

Be Better or Be Merry: How Mood Affects Self-Control

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Abstract

Six studies test whether the effect of mood on self-control success depends on a person's accessible goal. Positive mood signals a person to adopt an accessible goal, whereas negative mood signals a person to reject an accessible goal; therefore, if self-improvement goal is accessible, happy (vs. neutral or unhappy) people perform better on self-control tasks that further that goal. Conversely, if mood management goal is accessible, happy people abstain from self-control tasks because the tasks are incompatible with this goal. This pattern receives consistent support across several self-control tasks, including donating to charity, physical endurance, seeking negative feedback, and completing tests.

Keywords: self-control, self-regulation, mood, accessibility, goals

Research on self-regulation has documented the affective consequences of motivation (e.g., Carver & Scheier, 1998; Ferguson & Bargh, 2004; Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Higgins, 1997). For example, goal attainment is marked by positive affect, and goal failure is marked by negative affect. However, the literature is less clear about the effect of affective states on motivation, especially on motivation toward tasks that involve exercising self-control (cf. Giner-Sorolla, 2001; Leith & Baumeister, 1996). That is, it is unclear under what circumstances happy people will be motivated to engage in self-control activities, which characteristically provide long-term self-improvement benefits but also pose an immediate threat to positive mood. For example, when people feel happy (vs. neutral or unhappy), are they more or less likely to participate in a charity campaign that involves paying attention to negatively-valenced information (e.g., sad stories, disturbing images)? Are happy people more or less likely to pursue tasks that are difficult and physically draining (e.g., exercising)?

A self-control conflict occurs when the attainment of long-term interests comes at the expense of negative short-term outcomes (Dhar & Wertenbroch, 2000; Fishbach, Friedman & Kruglanski, 2003; Fishbach & Trope, 2005; Loewenstein, 1996; Metcalfe & Mischel, 1999; Thaler & Shefrin, 1981). Such self-control conflicts often emerge when a long-term goal of improving oneself conflicts with a short-term, although equally powerful, goal of feeling good at the moment. For example, students experience a self-control conflict when they must study uninteresting texts for long hours to attain academic success. Previous literature poses an apparent contradiction in addressing the effect of positive (vs. neutral or negative) mood on self-control success. On the one hand, positive mood is often viewed as the ultimate goal of people's actions (e.g., Diener, 2000; Gilbert et al., 1998), and positive feelings signal goal attainment (Carver & Scheier, 1998; Higgins, 1997; Hsee & Abelson, 1991). Thus, feeling

good is not expected to promote further actions, especially if these actions can impair a person's positive mood (Handley, Lassiter, Nickell, & Herchenroeder, 2004; Wegener & Petty, 2001). On the other hand, there is also research attesting that people use positive mood in the pursuit of long-term goals (Aspinwall, 1998; Raghunathan & Trope, 2002; Trope & Neter, 1994); based on this research, happy people should be more interested in actions that promote self-improvement goals, even if such actions involve sacrificing immediate mood. Because of these disparate findings, it is unclear when (and whether) positive mood will interfere with self-control rather than contribute to a person's success.

We propose that the exercise of self-control by happy versus unhappy people depends on whichever goal—self-improvement or mood management—is accessible. Positive mood promotes a general tendency to adopt goal states, whereas negative mood promotes a general tendency to reject goal states. Consequently, happy (vs. neutral or unhappy) people are expected to invest more self-control efforts when a self-improvement goal is accessible, but they are also expected to abstain from exercising self-control when a goal to maintain a positive mood is accessible. For example, when happy (vs. unhappy) people hold an accessible self-improvement goal, they will increase their donations to a charity, even if this action involves exposure to unpleasant materials, but they will not increase donations when they hold an accessible mood management goal, because such a task has immediate affective costs and conflicts with the goal.

In what follows, we review previous research on goals and mood that leads to our prediction that happy mood facilitates adherence to accessible goals, which affects self-control success. We then present six empirical studies that test for the effect of positive (vs. neutral or negative) mood on increased efforts on self-improvement tasks when self-improvement goals are cued and decreased efforts on these tasks when mood management goals are cued.

Goal Activation and Goal Pursuit

Goals are abstract structures in memory that can become accessible through contextual cues and guide behavior toward the attainment of these goal states and away from non-goal states (Higgins, 1987; Kruglanski, 1996). Whereas many ongoing personal goals (e.g., helping others, keeping in shape) involve explicit consideration and action planning (Gollwitzer, 1999; Locke & Latham, 1990), recent research indicates that goals often become accessible and promote congruent behaviors without conscious consideration. Such automatic effects of goals on actions occur when contextual cues temporarily increase the accessibility of goal representations, which then guide people's choice of actions without involving conscious planning (Aarts & Dijksterhuis, 2000; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001; Gollwitzer, Bayer, & McCulloch, 2005; Kruglanski et al., 2002). For example, presenting words related to achievement motivation in a word puzzle task was shown to increase subsequent performance on an achievement test, although research participants were unaware of the source of their motivation (Bargh & Chartrand, 1999; Srull & Wyer, 1979).

Despite a growing number of studies on automaticity in goal-directed behavior, some recent studies have also indicated that contextually primed goals may not influence people's choice of actions when there are obstacles to pursuing these actions (e.g., when the actions require overcoming competing motivations and the exercise of self-control). For example, Macrae and Johnston (1998) found that priming helping behavior increased altruistic actions only when there was no immediate cost associated with helping. However, priming helping behavior was ineffective when it was more costly to provide the help, for example, when participants primed with helping behavior helped an experimenter pick up dropped pens that were messy and leaking ink, as opposed to clean. Being helpful in the former situation involved

exercising self-control and doing something unpleasant in the short run (getting dirty, feeling unpleasant) in the interest of self-improvement and becoming a better person in the long run. In general, when goal attainment requires the overcoming of competing motives and the exercise of self-control, contextual cues for an overriding goal might not be enough to promote action. In such situations, positive mood may increase people's adherence to accessible goals.

Mood and Goal Pursuit

Several findings in the mood literature indicate that positive mood, compared with neutral or negative mood, may be associated with a general tendency to adopt accessible goals and pursue congruent actions. First, because people exhibit a general tendency to approach positive stimuli and avoid negative stimuli, an implicit association is formed between positive affect and approach tendency and between negative affect and avoidance tendency. As a result of this implicit association, it is possible that people not only tend to approach positive stimuli and avoid negative stimuli but also follow the reverse order, that is, the experience of positive affect signals people to approach a stimulus and the experience of negative affect signals them to avoid a stimulus (e.g., Cacioppo, Gardner, & Berntson, 1999; Higgins, 1997; Larsen, McGraw, & Cacioppo, 2001; Lazarus, 1991). Indeed, a similar process has been proposed in the research on mood as information (Schwarz & Clore, 1983, 2003), which attests that a positive mood signals that the environment is safe and that the cost of making a wrong decision is relatively negligible whereas negative mood signals that danger may be at hand. Based on this research, it is possible that people in a positive mood perceive accessible goals as opportunities and, thus, they have a lower threshold in general for adopting the goals. In contrast, people in a negative mood may perceive accessible goals as risky, which potentially leads unhappy people to reject such goals.

Second and congruent with the aforementioned analysis, research in neurophysiology makes the distinction between the behavioral approach system (BAS) and the behavioral inhibition system (BIS) (Gray, 1994; see also Carver & White, 1994; Depue & Collins, 1999; Fowles, 1987). The approach system is activated by incentives, leads to positive mood and it is responsible for approach responses. The inhibition system is activated by threat, leads to negative mood and it is responsible for withdrawal behavior. Because positive mood is linked to the approach system, it promotes goal adoption and goal-related behavior. Conversely, since negative mood is linked to the avoidance system it promotes a tendency to reject goals. Although notably, the link between negative mood and the avoidance system is more complex, and whereas, in general, negative mood leads to avoidance responses and goal rejection, there are specific negative emotions (e.g., frustration, anger) that are associated with approach responses (Carver, 2004; Harmon-Jones, 2003).

The Content of Goals: Self-Improvement versus Mood Management

We propose that the greater tendency to adopt goals under positive mood leads to increased self-control efforts toward an accessible self-improvement goal. Indeed, previous research attests that positive mood is often “used” for accomplishing tasks that have short-term costs but long-term benefits (Aspinwall & Taylor, 1997; Raghunathan & Trope, 2002; Trope & Pomerantz, 1998). For example, research on the delay of gratification attests that happy (vs. unhappy) children are better able to wait for a delayed, preferred reward than for an immediate, less preferred reward (Moore, Clyburn, & Underwood, 1976; Schwarz & Pollack, 1977). In addition, research on negative feedback seeking (i.e., feedback about a person’s shortcomings) reveals that people take an increased interest in this potentially useful information when positive mood is induced. For example, caffeine drinkers who were induced to feel good were more

attentive to negative information about the health effects of caffeine (Raghunathan & Trope, 2002), and happy students were more attentive to negative feedback about their academic performance (Trope & Neter, 1994).

However, what if a person's focus is on a short-term, mood management goal that conflicts with exercising self-control, rather than on a long-term, self-improvement goal? In this case, would happy (vs. unhappy) people realize that actions that are emotionally taxing are incompatible with mood management and abstain from these actions? There is some support for the effect of mood on impaired self-control in previous mood research, which has found that happy (vs. neutral or unhappy) people prefer activities that prolong the quest for positive mood. For example, Isen and Simmonds (1978) reported that participants in a happy mood were less helpful than those in a neutral mood when the helping behavior involved reading unpleasant information. In addition, Wegener and Petty (1994) found that compared with neutral or unhappy participants, happy participants chose to see more happy films but not more interesting films. In general, this suggests that happy people monitor the affective consequences of their actions more than sad or neutral mood people do (Wegener & Petty, 1994, 2001), and they are more attentive to mood maintenance goals (Handley et al., 2004). Consistent with this research, we predict that when people's active goals have a short-term, mood-based focus, including maintaining positive mood, improving neutral mood, and repairing negative mood, happy (vs. neutral or unhappy) participants abstain from self-control tasks that have immediate affective cost.

In summary, by increasing goal adoption, positive mood enhances goal-directed behavior, regardless of whether the goal is for long-term self-improvement or short-term mood management. As such, happy people are better able to adapt their behavior to a contextually primed goal. Thus, if self-improvement goals are made accessible, happy (vs. neutral or

unhappy) people invest more effort in a task that furthers the goal, even if the task is unpleasant or demanding. If mood management goals are made accessible, happy people are no more likely to invest in such a task than neutral-mood people, and they might be even less likely to invest efforts than unhappy people, who reject any goal that is made accessible to them.

The Current Research

A series of six studies investigates the relationship between mood and performance on self-control tasks as a function of two different accessible goals: self-improvement and mood management. Participants completed various mentally and physically draining tasks under positive, neutral, or negative mood conditions. In addition, they were primed with either a long-term, self-improvement goal or a short-term, mood management goal. We predicted that performance on these tasks would be enhanced under positive (vs. neutral and negative) mood when self-improvement goals are contextually primed but would be hindered when mood management goals are primed.

Study 1 tests whether positive (vs. negative) mood increases the tendency to adopt goals, regardless of whether the goal content involves self-improvement or mood management. In the rest of the studies, we test the implications of adopting an accessible goal for performance on self-control tasks. Specifically, Study 2 tests whether happy (vs. unhappy) participants contribute more to a charity when they are primed to be better people but not when they are primed to maintain their positive mood. Studies 3 and 4 further test whether a happy mood influences performance relative to a neutral mood. These studies assess persistence on a physically draining task (Study 3) and in a negative-feedback-seeking context (Study 4) as a function of participants' mood and an accessible self-improvement versus mood management goal. Study 5 compares the performance of happy, neutral, and unhappy participants on a moderately difficult creativity test

and as a function of their accessible goal. Finally, Study 6 tests whether the tendency to adopt a primed goal of self-improvement versus mood management mediates the effect of mood on performance on a moderately difficult test.

Study 1: Mood and Adopting Goals

Study 1 attempted to establish the effect of mood on adopting goals, regardless of whether these goals are related to self-improvement or to mood management. Participants, who were feeling happy or unhappy, indicated their level of agreement with statements that represented adopting and rejecting self-improvement and mood management goals.

Method

Participants. Forty undergraduate students (16 women, 23 men, 1 unreported) at the University of Chicago participated in the study in return for monetary compensation.

Procedure. This study employed a 2 (mood: happy vs. unhappy) \times 2 (goal: self-improvement vs. mood management) \times 2 (goal frame: adoption vs. rejection) mixed design, with mood as a between-subjects factor and goal and frame as within-subjects factors. Participants read that they were taking part in two unrelated studies. The “first study” served as the mood induction, and the “second study” measured goal adoption.

The first task induced either a positive or a negative mood. Depending on the experimental condition, participants were asked to write a vivid description of a happy or an unhappy event they could recall from their lives. In the positive mood condition, the instructions stated that we are currently developing a questionnaire that will provide us with a systematic understanding of what happy life events entail, and therefore we are asking participants to describe one of the happiest days in their life. Specifically, we asked participants to describe what happened on that day, how they felt, and whether the event elicited thoughts or imagery

that intensified their mood. In the negative mood condition, participants were asked to write about one of the unhappiest days in their lives. They were given an entire page for this task; this technique had been used successfully as a mood induction in several previous studies (e.g., Schwarz & Clore, 1983). Happy events that participants listed included descriptions of vacations, spending time with a friend or family member they had not seen for a while, a special birthday celebration, and so forth. Unhappy events included failures, the passing away of or illnesses suffered by family members, breakups with relationship partners, and so forth. After completing this task, participants rated how interesting it was (1 = *not at all*, 7 = *very*) and how much effort they put into it (1 = *not at all*, 7 = *a lot*). Because the act of labeling one's mood and acknowledging its source can potentially attenuate the actual affective experience (see e.g., Lieberman, in press), we did not ask participants in this study to rate their mood.

Participants then moved on to another, supposedly unrelated, task, which measured the tendency to adopt different goals. They read that the researchers were interested in undergraduate students' activities. In the current task they would view a list of statements that other students had listed when describing important goals they held or when describing themselves in general. The participants' task was to indicate how strongly they agreed with each statement.

Each participant evaluated 10 statements (on a 7-point scale, anchored by $-3 =$ *strongly reject*, $+3 =$ *strongly accept*). Two statements related to adopting self-improvement goals ("I want to achieve academic success," and "Ambition is my virtue"), two statements related to adopting mood management goals ("I want to enjoy the moment," and "I want to smile"), and two statements related to rejecting self-improvement goals ("I want to put off my coursework") and rejecting mood management goals ("I feel its futile to try and be happy"). These statements

were embedded among four goal-neutral statements (e.g., “I’m a slow driver”). After participants completed this part of the experiment, an experimenter debriefed and dismissed them.

Results and Discussion

Manipulation checks. Using a 7-point scale, a judge, who was blind to our hypothesis, coded each participant’s description of the happy or unhappy event for the extent to which the event induced happiness and the extent to which it induced unhappiness (reverse coded). We averaged these measures ($r = .64$), and found that the events that happy (vs. unhappy) participants described were indeed more happiness inducing ($M = 5.74, SD = 0.60$ vs. $M = 2.18, SD = 0.99$), $t(38) = 13.86, p < .01$. Additional manipulation check measures indicated that happy and unhappy participants did not report differences in task interest ($M = 4.38, SD = 1.56$ vs. $M = 4.68, SD = 1.45$), $F < 1$, and they did not report differences in the amount of effort they put into the task ($M = 2.48, SD = 1.47$ vs. $M = 3.11, SD = 2.01$), $F(1, 38) = 1.22, p > .25$.

Goal adoption. We averaged the ratings of the two items that measured adoption of the self-improvement goal ($r = .69$) and the two items that measured adoption of mood management goals ($r = .70$) to form two independent indexes of goal adoption. We conducted a 2 (mood: happy vs. unhappy) \times 2 (goal type: self-improvement vs. mood management) \times 2 (goal frame: adoption vs. rejection) mixed ANOVA, with the level of agreement serving as dependent variable. The results appear in Figure 1¹. The ANOVA revealed a main effect for goal frame, $F(1, 38) = 32.97, p < .01$, indicating participants’ overall tendency to agree more with adopting than with rejecting statements ($M = 1.51, SD = 1.18$ vs. $-0.41, SD = 1.53$), and a main effect for goal type, $F(1, 38) = 29.66, p < .01$, indicating participants’ overall tendency to agree more with self-improvement statements than with mood maintenance statements ($M = 1.05, SD = .81$ vs. $M = 0.04, SD = .79$). The two-way interaction between goal frame and goal type was also

significant, $F(1, 38) = 33.13, p < .01$, suggesting participants' tendency to agree more with rejecting self-improvement than mood-management goals, although they were similarly likely to agree with adopting self-improvement and mood-management statements.

However, most important, this analysis yielded the predicted two-way interaction between mood and goal frame, $F(1, 38) = 13.75, p < .01$, indicating that happy participants were more likely than unhappy participants to agree with adopting statements ($M = 2.05, SD = .61$ vs. $M = 0.90, SD = 1.37$), $t(38) = 3.15, p < .01$, but happy participants were less likely than unhappy participants to agree with rejecting statements ($M = -1.08, SD = 1.29$ vs. $M = 0.31, SD = 1.47$), $t(38) = 2.11, p < .01$.

These results support our hypothesis that positive mood facilitates the adoption of goals and, regardless of the content of the goal. Notably, similar differences did not emerge for agreement with goal-neutral statements ($F < 1$), which were rated similarly by happy ($M = 0.14, SD = 0.87$) and unhappy ($M = 0.03, SD = 0.90$) participants. This allows us to interpret the effects of mood on the goal adoption with more confidence. If happy participants are more likely than unhappy participants to adopt goals, they should increase self-control efforts when a self-improvement goal is made accessible and reduce self-control efforts when a mood maintenance goal is made accessible. We designed the following studies to test for these possibilities.

Study 2: Charity Donations

A charity donation serves the long-term goals of both helping a charity campaign and helping the donor become a better person. However, it also has immediate costs, including giving away cash and exposing oneself to potentially unpleasant information or disturbing images. Therefore, we predict that happy (vs. unhappy) people are more likely to donate if a self-improvement goal is made salient (i.e., they strive to "be better") than if a mood management

goal is made salient (i.e., they strive to “feel better”) or if they are not primed with any particular goal (control condition). We tested these predictions by priming goals either to be better or to feel better (or to remain neutral) in happy and unhappy participants, who were then offered to participate in a charity campaign that promotes protecting young children from injury or death by improving children’s product safety.

Method

Participants. One hundred ninety-four University of Chicago undergraduate students (112 women and 82 men) participated in the study in return for monetary compensation.

Procedure. This study employed a 2 (mood: happy vs. unhappy) \times 3 (goal: self-improvement vs. control vs. mood management) between-subjects design, in which the dependent variable was donation to a charity. Participants read that they were taking part in series of unrelated studies.

The first task induced a positive or negative mood, using a procedure similar to the one we used in Study 1. Depending on the experimental condition, participants wrote a vivid description of a happy or an unhappy event they could recall from their lives.

Participants then moved on to a second, supposedly unrelated, task, which induced either a self-improvement goal (be better), a mood management goal (feel better), or a no-goal (control) condition. Participants read that we were interested in undergraduate students’ activities. We randomly selected a third of the participants to list activities they do to become better people. The instructions read, “Different people choose to pursue different activities in order to improve themselves. In this survey, we are interested to learn about the type of activities that you usually pursue in order to become a better person. Please list everything that you do in order to become a better person.” We provided another third of the participants with similar instructions, but we

asked them to list activities they pursued to maintain a positive mood. We asked the remainder of the participants in the control condition to list routine activities they intended to pursue that day. A space was provided to list up to five activities. Participants in the be-better condition listed activities such as “be friendly,” “show people around campus,” “read the newspaper,” and “pray.” Participants in the feel-better condition listed activities such as “listen to music,” “hangout with friends,” “draw,” and “take a walk.”

The third task measured charity donation. Participant learned that the experiment was over and they received their compensation. To solicit donations, participants received half of their compensation (\$1) in quarters. The experimenter then informed them that the researchers were “working with a local charity, ‘Kids in Danger,’ to publicize their efforts.” The experimenter added that they could read some details about the charity and donate a portion of their earnings during the experimental session toward this charity.

We took the details on the charity from the Kids in Danger published brochures (see <http://www.kidsindanger.org>); these details contained negatively-valenced information. On the front page, the brochure stated that “Kids in Danger was established following the death of 3-year old Danny, in Chicago,” and that “Danny was asleep in his crib at his daycare when the crib collapsed, killing him. The company was aware of a defect in the manufacture of the crib and had recalled the product from its stores, but had not alerted consumers to the dangers of this product.” Participants then read, “We are now collecting money to increase consumer awareness about defective products and to protect other kids in danger and would like to ask for your help.”

“Kids in Danger” provided the rest of the charity materials, including a newsletter, an annual report that highlighted shortfalls in revenues, a short summary of the dangers to young children from malfunctioning consumer products, and an envelope in which participants could

(supposedly anonymously) place any money they wished to donate to the charity. We selected this specific charity because it contained negatively-valenced information that can potentially adversely affect mood. All donations were forwarded to the charity organization. After participants completed this part of the experiment they were debriefed and dismissed. None of the participants identified the connection between the different parts of the experiment.

Results and Discussion

Manipulation check. Two independent judges, who were unaware of the hypothesis or the mood condition, coded the list of activities that participants provided as part of the goal induction manipulation for the total number of statements each participant listed ($r = 0.96$). A 2 (mood: happy vs. unhappy) \times 3 (goal: self-improvement vs. control vs. mood management) ANOVA conducted on the number of distinct goal-related statements that each participant listed revealed the expected main effect of mood, $F(1, 188) = 8.74, p < .01$, showing that happy participants listed more statements endorsing the goal than did unhappy participants ($M = 5.31, SD = 1.73$ vs. $M = 4.64, SD = 1.37$), regardless of what the goal was. In addition, the main effect of goal was significant, $F(2, 188) = 12.15, p < .01$, showing that participants listed fewer statements in the be-better (self-improvement) condition than in the control or feel-better (mood-management) condition ($M = 4.22, SD = 1.37$ vs. $M = 5.37, SD = 1.31$ vs. $M = 5.33, SD = 1.79$). No other effect emerged in this analysis.

The two independent judges further coded responses of participants who listed be-better versus feel-better goals for the extent to which participants adopted the goal with which they were provided (7-point scale, anchored by 1 = *not at all*, 7 = *very much*). We averaged the ratings of the two judges ($r = .72$) to form an index of goal adoption. A 2 (mood: happy vs. unhappy) \times 2 (goal: self-improvement vs. mood management) ANOVA conducted on the level

of each participant's goal adoption revealed the expected main effect of mood, $F(1, 126) = 14.64, p < .01$, showing that happy participants adopted the goals more strongly than unhappy participants ($M = 4.12, SD = 0.96$ vs. $M = 3.48, SD = 0.91$), regardless of whether the goal was a be-better or feel-better one. In addition, the main effect of the goal was significant, $F(1, 126) = 5.86, p < .05$, showing that participants were less likely to adopt the be-better goal than the feel-better goal ($M = 3.59, SD = 1.00$ vs. $M = 4.01, SD = 0.93$). No other effect emerged in this analysis. Taken together, these two measures of goal adoption support our hypothesis that happy (vs. unhappy) mood increases goal adoption and they are consistent with the results of Study 1.

Charity donation. A 2 (mood: happy vs. unhappy) \times 3 (goal: self-improvement vs. control vs. mood management) ANOVA conducted on the amount of earnings participants donated to charity revealed the predicted interaction between mood and goal, $F(2, 188) = 3.23, p < .05$, and no main effects, $F_s < 1$. The results appear in Figure 2. Planned contrasts designed to investigate the source of this interaction revealed that when primed with a goal to be better, happy participants donated more money to the charity than did unhappy participants ($M = \$0.37, SD = 0.50$ vs. $M = \$0.15, SD = 0.36$), $t(188) = 2.02, p < .05$. However, in the no-goal (control) condition, happy and unhappy participants donated similar amounts ($M = \$0.17, SD = 0.37$ vs. $M = \$0.28, SD = 0.43$), $t(188) = 1.01, ns$. Finally, when primed with a feel-better goal, happy participants donated no more and somewhat less money than did unhappy participants ($M = \$0.18, SD = 0.38$ vs. $M = \$0.32, SD = 0.45$), $t(188) = 1.40, p = .16$.

To control for the possibility that a few extreme donations had a disproportionate impact on the statistical analysis, we conducted a similar analysis on participants' decisions to donate or not. We coded the response of each participant who donated money as 1 and the response of each participant who did not donate money as 0, and ran a binary logistic regression on this measure,

including mood, goal, and mood \times goal as predictors. This revealed a main effect of mood ($b = -1.03$), $t(188) = 3.85$, $p < .05$; a marginal effect of goal ($b = -.53$), $t(188) = 3.29$, $p = .07$; and a significant mood \times goal interaction ($b = .87$), $t(188) = 4.36$, $p < .05$. This interaction indicates that the proportion of participants who donated followed a similar pattern to the average donations.

These results support our hypothesis that positive mood facilitates helping behavior when the accessible goal refers to self-improvement rather than to mood management. Thus, happy participants were more likely to adhere to the be-better goal by increasing their charity donations, but they abstained from donations when their overriding goal was incompatible with the task, that is, they were striving to feel better.

Consistent with our analysis, we also observed a tendency among unhappy participants to increase charity donations when primed to feel better rather than to be better ($M = \$0.32$, $SD = .45$ vs. $M = \$0.15$, $SD = .36$), $t(188) = 1.76$, $p = .08$. This suggests that unhappy participants who rejected the accessible be-better goal were less likely to donate money to charity than unhappy participants who rejected the accessible feel-better goal. We also observed a similar pattern in the no-goal and the mood management conditions, which suggests that in this particular situation, the default goal that participants held was probably more closely associated with feeling better, and therefore most of the movement (relative to no-goal condition) was elicited by priming a self-improvement goal.

Study 2 examined the effect of mood and accessible goals on exposure to emotionally negative information that had immediate affective costs. However, it is possible that our specific mood manipulation of recalling life events influenced goal adoption directly, rather than by inducing mood, for example, by increasing perceived self-efficacy after recalling past success in

the happy conditions. Although increased self-efficacy is mainly relevant for the adoption of self-improvement (vs. mood management) goals, in order to rule out this alternative, Study 2 employed a different mood manipulation that does not potentially involve recalling of previous successful goal pursuits. In addition, it is still unclear whether positive mood further enhances performance relative to neutral (rather than negative) mood and whether positive mood enhances performance on tasks that are cognitively or physically draining rather than emotionally taxing. To test these hypotheses, we asked participants in our next study to squeeze a handgrip device for as long as they could. We predicted that priming a self-improvement goal would lead to improved performance among happy (vs. neutral mood) participants on this physical endurance task.

Study 3: Physical Endurance

This study tested whether happy participants with an accessible health goal perform better on a physical endurance task (squeezing a handgrip) than neutral participants with a similar goal. We adopted this task from previous self-control studies, and it has been shown to require self-control (e.g., Muraven, Tice, & Baumeister, 1998). We further expected that happy participants with a mood management goal would perform no differently from control participants with a similar goal, because both groups should be deterred from performing a task that is incongruent with the goal prime. Because Study 2 already established the null effect of a no-goal condition, we did not include this condition in following studies.

Method

Participants. One hundred thirty-nine undergraduate students (34 women, 105 men) at the University of Chicago participated in this study in return for monetary compensation.

Procedure. This study employed a 2 (mood: positive vs. neutral) \times 2 (goal: health improvement vs. mood management) between-subjects design. An experimenter approached participants and invited them to participate in a study investigating whether demographic factors are related to overall fitness levels among students. Following a procedure that Muraven et al. (1998) developed, the experimenter took two handgrip measures of each participant, one before and one after the experimental manipulation.

Participants read that the handgrip task measures the strength of muscles of the forearm and hand and is a useful indicator of overall levels of fitness. They further read that recent evidence has suggested that overall muscle tone is related to healthfulness. The purpose of these instructions was to emphasize the long-term value of performing well on the task for a person's health; that is, performing well on the handgrip task provides positive prognosis and helps maintain good health. The experimenter then assessed participants' first handgrip measure. We chose a particularly tight handgrip for this task, and pretests indicated that although the task appeared interesting to participants before they attempted it, participants found the task to be difficult and unpleasant once they tried it. Specifically, participants were to squeeze the ends of the handgrip together and hold a piece of paper between the two ends. The experimenter measured time from the moment the experimenter applied the paper to the grip until the paper fell away from the grip. The experimenter noted the reading and explained that a second handgrip measure would be taken again after a while because the participant needed to rest. In the interim, participants completed two supposedly unrelated tasks to be used in future studies.

In order to induce mood, the first task was a word association task, in which participants provided their first associated word to each of ten positive words (e.g., "smooth," "beautiful"), or neutral words (e.g., "desk," "number"). This task has been shown to manipulate mood state

effectively (e.g., Isen, Johnson, Mertz, & Robinson, 1985). Participants' responses included associations such as "satin" and "soft" to the word "smooth" and "table" and "wood" to the word "desk." After participants completed this task, they rated how interesting the task was (1 = *not at all*, 7 = *very*) and how they felt at that moment (1 = *very bad*, 7 = *very good*). We assumed that when the source of the mood is not apparent, rating it would not attenuate the actual experience.

Next, in order to prime the relevant health improvement or mood management goal, participants completed a supposedly unrelated, language survey, which consisted of a scrambled-sentence goal-priming task. The scrambled-sentence test (Bargh & Chartrand, 1999; Srull & Wyer, 1979) activated nonconsciously a self-improvement or a mood management goal. By employing a nonconscious priming procedure (as opposed to conscious priming, as in Studies 1 and 2), we attempted to demonstrate the effect of mood on performance in self-control tasks outside participants' conscious awareness of their accessible goals.

The task was to decipher eight scrambled sentences, which activated either health improvement goals (e.g., "aim for better shape," "fitness is a virtue") or mood management goals (e.g., "aim for most pleasure," "cheerfulness is a virtue"). Each sentence consisted of five words. Participants had to form a grammatically correct four-word sentence from the five words presented in a scrambled order and to circle any sentence that took more than 30 seconds to unscramble. All participants completed this task successfully without circling any sentences (see appendix for a complete list of 4-word priming sentences).

After completing both tasks, participants completed the second part of the handgrip task; again, as experimenter measured their times for squeezing the handgrip device. They were then debriefed and dismissed. None of the participants identified the relationships among the different parts of the experiment.

Results and Discussion

Manipulation checks. A 2 (mood: positive vs. neutral) \times 2 (goal: health improvement vs. mood management) ANOVA conducted on the self-report of mood measure revealed only a main effect of mood ($M = 4.72$, $SD = 1.43$ for happy participants vs. $M = 4.23$, $SD = 1.50$ for neutral participants), $F(1, 135) = 3.92$, $p < .05$ (all other F s < 1). A similar mood \times goal ANOVA conducted on the interestingness rating of the word association task did not reveal any significant effects (all F s < 1). These results suggest that the word association task was equally interesting across conditions, but participants who provided their first associated word to each of ten positive words reported feeling happier than participants who provided their first associated word to each of ten neutral words.

Performance on handgrip task. The times participants spent squeezing the handgrip were positively skewed; therefore, we log transformed the times using natural log transformation (Bargh & Chartrand, 2000; Fazio, 1990). There was no significant difference in the initial response times across conditions. To assess the effect of the manipulations, we computed changes scores by subtracting each participant's initial handgrip duration time from his or her final duration time. A 2 (mood: positive vs. neutral) \times 2 (goal: health improvement vs. mood management) ANOVA conducted on the changes scores revealed a main effect of mood, indicating greater improvement in performance for happy participants than for neutral participants ($M = 14.76$ sec, $SD = 42.18$ vs. $M = 1.44$ sec, $SD = 41.62$), $F(1, 135) = 10.03$, $p < .01$. In line with our hypothesis, this main effect was qualified by the predicted interaction between mood and goal, $F(1, 135) = 4.68$, $p < .04$ (see Figure 3). Planned contrasts indicated that happy participants who held an accessible health improvement goal showed improvement in performance at the handgrip task relative to neutral participants with the same goal ($M = 25.49$

sec, $SD = 43.63$ vs. $M = -6.17$ sec, $SD = 45.95$), $t(135) = 3.75$, $p < .01$. However, happy participants who held an accessible mood management goal showed no improvement relative to neutral participants who held a mood goal ($M = 3.72$ sec, $SD = 38.16$ vs. $M = 8.62$ sec, $SD = 36.29$), $t(135) < 1$.²

These data support our hypothesis that positive (vs. neutral) mood facilitates performance on a self-control task only when the relevant health improvement goal is accessible, but when happy people strive to maintain their positive mood, performance drops back to baseline levels, suggesting that when the task was incompatible with the goal, there was no advantage for happy (vs. neutral mood) participants, who all avoided the task to the same extent. Notably, increased adherence to accessible goals among happy (vs. neutral) participants did not seem to require conscious awareness of the goals, which we primed nonconsciously in this study.

Studies 1–3 explored the effect of positive mood on adherence to subsequently primed goals, but we did not design them to distinguish between the effect of mood on noticing goals (i.e., attending to contextual cues for the goals) and the effect of mood on adherence to these already recognized goals. To assess whether positive mood directly facilitates goal adherence, another study tested the effect of positive mood on the pursuit of preexisting goals (i.e., goals that were primed before inducing mood).

Study 4: Recalling Negative Information

In contrast with our previous studies, in Study 4, we primed goals before we induced mood, allowing us to rule out the possibility that positive mood only enables people to notice the primed goal. If this is indeed the case, mood should not have an effect if it is evoked after a goal is primed. Otherwise, as we predicted, positive mood should increase goal adoption and thus promote success at self-control toward preexisting goals. This study used a modified version of

Raghunathan and Trope's (2002) self-control task to test whether participants in a positive mood attend to information on the health consequences of drinking caffeine. Raghunathan and Trope induced a positive or negative mood among participants (caffeine users vs. nonusers) and then asked the participants to read an essay on the adverse effects of caffeine consumption. These authors reported that happy participants recalled more negative information than did unhappy participants but only if they deemed the information to be self-relevant, that is, they were caffeine users. For our study, we recruited only caffeine drinkers, and therefore all our participants are similar to Raghunathan and Trope's participants in the self-relevant condition. We expect to extend our previous results insofar as happy participants should spend more time recalling and should ultimately recall more information than should unhappy participants when primed with a health goal but not when primed with a mood management goal.

Method

Participants. Ninety-three undergraduate students at the University of Chicago (45 women, 48 men), who indicated that they were regular consumers of caffeine and consumed at least one serving of coffee, tea, or caffeinated soda daily, participated in this study in return for monetary compensation.

Procedure. This study employed a 2 (mood: happy vs. neutral) \times 2 (goal: health improvement vs. mood management) between-subject design. The dependent variables were amount of time spent recalling information from an essay on caffeine consumption and the number of items recalled. The study was conducted on computers and comprised three supposedly unrelated tasks.

The first task primed the goal of health improvement or mood management. Participants completed a "verbal reasoning task" that involved unscrambling eight sets of words into

sentences. Participants read that the task was a pretest, and the researchers needed to know whether the sentences were too difficult. They received either eight health-related sentences (e.g., “fitness is a virtue”) or eight mood-related sentences (e.g., “happiness is a virtue”) to unscramble; these were similar to those in Study 3.

Next, participants completed a mood induction survey. Those in the positive mood condition read that their task is to pretest a “funny thoughts” survey. They rated how funny (1 = *not at all*, 7 = *very*) each of seven statements was (e.g., “If Fed Ex and UPS were to merge, should they call it Fed UP?” “Why do we drive on parkways and park on driveways?”). The rest of the participants, in the neutral mood condition, read that their task is to pretest a general-knowledge survey. They rated how relevant (1 = *not at all*, 7 = *very*) each of seven statements was for a general-knowledge quiz (e.g., “How many states are there in the United States?” “Which President is called ‘The father of our country’?”). We adopted this mood manipulation from previous studies and it has been shown to affect people’s mood reliably (Zhang & Fishbach, 2005).

Participants then moved on to the third task, which assessed their attention to negative information. They read an essay on caffeine consumption that was adopted from research by Raghunathan and Trope (2002). The essay presented some negative aspects of caffeine consumption (e.g., “Caffeine can lead to a skin condition known as desiccation, which is essentially excessive drying of the skin tissue. This results in accelerated aging of skin, formation of scales and wrinkles, etc., resulting in an older look.”). After participants read the essay, they answered several filler questions (e.g., “How well was the essay written?”); then, they recalled as many of the pieces of information as they could remember. Specifically, we asked them to recall all of the aspects of caffeine consumption we presented in the essay. We also recorded the time

each participant spent recalling the information. After they completed the recall task, participants were debriefed and dismissed. None of the participants identified the relationships among the different tasks.

Results and Discussion

We conducted two separate analyses, one on the time participants spent retrieving the information about caffeine consumption and the other on the number of recalled items from the essay on the negative health effects of caffeine consumption. The results are summarized in Figure 4. A 2 (mood: positive vs. neutral) \times 2 (goal: health improvement vs. mood management) ANOVA on the time participants spent recalling information from the essay revealed a main effect of goal, $F(1, 89) = 5.21, p < .03$, indicating that participants spent more time retrieving information when primed with health concerns than when primed with mood concerns ($M = 106.32$ s, $SD = 54.99$ vs. $M = 82.58$ s, $SD = 43.22$). Importantly, this effect was qualified by the predicted interaction between mood and goal, $F(1, 89) = 4.19, p < .05$.³ Planned contrasts designed to investigate the source of this interaction revealed that when primed with the health improvement goal, happy participants spent more time retrieving the information than did those in neutral mood ($M = 121.96$ sec, $SD = 64.43$ vs. $M = 88.56$ sec, $SD = 35.26$), $t(89) = 2.36, p < .05$. However, when primed with the mood management goal, participants in a positive mood spent no more (and slightly less) time looking at the information than did those in neutral mood condition ($M = 78.28$ sec, $SD = 46.31$ vs. $M = 86.19$ sec, $SD = 41.04$), $t(89) < 1$.

Next, we analyzed the total number of pieces of information participants recalled correctly. An ANOVA conducted on the number of recalled items yielded the predicted mood \times goal interaction, $F(1, 88) = 4.00, p < .05$, and the main effects were not significant. As expected, when priming health improvement, happy participants recalled marginally more pieces of

information than did those in a neutral mood ($M = 6.08$, $SD = 1.38$ vs. $M = 5.18$, $SD = 1.89$), $t(88) = 1.76$, $p = .08$. However, when priming mood management, participants in a positive mood recalled no more and even slightly fewer pieces of information than did those in a neutral mood ($M = 4.75$, $SD = 1.99$ vs. $M = 5.32$, $SD = 1.74$), $t(88) = 1.25$, ns . Additional analysis indicated that the amount of time participants spent retrieving negative information was significantly correlated with the number of arguments they recalled ($r = .30$, $p < .01$).

This study primed goals before mood was induced. In line with our hypothesis, participants in a positive mood were more likely to adhere to an accessible goal of health improvement by recalling negative health information, but they deter from negative information when mood management goal was primed. This pattern of results is congruent with our hypothesis that happy people are more likely to adopt goals and pursue them when they have the opportunity to engage in related actions, which in turn contributes to self-control success. However, so far our studies have compared happy and unhappy participants or happy and neutral participants. We designed Study 5 to compare happy, neutral, and unhappy moods.

Study 5: Performance on a Challenging Test

Study 5 explored the effect of positive mood on pursuing a difficult task by presenting participants with an opportunity to work on a cognitive test that was difficult but had long-term diagnostic value. Specifically, this study measured performance on the moderately difficult version of the Remote Associates Test (Mednick, Mednick, & Mednick, 1964), which is a creativity test that has been associated with improved performance by participants in positive mood (Isen, Daubman, & Nowicki, 1987; Isen, Labroo, & Durlach, 2004; Wyer, Clore, & Isbell, 1999). It has been suggested that this improved performance is due to happy people's global processing style (Schwarz, 1990; Schwarz & Clore, 2003). However, the "appropriate" cognitive

style might not be sufficient if a person does not have the motivation. Accordingly, we predicted that when a test is framed as emotionally draining, happy (vs. neutral or unhappy) participants would perform better only to the extent that they hold an accessible self-improvement goal, but they would not perform better if they hold a mood management goal.

Method

Participants. One hundred thirty-six undergraduate students at the University of Chicago (84 women, 52 men), who indicated they were native English speakers, participated in this study in return for monetary compensation.

Procedure. The study employed a 3 (mood: positive vs. neutral vs. negative) \times 2 (goal: self-improvement vs. mood management) between-subjects design. Participants attempted to solve the Remote Associates Test after completing mood and goal manipulations.

An experimenter told the participants that the study comprised of a series of unrelated language-based studies. The first task induced mood. It was a word association task similar to the one in Study 2, in which participants provided their first associated word to each of ten positive words (e.g., “smooth), neutral words (e.g., “desk”), or negative words (e.g., “spider”), corresponding to positive, neutral and negative mood. After participants completed this task, they rated on 7-point scales how interesting the task was and how they felt at that time.

The second task primed the goal. Participants read that this, supposedly unrelated, task will test their verbal reasoning. They were handed a scrambled-sentence test, similar to the one used previously. It comprised eight sentences that primed a self-improvement goal (e.g., “I want to prosper,” “Ambition is a virtue”) or a mood management goal (e.g., “I want to smile,” “Cheerfulness is a virtue”).

As a measure of performance, participants then completed a third, supposedly unrelated, task, which included the moderately difficult version of the Remote Associates Test (e.g., Mednick et al., 1964). In this version, the test presents participants with seven triads of three words each (e.g., “guy,” “owl,” and “man”), and participants’ task for each triad was to write a word common to the three words (e.g., “wise”). The test was preceded by instructions that noted that this test was (presumably) known for its difficulty and was typically given to doctoral students before their admission to several leading graduate programs across the country. These instructions emphasized the long-term value of working hard on a test and noted that the test is a good indicator of academic success in graduate school. In addition, these instructions emphasized the immediate costs of working on the test, specifically, that the test is difficult and resource depleting. After participants completed the test, the experimenter debriefed and dismissed them. None of them identified the relationships among the tasks.

Results and Discussion

Manipulation checks. A 3 (mood: positive vs. neutral vs. negative) \times 2 (goal: self-improvement vs. mood management) ANOVA conducted on the mood ratings after the word association task revealed a main effect of mood, $F(2, 130) = 35.17, p < .01$. As we expected, participants who provided their first associated word to each of ten positive words reported feeling happier than participants who provided their first associated word to each of ten neutral words ($M = 5.06, SD = 0.90$ vs. $M = 4.52, SD = 1.01$), $t(130) = 2.34, p < .05$. In addition, participants who provided their first associated word to each of ten negative words reported feeling worse than participants who provided their first associated word to each of ten neutral words ($M = 3.29, SD = 1.22$ vs. $M = 4.52, SD = 1.01$), $t(130) = 5.52, p < .01$. No other effects were significant. A similar analysis conducted on the interestingness rating of the word

association task revealed no significant effects (all $F_s < 1$), indicating that participants across conditions did not differ in their evaluation of the interestingness of this task. In combination, these results suggest that the word association task resulted in participants reporting differential levels of positive mood across conditions, even though they did not differ in their perceptions of the interestingness of the task.

Test performance. Each participant received a score between 0 and 7 for the number of correct solutions to the Remote Associates Test. Because these test scores were positively skewed, we log transformed them using natural log transformation. A 3 (mood: positive vs. neutral vs. negative) \times 2 (goal: self-improvement vs. mood management) ANOVA conducted on this score revealed an interaction between mood and goal, $F(2, 130) = 7.52, p < .01$. No other effects were significant ($F_s < 1$). The results appear in Figure 5.

Planned contrasts revealed that when primed with a self-improvement goal, happy participants provided somewhat more correct solutions to the Remote Associates Test ($M = 1.56, SD = 1.09$) than neutral mood participants ($M = 0.89, SD = 0.84$), $t(40) = 1.71, p = .09$, and significantly more correct solutions than unhappy participants ($M = 0.32, SD = 0.69$), $t(44) = 3.83, p < .01$. In addition, happy participants who were primed with a mood management goal provided fewer correct solutions to the Remote Associates Test ($M = 0.47, SD = 0.69$) than unhappy participants ($M = 1.24, SD = 1.24$), $t(44) = 2.28, p < .05$, and their performance was similar to that of neutral mood participants ($M = 0.65, SD = 1.09$), $t(44) < 1$.

These results extend our previous results with a new task that imposes a different short-term cost (i.e., cognitive effort investment) and with all three mood conditions (happy, neutral, and unhappy). Happy participants performed well on the test when they held an accessible self-improvement goal but not when holding a mood management goal. Notably, post hoc tests

revealed that participants in negative moods performed significantly better on the Remote Associates Test when primed with a mood management goal than when primed with a self-improvement goal, $t(130) = 2.87, p < .01$. This result suggests that whereas participants in a positive mood adhered to the goal manipulation and those in neutral mood did not, participants in a negative mood did the opposite of what the goal manipulation entailed; namely, they rejected the primed goals and worked harder on the test when we primed a mood management (vs. self-improvement) goal. Thus, consistent with the results of Study 2, negative mood leads to ironic effects; such that unhappy people work harder on a self-control task if they do not have an accessible long-term improvement goal, but they abstain from this task if they have an accessible improvement goal.

The current results are also relevant to the previously observed link between positive mood and creativity (Isen et al., 2004; Wyer et al., 1999). We find that when a creativity task is framed as being difficult and requires self-control efforts, positive mood leads to better performance only when the task fits an accessible self-improvement goal. This suggests that the link between positive mood and improved performance on creativity tasks is not solely cognitive but depends also on a person's motivation. To test this notion further, we conducted a final study to determine whether a person's motivation to adopt an accessible goal mediates the effect of mood on performance on creativity tests.

Study 6: Adopting Goals and Test Performance

To investigate the mediating role of goal adoption on the link between mood and motivation to work on a moderately difficult creativity test, Study 6 manipulated mood state and measured both goal adoption and performance on the Remote Associates Test. We predicted that happy (vs. unhappy) participants would be more likely to adopt whichever goal—self-

improvement or mood management—is made accessible and that the adoption of goals would mediate the effect on performance on the creativity test.

Method

Participants. Seventy-three undergraduate students (41 women, 30 men, 2 unreported) at the University of Chicago participated in the study in return for monetary compensation.

Procedure. The study employed a 2 (mood: positive vs. negative) \times 2 (goal: self-improvement vs. mood management) between-subjects design. We manipulated participants' mood by asking them to write about happy or unhappy life events. They subsequently rated their agreement with goals that other students supposedly provided, and finally, they completed the moderately difficult version of the Remote Associates Test.

The first task induced a positive or negative mood. Similar to Studies 1 and 2, participants wrote a vivid description of a happy or an unhappy event they could recall from their lives. After completing this task, participants rated on a 7-point scale how much effort it took to recall the life event.

Participants then moved on to another, supposedly unrelated, task, which primed the relevant self-improvement versus mood management goal and measured goal adoption. We told participants that we were interested in undergraduate students' activities and that in the current task they would view several statements that other students had listed when describing important goals they held or when describing themselves in general. The participants' task was to rate how strongly they agreed with each statement. Each participant evaluated three goal-related statements ($-3 = \textit{strongly reject}$, $+3 = \textit{strongly accept}$). Participants in the self-improvement condition indicated their current level of agreement with three performance-related statements (“I want to achieve success,” “I want to work hard,” and “I want to do well”), and those in the mood

management condition indicated their level of agreement with three mood-related statements (“I want to enjoy the moment,” “I want to feel good,” and “I want to smile”).

In the final part of the study, participants provided their responses to each of seven items of the moderately difficult version of the Remote Associates Test. The instructions to this task and the task itself were similar to those in Study 5. After participants completed this part of the experiment, they were debriefed and dismissed. None of the participants identified the connection among the different parts of the experiment.

Results and Discussion

Manipulation checks. Using 7-point scales, a judge, who was blind to hypothesis, coded the participants’ descriptions of the happy or unhappy events for the extent to which the event was happiness inducing and the extent to which it was unhappiness inducing (reverse coded). We collapsed these measures ($r = 0.80$) and found that the judge coded the happy participants’ events as more happiness inducing than the unhappy participants’ events ($M = 5.75, SD = .58$ vs. $M = 2.20, SD = .69$), $t(71) = 23.74, p < .01$. Additional manipulation check measures indicated that happy and unhappy participants did not report differences in how much effort they put into the task ($M = 2.92, SD = 1.88$ vs. $M = 3.14, SD = 1.94$), $t(71) < 1$.

Goal adoption and performance on the Remote Associates Test. We averaged the three items that measured adoption of a self-improvement goal ($\alpha = .74$) and a mood management goal ($\alpha = .70$) into measures of goal adoption. A 2 (mood: happy vs. unhappy) \times 2 (goal type: self-improvement vs. mood management) ANOVA conducted on these measures revealed the predicted main effect of mood, $F(1, 69) = 8.65, p < .01$, indicating that happy participants were more likely to adopt goals than unhappy participants ($M = 2.04, SD = 0.99$ vs. $M = 1.23, SD = 1.39$). There was no main effect for goal or interaction involving this variable.

Next, we analyzed the number of remote-associates items that participants answered correctly (out of 7). As before, we log transformed these performance scores. A 2 (mood: happy vs. unhappy) \times 2 (goal type: self-improvement vs. mood management) ANOVA on the remote associates scores revealed only a mood \times goal interaction, $F(1, 69) = 15.59, p < .01$; these results appear in Figure 6. Planned contrasts designed to investigate the source of the interaction revealed that happy participants performed better than unhappy participants on the Remote Associates Test when holding a self-improvement goal ($M = 1.12, SD = 1.22$ vs. $M = 0.09, SD = 0.33$), $t(33) = 3.41, p < .01$. In contrast, unhappy participants performed better than happy participants on the Remote Associates Test when holding a mood management goal ($M = 0.73, SD = 0.97$ vs. $M = 0.17, SD = 0.44$), $t(36) = 2.11, p < .05$.

Mediation analysis. To examine whether goal adoption mediated the effect of mood on performance, we conducted two separate mediation analyses under each goal type (self-improvement vs. mood management). Beginning with the self-improvement goal, happy mood directly increased test performance ($\beta = 0.33$), $t(33) = 3.13, p < .01$. In addition, happy mood marginally increased the tendency to adopt the self-improvement goal ($\beta = 0.41$), $t(33) = 1.99, p = .06$, and in turn, goal adoption increased test performance, ($\beta = 0.24$), $t(33) = 2.79, p < .01$. Controlling for goal adoption, then, the path from happy mood to test performance showed a tendency to be reduced ($\beta = .25$), $t(32) = 2.41, p < .05$ (Sobel test $z = 1.79, p = .08$). Thus, adoption of the self-improvement goal is partially responsible for the effect of mood on test performance. As we elaborate subsequently, we obtained only partial mediation because the effect of mood on creativity is partially due to happy people's cognitive processing style.

We conducted a second mediation analysis on the mood management goal: Happy mood directly decreased test performance ($\beta = -.20$), $t(36) = 2.25, p < .05$. In addition, happy mood

increased adoption of the mood management goal ($\beta = .46$), $t(36) = 2.34$, $p < .05$, which in turn decreased test performance, ($\beta = -.22$), $t(36) = -3.36$, $p < .01$. When controlling for goal adoption, the path from happy mood to test performance became nonsignificant ($\beta = -.11$), $t(35) = 1.29$, $p > .20$ (Sobel test $z = 1.95$, $p = .06$). This suggests that adoption of the mood management goal mediated the effect of mood on test performance.

These results support our hypothesis that positive mood facilitates the adoption of goals, which mediates performance on the Remote Associates Test. When we primed happy participants with a self-improvement goal, they adopted this goal more than did unhappy participants, and they performed better on the Remote Associates Test. The partial mediation by goal adoption suggests that the improved performance on the creativity test is partially due to the effect of mood on motivation to follow accessible goals, and it is probably also partially due to the effect of mood on the cognitive processing style that happy (vs. unhappy) participants employed (e.g., Isen et al. 2004), which is independent of their motivation. In contrast, when we primed participants with a mood management goal, happy (vs. unhappy) participants again adopted the goals more, but because these goals conflicted with performance, they displayed poorer performance on the Remote Associates Test. Here, the worsened performance was completely mediated by the extent of goal adoption, which suggests that although happy participants were cognitively tuned to succeed on the task, they had lower motivation to do so.

General Discussion

This research addresses the effect of incidental positive, neutral, or negative mood on the processes of self-control when a long-term goal of self-improvement conflicts with a short-term, though equally powerful, goal of feeling good at the moment. We propose that positive mood serves as a booster, facilitating the adoption of accessible goals, and therefore happy (vs. neutral

or unhappy) people work harder on a task that serves an accessible self-improvement goal. However, happy people also abstain from such tasks when an alternative short-term goal of mood management is accessible. This relationship between mood and performance on self-control tasks as a function of an overall accessible goal is consistently supported across four self-control domains that involve overcoming different types of immediate costs. We find that when the accessible goal is related to self-improvement, positive mood enhances charity donations, the exertion of physical effort, the seeking of negative self-relevant health information, and performance on moderately difficult creativity tests. However, when the accessible goal is related to mood management, positive mood does not improve performance on any of these tasks and further impairs performance relative to negative mood. This pattern of results is observed with different mood induction techniques, such as recalling mood-provoking life events, elaborating on affective stimuli, and reading affective materials. Importantly, we also find the effect of mood on performance with explicit and implicit goal-priming techniques and regardless of the time order between inducing the mood and priming the overriding goal.

More specifically, Study 1 supports the assertion that happy (vs. unhappy) people adopt goal statements regardless of the content of the goal (self-improvement or mood enhancement). Study 2 indicates that happy (vs. unhappy) people with an accessible self-improvement goal donate more to a charity campaign that involves exposure to negatively valenced materials; however, they withhold their donations when their accessible goal refers to mood management. Study 3 uses a measure of persistence on squeezing a handgrip. The results of this study indicate that happy (vs. neutral) people exert greater physical endurance on the handgrip task but only when it is compatible with an accessible health improvement goal. Study 4 examines the effect of mood on recalling negative information, and it finds that happy (vs. neutral) people spend

more time recalling the health consequences of caffeine consumption and that they recall more information but only to the extent that their overriding goal refers to health improvement rather than mood management. Finally, Studies 5 and 6 extend these findings to performance on a difficult and challenging creativity test. Study 5 finds that happy people with an accessible self-improvement goal perform better on the test than unhappy and neutral people but that a happy mood interferes with test performance when the accessible goal is mood management. Study 6 demonstrates that the extent to which happy participants adopt self-improvement goals partially mediates their improved performance on a creativity test, and the extent to which they adopt mood management goals completely mediates their reduced performance on the test. In a departure from prior findings on creativity and mood effects (e.g., Wyer et al., 1999), our data suggest that the interaction between a person's cognitive processing mode, which fits the task better under positive mood, and a person's motivation (i.e., an accessible goal that renders the task as goal relevant vs. irrelevant) determines performance on a creativity test.

Overall, these results are compatible with research on the social functions of emotions (e.g., Ekman, 1992; Keltner & Gross, 1999), which has demonstrated that emotions are associated with specific goals that help people respond meaningfully to their social environment (Keltner & Haidt, 1999). For example, love can enhance commitment to an existing relationship (Gonzaga, Keltner, Londahl, & Smith, 2001), and moral emotions increase cooperation in social dilemmas (e.g., Frank, 2004). Our research further suggests that there is a link between global positive mood and a general tendency to pursue any accessible goal and between global negative moods and a tendency to reject any accessible goal. Thus, not only do specific positive emotions (e.g., love) signal a person to approach a specific goal state (e.g., commitment), but in general, positive emotions decrease the threshold for adopting any goal, regardless of its content.

Mood as a Goal versus a Resource

By addressing the interaction between moods and goals, this research integrates two lines of research on the relationships between mood and self-regulation, namely, research on mood as the ultimate goal of self-regulation (e.g., Diener, 2000; Gilbert et al., 1998; Kahneman, 2000; Wegener & Petty, 1994) and research on mood as a resource for self-regulation (e.g., Aspinwall, 1998; Leith & Baumeister, 1996; Raghunathan & Trope, 2002). We propose that when people experience a mild positive mood, their tendency to adopt accessible goals, increases. Under these conditions, when a mood management goal is accessible, happy mood discourages further choice of actions that undermine this goal; thus, mood serves as the ultimate goal of self-regulation. However, when the accessible goal refers to self-improvement, happy mood improves performance; thus, it serves as a resource for self-regulation.

By considering the role of accessible goals in this way, our research aligns some of the conflicting findings from previous research on mood as a goal versus mood as a resource. As an example of research on mood as a goal, Wegener and Petty (1994) reported that happy participants were more likely than neutral or unhappy participants to choose happy films and to avoid unhappy ones. It is possible that the task of sorting through films increased the accessibility of the goal of going to the movies, which was a relaxing activity with a short-term focus. Therefore, the sorting activity was more compatible with the mood management goal, and as a result, happy (vs. unhappy) participants assigned more weight to the mood goal and abstained from movies that did not fit their immediate goal and might have even undermined it. Conversely, Raghunathan and Trope (2002) reported that happy participants were more likely than unhappy participants to look at negative information but only when the information was self-relevant. It is possible that when considering relevant medical information, people assigned

health improvement goals more weight than mood management goals and, therefore, positive mood was a “resource” to deal with the negative, though potentially useful, information. In contrast, when performance was not important—for example, because the negative information was self-irrelevant—positive mood interfered with task performance because happy people recognized the discrepancy between the task and their active goal.

Taken together, these conflicting findings are explained by our theoretical model, which attests that people use positive mood according to their accessible motivation. Based on our results, it is further possible that people strategically put themselves in a positive mood to secure success at self-control, for example, by bringing to mind positive thoughts before undergoing an unpleasant medical checkup. Thus, as much as previous research suggests that people sometime seek out a negative mood to facilitate performance on specific tasks (Tamir, 2005; Tamir & Robinson, 2004), it is possible that they also seek a positive mood to ensure success in general.

Negative Mood and Self-Regulation

Our main focus in the current investigation is to identify the self-regulatory consequences of positive mood on adopting accessible goals. However, a related issue concerns the unique self-regulatory effect of sad feelings under a negative mood, and some of our findings shed light on this issue. In general, previous goal research has found that negative mood interferes with performance on self-control tasks, a pattern that has been explained in terms of increased concern with a person’s immediate affective state relative to some potential long-term interests. When people are concerned with their immediate affective state, they are less capable of coping with affective costs that interfere with successfully pursuing long-term interests, and as a result, they tend to fail at self-control (Leith & Baumeister, 1996; Tice, Bratslavsky, & Baumeister,

2001). However, there is also some evidence that sad people perform better on self-control tasks (e.g., solving math problems) whenever these tasks provide distractions (Erber & Tesser, 1992).

The results of Studies 2, 5, and 6 are consistent with such findings, attesting that unhappy people abstain from self-control tasks when they view them in relation to a long-term goal but are more likely to pursue these same tasks in the absence of a long-term goal. Thus, in our studies, participants in a negative mood invested the least efforts in working on self-control tasks when we primed them with a self-improvement goal (i.e., high goal–task compatibility), but they invested the most efforts on the same tasks when we primed them with a mood management goal (i.e., low goal–task compatibility). Thus, they showed the opposite pattern of what the goal priming entails. This pattern is congruent with the notion that negative mood leads to a general tendency to reject any accessible goal, regardless of its long-term versus short-term nature. As such, unhappy people end up investing more effort on a self-control task when it is incompatible with their accessible goal.

Alternative Explanations: Stop Rules and the Hedonic Contingency Hypothesis

Do the effects of mood on self-control reflect the operation of different stop rules? According to this alternative (Hirt, Melton, McDonald, & Harackiewicz, 1996; Martin, Ward, Achee, & Wyer, 1993), when happy (vs. unhappy) people attribute their positive feelings to task enjoyment, they are more likely to continue working on the task, whereas when they attribute their feelings to goal attainment, they are more likely to quit earlier and disengage with the task. However, there are several reasons that argue against this alternative. First, it is unlikely that an accessible self-improvement goal leads people to focus on task enjoyment, a focus that could account for happy (vs. unhappy) people's tendency to work harder. Similarly, an accessible mood management goal does not increase the focus on goal attainment, a focus that could

explain why happy (vs. unhappy) people infer task completion and quit earlier. If anything, we would expect that people with an accessible self-improvement goal would focus on task attainment and that people with an accessible mood management goal would focus on task enjoyment. However, these possible foci cannot account for the observed results. Second, whereas research on stop rules has mainly considered performance on ambiguous tasks in which people infer the value of the task or their progress on the task on the basis of their mood, our research concerns goals that are unambiguous, and they are clearly unpleasant and mentally draining in the short run. Participants in our studies were not trying to infer the nature of the task on the basis of their mood, and therefore we should not expect to replicate the pattern predicted by a stop-rule analysis. Third, a stop-rule analysis does not account for the effect on adopting a goal, and in particular, it does not explain why happy (vs. unhappy or neutral) participants were more likely to adopt goals, regardless of their content.

It might also be argued that happy people are more sensitive to hedonic contingencies because fewer actions will improve their mood. Therefore, they must choose activities more carefully to maintain hedonic rewards (Wegener & Petty, 1994). The hedonic contingency hypothesis may account for happy people's greater tendency to deter from self-control tasks when they hold an active mood management goal because the task may potentially undermine their mood. However, the hedonic contingency hypothesis does not account for happy people's increased self-control efforts when they hold an active self-improvement goal, because pursuing this goal has mixed emotional consequences. In addition, similar to the stop-rules alternative, the hedonic contingency hypothesis does not explain the observed effects of mood on adopting goals.

A Final Thought: Global Mood versus Performance-Based Affect

Our research addresses the effect of global positive mood on people's adherence to emotionally and physically demanding tasks, and in several self-control domains we find support for the notion that positive mood enhances the pursuit of a compatible goal. Notably, however, across all studies, the mood induction procedures were independent of task performance. Accordingly, at no stage did we cue participants to use mood as an input to assess their level of performance. Nevertheless, positive feelings are sometimes attributed to a person's level of goal performance, and they provide feedback on successful goal attainment (e.g., Carver & Scheier, 1998; Higgins, 1997; Hirt et al., 1996; Hsee & Abelson, 1991), whereas negative feelings provide feedback on goal unattainment and signal a person to increase efforts (e.g., embarrassment is associated with appeasement, shame is associated with repairing social relationships (Keltner & Gross, 1999)). We would expect that when positive and negative feelings are attributed to task performance, they mark the discrepancy from goal attainment and the remaining required effort. Under these conditions, a positive mood that is evoked during task performance should inhibit further self-regulation because it signals goal attainment, and a negative mood that is evoked during task performance should have a motivating effect on further goal pursuit because it signals a large discrepancy from goal attainment.

Whereas the current investigation addresses the effect of global mood, further research should more closely address the inference that is made on the basis of a person's affective experience and that may be attributed either to a person's performance (which signals the level of goal attainment) or to an external stimulus. We would predict that these inferences of rate of goal attainment versus global affective experience moderate the relationship between affect and performance on self-control tasks.

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Appendix

List of correct solutions for scrambled sentences from Studies 3-5:

Self improvement (health prime, Study 3): “Parents want healthy children,” “Aim for good form,” “Fitness is a virtue,” “I stay in shape,” “Being healthy is vital,” “Strong muscles boost energy,” “Longevity relates to vigor” and “Seek a toned body.”

Self improvement(health prime, Study 4): “Parents want healthy children,” “Strive to get results,” “Fitness is a virtue,” “I stay in shape,” “Aim for better shape,” “They exercise every week,” “hope you get well” and “do what you should.”

Self improvement (performance prime, Study 5): “Parents want successful children,” “Aim for best excellence,” “Ambition is a virtue,” “I am very accomplished,” “Work hard do well,” “Invest effort to succeed,” “I want to prosper” and “Strive to get results.”

Mood management prime (Studies 3-5): “Parents want happy children,” “Aim for most pleasure,” “Cheerfulness is a virtue,” “I want to smile,” “Being content is vital,” “Now try to relax,” “Always enjoy the moment,” and “Seek a pleasant life”

Footnotes

1. Standard errors are depicted in the figures.

2. Note that in Study 3, the reported means are based on reverse transformation of the logarithmic scores into seconds; in Studies 5 and 6 the reported means are based on a reverse transformation of the logarithmic scores into test scores.

3. Another similar analysis conducted with the valence of the recalled information (neutral vs. negative) did not reveal any valence effect, which suggests that happy people who hold an accessible health goal are more likely to recall negative and neutral information.

Figure Captions

Figure 1. Agreement with goal statements as a function of mood

Figure 2. Charity donation as a function of mood and accessible goal

Figure 3. Improvement in time squeezing a handgrip as a function of mood and accessible goal

Figure 4a, b. Amount of time spent recalling information and the number of arguments recalled as a function of mood and accessible goal

Figure 5. Correct solutions on the Remote Associates Test as a function of positive vs. neutral vs. negative mood and accessible goal

Figure 6. Correct solutions on the Remote Associates Test as a function of positive vs. negative mood and accessible goal











