small number of mental contrasting participants, these results suggest that, as in Study 5, mood condition did not substantially influence the stronger correlation between expectations and goal commitment in those who used mental contrasting versus other modes of thought.

Discussion

As in the previous studies, induced sad mood facilitated self-initiated mental contrasting. Additionally, participants who used mental contrasting evinced persistence that was more strongly correlated with their expectations of success than those who used other modes of thought. Because relatively few participants used mental contrasting in the present study, we could not directly test whether mood moderated the expectancy-dependent relation of mental contrasting to goal commitment. Still, using a behavioral indicator of goal commitment, we replicated the pattern of results observed in Study 5, and this pattern was present in spite of the small number of mental contrasting participants. Together, then, Studies 5 and 6 indicate that sad mood upholds the efficacy of mental contrasting for forming prudent goal commitments. In line with Studies 2 and 3, mood influenced mode of thought even though participants were not made aware of their mood state. Indeed, our music mood manipulation had the same effect on mode of thought in Study 6 as it had in Study 4 when mood was made salient via manipulation check.

Sad mood resulted in more mental contrasting than happy mood, here measured via participants' free stream of thought rather than via their elaborations of named future and reality aspects. This finding implies that mood effects on self-regulatory mode of thought can be measured by free elaborations that in hindsight are specified as future and reality (Study 6) as well as by a more constrained measure where participants specify future and reality aspects beforehand and then freely elaborate them (Studies 1–2, 4–5). Further, in the present study, mood effects on mode of thought were observed though participants elaborated an everyday concern that was assigned to them (improving study habits and time management). In the previous studies participants had elaborated a self-chosen concern that was most important to them.

General Discussion

The present investigation explored sad mood as a context variable promoting the use of a self-regulatory mode of thought that leads to expectancy-based goal commitment when induced experimentally. Across six studies, we found that sad moods resulted in more use of and preference for mental contrasting than neutral or happy moods. By utilizing several different means to elicit mood, these studies speak to the range and reliability of our converging results. Whether comparing sad mood to neutral mood (Studies 1, 5) or to happy mood (Studies 2, 3, 4, 6), sad mood consistently resulted in more participants using mental contrasting. This was true for both verbal and auditory manipulations of mood (Studies 1, 2, 5 and Studies 4, 6, respectively) as well as mood manipulated via inconsistent versus consistent feedback (Study 3). In the verbal mood manipulations, sadness facilitated mental contrasting upon either reading about a past tragedy (Study 1) or writing about facing a problematic situation (Studies 2, 5). Further, the same effect of sad mood was present whether mode of thought was measured via more constrained (Studies 1–2, 4–5) or less constrained (Study 6) elaborations, or via preference (Study 3).

Mood Effects on Self-Regulatory Mode of Thought

Six studies showed the breadth of the mood effects on self-regulatory mode of thought. Study 2 increased the impact of the mood manipulation over Study 1, by having participants write about a hypothetical present event involving one's own person rather than read about a past event not directly related to them. Together with Study 3, this study also showed that conscious recognition of one's sad mood is not a necessary prerequisite for observing increased use of mental contrasting. By inducing mood without a manipulation check, participants were not made aware of their mood during these studies. Nevertheless, sad mood still promoted mental contrasting. Study 3 further increased the impact of the mood manipulation, by providing participants with actual feedback about their leadership potential. Differential mood effects resulted from whether or not the feedback was consistent with participants' prior self-view. Because participants in both mood conditions received negatively as well as positively toned feedback, the findings should not result from the negativity of the feedback itself, but from the elicited mood which in fact may stem from positive feedback.

Study 5 resolved an important procedural issue: order of listing aspects. Initial listing of positive future and negative reality aspects was counterbalanced, and order had no effect on use of mode of thought. Use of mental contrasting in the other studies is thus unlikely to be explained by order effects of listing future and reality aspects. Finally, in all studies where they were measured twice (Studies 1, 4, 5, 6), expectations of success did not differ nor differentially change as a function of mood condition. Previous research has shown that expectations may be influenced by moods (Schwarz & Clore, 1983; Salovey & Birnbaum, 1989). However, those studies obtained mood effects on expectations when they pertained to general concepts (general life satisfaction) or presently irrelevant issues (improbable illnesses among healthy participants). When expectations apply to people's performances and skills, they potentially can be modified via past performance and extensive experience, but are not generally subject to mood effects (Bandura, 1997). In line with these findings, in the present studies, our mood inductions did not affect expectations of success and thus use of mode of thought was not due to a change in expectations of successful wish fulfillment.

The present research addressed sad mood because it is known to facilitate the use of careful, purposeful processing that facilitates problem solving (Schwarz & Bless, 1991). A simple accessibility argument would predict that because sad mood makes negative cognition more accessible, participants would attend to negative reality first, thus engaging in reverse contrasting or dwelling; however, this was not the case. Moreover, in Study 4, we explicitly addressed accessibility as an alternative explanation. In line with our hypotheses, we did not find differential effects of mood on the listing of positive future and negative reality aspects, implying that the effect of the mood inductions on use of mental contrasting should not be due to differential accessibility of positive and negative cognition.

The finding that mood effects on self-regulatory mode of thought cannot be explained by accessibility may shed a more differentiated light on the effects of mood on accessibility. Previous research on this topic has employed paradigms such as having participants generate open-ended descriptions of self or others, and observing how the rater-coded valence of these descriptions changes over time (Forgas & Ciarrochi, 2002). In contrast, we asked participants to generate short lists of positive future aspects and negative reality aspects before choosing aspects from these lists on which to elaborate, and found no significant mood effects on the number of each type of aspect elaborated (Studies 1, 2, 4, 5, 6) or generated (Study 4). It may well be that the effect of mood on the accessibility of thoughts differs when the context is specific goal-relevant self-regulatory thought, like in the present studies, as opposed to more general descriptions like those observed in previous research.

Research investigating how moods influence striving for set goals finds that moods can have different effects depending on whether they result from the experience of goal pursuit itself (i.e., positive vs. negative feedback) or arise from incidental sources (see, e.g., Aspinwall, 1998; Carver & Scheier, 1990). The present findings suggest that sad moods may promote mental contrasting regardless of the source of the mood—similar effects emerged when mood was manipulated incidentally to the elaborated concern (Studies 1, 2, 4, 5, 6) or more directly (Study 3). In Study 3, particularly for participants who view themselves as very likely to be good leaders, and who receive feedback that they are actually low in leadership potential, the induced mood might represent a setback in the pursuit of a goal to be a leader. We found the same pattern of results (more mental contrasting under induced sad mood than under induced happy mood) here as in the studies where the induced mood was clearly incidental to the concern where mode of thought was measured, which suggests that sad moods, regardless of their source, promote the use of mental contrasting.

The present results converge with other work to paint a picture of mental contrasting as a purposeful, detail-oriented, and problem-geared self-regulatory mode. Mental contrasting employs inconsistent cognitions and leads to either effortful realization or unsavory relinquishment of desired futures (Oettingen et al., 2001). People prefer to stay away from inconsistent cognitions (McGregor, Newby-Clark, & Zanna, 1999), and tend to generate thoughts of similar rather than opposing valence (Bower, 1981; Bargh et al., 1996), supporting the effortful nature of mental contrasting. Moreover, Achtziger, Fehr, Oettingen, Gollwitzer, and Rockstroh (2009) compared the neural correlates of mental contrasting, indulging, and resting. They observed greater neural activity during mental contrasting compared to indulging as well as resting in brain regions responsible for working memory and intention formation. This finding is in line with the contention that mental contrasting involves the processing of critical information, positioning the present, negative reality in the way of the positive future. Moreover, mental contrasting elicited heightened neural activity in areas of episodic memory and vivid mental imagery, suggesting that mental contrasting is rooted in the retrieval of past personal events in addition to the processing of complex stimuli. These arguments, along with the finding that sad mood more than happy and neutral moods fostered mental contrasting, indicate that engaging in mental contrasting should be distinguished from automatic comparison processes (Gilbert, Giesler, & Morris, 1995; Mussweiler, 2003). Such automatic comparisons can facilitate information acquisition and social judgment but are distinct from mental contrasting, which involves explicitly elaborating a positive future and its respective negative reality.

Other moods and mental contrasting. While sad mood provided a context conducive to self-initiated mental contrasting, we additionally tested the hypothesis that happy mood should detract from mental contrasting. Indeed, in Study 4, the probability of self-initiated mental contrasting tended to be lower following happy mood induction than in the baseline measure. Happy moods lead to thought that is less effective for solving problems: for example, seeing broad themes rather than details (Gasper & Clore, 2002), and using relational rather than item-specific processing (Storbeck & Clore, 2005). It seems that happy moods also decrease the use of problem solving thought by leading people to use self-regulatory modes other than mental contrasting.

The deliberative processing characteristic of sad mood stands in stark contrast to moods such as anger. Whereas the former has been associated with withdrawal or avoidance motivation, the experience of angry mood elicits a sense of approach motivation (Carver & Harmon-Jones, 2009). Given this orientation toward action initiation, coupled with a biased sense of optimism (Lerner & Keltner, 2001), perhaps angry mood would reduce the tendency to engage in reflective processing (i.e., mental contrasting). Instead, it may attune cognition toward opportunities to engage in goal-directed behavior (e.g., planning of how to overcome obstacles). Future work at the intersection of motivation and emotion should consider the effects of anger as well as other specific moods on various self-regulatory modes of thought.

Mental contrasting in the stream of thought. The overall probability of self-initiating mental contrasting varied in the present studies according to the way it was measured. In Studies 1, 2, 4, and 5, where participants listed desired future and negative reality aspects before elaborating on a subset of them, mental contrasting was frequently the most-used mode of thought. In Study 6, where participants classified the relevant aspects after freely elaborating their wish, mental contrasting was comparatively less used. This finding is in line with recent work by Sevincer and Oettingen (2011), who content-analyzed participants' free writing, and found mental contrasting to be used less frequently than indulging or dwelling, though it stayed a reliable predictor of forming prudent goal commitments. These results, along with the findings of Study 6, lend further credence to the arguments supporting the effortful nature of mental contrasting versus other modes of thought. However, in spite of differences in

the overall frequency of mental contrasting, in the present studies, it was consistently more likely to be used following sad mood than following neutral or happy mood inductions.

Mental Contrasting and Selective Goal Commitment Across Mood

Although sad mood provides a context facilitating the use of mental contrasting, it does not appear to moderate the selective goal commitment evinced after using this mode of thought. In Study 5, those participants who elaborated their concern via mental contrasting reported feelings of energization more in line with expectations of success than participants who used other modes of thought. Similarly, in Study 6, mental-contrasting participants showed more expectancy-dependent behavioral persistence than nonmental-contrasting participants. These findings suggest that independent of contextual variables that trigger mental contrasting (e.g., sad mood), people who mentally contrast will be prudent in forming their goal commitments.

Mental Contrasting and Mood Regulation

Mental contrasting not only facilitates selective commitment to what is feasible and what is not; our results imply that it may also enhance the self-regulation of negative mood. This consideration is stimulated by recent results by McFarland, Buehler, von Rüti, Nguyen, and Alvaro (2007). The authors showed that after inducing negative mood, reflective thoughts about this mood ("I do not want to dwell on my feelings"; "I feel like I want to do something to make myself feel better") led to more incongruent moods than ruminative thoughts ("I find myself focused on the feelings"; "I feel passive and fatigued"). Based on the results of the present studies showing that after sad mood induction more people initiated mental contrasting than other modes of thought, we speculate that self-initiated mental contrasting, as a self-regulatory form of reflective thought, might facilitate switching from a negative to a positive mood.

It is comforting that sad moods—though painful—may serve a beneficial role on the long run by facilitating the use of mental contrasting. We speculate that mental contrasting in favoring selective goal commitment should ultimately yield positive affect and well-being: People are spared pursuing futile goals, and they should experience feelings of joy, satisfaction, and pride from devoting sufficient resources to high-expectancy goals and subsequently accomplishing them. Importantly, however, the mood inductions in the present research, while significantly different from each other, were relatively mild. It is possible that an intense or enduring negative affective state rather than the mild ones used here would hinder effective self-regulation of goal commitment and subsequent well-being. Participants may no longer be able to generate thoughts of bright futures to contrast with the negative reality that they face (e.g., MacLeod & Salaminiou, 2001).

Contextual Influences Other Than Mood

Previous research has focused primarily upon contextual influences on goal striving rather than goal setting (summary by Bargh, Gollwitzer, & Oettingen, 2010). Context effects on goal striving have been observed for both external and internal variables. The latter include the divergent effects of positive and negative mood states (e.g., Tice, Bratslavsky, & Baumeister, 2001; Kazén & Kuhl, 2005). The present research explored the effects of mood states on self-regulatory mode of thought. However, other contextual factors may also impact self-initiation of mental contrasting. For example, professions that push frequent problem solving rather than daily routine (e.g., law, business) may foster self-initiated mental contrasting in their members. Loose and individualist cultures rather than tight and collectivist cultures (Triandis, 1995) may afford self-initiated mental contrasting rather than other modes of thought (Oettingen, 1997). It is possible that particular experiences that trigger systematic processing, such as the violation of expectations (Hastie & Kumar, 1979), might also trigger mental contrasting. Indeed, such an effect would be in line with the results of the present Study 3, since the violation of expectations about personal leadership potential was linked to a strong preference for mental contrasting. Further, person variables may foster self-initiated mental contrasting. For example, need for cognition as indicated by engagement in and enjoyment of demanding cognitive activities (Cacioppo, Petty, Feinstein, & Jarvis, 1996) might be linked to mental contrasting rather than other self-regulatory modes of thought.

We did not find consistent mood effects on the use of indulging, dwelling, or reverse contrasting (see Table 1). However, future work might specifically ask which contextual variables promote the use of these modes of thought. Situational variables may refer to readings about heroic models, while variables influencing ontogenetic development may refer to parents idealizing their children. Such idealization may foster self-initiated indulging in the next generation, as might books and advertisements espousing the idea that simply imagining success will bring it your way. These contexts might also encourage people to turn to thoughts of a positive future when they encounter obstacles, thereby promoting reverse contrasting. Likewise, a low construal level that emphasizes the here-and-now (Trope & Liberman, 2003) may facilitate self-initiated dwelling. Or, people who use defensive pessimism (Norem & Cantor, 1986) may favor self-initiated dwelling.

Conclusion

The present studies complement previous research, which identified mood effects on striving for set goals, by highlighting mood effects on the use of a mode of thought that guides selective goal commitment. Sad moods that facilitate problem solving promoted the self-initiated use of mental contrasting, while happy moods that cue perfunctory and facile thinking hindered this more purposeful mode of thought. At the same time, self-initiated mental contrasting related to expectancy-based goal commitments, regardless of mood state. Ironically, something as potentially unwelcome as a sad mood is conducive to self-regulation of goal commitment by mentally contrasting future and reality, and thus helps to transform people's wishes into selective goal pursuit.

References

Achtziger, A., Fehr, T., Oettingen, G., Gollwitzer, P. M., & Rockstroh, B. (2009). Strategies of intention formation are reflected in continuous MEG activity. *Social Neuroscience, 4,* 11–27.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50,* 179–211.

Aspinwall, L. G. (1998). Rethinking the role of positive affect in self-regulation. *Motivation and Emotion, 22,* 1–32.

Aspinwall, L. G., & Taylor, S. E. (1997). A stitch in time: Self-regulation and proactive coping. *Psychological Bulletin, 121,* 417–436.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman.

Bargh, J. A., Chaiken, S., Raymond, P., & Hymes, C. (1996). The automatic evaluation effect: Unconditional automatic attitude activation with a pronunciation task. *Journal of Experimental Social Psychology, 32,* 104–128.

Bargh, J. A., Gollwitzer, P. M., & Oettingen, G. (2010). Motivation. In S. Fiske, D. T. Gilbert, & G. Lindzay (Eds.), *Handbook of social psychology* (5th ed., Vol. 1, pp. 268–316). New York: Wiley.

Beukeboom, C. J., & Semin, G. R. (2005). Mood and representations of behaviour: The how and why. *Cognition & Emotion, 19,* 1242–1251.

Beukeboom, C. J., & Semin, G. R. (2006). How mood turns on language. *Journal of Experimental Social Psychology, 42,* 553–566.

Bless, H., Clore, G. L., Schwarz, N., Golisano, V., Rabe, C., & Wolk, M. (1996). Mood and the use of scripts: Does a happy mood really lead to mindlessness? *Journal of Personality and Social Psychology, 71,* 665–679.

Bohner, G., & Weinerth, T. (2000). *Negative affect and persuasion: The role of affect interpretation.* New York: Psychology Press.

Bower, G. H. (1981). Mood and memory. *American Psychologist, 36,* 129–148.

Brandstädter, J., & Greve, W. (1994). The aging self: Stabilizing and protective processes. *Developmental Review, 14,* 52–80.

Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal of Personality and Social Psychology, 65,* 1061–1070.

Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin, 119,* 197–253.

Carver, C., & Harmon-Jones, E. (2009). Anger is an approach-related affect: Evidence and implications. *Psychological Bulletin, 135,* 183–204.

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review, 97,* 19–35.

Clore, G. L., Schwarz, N., & Conway, M. (1994). Affective causes and consequences of social information processing. In R. S. Wyer, Jr. & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 1, pp. 323–417). Hillsdale, NJ: Erlbaum.

Forgas, J. P., & Ciarrochi, J. V. (2002). On managing moods: Evidence for the role of homeostatic cognitive strategies in affect regulation. *Personality and Social Psychology Bulletin, 28,* 336–345.

Gasper, K. (2004). Do you see what I see? Affect and visual information processing. *Cognition & Emotion, 18,* 405–421.

Gasper, K., & Clore, G. L. (2002). Attending to the big picture: Mood and global versus local processing of visual information. *Psychological Science, 13,* 34–40.

Gilbert, D. T., Giesler, R. B., & Morris, K. A. (1995). When comparisons arise. *Journal of Personality and Social Psychology, 69,* 227–236.

Hardin, J. W., & Hilbe, J. M. (2001). *Generalized linear models and extensions.* College Station, TX: Stata Press.

Hastie, R., & Kumar, P. A. (1979). Person memory: Personality traits as organizing principles in memory for behaviors. *Journal of Personality and Social Psychology, 37,* 25–38.

Heckhausen, H. (1991). *Motivation and action.* Heidelberg, Germany: Springer-Verlag.

Hemenover, S. H., & Zhang, S. (2004). Anger, personality, and optimistic stress appraisals. *Cognition & Emotion, 18,* 363–363.

Hom, H. L., & Arbuckle, B. (1988). Mood induction effects upon goal setting and performance in young children. *Motivation and Emotion, 12,* 113–122.

Janoff-Bulman, R., & Brickman, P. (1982). Expectations and what people learn from failure. In N. T. Feather (Ed.), *Expectations and actions: Expectancy-value models in psychology* (pp. 207–237). Hillsdale, NJ: Erlbaum.

Kazén, M., & Kuhl, J. (2005). Intention memory and achievement motivation: Volitional facilitation and inhibition as a function of affective contents of need-related stimuli. *Journal of Personality and Social Psychology, 89,* 426–448.

Keltner, D., Ellsworth, P. C., & Edwards, K. (1993). Beyond simple pessimism: Effects of sadness and anger on social perception. *Journal of Personality and Social Psychology, 64,* 740–752.

Klein, H. J., Wesson, M. J., Hollenbeck, J. R., & Alge, B. J. (1999). Goal commitment and the goal setting process: Conceptual clarification and empirical synthesis. *Journal of Applied Psychology, 84,* 885–896.

Kwang, T., & Swann, W. B., Jr. (2010). Do people embrace praise even when they feel unworthy? A review of critical tests of self-enhancement versus self-verification. *Personality and Social Psychology Review, 14,* 263–280.

Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgment and choice. *Cognition & Emotion, 14,* 473–473.

Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology, 81,* 146–159.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance.* Englewood Cliffs, NJ: Prentice Hall.

MacLeod, A. K., & Salaminiou, E. (2001). Reduced positive future-thinking in depression: Cognitive and affective factors. *Cognition & Emotion, 15,* 99–107.

Mayer, J. D., Allen, J. P., & Beauregard, K. (1995). Mood inductions for four specific moods: A procedure employing guided imagery vignettes with music. *Journal of Mental Imagery, 19,* 151–159.

McFarland, C., Buehler, R., von Rüti, R., Nguyen, L., & Alvaro, C. (2007). The impact of negative moods on self-enhancing cognitions: The role of reflective versus ruminative mood orientations. *Journal of Personality and Social Psychology, 93,* 728–750.

McGregor, I., Newby-Clark, I. R., & Zanna, M. P. (1999). "Remembering" dissonance: Simultaneous accessibility of inconsistent cognitive elements moderates epistemic discomfort. In E. Harmon-Jones & J. Mills (Eds.), *Cognitive dissonance: Progress on a pivotal theory in social psychology* (pp. 325–353). Washington, DC: American Psychological Association.

McLennan, J. (1992). "University blues": Depression among tertiary students during an academic year. *British Journal of Guidance & Counselling, 20,* 186–192.

Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. *Psychological Review, 80,* 252–283.

Mischel, W., Cantor, N., & Feldman, S. (1996). Principles of self-regulation: The nature of willpower and self-control. In E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principle* (pp. 329–360). New York: Guilford Press.

Morris, W. N. (1989). *Mood: The frame of mind.* New York: Springer-Verlag.

Murray, H. A. (1943). *Thematic apperception test.* Cambridge, MA: Harvard University Press.

Mussweiler, T. (2003). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Review, 110,* 472–489.

Newell, A., & Simon, H. A. (1972). *Human problem solving.* Oxford, England: Prentice Hall.

Niedenthal, P. M., & Setterlund, M. B. (1994). Emotion congruence in perception. *Personality and Social Psychology Bulletin, 20,* 401–411.

Norem, J. K., & Cantor, N. (1986). Defensive pessimism: Harnessing

anxiety as motivation. *Journal of Personality and Social Psychology, 51,* 1208–1217.

Oettingen, G. (1997). Culture and future thought. *Culture and Psychology, 3,* 353–381.

Oettingen, G. (2000). Expectancy effects on behavior depend on self-regulatory thought. *Social Cognition, 18,* 101–129.

Oettingen, G., Mayer, D., Sevincer, A. T., Stephens, E. J., Pak, H., & Hagenah, M. (2009). Mental contrasting and goal commitment: The mediating role of energization. *Personality and Social Psychology Bulletin, 35,* 608–622.

Oettingen, G., Mayer, D., & Thorpe, J. (2010a). Self-regulation of commitment to reduce cigarette consumption: Mental contrasting of future and reality. *Psychology and Health, 25,* 961–977.

Oettingen, G., Mayer, D., Thorpe, J. S., Janetzke, H., & Lorenz, S. (2005). Turning fantasies about positive and negative futures into self-improvement goals. *Motivation and Emotion, 29,* 237–267.

Oettingen, G., Pak. H., & Schnetter, K. (2001). Self-regulation of goal setting: Turning free fantasies about the future into binding goals. *Journal of Personality and Social Psychology, 80,* 736–753.

Oettingen, G., & Stephens, E. J. (2009). Fantasies and motivationally intelligent goal setting. In G. B. Moskowitz & H. Grant (Eds.), *The psychology of goals* (pp. 153–178). New York: Guilford Press.

Oettingen, G., Stephens, M. E. J., Mayer, D., & Brinkmann, B. (2010b). Mental contrasting and the self-regulation of helping relations. *Social Cognition, 28,* 490–508.

Roese, N. J., & Sherman, J. W. (2007). Expectancy. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (pp. 91–115). New York: Guilford Press.

Rosenthal, B. S., & Schreiner, A. C. (2000). Prevalence of psychological symptoms among undergraduate students in an ethnically diverse urban public college. *Journal of American College Health, 49,* 12–18.

Ruvolo, A. P., & Markus, H. R. (1992). Possible selves and performance: The power of self-relevant imagery. *Social Cognition, 10,* 95–124.

Saavedra, R., & Earley, P. C. (1991). Choice of task and goal under conditions of general and specific affective inducement. *Motivation and Emotion, 15,* 45–65.

Salovey, P., & Birnbaum, D. (1989). Influence of mood on health-relevant cognitions. *Journal of Personality and Social Psychology, 57,* 539–551.

Schwarz, N., & Bless, H. (1991). *Happy and mindless, but sad and smart? The impact of affective states on analytic reasoning.* Elmsford, NY: Pergamon Press.

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

Sevincer, A. T., & Oettingen, G. (2011). Self-regulatory thought in written language: Mental contrasting of future and reality. Manuscript under review.

Storbeck, J., & Clore, G. L. (2005). With sadness comes accuracy; with happiness, false memory: Mood and the false memory effect. *Psychological Science, 16,* 785–791.

Swann, W. B., Jr. (1983). Self-verification: Bringing social reality into harmony with the self. In J. Suls & A. G. Greenwald (Eds.), *Social psychological perspectives on the self* (Vol. 2, pp. 33–66). Hillsdale, NJ: Erlbaum.

Tice, D. M., Bratslavsky, E., & Baumeister, R. F. (2001). Emotional distress regulation takes precedence over impulse control: If you feel bad, do it! *Journal of Personality and Social Psychology, 80,* 53–67.

Triandis, H. C. (1995). *Individualism and collectivism.* Boulder, CO: Westview Press.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review, 110,* 403–421.

Trope, Y., & Neter, E. (1994). Reconciling competing motives in self-evaluation: The role of self-control in feedback seeking. *Journal of Personality and Social Psychology, 66,* 646–657.

Trope, Y., & Pomerantz, E. M. (1998). Resolving conflicts among self-evaluative motives: Positive experiences as a resource for overcoming defensiveness. *Motivation and Emotion, 22,* 53–72.

Wegener, D. T., & Petty, R. E. (1994). Mood management across affective states: The hedonic contingency hypothesis. *Journal of Personality and Social Psychology, 66,* 1034–1048.

Wood, J. V., Heimpel, S. A., Newby-Clark, I. R., & Ross, M. (2005). Snatching defeat from the jaws of victory: Self-esteem differences in the experience and anticipation of success. *Journal of Personality and Social Psychology, 89,* 764–780.

Received July 5, 2010
Revision received March 28, 2011
Accepted March 31, 2011 ■