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Abstract

We propose and test a model of multiple goal pursuit that specifies how individuals allocate effort among multiple goals over time. The model predicts that whether individuals decide to step up effort, coast, abandon the current goal, or switch to pursue another goal is determined jointly by the emotions that flow from prior goal progress and the proximity to future goal attainment, and proximally determined by changes in expectancies about goal attainment. Results from a longitudinal diary study and two experiments show that positive and negative goal-related emotions can have diametrically opposing effects on goal-directed behavior depending on the individual's proximity to goal attainment. The findings resolve contrasting predictions about the influence of positive and negative emotions in volitional behavior, critically amend the goal gradient hypothesis, and provide new insights into the dynamics and determinants of multiple goal pursuit.

Keywords: multiple goals, emotions, effort, expectancy, goal gradient

Dynamics of Multiple Goal Pursuit

People regularly pursue multiple goals simultaneously, which makes everyday life like a juggling act between, amongst others, working, making time to be with family and friends, trying to find that special someone, and exercising. Multiple goal pursuit often requires a dynamic balance between opposing demands for the limited pool of personal resources, such as energy, time and attention, to ensure that moving toward one of the goals does not lead to moving away from at least one other goal (Lewin, 1938; Miller, 1944; Muraven, Tice, & Baumeister, 1998). For example, it is hard to quit smoking and at the same time try to control eating (Mizes et al., 1998) or alcohol consumption (Hays et al., 1999). As a result, much of our daily activity involves deciding how much to invest when in which goals (Gollwitzer, Heckhausen, & Steller, 1990). This calls for a theory that specifies how people reconcile the competing demands that multiple goals place on their limited resources.

Although the simultaneous pursuit of multiple goals appears to be the norm in everyday life (Dodge, Asher, & Parkhurst, 1989; Miller, Galanter, & Pribram, 1960), and much is known about the determinants of successful single-goal pursuit (Austin & Vancouver, 1996; Locke & Latham, 1990; Vohs & Baumeister, 2004), and the well-being implications of goal conflict (Emmons & King, 1988; Riediger & Freund, 2004; Schmuck & Sheldon, 2001), surprisingly little is known about the flow of goal-directed behavior in multiple-goal pursuit. This leaves important questions about the dynamics of multiple goal pursuit unanswered. Faced with the pursuit of multiple, desirable goals that compete for their limited resources, how do individuals determine which goals are most important to attend to at a given time? And under which conditions will individuals recalibrate their goal priorities from one time to the next? Specifically, when will individuals faced with such multiple competing goals, persist in or

abandon the current goal, or shift to another goal? We address these issues by developing and testing a model of how individuals selectively regulate the allocation of effort between multiple goals over time.

We propose that the emotions that flow from ongoing goal pursuit and the proximity to goal attainment jointly influence the pattern of effort allocation across competing goals. Results from a longitudinal daily-diary study (Study 1) and two experiments (Studies 2 & 3) demonstrate that when the attainment of a focal goal is remote, positive emotions lead to an increase in effort in that domain, by diverting resources from other goal pursuits. In contrast, negative emotions in that case prompt individuals to disengage from further effort, and instead to shift effort to competing goals. However and importantly, these relationships are reversed when goal attainment is near. Close to the goal, positive emotions prompt decreased effort towards the focal goal, and increased effort towards competing goals. Negative emotions, then, prompt increased effort towards the focal goal, but decreased effort towards competing goals. Moreover, as predicted by the model, these effects are mediated by specific changes in goal expectancies. Taken together, the research demonstrates that people respond flexibly and adaptively to the ongoing challenge of simultaneously pursuing multiple competing goals by using emotions and goal proximity to regulate the flow of goal-directed effort between these goals over time.

The Multiple Goal Pursuit Model

The proposed model (summarized in Figure 1) focuses on the emotions that accompany goal-directed behavior (Bagozzi, Baumgartner, & Pieters, 1998; Carver & Scheier, 1998; Fishbach, Shah, & Kruglanski, 2004) and how these influence people's effort allocation when they are striving towards multiple goals: (a) sustain/increase effort in the focal goal, (b) decrease effort in the focal goal and reallocate that effort to other goals, or (c) abandon the focal goal and

reallocate all effort to the other goals. Because these emotions signal the effectiveness of goal-directed behavior, they will play a role in the selective investment of personal resources across multiple competing goals over time, but the issue is how.

Motivational Influences of Goal-Relevant Emotions

The literature offers two opposing predictions about the motivational role of goal-related emotions in multiple goal pursuit. One prediction, stemming from the hedonic principle of motivation (Freud, 1950), is that positive emotions increase and that negative emotions decrease effort in focal goal pursuit (Herrald & Tomaka, 2002; Ilies & Judge, 2005). Neuroscientific research indeed suggests that positive affect is associated with approach processes and reinforcement of ongoing goal-directed behavior (Davidson, 1998). Moreover, Fishbach and colleagues (2004) showed that goal-related emotions could transfer to goal-related behavior. In case of multiple goals, the hedonic principle would imply that positive emotions promote greater investments of effort in the focal goal, by diverting resources from other goals that compete for the same resources. Negative emotions, on the other hand, would lead individuals to disengage from the focal goal, and redirect effort to valued alternatives, in an attempt to minimize the unpleasant feelings stemming from goal failure.

A contrasting prediction builds on evidence that positive emotions signal faster than expected goal progress and negative emotions slower than expected goal progress (Hsee & Abelson, 1991; Lawrence, Carver, & Scheier, 2002). The prediction is that positive emotions prompt decreased and negative emotions prompt increased effort towards focal goal pursuit (Carver 2003; Carver & Scheier 1998). Hence, in a multiple goals context, positive emotions should prompt individuals to reduce effort or “coast” in the focal goal domain, so that the rate of progress returns to the criterion rate, freeing up personal resources that can be channeled toward

other goals. In contrast, negative emotions should prompt individuals to work harder (Cervone, Kopp, Schaumann, & Scott, 1994), in an attempt to reverse the insufficient progress in that goal domain, reducing effort allocation to other goals. However, as Carver (2004) pointed out, "the ideas just outlined are more than just a little speculative" (p. 33).

The above is consistent with the finding that positive affect, as compared with neutral or negative affect, reduces persistence in ongoing cognitive responses, increases cognitive flexibility, and attention towards novel stimuli (Dreisbach & Goschke 2004). Moreover, research by Fishbach and Dhar (2005) suggests that satisfactory goal progress may induce people to switch goals. For instance, in their Study 1 dieters who believed to have made little progress were more likely to engage in an activity consistent with their weight-loss goal–choose an apple as a parting gift–, whereas dieters who believed to have made much progress were more likely to engage in a goal inconsistent activity–choose a chocolate bar.

The two predictions about the effects of positive and negative emotions on multiple goal pursuit appear incompatible but can be reconciled by accounting for goal proximity, that is, the size of the discrepancy between the present and the desired goal state (see Figure 1).

The Role of Goal Proximity

Goal discrepancies generally trigger attempts to reduce them by effort allocation (Bandura & Cervone, 1983; Carver & Scheier, 1998; Kernan & Lord, 1988). In fact, motivation appears to generally increase as the goal nears which is termed the goal gradient hypothesis (Brown, 1948; Hull, 1934; Lewin, 1938; Losco & Epstein, 1977) and, more recently, the "goals loom larger" effect (Brendl & Higgins, 1995). Then, the closer the final goal is to being attained, the more effort is allocated to its attainment. Such results, however, have been primarily obtained in single goal contexts where all effort can be focused on reducing a single goal discrepancy. The

challenge in multiple-goal pursuit is different. There, several goals concurrently vie for people's limited resources, such that allocations to one goal go at the expense of the others (Kruglanski et al., 2002). One way to deal with such resource competition is to establish and adapt goal priorities (Austin & Bobko, 1985), which may be implemented by cognitive inhibition of other goals to minimize interference from them during focal goal pursuit (Shah, Friedman, & Kruglanski, 2002).

Building on this view, we propose that individuals use moment-to-moment variations in goal-related emotions and goal proximity to establish a dynamic priority system that guides ongoing resource allocation among multiple goals. Specifically, we propose that, in multiple-goal environments, experiencing positive and negative goal-related emotions when goal attainment is distant has diametrically opposed motivational implications from experiencing those same emotions when goal attainment is close. We hypothesize that positive emotions following goal progress promote increased goal-directed efforts when being far from goal attainment, but instead decreased goal-directed efforts when being closer (right part of Figure 1). That is, when individuals are doing well but the effort required for goal attainment is still large, positive emotions may lead individuals to believe that the goal is attainable if they maintain or step-up their goal-directed effort. However, when goal attainment comes closer, the total effort required for goal completion is lower and positive emotions signal that goal-progress is satisfactory, prompting individuals to reduce the effort currently allocated to this goal. When individuals have multiple goals competing for the available resources, such a tendency to coast on the focal goal when it is near and goal-related emotions are positive may, in turn, promote a shift of most of the effort to other goals that are being pursued.

We further predict that, in multiple-goal environments, individuals who experience

negative emotions are likely to decrease their effort in goal pursuit when being far from the focal goal, but to increase it when they are closer to the goal (left part of Figure 1). Individuals experiencing such negative emotions when the required effort for focal goal attainment is still high are likely to perceive that their effort can be more effectively allocated to the pursuit of one's other goals. In contrast, when the goal is close, negative emotions should have the opposite effect, by stepping up effort, which accelerates progress or even leads to goal attainment. Therefore, when individuals fall behind but the goal is near, negative emotions should enhance goal-directed efforts, by signaling that insufficient effort is allocated toward goal attainment.

For completeness, although the current focus is on the pursuit of multiple goals over time, we expect that once the focal goal is attained or completely lost, the motivation to pursue it ends, and individuals switch all effort to another goal, which may then be exclusively pursued (Figure 1, bottom middle). These relationships operate within a feedback process in which goal priorities are revised and updated, and thereby the allocation of effort in response to the emotional outcomes of prior behavior and current goal proximity (feedback loops in Figure 1).

Thus, the model specifies that whether goal-related emotions will promote increased or decreased effort for the focal goal versus for other goals is a changing function of moment-to-moment goal proximity. In this way, it bridges the hedonic principle of motivation and theories about the signal value of emotions, and shows how these provide complementary rather than contrasting accounts of the role of emotions in multiple goal pursuit. Moreover, if supported, it implies that the goal gradient hypothesis and goals loom larger effect are contingent on goal proximity and goal-related emotions rather than being universal, with implications for goal theories more generally. In fact, in the common situation of multiple goal pursuit, experiencing positive emotions about focal goal progress when nearing goal attainment should lead to coasting

rather than stepping up effort, whereas such increased effort allocation is predicted when the goal is still distant, but emotions about goal progress are positive.

Formation of Goal Expectancies

We expect that the effects of emotions and goal proximity on resource allocation will be mediated by expectancies about the degree to which the focal goal is attainable (middle part of Figure 1). The importance of such goal expectancies in motivations to work hard is recognized in, for instance, expectancy-value theories of achievement motivation (Atkinson, 1957), work motivation (Vroom, 1964), and in goal setting theory (Locke & Latham, 1990). Along these lines, Carver and Scheier (1998) speculated that positive emotions might be linked to favorable expectancies and negative emotions to unfavorable ones, which in turn should shape subsequent goal pursuit. This is supported by findings that in single-goal contexts, positive and negative affect are positively and negatively related with goal expectancies, respectively (Erez & Isen, 2002; Herrald & Tomaka, 2002), and that positive expectancies lead to higher levels of effort (Carver, Blaney, & Scheier, 1979).

Importantly, Carver and Scheier (1998) speculated that factors other than emotions may also influence the formation of goal expectancies, and we believe goal proximity to be a candidate. That is, we hypothesize that individuals who are pursuing multiple goals will consider both their goal-related emotions and the proximity to goal attainment when forming expectancies about the likelihood of reaching a given goal, and these expectancies should, in turn, influence subsequent goal-directed efforts. Hence, when goal attainment is still remote, positive emotions--signaling goal-progress--will raise the expectancy of goal attainment, which will prompt increased effort in focal goal pursuit. In contrast, when goal attainment in still remote, negative emotions--signaling insufficient goal-progress--will depress the expectancy of goal attainment,

which will prompt decreased effort in focal goal pursuit, and increased effort allocation to other goals.

When goal attainment is close, positive emotions will raise expectancies of goal attainment, which encourages coasting towards the focal goal, and a relocation of effort to other goals. However, negative emotions will then signal that, although the goal is within reach, goal attainment is not certain yet and additional effort is still required. This moderate level of expectancy should, in turn, encourage increased effort toward the focal goal. Importantly, our prediction that, when forming goal expectancies, individuals will be more sensitive to their emotions when the goal is distant and to the goal's proximity when its attainment is near, suggests that the effect of goal-related emotions on goal expectancy will be contingent on goal proximity. Interestingly, whereas prior research in single-goal situations has generally emphasized a positive linear link between goal expectancy and effort in pursuing valued goals (Locke & Latham, 1990; Mitchell, 1974), our account of multiple goal pursuit instead predicts a *curvilinear* relationship between goal expectancy and effort toward the focal goal, with effort being lowest respectively at low and high levels of goal expectancy, and highest at moderate levels of goal expectancy. This prediction is consistent with Atkinson's (1957) motivation theory, which posits an inverted-U-shaped relationship between probability of success and performance for single goals, but extends it by hypothesizing a simultaneous U-shaped relationship between probability of success for the focal goal and effort for the other goals, and specifying the emotional and goal proximity conditions upon which it is contingent.

Predictions and Studies

The main predictions of the model of multiple goal pursuit are summarized in Figure 2. First, the model predicts that effort allocation to the focal goal is highest when emotions due to

focal goal progress are negative and goal attainment is near, and when emotions are positive and goal attainment is distant. Effort allocation to the focal goal is predicted to be lowest when emotions are negative and goal attainment is distant, and when emotions are positive and goal attainment is near (Figure 2: the top bar chart below arrow 1). The model makes the exact mirror predictions for effort allocation to other, competing goals. That is, effort allocation to other goals is predicted to be *highest* when emotions about focal goal progress are negative and focal goal attainment is distant, and when emotions are positive and focal goal attainment is near. Effort allocation to other goals is predicted to be *lowest* when emotions about focal goal progress are negative and focal goal attainment is near, and when emotions are positive and focal goal attainment is distant (Figure 2: bottom bar chart below arrow 1). This pattern of predictions expresses that the influence of goal-related emotions on goal pursuit–rather than being uniform–is contingent on the proximity to focal goal attainment. It also expresses that, contrary to the goal gradient or "goals loom larger" hypothesis, increased proximity to goal attainment does not uniformly lead to increased effort to goal pursuit, but instead that effort allocation under varying distances from focal goal attainment critically depends on the emotions arising from prior goal progress. Together this specifies how the dynamic balancing of effort allocation to the focal and other goals depends jointly on goal-related emotions and goal proximity.

Second, the model of multiple goal pursuit predicts that effort allocation across multiple goals is proximally determined by changes in goal expectancies. Specifically, it predicts that expectancies of focal goal attainment are *lowest* when emotions due to prior goal progress are negative and goal attainment is distant, *highest* when these emotions are positive and goal attainment is near, and *intermediate* when these emotions are either negative and goal attainment is near or positive and goal attainment is distant (Figure 2: bar chart left of arrow 2). Crucially,

the model predicts that effort allocation to the focal goal is an inverted-U-shaped function of goal expectancies, such that effort is highest when expectancies about focal goal attainment are intermediate, and lowest when goal expectancies are either low or high, because in these latter situations resources can be allocated more effectively to other goals (Figure 2: top chart right of arrow 3). The influence that expectancies about focal goal attainment have on effort allocation to other, competing goals is the exact mirror image, and U-shaped. That is, the effort allocated to other goals is highest when expectancies about focal goal attainment are either low or high, and lowest when expectancies about focal goal attainment are intermediate (Figure 2: bottom chart right of arrow 3). Arrows 2 and 3 in Figure 2 express this predicted mediating role of goal expectancies between goal-related emotions, goal proximity and their interaction on the one hand and effort allocation to multiple goals on the other hand.

Study 1 tested the predictions about the joint influence of goal-related emotions and goal proximity on effort allocation using a longitudinal diary design under natural conditions, with weight loss as the focal goal and an individually identified other goal (arrow 1). Study 2, a scenario-based experiment, tested all predictions (arrows 1 to 3) under controlled conditions, with athletic performance as the focal goal and financial performance as the other, competing goal. Finally, Study 3, a laboratory experiment, tested all predictions (arrows 1 to 3) under controlled conditions using unobtrusive, behavioral measures of effort allocation, with weight loss as the focal goal and solving tracing puzzles as the competing performance goal.

Study 1

Study 1 used a 21-day period daily-diary design. It focused on a weight-loss goal and an individually identified, unrelated personal goal, to ensure goal competition for resources. Weight-loss was chosen because it is an everyday goal of importance to most people, with as

many as 15 to 35% of Americans trying to lose weight on any given day (Horm & Anderson, 1993). The use of a daily-diary design coupled with multilevel data analysis allows testing the proposed mechanisms within individuals across time, while controlling for potential sources of chronic individual differences in goal-directed behavior.

Method

Participants and Design

Female undergraduate students ($N = 82$, $M_{age} = 19$ years) who had indicated, in an earlier screening questionnaire, a desire to decrease their bodyweight via dieting and exercising were recruited to participate, in return for course credit. The starting date was the second week of January, which is a typical weight-loss period, featuring in New Year's resolutions (Norcross, Ratzin, & Payne, 1989). 62 participants were randomly assigned to the diary condition, and 20 to a control (no-diary) condition.

Procedure

Upon arrival for the first session, participants read and signed an informed consent form, and were weighed. They indicated their ideal body weight and their weight-loss goal in the next three weeks. They also identified another important personal goal and specified the desired end state that they wanted to accomplish in the next three weeks. Of the 82 participants, 71 identified a study goal (e.g., increase the time devoted to study), 8 a financial goal (e.g., increase monetary savings), and 3 other goals (e.g., devote more time to helping others). As a check whether the two goals were both valued and their content independent of each other, participants rated their importance, and the extent to which they were related (1 = not at all, 7 = very much).

Participants in the diary condition agreed to keep a daily record of their behavior for a total of 21 days, to begin filling out the diaries the following day, complete the diaries before

going to bed. Diary forms were distributed in 7-day packets so that each packet would have to be completed and handed in when the next weekly packet was picked up. At the end of the three-week period, participants indicated weight-loss goal attainment: "To what extent were you successful in achieving this goal?" (1 = not at all, 7 = completely), and whether at any point during the course of the study they had fully attained any of their personal goals (yes/no). Finally, participants were weighed again and debriefed.

Participants in the control condition pursued their weight-loss goal and their other goal, but without keeping a record of their daily behavior. Inclusion of this control condition, allows us to test whether behavior monitoring by keeping a daily diary itself induced reactive effects (Bolger, Davis, & Rafaeli, 2003), which would be undesirable.

Diary Measures

Participants answered daily questions about both goals. They kept a record of the type and amount of food and beverage intake during meals and in-between meals (snacks), as well as of their physical activity (in minutes), and assessed how much effort they exerted in pursuing their weight-loss goal each day via the following items (1 = not at all, 7 = very much): "How much effort have you made today toward achieving this goal?" "Today, to what extent were you self-disciplined in pursuing this goal?" and "How hard did you work today toward this goal?" (Average $\alpha = .87$)[1].

Participants next indicated (1 = not at all, 7 = very much) their positive and negative emotions about the effort exerted to lose weight during that day (Bagozzi et al., 1998) (proud with myself, good about myself, happy with myself, satisfied with myself, guilty, ashamed with myself, angry at myself, and regretful) (Average $\alpha = .96$). Positive and negative emotions were combined into a single index: the difference between positive and negative emotions experienced

during goal pursuit (positive scores indicate net positive emotions).

Then, participants indicated (1 = none, 7 = a lot) how much progress they made toward achieving their weight-loss goal (i.e., goal progress). Goal proximity was measured with: "In your opinion, how close are you to attaining your weight-loss goal?" (1 = not at all, 7 = very much) and "How large is the distance between your current weight and target weight?" (1 = small, 7 = large [reversed scored]) ($r = .76$, $p < .001$). After that, participants completed the same questions for the other personal goal. They rated goal effort ($\alpha = .95$), positive and negative emotions (Average $\alpha = .97$), goal progress, and goal proximity ($r = .81$, $p < .001$).

Diary-Data Analyses

The SAS Proc Mixed procedure for multilevel regression analysis (SAS Institute, 1989) was used to test the model and predictions using the daily-diary data (*cf.* Bolger et al., 2003; Mohr et al., 2001). Two separate multilevel regression analyses were performed with respectively the amount of effort allocated to the weight-loss goal (*Effort* wgl_{it}) and the other personal goal (*Effort* og_{it}) of individual *i* on the current day *t* as the criterion variables, and with the following predictor variables all measured on the previous day (*t-1*): (1) effort allocated to the weight-loss goal (*Effort* wlg_{it-1}), (2) goal-related emotions for the weight loss goal (*Emotions* wlg_{it-1}), (3) proximity of the weight-loss goal (*Goal Proximity* wlg_{it-1}), (4) the interaction between positive emotions and goal proximity for the weight loss goal, (5) effort allocated to the other goal (*Effort* og_{it-1}), (6) goal-related emotions for the other goal (*Emotion* og_{it-1}), (7) proximity of the other goal (*Goal Proximity* og_{it-1}), (8) the interaction between positive emotions and goal proximity for the other goal, and finally an error term for each person's deviation from the overall average (u_i), and an error term for each person's daily deviation from the own mean level of effort (e_{it}), and an AR(1) error structure. Because all predictor variables are centered around

the individual-level mean (Bryk & Raudenbusch, 1992), the coefficients can be interpreted as the effects of persons being high or low on a given day relative to their own mean for that variable across days. The following two models were estimated (the two dependent variables separated by commas):

$$Effort\ wlg_{it}, Effort\ og_{it} = b_{0i} + b_1\ (Effort\ wlg_{it-1}) + b_2\ (Emotions\ wlg_{it-1}) + b_3\ (Goal\ Proximity\ wlg_{it-1}) + b_4\ (Emotions\ wlg_{it-1} \times Goal\ Proximity\ wlg_{it-1}) + b_5\ (Effort\ og_{it-1}) + b_6\ (Emotions\ og_{it-1}) + b_7\ (Goal\ Proximity\ og_{it-1}) + b_8\ (Emotions\ og_{it-1} \times Goal\ Proximity\ og_{it-1}) + u_i + e_{it}$$

The regression models assess the contribution that goal-related emotions, goal proximity and their interaction regarding the focal and other goal at the *previous* day have on effort allocation to these respective goals on the *current* day, while controlling for the previous day's effort allocation to each goal. Importantly, they assess the *cross-effects* of goal-related emotions and goal proximity regarding one goal on effort allocation to the other goal. Our predictions about the changing role of emotions in multiple goal pursuit depending on goal proximity would be supported if both interaction effects would be statistically significant in both regression analyses, with the correct sign of the respective coefficients (b_4 negative for weight-loss and positive for the other goal, and b_8 positive for weight loss and negative for the other goal).

To rule out the possibility that goal pursuit varied as a function of relevant traits rather than of the proposed process, the following measures were included (all αs > .80): the restraint scale (Herman & Polivy, 1980), the three state self-esteem subscales (Heatherton & Polivy, 1991), the brief self-control scale (Tangney, Baumeister, & Boone, 2004), and the Regulatory Focus Questionnaire (RFQ; Higgins, Friedman, Harlow, Idson, Ayduk, & Taylor, 2001). To control for differences in the type of other goal, we included two dummy variables indicating whether the other goal is a study goal (baseline category), a financial goal, or an "other goal."

Finally, to ensure that the findings indeed reflect the contribution of emotions and goal proximity, and not difficulty (Locke & Latham, 1990), we included the percentage of their initial weight that participants wanted to lose as a measure of weight-loss goal difficulty.

Results

Descriptive Statistics

Participants' initial weight (M = 146.82 lb, SD = 18.28) ranged from 1.68% to 31.69% above their indicated ideal bodyweight (M = 10.94%, SD = 5.72). Participants wanted to lose between 1.98 lb and 22.05 lb in the three weeks (M = 7.58 lb, SD = 3.23). Overall, participants indicated both personal goals to be unrelated (M = 2.37, SD = 1.41), which is desirable, and reported goal attainment to be important, with weight-loss being dominant ($M_{Weight\text{-}loss}$ = 6.04, SD = 0.94 vs. $M_{Other\ goal}$ = 4.98, SD = 0.89), $F(1, 81) = 115.57$, $p < .001$. After the three weeks, participants had lost on average 2.32 lb (SD = 3.05), ranging from an 8.82 lb loss to a 3.97 lb gain. At the end of the three weeks, participants reported being moderately successful in attaining their two personal goals ($M_{Weight\text{-}loss}$ = 3.05, SD = 1.92; $M_{Other\ goal}$ = 4.66, SD = 1.80), and no participant reported having fully attained any of the two personal goals. The diary and the control group did not differ on any of the measures reported above, all Fs < 1, indicating no reactance of daily monitoring on goal outcomes. Descriptive statistics for the main measures are in Table 1.

Effects of Emotions and Goal Proximity on Multiple Goal Pursuit

Regression analyses confirmed that previous day's progress in the weight-loss goal was associated with more positive emotions about effort towards that goal, b = 0.84, t = 22.57, $p <$ .001, and likewise that previous day's progress in the other goal was associated with more positive emotions about effort towards that goal, b = 1.07, t = 33.54, $p < .001$. Based on this, we

proceeded to test the main predictions.

The results of the hierarchical linear regression analyses are summarized in Table 2. They provide systematic support for the predictions, with the four interaction effects being significant and with the proper signs. That is, goal proximity indeed moderated the contribution of goal-related emotions to effort allocation for each of the goals, and both interaction effects had negative signs. This expresses that positive emotions led to more effort allocation when being close, but to less effort allocation when being distant from the respective goal. There was also support for the proposed balancing of effort allocation to competing goals over time, such that a decrease of effort in one goal domain was accompanied by an increase of effort in the other goal, expressed by the positive signs of both interaction effects. In fact, the dynamics of goal pursuit in one goal domain completely mirrored goal pursuit in the other goal domain.

Figure 3 displays the four interaction effects graphically. We plotted the predicted values of effort in pursuing the weight-loss goal and the other goal for participants scoring 1 *SD* above and below the mean of goal-related emotions, and goal proximity, employing common regression techniques (Aiken & West, 1991). Clearly, when participants were far from attaining their weight-loss goal, positive emotions simultaneously led to *increased* effort in pursuing this goal, $b = 0.23$, $t = 9.52$, $p < .001$, and *decreased* effort in pursuing the other goal, $b = -0.19$, $t = -6.45$, $p < .001$. Conversely, when participants were close to attaining their weight-loss goal, the positive emotions led to *decreased* effort in pursuing this goal, $b = -0.30$, $t = -11.63$, $p < .001$, and *increased* subsequent effort in pursuing the other goal, $b = 0.16$, $t = 5.38$, $p < .001$.

As predicted by our model, these relationships were also found when examining the effect of emotions and goal proximity in relation to the competing personal goal. Thus, when participants were far from attaining the other goal, positive emotions increased effort in pursuing

that goal, $b = 0.11$, $t = 4.35$, $p < .001$, but decreased effort in pursuing the weight-loss goal, $b = -0.10$, $t = -5.72$, $p < .001$. When participants were close to attaining their other goal, negative emotions led to decreased subsequent effort in pursuing that goal, $b = -0.18$, $t = -6.92$, $p < .001$, and increased effort in pursuing the weight-loss goal, $b = 0.11$, $t = 6.49$, $p < .001$. All effects remained unchanged after controlling for the type of competing goal being pursued, the individual traits (dietary restraint, self-esteem, self-control, regulatory focus) and goal difficulty[2].

Discussion

Positive goal-related emotions experienced during the previous day led to increases in effort on the next day in the relevant goal domain, but only when individuals were distant from attaining the goal. In contrast, positive goal-related emotions led to decreases in such efforts when goal attainment was near, by triggering a shift of effort to other goals. These findings reflect the operation of a tuning process in which individuals systematically adjust the day-to-day effort allocated to the multiple goals they pursue in response to the emotional and motivational outcomes of prior goal progress and contingent on goal proximity. Moreover, these dynamics were independent of goal difficulty, of individuals' chronic propensity to frame goals as ideals or responsibilities, and of other individual characteristics such as self-control, self-esteem, and the level of dietary restraint, that have been found to be related to persistence in goal pursuit.

Study 2

Study 2 tests the prediction that the relationship between goal-related emotions and goal proximity on the one hand and subsequent goal pursuit on the other hand is mediated by changes in individuals' expectancy of success in reaching the focal goal. It investigates the proposed mechanisms in a controlled laboratory setting, to provide a stronger test of the direction of causality in the relationships identified in Study 1, and evaluates the generalizability of the

findings across different goal domains.

Method

Participants and Design

Undergraduate students (49 males, 47 females; M_{age} = 21 years) were randomly assigned to the cells of a 2 (Goal-related emotions: positive vs. negative) × 2 (Goal proximity: distant vs. close) between-subjects factorial design (n = 24 per cell). The main dependent variables referred to effort allocation between an athletic performance goal and a financial goal. Gender did not yield any significant effects.

Procedure

Participants read a scenario in which they had to decide how to allocate their limited time between pursuing two competing goals. One focal goal, athletic performance, concerned training to win the current season's 100m-sprint race. All participants were asked to imagine that given their running talents, they are part of their University's track and field team and compete in the 100m-sprint. Further, they read: "You have been training hard for this year's competitive season which is due to start in two weeks, because you are eager to win a race. In fact, you have been spending all your free time training which adds up to 18 hours per week." In the distant-goal condition, participants read: "So far things are not going well. Only in 20% of your training sessions were you able to achieve a time that would allow you to win a race." In the close-goal condition, participants read: "So far things are going well. In 95% of your training sessions you were able to achieve a time that would allow you to win a race."

All participants then read that they had another training session of 12 time trials. To manipulate emotions, participants' performance in this session was varied. In the positive-emotions condition, participants read: "You achieved a winning time in all of the 12 trials." In

the negative-emotions condition they read: "You achieved a bad time in all of the 12 trials."

Then, all participants were presented with a competing, financial, goal, namely working to earn extra money. Participants read the following[3]:

> On your way home, you keep thinking about your goals and aspirations. Your mind shifts between thoughts about your chances of winning the 100m-sprint and thoughts about how good it would be to find a way to earn extra money. Later that day, you get a call from the Modern Art Museum offering you a part-time job as a museum tour guide. These positions do not open often and are highly sought after. You would like to accept this job because of your goal to earn extra money. Besides, you have been interested in modern art for many years now. The tour guide job is, for now, on a trial basis. The decision of whether or not to hire you permanently as a part-time tour guide will be based on the quality of your work and visitors' satisfaction. Given your previous experience, you expect to be a good tour guide, if you try your best. The job is due to start in 3 days and you may choose to work between 6 to 18 hours each week. At the back of your mind you are thinking that accepting this job would mean training less hours per week. The museum needs an answer today and you promise that you will call back soon. You only have a few minutes to think about this, and then make a decision.

After reading the scenario, participants indicated (1 = not at all, 7 = very much) how much effort they would allocate to pursuing each goal. The items measuring effort in athletic performance were (α = .95): "How hard will you train to reach the goal of winning the 100m sprint race this season?" "To what extent will you strive to attain the goal of winning the 100m sprint race this season?" and "I am willing to put forth a great deal of effort in training to attain the goal of winning the 100m sprint race this season." The financial goal items were similar (α =

.88). Participants then indicated how they would distribute their time between the two competing goals: “Of the 18 hours of discretionary time that you have available each week, how many hours will you spend working as a museum tour guide?” (0 hours if job offer is not accepted; 6–18 hours if job offer is accepted).

Next, 4 items ($\alpha = .97$) assessed focal goal expectancy: “What is the probability that you will win the 100m sprint race this season?” (1 = not at all probable; 7 = highly probable); “How confident are you that you will achieve your goal of winning the 100m sprint race this season?” (1 = not at all; 7 = very much); “Do you expect to succeed in winning the 100m sprint race this season?” (1 = not at all; 7 = very much); and “Are you optimistic about attaining your goal of winning the 100m sprint race this season?” (1 = not at all optimistic; 7 = very optimistic). The average score across the four items was mean centered to allow appropriate mediation tests, as explained later.

Finally, participants completed manipulation checks, to establish whether the scenario successfully created competition between two attractive, approach goals, and different levels of goal proximity and goal-related emotions for people’s limited resources. Goal attractiveness was measured by two items, one for each goal (Shah & Higgins, 1997): “How good would it be if you attained your goal of winning the 100m-sprint race this season?” and “How good would it be if you attained your goal of earning extra money by working in the museum?” (1 = not at all, 7 = extremely). The level of goal competition was assessed by (Emmons & King, 1988): “Does working as a museum tour guide to earn extra money have a helpful, a harmful, or no effect at all on your goal to win the 100m sprint race this season?” (1 = very harmful; 4 = neither harmful, nor helpful; 7 = very helpful), reverse-coded so that higher scores reflect more competition. The goal type (approach vs. avoidance) was assessed for each goal separately by

(Roese et al., 1999): "Some goals involve pursuing something we want, whereas others involve trying to avoid something we don't want." "How would you describe your goal for the 100m sprint race?" and "How would you describe your goal of earning extra money?" (1 = avoiding; 7 = pursuing). The emotion and goal proximity manipulation checks were the same as in Study 1 (respective α for positive and negative items .98 and .92; r for goal proximity .89, $p < .001$).

Results

Manipulation Checks

The manipulations were successful. That is, participants considered attaining the athletic performance goal and the financial goal to be attractive ($M_{\text{Athletic goal}} = 6.42$, $SD = 0.98$; $M_{\text{Financial goal}} = 5.05$, $SD = 1.57$), and that both were approach goals ($M_{\text{Athletic goal}} = 6.49$, $SD = 0.82$; $M_{\text{Financial goal}} = 4.97$, $SD = 1.64$), with no significant differences between experimental conditions (all $F's < 1.9$). Participants also experienced the two goals to be competing ($M = 4.75$, $SD = 1.38$) regardless of experimental condition, $F(1, 92) = .02$, $p > .88$. Also, positive emotions were higher in the positive-emotion ($M = 5.77$, $SD = 0.82$) than in the negative-emotion condition ($M = 2.17$, $SD = 0.96$), $F(1, 95) = 394.20$, $p < .001$, and negative emotions were higher in the negative-emotion ($M = 4.04$, $SD = 1.28$) than in the positive-emotion condition ($M = 1.20$, $SD = 3.34$), $F(1, 92) = 219.44$, $p < .001$, and no other effects were significant. Furthermore, participants felt closer to attaining the athletic performance goal in the close-goal condition ($M = 6.15$, $SD = .64$) than in the distant-goal condition ($M = 3.28$, $SD = 1.06$), $F(1, 92) = 256.43$, $p < .001$, and no participant reported that the athletic performance goal had been attained or failed fully.

Effects of Emotions and Goal Proximity on Effort Allocation across Multiple Goals

The proposed model predicts that goal-related emotions and goal proximity in the athletic

goal domain should have opposing effects on, respectively the pursuit of the athletic goal and the competing, financial goal. Because of resource limitations, an increase of effort in one goal domain should lead to a shift of effort away from other, competing goals. A 2 (goal-related emotions) × 2 (goal proximity) × 2 (goal domain: athletic vs. financial) mixed between-within ANOVA yielded the predicted three-way interaction, $F(1, 184) = 27.98$, $p < .001$, and Figure 4 displays it.

In support of our predictions, participants in the positive-emotion condition who were close to attaining their athletic performance goal reported lower intentions to allocate effort to the athletic goal ($M = 5.49$, $SD = 1.74$) and higher intentions to devote effort to the goal of earning extra money ($M = 5.54$, $SD = 1.08$), than those in the negative-emotion condition who felt close to attaining the athletic performance goal (athletic goal: $M = 6.40$, $SD = 1.14$, $F(1, 92) = 4.92$, $p < .05$; financial goal: $M = 4.04$, $SD = 1.42$, $F(1, 92) = 13.67$, $p < .001$). As hypothesized, these relationships were reversed when attainment of the athletic performance goal was distant. Then, participants in the positive-emotion condition reported higher intentions to train ($M = 6.32$, $SD = 0.84$) and lower intentions to pursue the competing, financial goal ($M = 4.21$, $SD = 1.37$) than those in the negative-emotion condition (athletic goal: $M = 5.36$, $SD = 1.79$, $F(1, 92) = 5.37$, $p < .05$; financial goal: $M = 5.17$, $SD = 1.69$, $F(1, 92) = 5.58$, $p < .05$). A separate 2 (goal-related emotions) × 2 (goal proximity) ANOVA yielded a similar significant pattern for the measures assessing participants' relative distribution of time between the athletic performance goal and the financial goal, in terms of the number of hours allocated to the museum job (positive emotions/distant: $M = 5.63$ hrs, $SD = 3.97$; positive emotions/close: $M = 8.83$ hrs, $SD = 5.01$; negative emotions/distant: $M = 8.25$ hrs, $SD = 2.27$; negative emotions/close: $M = 5.50$ hrs, $SD = 3.91$; $F(1, 92) = 13.90$, $p < .001$).

Effects of Emotions and Goal Proximity on Goal Expectancy

Note that the model of multiple goal pursuit predicts that the main effects of goal-related emotions and goal proximity both contribute to goal expectancies, such that these are higher when goal-related emotions are positive rather than negative, and higher when goal attainment is near rather than distant. Intermediate goal expectancies between the two extremes are then expected for respectively positive emotions and distant goal attainment and negative emotions and near goal attainment (Figures 1 and 2). A 2 (goal-related emotions) × 2 (goal proximity) ANOVA and planned comparisons supported these predictions. The main effects of goal-related emotions, $F(1, 92) = 80.77$, $p < .001$, and goal proximity, $F(1, 92) = 125.68$, $p < .001$, as well as their interaction, $F(1, 92) = 6.95$, $p < .001$, were significant. More importantly, planned comparisons revealed that goal expectancies were lower when emotions were negative and goal attainment was distant ($M = -1.87$, $SD = 0.59$) than when emotions were either negative and goal attainment was near ($M = 0.40$, $SD = 0.97$) or positive and goal attainment was distant ($M = 0.03$, $SD = 0.89$), $t(92) = -10.40$, $p < .001$. Likewise, goal expectancies were higher when emotions were positive and goal attainment was near ($M = 1.44$, $SD = 0.70$) than when emotions were either positive and goal attainment was distant, or negative and goal attainment was near, $t(92) = 6.09$, $p < .001$.

Mediation by Goal Expectancy

Regression analyses were performed to test the prediction that goal expectancy mediates the effects of goal-related emotions, goal proximity and their interaction on the pattern of effort allocation across multiple goals (Baron & Kenny, 1986; MacKinnon, Fairchild, & Fritz, 2007). Specifically, we tested whether the relationship between goal expectancy about the focal goal and effort allocation to the focal (athletic) goal is inverted-U-shaped, with the *highest* effort at

intermediate goal expectancies, and U-shaped for the competing (financial) goal, with the *lowest* effort at intermediate goal expectancies, and that the contribution to effort allocation by goal-related emotions, goal proximity and their interaction is significantly reduced when goal expectancies are accounted for. For these analyses, goal-related emotions were effect-coded as 1 for the positive-emotion condition, and as -1 for the negative-emotion condition. Goal proximity was coded as 1 for the close-goal condition, and as -1 for the distant-goal condition. Also, the linear and squared-term of goal expectancy, after mean centering, were used in the analyses (see, e.g., Aiken & West, 1991, pp. 35-36; Neter, Wasserman, & Kutner, 1985, pp. 300-301). After mean centering goal-expectancy, low values of the original measure become negative, high values positive, and the average zero. The squared-term of the goal-expectancy measure then appropriately captures its curvilinear effect in the subsequent regression analyses, because both negative and positive extreme values, when squared, become positive and higher than intermediate values. Moreover, in this way the multi-collinearity of goal expectancy and goal expectancy-squared is effectively reduced (correlations between goal expectancy and goal expectancy-squared before and after mean centering are, respectively, $r = .99$ ($n = 96$, $p < .001$), and $r = -.23$ ($n = 96$, $p < .05$).

The first set of regression analyses tested the main effects of goal-related emotions and goal proximity, and their interaction on effort allocation. It showed that, consistent with the ANOVA results, only the goal-related emotions × goal proximity interaction predicted both effort in pursuing the athletic performance goal ($b = -0.47$, $t = -3.21$, $p < .01$) and effort in pursuing the financial goal ($b = 0.62$, $t = 4.28$, $p < .001$). The two main effects were insignificant in both cases (ps > .34).

The second set of regression analyses revealed, consistent with the ANOVA results, that

the main effects of goal-related emotions (b = 0.74, t = 8.99, p < .001) and goal proximity (b = 0.92, t = 11.21, p < .001), and their interaction (b = -0.22, t = -2.64, p < .01) predicted focal goal expectancy significantly. This supports the prediction that goal expectancy is lowest for negative emotions when goal attainment is distant, highest for positive emotions when the goal is near, and intermediate in between. This specific data pattern implies that the interaction between goal-related emotions and goal proximity should be the dominant predictor of the goal expectancy-squared measure, which was indeed borne out in follow-up regression analyses ($b_{Interaction}$ = 1.14, t = 7.01, p < .001, $b_{Emotions}$ = -0.40, t = -2.44, p < .05, $b_{Goal\ proximity}$ = -0.25, t = -1.53, p > .13)[4].

Finally, goal-related emotions, goal proximity, their interaction, goal expectancy, and goal expectancy-squared were simultaneously entered into the third set of regression analyses. The predicted inverted-U-shaped relationship between goal expectancy and effort in pursuing the athletic performance goal ($b_{Expectancy}$ = -0.07, t = -0.41, p > .68; $b_{Expectancy^2}$ = -0.28, t = -3.06, p < .001), and the predicted U-shaped relationship between goal expectancy and effort in pursuing the financial goal ($b_{Expectancy}$ = -0.11, t = -0.65, p > .5; $b_{Expectancy^2}$ = 0.27, t = 3.08, p < .01) emerged[5]. Moreover, in this latter set of regression analyses, the interactive effect of goal-related emotions and goal proximity on effort became insignificant both for the athletic goal (b = -0.17, t = 0.94, p > .34) and for the financial goal (b = 0.28, t = 1.57, p > .12). Sobel (1982) tests corroborated that goal expectancy-squared fully mediated the interactive effect of goal-related emotions and goal proximity on effort allocated to the athletic and financial goal (both $|Z|$s > 2.80, p < .01).

To substantiate that the *curvilinear* rather than the *linear* effect of goal expectancy on effort allocation was crucial, the third set of regression analyses was redone but now without goal expectancy-squared. In support of our predictions, the linear effect of goal expectancy was

again insignificant for effort in the athletic goal ($b_{Expectancy}$ = -0.13, t = -0.68, p > .49) and the financial goal ($b_{Expectancy}$ = -0.06, t = -0.34, p > .73), whereas the interactive effect of goal-related emotions and goal proximity remained significant for effort in the athletic goal (b = -0.50, t = -3.26, p < .01) and in the financial goal (b = 0.60, t = 4.02, p < .001). Separate mediation analyses yielded a similar pattern of results for the measure of relative allocation of time between the athletic performance goal and the financial goal. These results demonstrate that the curvilinear effect of goal expectancy mediates the effect of goal-related emotions and goal proximity on effort allocation.

To facilitate the interpretation of the findings, Figures 5A and 5B plot the estimated effects of goal expectancy on goal effort in the athletic performance goal and the financial goal, respectively, using the regression parameters of the third set of regression analyses (Aiken & West, 1991). Effort in pursuing the athletic performance goal was indeed lowest at the high and low ends of expecting to win the 100m-sprint race and highest in the middle, and the reverse was the case for effort in pursuing the financial goal.

Discussion

Study 2 extends the findings of Study 1 by revealing that the effect of goal-related emotions and goal proximity on effort allocation across multiple competing goals is mediated by goal expectancy, as hypothesized. Together, the results of the first two studies suggest that multiple goal pursuit operates through an intricate prioritization process, where effort is balanced between competing goals over time, with goal expectancies as proximal determinants.

Study 3

The competing goals and the alternative courses of action to pursue them were simultaneously salient and available in Studies 1 and 2, and thus people had to chose how to

allocate their resources at each point in time. Often however, individuals must manage their overall level of goal effort over time so as to take advantage of the opportunities that are momentarily available to pursue one particular goal, while simultaneously conserving some resources to effectively respond to opportunities to pursue their other goals later or even to the pursuit of future goals not yet identified. The purpose of Study 3 was to extend our findings to multiple-goal situations where the distinct means for attaining the competing goals are not simultaneously available. Moreover, in contrast to Studies 1 and 2, which used self-report measures of goal pursuit activity, Study 3 uses unobtrusive behavioral measures of actual effort allocation, which allow a more robust test of the dynamics of multiple goal pursuit, and the validity of the proposed model.

Method

Participants and Design

Female undergraduate students (N = 165, M_{age} = 21 years) participated in return for monetary compensation. Of these, 120 participants were randomly assigned to one of eight experimental conditions in a 2 (goal-related emotions: positive vs. negative) × 2 (goal proximity: distant vs. close) × 2 (goal domain: dieting vs. other) between-subjects factorial design with effort in the two competing goals as the criterion variables (n = 15 per cell). The remaining 45 participants were randomly assigned to one of three control conditions, explained later.

Procedure

Phase I: Activation of dieting goals. In the first phase of the experimental procedure, a dieting goal was primed in all participants (adapted from, Fishbach, Friedman, & Kruglanski, 2003; Study 5) except those in the first control group. Upon arrival in the laboratory, participants were asked to wait for a few minutes in a room, which had a variety of magazines and flyers

about exercising and dieting scattered around the tables, and nutrition- and dieting-related posters on the walls. The experimenter pointed at the posters and flyers, and told participants not to pay attention since these materials were there for use at a later study. After some waiting time, participants were brought into an individual cubicle with a personal computer and informed that they would be taking part in several unrelated studies during the 1-hour session, and that all instructions would be via the computer. After obtaining participants' informed consent, the experimenter started the computer program and left.

The first study (in fact, the manipulation check for the effectiveness of priming dieting goals) was introduced as a word recognition task on the computer (Fishbach et al., 2003). Participants performed a lexical-decision task, with twelve trials, with six non-words and six words, three unrelated (warm, desk, day) and three related to dieting (slim, diet, fat), presented in random order. Participants in the first control group, who skipped the activation of the dieting goal, provided a baseline for evaluating the effectiveness of the priming procedure. If the dieting goals were successfully activated by the manipulation, response times for the dieting-related words should be faster in the experimental groups as compared to this control group.

Phase II: Manipulation of goal-related emotions. In the second phase, via a taste perception study, positive and negative emotions were induced. Participants were presented with a 10 oz heaping bowl of potato chips and a glass of water, and invited to taste the chips, rate them on five dimensions (e.g., crunchy, salty), and indicate their purchase intention. Participants were informed that they would have 10 minutes for the task and that, after tasting and rating, they could help themselves to as many chips as they wished because the lab had "tons of them," but they were not to change their initial ratings. The questionnaire was short, leaving participants with ample time to eat additional chips, which was important. After the tasting period, the bowl

was removed and weighed to determine the exact amount (in oz) of chips consumed.

Goal-related emotions were elicited by providing participants with an accessible upward or downward standard against which they could compare and evaluate their own potato chips consumption during the taste-rating task. Thus, after the tasting task, participants read five reviews about the chips written by other consumers. The stated purpose was that the researchers were interested in learning how consumer-reviews influence people's judgments. In fact, emotions were manipulated by varying, in the second and fourth review, the reference value against which participants could compare their own efforts in self-regulating the amount of chips eaten during the tasting task. In the positive-emotion condition, in order to promote positive appraisals of their own consumption behavior, the reviews stated that individuals are, in general, unable to control themselves and end up eating large amounts of chips (e.g., "Delicious chips! But I find that, like most people, I always eat way too many! I can never control myself. As soon as I open a pack, I always keep eating more and more until the last crumb. Oops!").

In contrast, in the negative-emotion condition, the reviews implied that, in general, individuals are able to control themselves and only eat a small amount of chips. This, in turn, should lead participants to negatively appraise their own consumption behavior. The reviews read, among others: "Delicious chips! However, I seldom eat them (I can control myself especially with such fat snacks). As soon as I open a bag of chips, I start telling myself: 'Two chips are more than enough.' And I pretty much stay away from them." The three remaining neutral reviews were identical across conditions (e.g., "Good texture and real crispness. The bags aren't half empty and the pricing is great for the quality of the chips!"). After having read the reviews, and consistent with the cover story, participants indicated their purchase intention again.

Phase III: Manipulation of goal proximity. In the third phase, perceived goal proximity

(close/far) was manipulated by varying the feedback that participants received about their current body weight relative to the ideal. To this end, participants engaged in a third, ostensibly unrelated study on body health of university students. They were informed that a prestigious medical school had recently developed a new measure of body health, the Personalized Health Index (PHI), and were asked to enter on the computer the required personal information so that their individual PHI could be computed. In reality, the PHI was designed to manipulate goal proximity in this experiment. To increase the credibility of the cover story, participants were told "the PHI indicates body health after controlling for a variety of different individual characteristics, including age, gender, height, weight, bone structure, and muscle mass. It has been shown to be more accurate and reliable than other measures, such as the Body Mass Index (BMI), because it takes into account the fact that you may be heavy but healthy."

Next, participants entered the required information, including age, gender, weight, height, number of exercise hours per week, and measures around the waist, shoulders, hips and thighs (a tape measure and a scale were made available for each participant to use in isolation). After entering the data, the computer indicated that, depending on the experimental condition, participants' current PHI score was either 2 points above (close-goal condition) or 11 points above (distant-goal condition) their optimal PHI score. Also, in the close-goal condition, participants were informed that, on average, an excess of 2 points could be eliminated within 1 or 2 weeks of healthy eating and exercise. In the distant-goal condition, participants read instead that, on average, an excess of 11 points could be eliminated within 8 or 9 weeks. For control purposes, participants were then asked to indicate whether it was important for them to attain their optimal PHI score (1 = not at all, 7 = very much). The purpose of this manipulation was to ensure that all participants perceived a gap between their current state and an ideal state. Next,

participants' goal expectancy ($\alpha = .97$) was measured with the items as in Study 2, and the resulting scores were mean centered prior to the analyses.

Phase IV: Measurement of subsequent goal effort. Finally and crucially, we examined participants' effort allocation to pursue either the currently focal goal of dieting or to pursue another goal (goal domain: two conditions). Participants in the dieting-goal condition read that the 15 minutes necessary, to allow the sensory memory of the food (chips) to fade, were over, and that a second taste perception task could now start. Participants were then presented with a tray with five 5-ounce paper cups filled with an aversive drink (Apple Cider Vinegar mixed with water) and a glass of water. Apple cider vinegar is sometimes used as a weight-loss agent. It has quite a sour and unpleasant taste. Participants were informed that the drink is effective in burning body fat and that the more they would drink, the more weight they could lose. They were then asked to taste and rate the drink following a similar procedure as the one used in the first tasting task. People must exert substantial effort to drink apple cider vinegar because of its disagreeable taste. The criterion variable was the quantity of the drink consumed. Participants in the second control group performed only the tasting task to provide an undistorted baseline. Sour

Participants in the competing-goal condition were given two unsolvable tracing puzzles, in what they believed was another, ostensibly unrelated study investigating people's creative ability. This task has been widely used to measure effort, as reflected in persistence in the face of frustration (Baumeister, Bratlavsky, Muraven, & Tice, 1998). This task requires participants to trace over all the lines of two (unsolvable) geometric figures without retracing the same line twice and without lifting the pen from the paper, as many times as they wish. Participants were given a (solvable) practice puzzle first, and then received the two unsolvable puzzles to work on. Unbeknownst to them, the length of time they spent working on the puzzles before giving up was

timed, as a measure of effort. Participants in the third control group worked only on the puzzles and hence provided an undistorted baseline against which the persistence on the puzzles task in the experimental condition could be compared.

This concluded the experimental procedure with the dieting goal primed in phase I, positive or negative goal-related emotions manipulated in phase II, near or distant goal attainment manipulated in phase III, and effort exertion towards either the focal or a competing goal manipulated in phase IV, and with three separate control groups.

Phase V: Post-experimental questionnaire. At the end of the experiment, participants completed a questionnaire that included a set of manipulation checks (1 = not at all, 7 = very much) and three individual difference scales[6]. First, manipulation checks for positive ($\alpha = .89$) and negative emotions ($\alpha = .93$) associated with the effort exerted toward the amount of chips eaten were assessed using the same scales as in Studies 1 and 2. Three items tapped perceived effort associated with the amount of chips eaten ($\alpha = .86$): "Did you have to restrain yourself from eating the chips?" "To what extent were you self-disciplined not to eat too many chips?" and "How much effort did you make to control the amount of chips eaten?" Next, the manipulation check for perceived goal proximity to reach the optimal PHI score was measured with the same two items as in Studies 1 and 2 ($r = .80$). Perceived effort in drinking the aversive drink ($r = .70$) and working on the puzzles ($r = .77$) were measured: "Did you force yourself to drink the weight-loss drink [to work on the puzzles]?" and "How much effort did you put into drinking the weight-loss drink [working on the puzzles]?" As a check for goal-relatedness, participants were asked to indicate the extent to which the drink tasting task and the puzzle task were related to the chips tasting task, and whether these were related to dieting. Finally, participants completed three individual difference scales that were used as controls in the

subsequent analyses: the restraint scale (α = .82), the brief self-control scale (α = .95), and the state self-esteem subscales (average α = .78).

Phase VI: Debriefing. A funneled debriefing procedure (Chartrand & Bargh, 1996) was used to assess whether participants had guessed the true nature of the experiment and had suspected any relation between the different tasks. No participant showed any awareness or suspicion of the manipulations or the link between the different tasks. Participants were then thoroughly debriefed about the purpose of the experiment and care was taken to explain the false nature of the PHI feedback and the puzzles' tracing task. The use of deception in this experiment was explained, and all questions about the study were clarified. Finally, participants were thanked and asked not to discuss the experiment with their colleagues.

Results

Manipulation Checks

All manipulations were effective. Participants in the diet-prime condition recognized dieting-related words faster (M = 565 ms, SD = 150) than those in the baseline control condition did (M = 689 ms, SD = 140), $F(1, 131) = 11.28$, $p < .001$, whereas reaction times to neutral words did not differ across the conditions (M_{Prime} = 668 ms, SD = 256 *vs.* $M_{Control}$ = 677 ms, SD = 147), $F < 1$, and no other effects were significant.

Positive emotions were higher in the positive-emotion condition (M = 4.91, SD = 0.99) than in the negative-emotion condition (M = 3.30, SD = 1.11), $F(1, 112) = 72.29$, $p < .001$, and negative emotions higher in the negative-emotion (M = 4.66, SD = 1.35) than in the positive-emotion condition (M = 2.86, SD = 1.30), $F(1, 112) = 55.37$, $p < .001$. No other effects were significant, and results remained unchanged after controlling for the amount of chips eaten.

Participants indicated being closer to their PHI goal in the close condition (M = 5.40, SD

= 1.26) than in the distant condition (M = 3.23, SD = 1.37), $F(1, 112) = 79.96$, $p < .001$, and no other effects were significant. As desired, they also found it important to attain their optimal PHI score ($M_{Overall}$ = 5.08, SD = 1.70) with no differences between experimental conditions, F (1, 112) = 1.49, $p > .20$, and the results did not change after controlling for participants' weight.

Finally, participants in the dieting-goal condition judged the drink tasting task to be more related to the chips tasting task (M = 4.33, SD = 1.47), than participants in the competing-goal condition judged the puzzle task to be related to the chips tasting task (M = 2.58, SD = 1.52), $F(1, 112) = 39.70$, $p < .001$. Similarly, participants who performed the drink tasting task perceived it to be more related to dieting (M = 5.27, SD = 1.18) than those who performed the puzzle task (M = 2.23, SD = 1.29), $F(1, 112) = 172.91$, $p < .001$. Moreover, participants perceived the chips tasting task to be related to dieting regardless of experimental condition (M_{Drink} = 4.75, SD = 1.71 *vs.* M_{Puzzle} = 4.53, SD = 1.52), $F < 1$. No other effects were significant.

Effort Allocation to the Focal Goal

A 2 (goal-related emotions) × 2 (goal proximity) × 2 (goal domain) ANOVA yielded the predicted three-way interaction ($F(1, 120) = 72.05$, $p < .001$), which demonstrates that the indeed influence of goal-related emotions and goal proximity on effort allocation differs across the two goal domains, as shown in Figure 6A and 6B. The data for the focal and competing goal were inspected separately to gain more detail.

To test the joint effects of goal-related emotions and goal proximity on multiple goal pursuit, the amount (in oz) of apple cider vinegar consumed was examined first. A 2 (goal-related emotions) × 2 (goal proximity) ANOVA yielded the predicted two-way interaction, $F(1, 56) = 41.80$, $p < .001$ (see Figure 6A). Participants in the positive-emotion condition who were close to attaining their focal goal (PHI goal) consumed much less of the aversive drink (M = 2.02

oz, *SD* = 1.43) than those in the negative-emotion condition who were close to attaining their focal goal (*M* = 4.53 oz, *SD* = 1.87), $F(1, 56) = 19.86$, $p < .001$. These relationships were reversed when being far from attaining the focal goal: participants in the positive-emotion condition consumed much more (*M* = 4.56 oz, *SD* = 1.68) than those in the negative-emotion condition (*M* = 1.86 oz, *SD* = 1.17), $F(1, 56) = 21.96$, $p < .001$.

The experimental conditions were also compared to the second control condition (*M* = 1.48 oz, *SD* = 1.38) (Himmelfarb, 1975). In support of our reasoning, the amount of apple cider vinegar consumed was significantly lower in the control condition than in the positive-emotion/distant, $t(70) = 5.47$, $p < .001$, and negative-emotion/close conditions, $t(70) = 5.52$, $p < .001$. No difference existed between the control condition and the positive-emotion/close, $t(70) = .96$, $p > .30$, and negative-emotion/distant conditions, $t(70) = .68$, $p > .50$. The predicted interaction was also obtained for participants' self-reported effort in consuming apple cider vinegar, $F(1, 56) = 14.50$, $p < .001$. All effects remained the same after controlling for participants' weight, taste ratings of the drink, and their chronic levels of dietary restraint, self-control, and state self-esteem. These findings strongly support the predictions about effort allocation to the focal goal.

Effort Allocation to Competing Goals

To test our predictions about effort allocation in competing goal domains, the time (in log-minutes) that participants spent on the unsolvable puzzles was examined. Results of a 2 (goal-related emotions) × 2 (goal proximity) ANOVA revealed the predicted two-way interaction, $F(1, 56) = 47.62$, $p < .001$. In support of the hypotheses, participants in the positive-emotion condition who were close to attaining their focal goal, and who could thus free up resources, (*M* = 29.88 minutes, *SD* = 7.94) persisted significantly longer compared to those in the

negative-emotion condition who were close to attaining their focal goal (M = 15.75 minutes, SD = 7.06), $F(1, 56) = 27.02$, $p < .001$ (see Figure 6B), in fact almost twice as long. Again, these relationships were reversed when focal goal attainment was distant: in the positive-emotion condition (M = 15.57 minutes, SD = 6.01) participants quit working on the puzzles much sooner than in the negative-emotion condition (M = 27.45 minutes, SD = 6.66), $F(1, 56) = 20.80$, $p < .001$.

The experimental conditions were also compared to the third control condition (M = 33.10 minutes, SD = 12.36). As expected, results showed that the amount of time spent working on the puzzles was significantly higher in the control condition than both in the positive-emotion/distant, $t(70) = -5.60$, $p < .001$, and negative-emotion/close conditions, $t(70) = -5.61$, $p < .001$. There was no difference between the control condition and both the positive-emotion/close, $t(70) = -.48$, $p > .60$, and negative-emotion/distant conditions, $t(70) = -1.10$, $p > .25$. The predicted interaction effect was also obtained for participants' self-reported effort in working on the puzzles, $F(1, 56) = 13.84$, $p < .001$. All these effects remained the same after controlling for participants' chronic levels of dietary restraint, self-control, and state self-esteem.

Effects of Emotions and Goal Proximity on Goal Expectancy

A 2 (goal-related emotions) × 2 (goal proximity) ANOVA supported the hypothesized effect of goal-related emotions ($F(1, 116) = 39.30$, $p < .001$), goal proximity ($F(1, 116) = 47.38$, $p < .001$), and their interaction ($F(1, 116) = 16.45$, $p < .001$) on focal goal expectancy. More importantly, planned comparisons revealed that, as predicted, goal expectancies were indeed lower when emotions were negative and goal attainment was distant (M = -2.33, SD = 1.15) than when emotions were either negative and goal attainment was near (M = .63, SD = 1.37) or positive and goal attainment was distant (M = .47, SD = 1.53), $t(116) = -8.68$, $p < .001$. Also,

goal expectancies were significantly higher when emotions were positive and goal attainment was near (M = 1.23, SD = 1.82) than when emotions were either positive and goal attainment was distant, or negative and goal attainment was near, $t(116) = 2.06$, $p < .05$.

Mediation by Goal Expectancy

Prior to the mediation analyses, the goal-related emotion and goal proximity conditions were effect-coded, and the linear and squared-term of goal expectancy were developed as in Study 2 (the correlations between goal expectancy and goal expectancy-squared before and after mean-centering were, respectively, r = .98 (n = 120, $p < .001$), and r = -.24 (n = 120, $p < .05$). Because participants in the focal goal (weight loss) and competing goal (puzzle) conditions both indicated their focal goal expectancies, and to allow proper mediation analyses, goal expectancies were examined separately per goal domain (condition).

The first set of regression analyses showed, consistent with the ANOVAs, that the emotions × goal proximity interaction had the predicted significant effect on the amount of apple cider vinegar consumed, b = -1.30, t = -6.47, $p < .001$, and the time spent on the puzzles, b = 0.33, t = 6.90, $p < .001$. The two main effects were insignificant in both cases (ps > .65)

The second set of regression analyses revealed, consistent with the ANOVA results, that emotions (b = 0.91, t = 4.76, $p < .001$), goal proximity (b = 0.97, t = 5.07, $p < .001$), and their interaction (b = -0.60, t = -3.11, $p < .01$) predicted goal expectancy significantly for the focal goal. The same results were obtained for the competing goal condition, with goal-related emotions (b = 0.79, t = 3.98, $p < .001$), goal proximity (b = 0.90, t = 4.53, $p < .001$), and their interaction (b = -0.50, t = -2.56, $p < .05$) being significant. In follow-up regression analyses, the interaction between emotions and goal proximity predicted the squared term of goal expectancy both in the focal goal (b = 1.74, t = 4.84, $p < .001$) and competing goal (b = 1.63, t = 4.41, $p <$

.001) condition, whereas the two main effects did not (all *p*s > .06). This demonstrates again that goal expectancy is lowest for negative emotions when goal attainment is distant, highest for positive emotions when goal attainment is near, and intermediate otherwise.

In the third set of regression analyses, the effects of goal-related emotions, goal proximity, their interaction, goal expectancy, and goal expectancy-squared on effort allocation were examined. The results support the predicted inverted-U-shaped relationship between goal expectancy and the amount of apple cider vinegar consumed ($b_{Expectancy}$ = -0.04, t = -0.41, p > .68; $b_{Expectancy}^2$ = -0.39, t = -7.05, p < .001), and the predicted U-shaped relationship with the time spent working on the unsolvable puzzles ($b_{Expectancy}$ = -0.001, t = -.24, p > .81; $b_{Expectancy}^2$ = 0.09, t = 6.79, p < .001). The interactive effect of goal-related emotions and goal proximity on the amount of apple cider consumed (b = -0.65, t = -3.43, p < .01) and the time spent working on the unsolvable puzzles (b = 0.18, t = 4.27, p < .001) was reduced significantly but remained significant here. Sobel (1982) tests corroborated that the curvilinear effect of goal expectancy mediated the interactive effect of emotions and goal proximity on the two behavioral measures of effort in goal pursuit (both |*Z*|s > 3.69, p < .001). The same mediation effects were found when analyzing self-reported effort both in consuming apple cider vinegar and in working on the puzzles.

To further substantiate that the curvilinear rather than the linear effect of goal expectancies on effort allocation was crucial, the third set of regression analyses was re-done but without the curvilinear effect. In these analyses, the linear effect was also not significant neither for the amount of apple vinegar consumed ($b_{Expectancy}$ = -0.16, t = -1.11, p > .27), nor for the time spent working on the unsolvable puzzles ($b_{Expectancy}$ = -0.01, t = -0.29, p > .77), as expected, and the interactive effect of emotions and goal proximity remained significant (both *p*s < .001).

To facilitate the interpretation of the findings, Figures 7A and 7B plot the estimated curvilinear effects of goal expectancy on the amount of apple cider vinegar consumed, and the time spent working on the unsolvable puzzles, respectively, using the regression coefficients of the third set of regression analyses for several values situated between one standard deviation below and one standard deviation above the mean level of goal expectancy (Aiken & West, 1991). The amount of apple cider vinegar consumed was clearly lowest at both high and low levels of expectancy in reaching the optimal PHI and highest in the middle. The reverse was the case for the time spent working on the puzzles. The findings of this study indicate that the pattern of effort allocation predicted by the model of multiple goal pursuit accounts for resource regulation over time more generally, holding for simultaneous as well as sequential multiple goal contexts.

General Discussion

People try to perform in various life domains: work, home, family, finances, spirituality, sports, and social relationships, but their resources, like attention, energy and time, to pursue these various goals are limited. The present studies shed light on how people achieve a dynamic, context-sensitive balance between these competing demands to effectively pursue multiple goals. Specifically, when the attainment of a currently focal goal is distant, positive emotions stemming from prior success in moving toward the goal lead to an *increase* of effort in that domain. Diverting resources away from the pursuit of other goals achieves this. In contrast, negative emotions associated with prior failure in moving toward the focal goal prompt individuals to *decrease* their level of effort in pursuing the goal, and to re-channel effort toward other valued goals. These relationships, however, are reversed when the goal is close. At that point, positive emotions lead to coasting, a *decrease* of effort in pursuing the currently focal goal, and promote

a shift of effort to other goals. Negative emotions, on the other hand, trigger an *increase* in the level of effort allocated to pursuing the focal goal, leading to a *decrease* of effort in pursuing other goals.

Thus, the evidence obtained reveals that the regulation of goal pursuit in multiple-goal environments, rather than directed to the simultaneous attainment of all goals, operates through an ongoing prioritization process in which the limited resources available for goal pursuit are balanced among competing goals over time. Furthermore, the present research shows that individuals' expectancy of success in each of their competing goal domains provides a benchmark for the regulation of goal priorities, as it mediates the effects of goal-related emotions and goal proximity on effort allocation across multiple goals. Effort allocated to the focal goal is then highest for intermediate levels of success expectancy, and lowest for either low or high levels. The resulting effort allocated to competing goals is the exact mirror image, being lowest at intermediate levels and highest at the extremes of success expectancy about the focal goal. The results also indicate that the proposed system of self-regulation is continuously recalibrated so that the outcomes of current goal-directed behavior, in terms of goal progress and changes in goal proximity, become an input for allocating the flow of subsequent goal-directed behavior. Taken together, the findings highlight the important and adaptive role that emotions and goal proximity play in successful goal pursuit.

These dynamics of multiple goal pursuit were observed over the course of daily life (Study 1) and in controlled experimental settings (Studies 2 & 3), and both in situations where individuals set goals of their own (Study 1) or were supplied with specific goals (Studies 2 & 3). The effects were obtained for self-reported (Studies 1 & 2) and unobtrusively observed (Study 3) goal pursuit in multiple-goal situations involving a wide range of goals and attainment means.

These included health/appearance goals (weight-loss and exercising), financial goals (earning and saving money, paying off debts), goals related to one's attributes and behavior (helping others), and life aspirations (academic and athletic success). The effects were obtained in situations were goal pursuit was investigated across a time-series of real-world, consequential behavior involving a commitment to long-term objectives, as well as in situations involving short-term objectives (Trope & Liberman, 2003). The effects were independent of the level of goal difficulty, the type of goals (approach versus avoidance) and other individual characteristics, such as levels of dietary restraint, state self-esteem, and self-control.

Relation to Previous Goal Research

The present work is grounded in theories of goal striving, such as expectancy-value theories of achievement motivation (Atkinson, 1957), goal setting theory (Locke & Latham, 1990), Carver and Scheier's (1998) cybernetic control model, and goal systems theory (Kruglanski et al., 2002), and it shares several of its predictions with these. The Multiple Goal Pursuit model however differs from prior work in significant ways as well. Whereas much research has studied single-goal situations, the present analysis is concerned with the dynamics of goal pursuit in multiple-goal environments, which presents individuals with different kinds of regulatory challenges. In single-goal environments, all available resources can be devoted to the focal goal. Thus, effective self-regulation entails identifying the appropriate level of resources that must be allocated to ensure the goal is attained in a context where only inaction has an opportunity cost, in terms of failed or slower goal progress in the focal goal domain. In contrast, in multiple goal environments effective self-regulation requires achieving an ongoing balance between the competing demands that multiple goals have on one's limited resources. Thus, individuals must continuously identify which goals should be (re-)prioritized for resource

allocation in a context where both action and inaction have an opportunity cost, in terms of failed or slower goal progress in the active goal domains. The model and findings reveal that the different self-regulatory challenge underlying multiple-goal environments has important and sometimes unexpected implications for the way in which factors such as goal proximity, emotions and goal expectancy influence goal pursuit.

The present research is, to our knowledge, the first to test recent speculations about the influence of positive emotions on coasting towards the goal (Carver 2004), and the first to reveal that the likelihood of coasting critically depends on goal proximity. In this novel light, the "car's cruise control" analogy takes on a different tone. In fact, the speed of driving towards one's destination depends not only on the current speed but also on how close or distant one is from getting there. Our model and findings also have ramifications for the "goals loom larger" effect (Brendl & Higgins, 1995; Förster et al., 1998) and the goal gradient hypothesis (Hull, 1934). Specifically, they show that rather than monotonically going up when the goal nears, the level of effort allocated to goal pursuit is instead contingent on goal-related emotions. Of course, the original goal gradient hypothesis was formulated in the context of rodents approaching food in a single 20-foot runway, without alternatives. But remarkably and less recognized later, Hull actually already observed that whereas the speed of approach increased monotonically from the start until the point where the goal was very near, it slowed down from there onwards in "a very definite tendency of retardation as the goal is approached" (Hull 1934, p. 420). He speculated that this might be due to the animal's preparation to start eating the food at the end of the runway, and that this switch to another activity required attention, which reduced the speed of locomotion. Our findings are in line with this phenomenon, but demonstrate more specifically how individuals with multiple goals slow down when focal goal attainment is imminent and

goal-related emotions signal progress, and prioritize competing goals, which we believe to be novel. This demonstrates that far from being universal, the goal gradient effect in multiple-goal contexts is contingent on the valence of goal-related emotions and the imminence of goal attainment, and that these conditions are general, holding across a variety of common goal pursuit situations.

In these ways, our model reconciles opposing perspectives about the effects of emotions on goal-directed behavior. That is, both positive and negative goal-related emotions can promote persisting or shifting in goal pursuit, and goal proximity determines this. It also provides an answer to the question that puzzled Hull early on. That is, goal proximity can promote both increased and decreased effort in goal pursuit, and the valence of goal-related emotions determines this, and we are not aware of other models that can account for these dynamics.

Limitations and Future Directions

There are boundary conditions to the empirical evidence obtained, which may stimulate future research. First, all studies concern situations where the activated goals compete. Second, all goals in this research implied an incentive to move toward a desired end state, rather than an incentive to maintain a current (satisfactory) state. Third, all studies investigate a specific phase of goal-directed behavior (Gollwitzer et al., 1990), namely how people manage goal implementation once they have set the goals to simultaneously pursue. Fourth, the empirical contexts investigated all involved instances were goal progress required effort, and where individuals perceived their actions to be instrumental to goal progress. Exploring how multiple goal pursuit operates outside these conditions would be an important extension. Understanding multiple goal pursuit would benefit from extending the current findings to different goal system configurations (Kruglanski et al., 2002), for instance, when people regulate effort across

mutually facilitating goals, or when pursuing both competing and facilitating goals.

Individuals are sometimes motivated to maintain the status quo as the desired end state, rather than to move away from a current or move towards a future state. Because maintenance of current states often requires effort (e.g., maintaining level of fitness, current weight, grade point average, or social relationships), these maintenance goals are likely to compete for available resources with other goals. In addition, goal pursuit is likely to be accompanied by positive and negative emotions. It is also possible that individuals develop a subjective sense of goal proximity in response to threats to the status quo. Specifically, when the maintenance of a desirable state is threatened, the distance may be perceived as larger than when the maintenance of a desirable state is not threatened. Taken together, these properties of maintenance goals suggest that the proposed model may generalize to other types of goals beyond those examined in the current studies, and future work can test these conjectures.

Extensions of the present research, could also address multiple-goal pursuit during other phases of goal-directed behavior. Specifically, because multiple-goal pursuit implies that individuals have decided to pursue a set of goals simultaneously, future work could explore the conditions that lead individuals to make this decision, as well as the factors determining which goals are included in the set (Gollwitzer et al., 1990). It would also be interesting to examine the impact of post-goal attainment and failure emotions (Davidson, 1998) on the pattern of goal prioritization and effort allocation in multiple-goal situations. One possible response to goal attainment or failure in multiple goal pursuit is to modify the level of aspiration associated with the focal goal (Dodge et al., 1989; Miller et al., 1960). In fact, past success may be followed by increases and past failure by decreases in the level of aspiration (Lewin, Dembo, Festinger, & Sears, 1944). This is likely to have implications for whether and when coasting and goal

termination occur in the context of multiple goal pursuit, and thus influence the pattern of effort allocation over time. For example, under certain conditions the experience of positive goal-related emotions when being close to goal attainment may lead to an increase in the level of aspiration for a particular goal (e.g., try to lose 10 lb instead of 5 lb), rather than to coasting. Our consistent pattern of findings across the studies suggests that such responses were absent or at least not very prominent here. Still, future research is needed to understand when people coast in response to positive emotions and nearby goals, or instead adapt their desired goal levels upward, as well as when they will terminate current goal pursuit in response to negative emotions and remote goals, or instead adapt desired goal levels downward.

In sum, the present research contributes to a better understanding of the dynamics of multiple goal pursuit, a common but relatively unexplored aspect of self-regulation. In it, we developed and tested a parsimonious model, which accounts for how individuals heedfully and adaptively regulate their goal-directed efforts over time by continuously monitoring progress across multiple goals, and channeling their limited resources toward those goals where effort is perceived as being potentially most effective at a given time. The Multiple Goal Pursuit model specifies that, in addition to their independent influences on behavior, goal-related emotions and goal proximity jointly influence both the resource allocation decisions that individuals make in multiple-goal environments and their expectancies of success, and that the latter are the proximal cause of ensuing goal pursuit. In this way, the present article demonstrates how people manage a shifting system of resource allocation to adaptively juggle multiple goals over time.

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Footnote

1. As a validity check, a follow-up content analysis of participants' eating behavior was conducted by two independent coders, blind to the hypotheses, who rated how much effort each participant actively made toward losing weight on each day, along a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*) ($r = .81$, $p < .001$). The correlation between coder ratings and participants' own assessment of their goal effort in the weight-loss goal was high (.67, $p < .001$).

2. To rule out the possibility that the interaction between *goal progress* and goal proximity actually accounts for effort allocation, we conducted additional multilevel regression analyses, but now with this latter interaction. The predictor variables were the previous day's goal progress, goal proximity, their interaction, and effort for the focal and competing goal, and the criterion variables were the current day's goal effort for, respectively, the focal and competing goal. None of the interaction effects was significant, which rules out the alternative process and supports our reasoning. That is, the interaction for the *focal* goal was neither significant on the focal goal effort ($b = .0008$, $p > .54$) nor on the competing goal effort ($b = -.006$, $p > .77$). Likewise, the interaction for the *competing* goal was neither significant on the competing goal effort ($b = .015$, $p > .57$) nor on the focal goal effort ($b = .014$, $p > .40$).

3. Results from a pilot study ($n = 44$) indicated that the goal proximity and goal-related emotions manipulations were both effective. Emotions were more positive ($M = 5.50$) in the positive compared to the negative-emotions condition ($M = 3.74$, $F(1, 40) = 35.57$, $p < .001$), and participants perceived goal attainment as closer ($M = 5.09$) in the close compared to the distant goal condition ($M = 3.64$, $F(1, 40) = 23.27$, $p < .01$).

4. We thank the Associate Editor for suggesting this analysis.

5. We did not find support for *reverse mediation*. To test for it, follow-up analyses were

conducted with goal expectancy as the criterion variable, and goal-related emotions, goal proximity, their interaction, and the linear and squared effects of goal effort as predictor variables, separately for the athletic and financial goal. In case of reverse mediation, the linear effect of goal effort on goal expectancy would be significant. Moreover, such reverse mediation would imply that then the curvilinear effect of goal effort on goal expectancy would be significant as well. Yet, the linear and curvilinear effects of goal effort on goal expectancy were insignificant both for the athletic performance goal (b_{Effort} = -.09, t = -.92, p > .36; b_{Effort}^2 = -.02, t = -.65, p > .51) and the financial goal (b_{Effort} = .002, t = .04, p > .97; b_{Effort}^2 = .04, t = 1.05, p > .29), and the effects of goal-related emotions, goal proximity and their interaction remained significant. Dropping the curvilinear term in further analyses did not change the findings.

6. In a separate pretest (n = 32) where the order of the manipulation checks, either at the end of each corresponding experimental phase or at the end of the experiment, was systematically varied across participants, no order effect was found on any of the measured variables (all Fs < 1).

Table 1

Univariate and Bivariate Statistics for the Daily Diary Condition in Study 1

	Mean	SD	1	2	3	4	5	6	7
1. Previous day goal progress (weight-loss goal)	3.51	1.68							
2. Previous day goal progress (competing goal)	3.70	1.80	.16***						
3. Previous day goal-related emotions (weight-loss goal)	1.65	2.61	.54***	.11***					
4. Previous day goal-related emotions (competing goal)	1.47	2.80	.07*	.69***	.20***				
5. Previous day goal proximity (weight-loss goal)	3.15	1.59	.42***	.15***	.29***	.04			
6. Previous day goal proximity (competing goal)	4.06	1.40	.17***	.37***	.20***	.38***	.07*		
7. Current day effort (weight-loss goal)	4.47	1.37	.31***	.19***	.34***	.10***	.22***	.23***	
8. Current day effort (competing goal)	3.92	1.80	-.04	.16***	-.05	.07**	.00	-.02	-.09**

$N = 1240$, * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

Multilevel Regression Results: Predicting Current Day's Effort Allocation to the Focal (Weight-loss) and Other, Competing Goal from Previous Day's Factors (Study 1)

	Current day effort allocated to:			
	Weight-loss goal		Competing goal	
Predictors	*b*	*SE*	*b*	*SE*
Intercept	4.517***	.104	3.925***	.122
Previous day goal pursuit (weight-loss goal):				
Goal effort	-.026	.038	-.128*	.058
Goal-related emotions	-.030	.021	.041	.032
Goal proximity	.001	.023	.015	.034
Goal-related emotions × goal proximity	-.217***	.011	.143***	.017
Previous day goal pursuit (competing goal):				
Goal effort	.019	.019	-.058*	.028
Goal-related emotions	.002	.013	-.035	.019
Goal proximity	.077**	.025	-.052	.039
Goal-related emotions × goal proximity	.102**	.011	-.147***	.017

Significance of regression coefficients: * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure Captions

Figure 1. The multiple goal pursuit model.

Figure 2. Summary of main predictions.

Figure 3. Current day's effort in pursuing the weight-loss goal (A) and the competing personal goal (B) as a function of the previous day's emotions related to progress in the competing goal and previous day's goal proximity to competing goal (left), and of previous day's emotions related to goal progress in the weight-loss goal and previous day's goal proximity to the weight-loss goal (right).

Figure 4. Effort allocated to pursuing the athletic performance goal (A) and the financial goal (B) as a function of emotions and goal proximity in the athletic performance goal. Error bars ± 1 standard error of the mean.

Figure 5. The effect of goal expectancy on the level of effort allocated to the athletic performance goal (A) and the financial goal (B).

Figure 6. Amount of apple cider vinegar consumed in ounces (A) and duration of puzzle persistence in minutes (B) as a function of emotions over prior eating behavior and goal proximity. Error bars ± 1 standard error of the mean.

Figure 7. The effect of goal expectancy on the amount of apple cider vinegar consumed in ounces (A) and on the duration of puzzle persistence in minutes (B).

Figure 1.

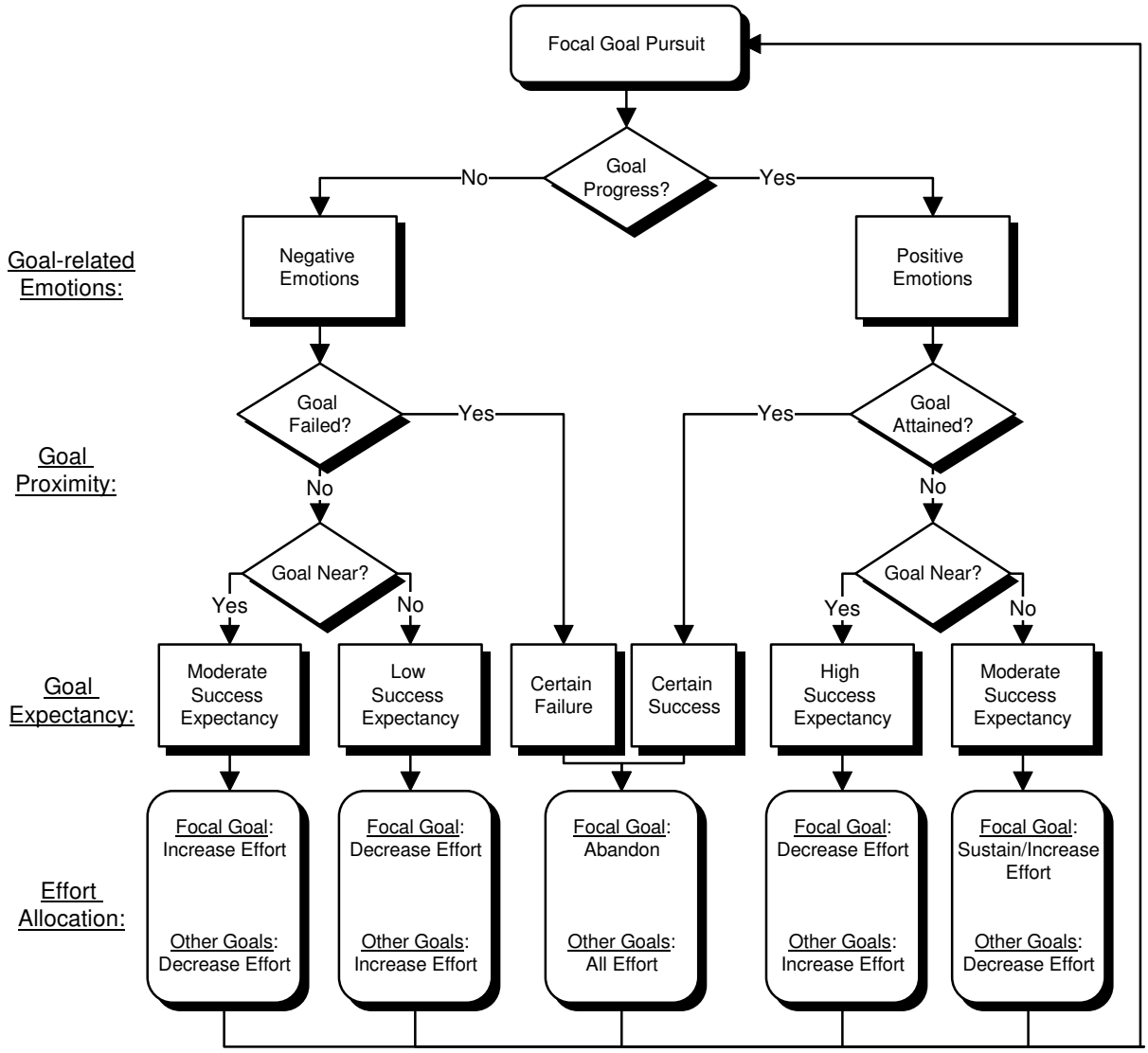

Focal Goal Pursuit
Goal Progress?
No
Yes
Goal-related Emotions:
Negative Emotions
Positive Emotions
Goal Failed?
Goal Attained?
Yes
Yes
Goal Proximity:
No
No
Goal Near?
Goal Near?
Yes
No
Yes
No
Goal Expectancy:
Moderate Success Expectancy
Low Success Expectancy
Certain Failure
Certain Success
High Success Expectancy
Moderate Success Expectancy
Effort Allocation:
Focal Goal: Increase Effort
Other Goals: Decrease Effort
Focal Goal: Decrease Effort
Other Goals: Increase Effort
Focal Goal: Abandon
Other Goals: All Effort
Focal Goal: Decrease Effort
Other Goals: Increase Effort
Focal Goal: Sustain/Increase Effort
Other Goals: Decrease Effort

Figure 2.

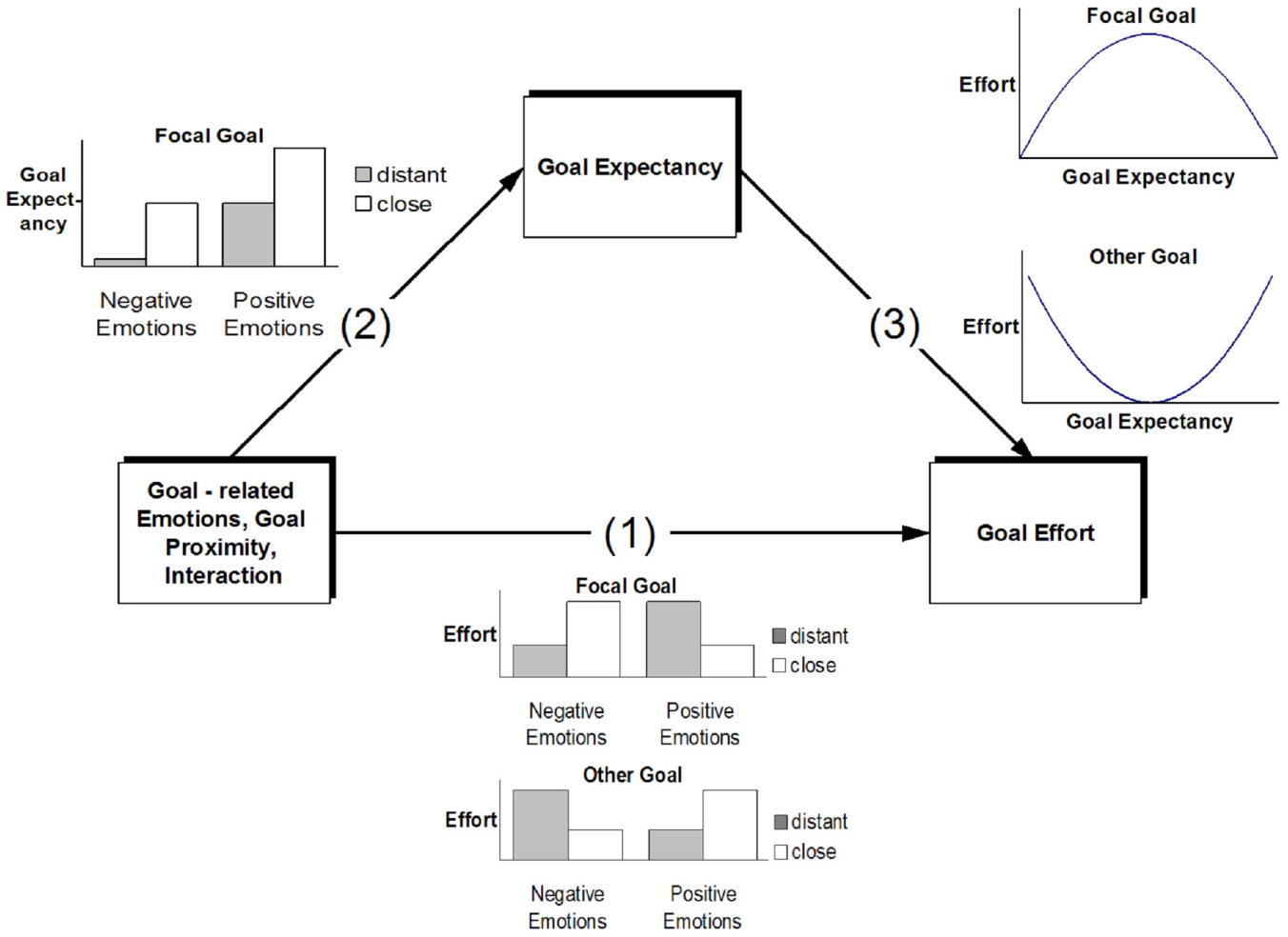
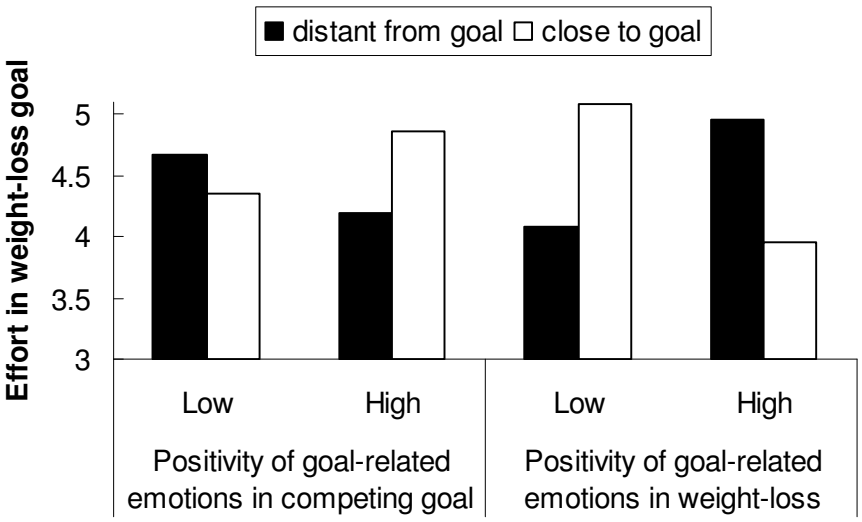

Focal Goal
Goal Expect-ancy
distant
close
Negative Emotions
Positive Emotions
Goal Expectancy
Focal Goal
Effort
Goal Expectancy
Other Goal
Effort
Goal Expectancy
(2)
(3)
Goal - related Emotions, Goal Proximity, Interaction
(1)
Goal Effort
Focal Goal
Effort
distant
close
Negative Emotions
Positive Emotions
Other Goal
Effort
distant
close
Negative Emotions
Positive Emotions

Figure 3.

A


distant from goal
close to goal
Effort in weight-loss goal
5
4.5
4
3.5
3
Low
High
Low
High
Positivity of goal-related emotions in competing goal
Positivity of goal-related emotions in weight-loss

B

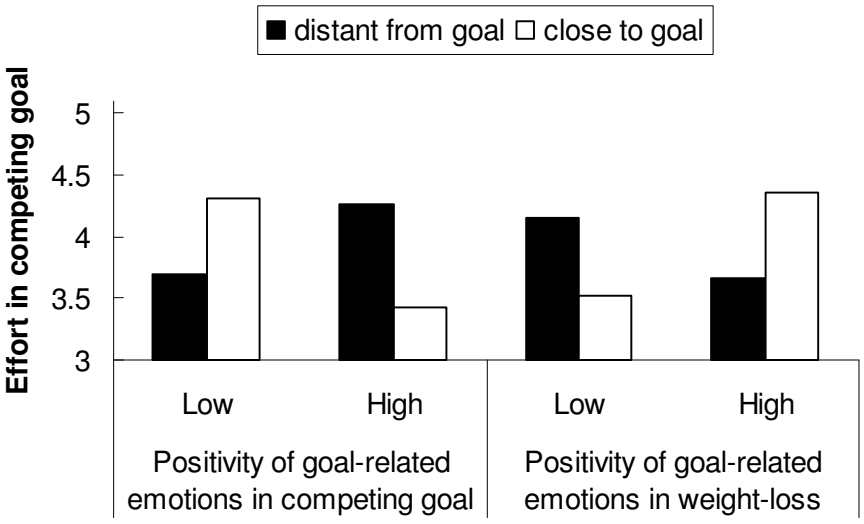
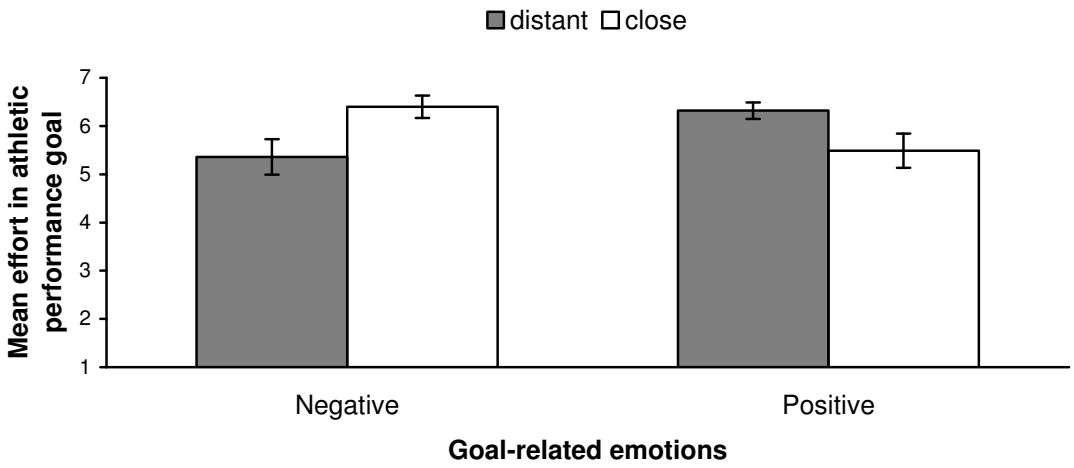

distant from goal
close to goal
Effort in competing goal
5
4.5
4
3.5
3
Low
High
Low
High
Positivity of goal-related emotions in competing goal
Positivity of goal-related emotions in weight-loss

Figure 4.

A

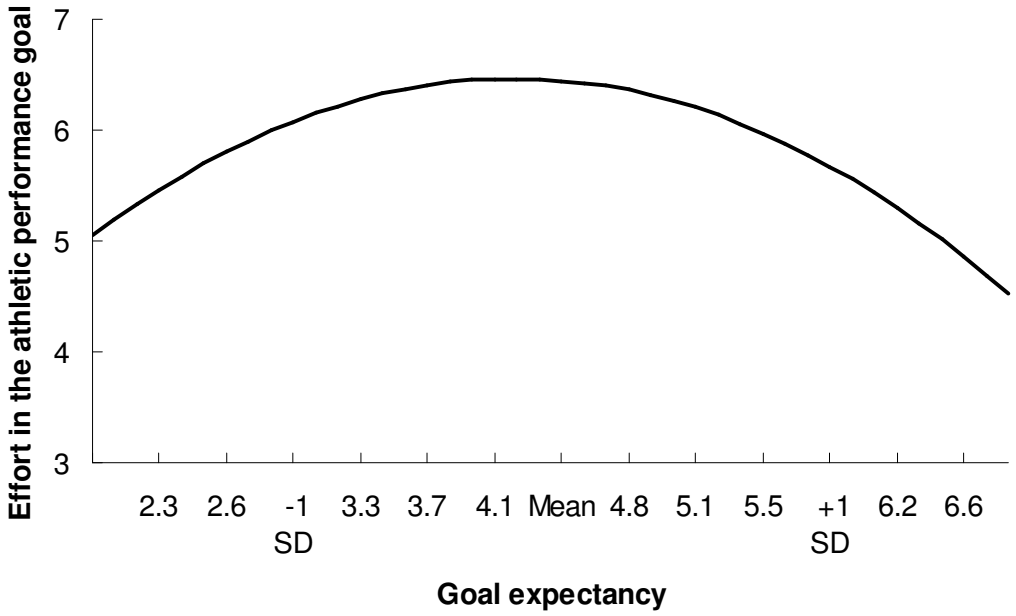

distant
close
Mean effort in athletic performance goal
7
6
5
4
3
2
1
Negative
Positive
Goal-related emotions

B


distant
close
Mean effort in financial goal
7
6
5
4
3
2
1
Negative
Positive
Goal-related emotions

Figure 5.

A


Effort in the athletic performance goal
7
6
5
4
3
2.3
2.6
-1 SD
3.3
3.7
4.1
Mean
4.8
5.1
5.5
+1 SD
6.2
6.6
Goal expectancy

B

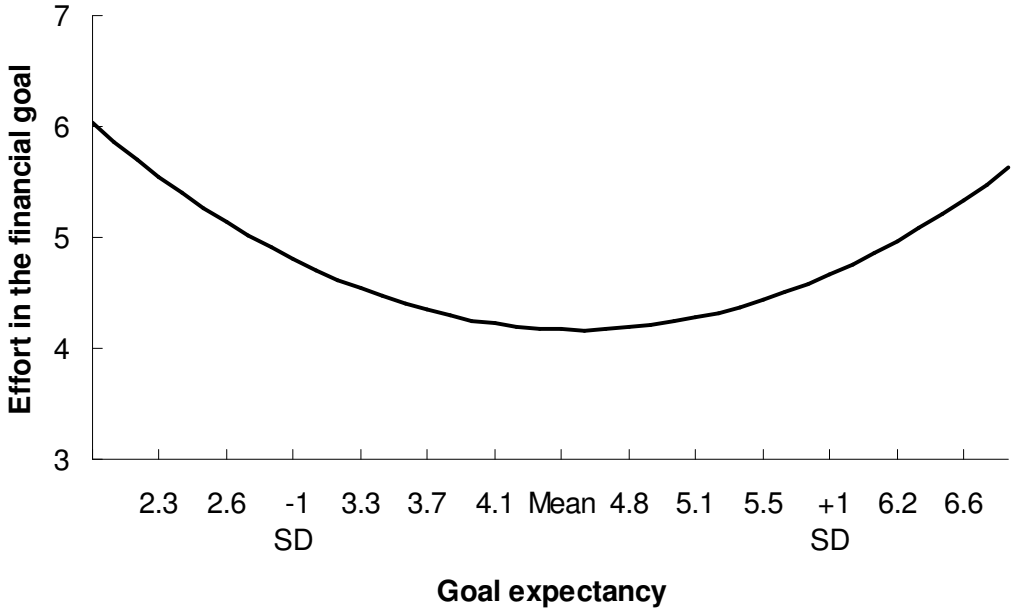
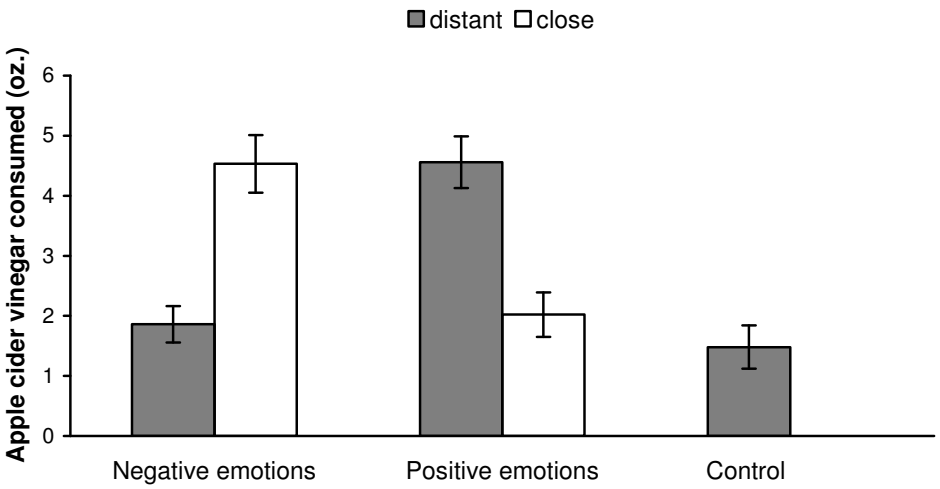

Effort in the financial goal
7
6
5
4
3
2.3
2.6
-1 SD
3.3
3.7
4.1
Mean
4.8
5.1
5.5
+1 SD
6.2
6.6
Goal expectancy

Figure 6.

A

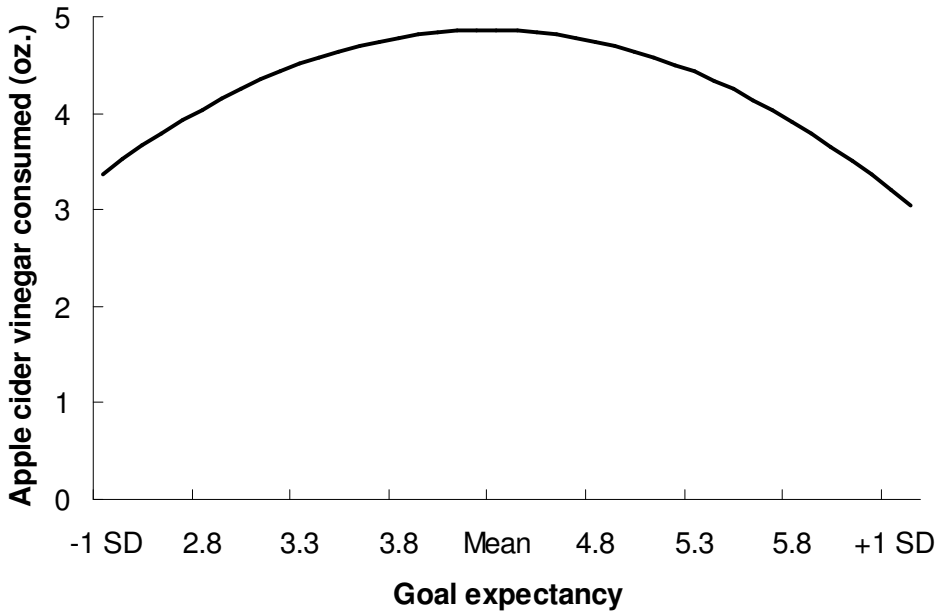

distant
close
Apple cider vinegar consumed (oz.)
0
1
2
3
4
5
6
Negative emotions
Positive emotions
Control

B

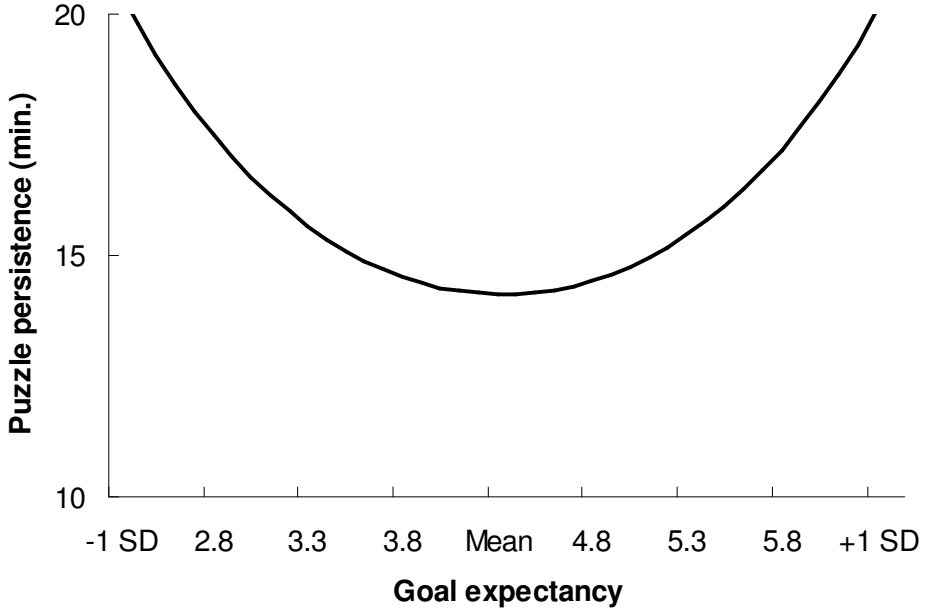

distant
close
Puzzle persistence (min.)
0
10
20
30
40
Negative emotions
Positive emotions
Control

Figure 7.

A


Apple cider vinegar consumed (oz.)
5
4
3
2
1
0
-1 SD
2.8
3.3
3.8
Mean
4.8
5.3
5.8
+1 SD
Goal expectancy

B


Puzzle persistence (min.)
20
15
10
-1 SD
2.8
3.3
3.8
Mean
4.8
5.3
5.8
+1 SD
Goal expectancy