

KEEPING YOUR EYES ON THE PRIZE  
VERSUS YOUR NOSE TO THE GRINDSTONE:  
THE EFFECTS OF LEVEL OF GOAL EVALUATION  
ON MOOD AND MOTIVATION

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A Dissertation presented to  
the Faculty of the Graduate School  
at the University of Missouri-Columbia

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In Partial Fulfillment  
Of the Requirements for the Degree  
Doctor of Philosophy

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by

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AUGUST 2007

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The undersigned, appointed by the Dean of the Graduate school, have examined the dissertation entitled

KEEPING YOUR EYES ON THE PRIZE  
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THE EFFECTS OF LEVEL OF GOAL EVALUATION  
ON MOOD AND MOTIVATION

presented by Linda Houser-Marko

a candidate for the degree of Doctor of Philosophy,

and hereby certify that, in their opinion, it is worthy of acceptance.

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Many thanks go to my dear husband Shaun who has supported me in so many ways throughout this process. Thanks as well to my parents Bob and Betsy who always expected the best from me. And most of all, this dissertation is dedicated to my two young daughters, Claire Charlotte and Maggie Belle, who inspire me with their boundless energy.

## ACKNOWLEDGEMENTS

I would like to acknowledge all those who have helped with my academic research. First I would like to thank Professor Ken Sheldon for his advice, guidance, support and patience in this long endeavor. I would also like to thank all of my committee members for their guidance, patience and support throughout the years, for both my master's thesis project and this dissertation project. Thank you to Lynne Cooper, Laura King, Anna Bardone-Cone, and Vicki Conn. I would like to thank my lab mates for their support and camaraderie—thank you to Neetu Abad, Chuck Nichols and Alex Gunz. A special thank you to Yuna Ferguson for providing feedback on early drafts. Thank you to all of our undergraduate research assistants for their help on all of our projects as well.

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## ABSTRACT

The level at which a goal is evaluated can lead to differing mood and motivation during the process of goal pursuit. Though higher level primary goals provide meaning and direction for a person, evaluating progress on that primary goal is risky. This notion was tested with a 2 x 2 experiment in which framing level (sub-goal or primary goal) and feedback valence (success or failure) were manipulated for participants ( $n=118$ ) during a computer game in the laboratory. Positive mood and expectancy decreased and negative mood increased the most for those who received primary goal failure feedback. Study 2 was a short longitudinal experimental study that took place over 8 weeks throughout which participants ( $n=113$ ) evaluated their progress on a primary goal (Grade goal) or sub-goal (Study hours goal) for a specific course. Success or failure varied naturally for individuals. Evaluating progress on a primary goal was associated with more extreme mood. Specifically, when progress was lacking, the primary goal focus was associated with decreases in mood and expectancy. These results indicate that a person might be better off evaluating goal progress at the lower, sub-goal level, especially when receiving negative feedback.

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INTRODUCTION

The phenomenon

*Consider two people who plan to run in the city marathon in six months. Each person sets forth on a simple training program: to run several times every week in training for the marathon.*

*After two months of running every week, Chris faces a dilemma. His boss asks him to make an important presentation to the company executives and gives him a week to complete his research and prepare the presentation. Under the time crunch of his looming deadline, Chris decides to forgo running for one week. After the presentation, Chris comes down with a cold and skips running for another week. When his wife asks him how his training is progressing, Chris says, "Lousy. I've already skipped two weeks of running so far and I don't feel like I'll ever be able to run a marathon. I'm not sure I want to run next week."*

*Likewise, Kathryn faces her own obstacles. Two months into her training, her boss sends her to Singapore for a week to scout new vendors for her company. Faced with the busy travel schedule and the prospect of running in an unfamiliar city, she decides to skip running for her week abroad. Shortly after returning, Kathryn twists her*

*ankle while running and her doctor tells her to stay off it for a week. When a friend asks Kathryn how her training is progressing, she says, “Fine, I have to skip running this week, but I’ll get back to it next week. I’m just taking it a week at a time.”*

*Chris and Kathryn have the same long-term or primary goal, to run a marathon, and the same short-term or sub-goal, to train by running every week until the marathon. Both advance equally well in the pursuit of their goals, but Chris and Kathryn evaluate their ongoing progress in vastly different ways which results in equally varied outlooks on their future pursuits. Chris interprets his recent training activity in terms of the primary goal. For Chris, the failure to run for two weeks out of the entire six months makes him expect failure on the future marathon. Chris is evaluating at a high level. His evaluation of progress throws the pall of failure onto the entire primary goal. In contrast, Kathryn evaluates her training as a series of discrete sub-goals. She temporally isolates her failure on a sub-goal and does not let the experience color her feelings toward the primary goal. Kathryn is evaluating at a low-level. She evaluates effort on the sub-goal in terms of the same sub-goal. For her, each week brings another opportunity to fail or succeed in the course of her training.*

These scenarios illustrate possible outcomes of two approaches to goal evaluation—high-level and low-level evaluation. Framing failure at the higher, primary goal level is more discouraging than framing failure at the lower, sub-goal level.

The current research project tested a common recommendation for goal evaluation: when facing failure, one should focus on the sub-goal and “keep your nose to the grindstone.” In other words, evaluate at the lower sub-goal level rather than the higher primary goal level to protect mood and motivation from setbacks. In contrast, the

benefits of keeping your “eyes on the prize” might solely occur after clear success or when seeking meaning, and the costs of potential failure might outweigh these benefits.

### *Levels of goals and goal evaluation*

A primary goal and its sub-goals exist in a relative hierarchical relationship: the primary goal provides the impetus for the sub-goals, but also relies on the completion of those shorter-term, more concrete sub-goals. In terms of the hierarchy of goals described by Carver & Scheier (1982, 1990), primary goals tend toward the *principle level* involving abstract desires, such as the goal to be healthy. A goal may also exist at the lower *program level* involving specific activities, such as exercising daily. The program level goals could require the completion of even more lower level sub-goals that are even more specific. This hierarchical framework for goals helps us to understand relationships and differences between goals.

### *Hierarchical differences in goals*

This research examines the consequences of goal evaluation and presumes that focusing on a specific level of goal makes a difference for mood and motivation. Hierarchical goals have differing qualities such as degree of specificity, time frame, and meaning (Bandura & Schunk, 1981; Bandura, 1988) and have differing effects on motivation and performance.

For example, a focus on a proximal, lower level, short term goal rather than a distal, higher level, longer term goal leads to greater performance and associated self-efficacy (Bandura & Schunk, 1981; Bandura, 1988), and is correlated with positive attainment expectations (Manderlink & Harackiewicz, 1984). Similarly, specific goals have been shown to lead to greater performance compared to the more abstract “do your

best” goals (Locke & Latham, 1990). Also, the utility of proximal goals has been shown. For example, being assigned to pursue both proximal *and* distal goals, compared to simply pursuing distal goals, resulted in higher performance in a workplace setting (Brown, 2005; Latham & Seijts, 1999). The research comparing proximal (sub) and distal (primary) goals makes a strong case for the benefits of proximal goals. The current research examines one possible explanation for the benefits of framing goals at a lower more proximal level.

There are clearly benefits to higher levels of goals. Higher level, more abstract goals are more relevant and meaningful for the self-concept (Brunstein, 2000; King, 1998). Some research has shown that a higher level goal is difficult to disengage from even when a person should (Wrosch, Scheier, Miller, Schultz & Carver, 2003), possibly because the goal is more central to the self and has higher levels of commitment and meaning or is a self-defining goal (Brunstein, 2000). This leads to a conundrum--if higher level goal failure leads to more negative mood and less motivation, and yet the higher level goal is difficult to give up because it is so central to the self, then a person might be stuck with a negative mood, lack of progress on a self-relevant goal, which might undermine his broader self. Often, life pursuits and personal projects involve a tradeoff between doing what is meaningful, the higher level, and what is manageable, the lower level (Little, 1989).

Progress toward a primary, distal goal is slower and harder to measure due to the abstractness and long term nature of this level of goal (Carver & Scheier, 1998; Emmons, 1992). The desired state of the sub-goal is more clear and concrete, while the desired state of the abstract goal is more vague and broad. Thus, as the criterion or desired state is

vague for one type of goal and clear for the other type of goal, the results and effects of evaluating at either level would likely differ.

People who tend to think of their goals more abstractly have been shown to have higher levels of psychological distress (Emmons, 1992), possibly due to greater discouragement compared to concrete goals when experiencing failure (also Carver, LaVoie, Kuhl & Ganellen, 1988). For Emmons (1992), concrete versus abstract goal focus was thought of as an individual difference; he classified participant's personal strivings as either concrete or abstract, creating two categories of people, low-level strivers and high-level strivers. This individual difference in striving level resulted in differing levels of psychological distress.

*Dynamics between sub-goal and primary goal.* Level of focus may be a stable personality disposition (Emmons, 1992; Vallacher & Wegner, 1989), or may fluctuate due to situational influences (Vallacher & Wegner, 1987). Action identification theory has shown that people are more likely to think of their actions at the highest level possible for themselves (Vallacher & Wegner, 1987, 1989). A person might shift to a lower level of identification due to demands from the situation that require more focused attention (Vallacher & Wegner, 1987). A well-learned action is more likely to be viewed at a higher level of abstraction, when greater attention to detail is not required (similar to a habit, see Wood, Quinn & Kashy, 2002; or automaticity, see Bargh, 1997). Likewise, we can assume that people would be more likely to frame goal evaluation at the higher primary goal level when things are going well.

### *The evaluation process*

In addition to being in hierarchical relation to each other, primary goals and sub-goals may be linked in feedback loop systems. Feedback loop models are useful in discussing the process of goal pursuit and evaluation, and are well established in the motivation literature (Carver & Scheier, 1982; 1990; 1998; Miller, Galanter, & Pribram, 1960; Powers, 1973; Scheier & Carver, 1988). A feedback loop system begins with the current state that is compared to a goal (or a desired state). When a discrepancy is detected, a behavior is enacted, and then the result feeds back to the beginning of the system. The new state is compared to the desired state again, to determine if there is a discrepancy and to decide on further action. For example, if a student's desired state is to learn the material in a chapter of her French textbook, the beginning point is that she has not read the French chapter. Thus a discrepancy is detected, which leads to behavior (she reads the chapter), and the result feeds back to the beginning of the system. Then the new state (she read the French chapter) is compared to the desired state, and the lack of discrepancy tells her she can move on to the next assignment.

To visualize how the goal evaluation process might be linked for different levels of goals, imagine that two simple feedback systems are joined consecutively and hierarchically (Carver & Scheier, 1998), for a primary goal and sub-goal (see Figure 1). Setting a primary goal often leads to the setting of a sub-goal. The sub-goal then leads to a concrete behavior. Evaluation of this behavior would feed back to the sub-goal system when evaluated at a low level (i.e. Kathryn), whereas the behavior would feed back to the primary goal system when evaluated at a high level (i.e. Chris). A problem may result in this case when the behavior feeds back to the primary goal and is evaluated using the

primary goal criteria that have not yet been met. Such an evaluation likely results in a global failure appraisal and then negative affect and decreased expectancy for the future. Thus, evaluating at the primary level too early or when there are many more sub-goals that must be completed might affect pursuit of the goals via discouragement regarding the primary goal. A downward trend might ensue in which both the initial primary goal and the sub-goal which serves it are de-energized and finally abandoned.

Goal progress can be evaluated at any time after the goal has been initiated. Consistent with feedback models of goal pursuit, a person *evaluates* their goal behavior by comparing their actual state with the ideal state suggested by the desired goal. With the goal feedback loop in mind (Figure 1), we can think of progress being evaluated after a behavior is enacted. Then the resulting appraisal feeds back to the start of the loop system where the current state is compared to the desired state of the goal (Carver & Scheier, 1990), which goal or ideal state this appraisal feeds back to depends on the level of evaluation.

The theory of action phases (Gollwitzer, 1990) delineates a similar series of events. The chronology of goal pursuit is as follows: 1) deliberation that results in a decision to pursue a goal, 2) making a plan for the goal, 3) taking action, and 4) evaluation of the outcome. Evaluation involves determining if the intended outcome has been achieved, and if the actual value of the goal striving matches the expected desired value. If the outcome has not been achieved, appraisals may loop back to the action phase to continue the same action, or the appraisal might loop back to the deliberation or planning phase.

In light of the joined primary and sub-goal feedback loop model (Figure 1), looping back to the action phase is similar to evaluating at the sub-goal level, and looping back to the deliberation phase is similar to evaluating at the primary goal level. In other words, when the primary goal is evaluated, the whole purpose of one's goal efforts might be deliberated upon again. The question of "Can I run the marathon?" might become "Should I run the marathon?"

*Consequences of success or failure.* Evaluation of goal progress might lead to perceptions of success or failure. Setbacks versus successes clearly have differing implications and effects on motivation (Spieker & Hinsz, 2004; Thompson, Webber, & Montgomery, 2002), yet past research has not examined the influence of *level* of goal evaluation on mood and future motivation. The research looking at success and failure supports the assumptions of the proposed model.

Failure feedback on a goal has been shown to lead to either an increase or decrease in future effort on that goal (depending on qualities of the goal such as importance), or a decrease in the difficulty of the goal through goal revision (Ilies & Judge, 2005; Kluger & Denisi, 1996; Donovan & Williams, 2003). Though goal revision research has examined changes in actual goals and future effort after failure, it has not examined how responses to feedback framed in terms of low versus high level goals affects outcomes.

One study looked at the effects of failure and linking personal goals to a higher order goal—the goal of happiness (McIntosh, 1996). Those people who linked a personal goal to the higher order goal of happiness ruminated more compared to those who did not link their goal to happiness. Likewise, they found that "linkers" to the higher order goal

of happiness experienced more negative mood after failure. This study showed that lower level goals that are linked to important higher order goals lead a person to experience more rumination and negative affect after failure. This further supports the notion that higher level goals are more important and relevant to the self, but links to the higher level might not always be helpful.

Success on goals has been shown to lead to increased well-being and continued effort on goals longitudinally (Sheldon & Houser-Marko, 2001; Sheldon, 2002), and to setting more difficult future goals (Kluger & Denisi, 1996; Donovan & Williams, 2003; Radosevich, 2000). Another study showed that progress on goals that are linked to one's best possible self was related to subjective well-being (King, Richards, & Stemmerich, 1998). Experimentally, success leads to increases in feelings of self-worth, while the effects of failure lead to more varied responses, depending on level of self-esteem (Brown & Dutton, 1995; Nummenmaa & Niemi, 2004)). The effects of failure and success are less clearly defined than might be expected and are examined in more depth in the current research.

#### *Integrating the previous research*

The research reviewed above form the basic building blocks that inform the proposed model. Goals that are at different levels of a goal hierarchy have differing motivational and mood outcomes. These outcomes have been examined for concrete or abstract goals, for example, but research has not fully addressed the dynamic whole of related primary and sub-goals and responses to success or failure specifically. Evaluating at the primary level might affect pursuit of the goals by way of discouragement regarding the primary goal, leading to disengagement from both goals.

In previous experiments comparing proximal and distal goals, no feedback was given to participants. Although participants varied in their actual performance and thus in the natural and implicit feedback associated with the task, this feedback was confounded with participant ability, rather than being randomly assigned (Bandura & Schunk, 1981; Manderlink & Harackiewicz, 1984; Brown, 2005; Latham & Seijts, 1999).

Evaluation of goal pursuit at the sub-goal level likely yields specific behavior-related conclusions; evaluation at the primary goal level likely yields conclusions that are relevant to the self-concept and the broader self. The current research manipulated the level of goal evaluation in order to confirm these differing conclusions for either level of evaluation. The extant research has not addressed the issue of framing *evaluations* at either hierarchical level and the specific effects of success and failure, as the current research does.

Goal evaluations may have the greatest impact when framed for the primary goal. For example, if evaluations were at the *primary goal level* and indicated lack of progress, the discrepancy between the actual state and desired state would be greater than the discrepancy that results from the evaluation of the sub-goal, due to the many other sub-goals that must yet be achieved. This negative evaluation of the primary goal would likely result in lower positive affect and higher negative affect. Then following this negative mood, a person's intended effort and expectation to do well in the future would likely decrease. Thus, failure evaluations at the primary goal level would have the greatest negative consequences for the long term pursuit of the goals, compared to failure evaluations at the sub-goal level.

The consequences of failure evaluations at the *sub-goal level* are expected to have less of an impact on mood and future effort. Even if an evaluation were negative (such as lack of progress on a goal), there would be less of a discrepancy between the behavior and the ideal state of the sub-goal, simply because the scope of the sub-goal is smaller. This smaller discrepancy would be less discouraging, and expectations and future effort in the long term would likely continue at close to the previous levels. In other words, failure at the sub-goal was expected to have less of an impact on future effort and expectancy in the long term. Making a cognitive effort to evaluate at the sub-goal level, and “keep your nose to the grindstone” may help a person to dodge the pitfalls of goal failure.

*Moderator to consider*

*Academic contingency of self-worth.* When a student ties his or her self-esteem to academic performance, success or failure feedback might cause shifts in his or her vulnerable self-esteem (Crocker, Karpinski, Quinn, & Chase, 2003; Crocker, Luhtanen, Cooper, & Bouvrette, 2003). Academic contingency of self-worth (ACSW), or basing one’s self-esteem on academic competence, has been shown to moderate the effect of bad grades on daily self-esteem and mood (Crocker, Karpinski, Quinn, & Chase, 2003), such that when ACSW was high, daily self-esteem was affected by bad grades. Clearly, if a person bases their self-esteem in one domain more than another, receiving feedback relevant to that domain would more strongly impact his or her self-esteem and/or emotions (Dutton & Brown, 1997). The current research takes this concept further by examining the effects of level of framing of the feedback, explicitly for a low level or high level goal, expecting that academic contingency of self worth would moderate the

effect of level of feedback. Specifically, we would expect that those high in ACSW would be especially vulnerable to failure feedback for the high level goal.

### *The current research*

Study 1 tested if it is indeed better for mood and goal motivation to frame task feedback at the sub-goal level. Two factors were manipulated in the experiment: valence of feedback (success or failure) and level of goal (primary or sub-goal). Thus, we could examine the differing mood and motivation outcomes due to failure or success on sub-goals versus primary goals.

Study 2 was a short term longitudinal study that looked at the effects of naturally occurring success or failure on personal goals over a period of several weeks. In this study, students reported on their pursuit of an academic primary goal or sub-goal. The level of evaluation was manipulated so that students evaluated progress at the sub-goal level in one condition versus the primary goal level in the other condition. Success or failure occurred naturally throughout this study, was self-evaluated, and was considered both as a continuous and dichotomous variable. The longitudinal study allowed for the evaluation of the hypotheses in a real life setting, for actual personal goals over time.

The general predictions for both studies were: Framing task feedback at the primary goal level amplifies the effects of failure. Specifically, failure framed in terms of the higher level primary goal compared to the sub-goal leads to decreased expectancy, less positive affect, and more negative affect. Likewise, failure framed in terms of the sub-goal would result in less of a negative impact—slightly greater expectancy and less negative affect than the primary goal/failure condition. Thus, the combination of failure and the primary goal evaluation would be contrasted from all other cells.

Overall, success versus failure feedback was expected to lead to differing effects. The subtleties of the negative effects of failure feedback were the main issue for this research to address. Additionally, we expected positive effects for success feedback, such that there would be higher levels of positive mood and greater expectancy. However, it should be noted that we did not have any particular predictions regarding level of goal evaluation and success. Two possibilities were that success would have essentially the same effect for both the primary goal and the sub-goal, or that the primary level of evaluation would make the effects of success even more positive.

## STUDY ONE

This experiment examined how motivation and mood were affected when feedback level and valence were manipulated. The experiment involved playing a difficult skill-related game while receiving feedback regarding a sub-goal or a primary goal. Participants engaged in a computer game during which they were consistently given false feedback for either level of goal. Then participants rated their attitudes about the goal and their associated affect during the task. This experiment was designed to ascertain the effects of level of goal (Primary/Sub-goal) and valence of feedback (Success/Failure), a 2x2 design, on subsequent motivation and mood. A no feedback condition was also included as a hanging control condition.

### Hypotheses

#### *Hypothesis 1*

We expected a main effect of success/failure feedback, such that when a person received success feedback on either the sub-goal or the primary goal, he or she would have higher levels of positive affect, expectancy for future tasks, and lower negative affect compared to the failure conditions.

#### *Hypothesis 2*

We expected a 2-way interaction of Success/Failure and level of feedback, such that Failure framed at the Primary goal level would have the most negative effect on mood and expectancy. Specifically, when a person received failure feedback at the Primary goal level, he or she would have the lowest levels of positive affect and

expectancy for future tasks, compared to framing failure at the Sub-goal level or either success cell. These effects were expected to be cumulative and take place after a few repetitions of feedback. The Primary goal/Failure condition was expected to have the lowest expectancy and mood compared to the other three experimental conditions. We expected the Primary goal/Failure condition to have lower expectancy and mood compared to the no feedback condition in planned contrasts as well.

### *Hypothesis 3*

We expected that there would be an individual difference effect for people whose self-worth was contingent on the academic domain. There are two possible interactions that were tested regarding academic contingency of self-worth (ACSW). A plausible 2-way interaction would be if level of ACSW and Success/Failure interacted to have differential effects on the outcomes of positive and negative mood, and expectancy. Specifically, for those students high in ACSW, failure feedback framed for either level of goal might lead to lower levels of positive affect and expectancy, and higher levels of negative affect, compared to those students low in ACSW. Such a 2-way interaction would support the notion that those who are high in contingency of self-worth are more vulnerable to failure feedback in general.

Yet another possibility is that a 3-way interaction might occur such that those high in ACSW are especially affected by high level failure. In this case, those high in ACSW would not just be vulnerable to failure feedback (i.e. the 2-way interaction), but particularly to failure on a high level goal. The combination of high level goal focus and failure feedback for those high in ACSW might be especially discouraging, indicating that when self-worth is contingent and vulnerable, self-relevant failure really hurts.

## Method

### *Participants*

One hundred twenty-seven students from the University of Missouri-Columbia participated in this study. The incentive for participating was a \$10 gift certificate or partial credit for those in a Psychology 1000 course. There were 93 participants who received the gift certificate while all others received course credit. Nine participants were excluded from analyses due to a problem with instructions in one of the conditions that was subsequently corrected. The final sample consisted of 118 participants. There were 41 males and 77 females that participated. The average age of participants was 21.5 years old. There were 23 participants in the Sub-goal/Success condition, 24 participants in the Primary goal/Success condition, 23 participants in the Sub-goal/Failure condition, 23 participants in the Primary goal/Failure condition, and 25 participants in the no feedback condition.

### *Procedure*

Participants came in to the lab in groups of one to five people. After an introduction to the format of the study, participants completed Questionnaire 1. Then the experimenter explained a word puzzle game that participants did on the computer. The puzzles were presented in five blocks that contained five puzzles each. The experimenter told participants that performance on similar puzzles was related to verbal ability and certain types of success in life and they would receive points for correct responses within each block. They were told the points would accumulate to result in a final letter grade for the task. Further, participants were asked to keep in mind two goals while playing the game: 1) To earn the most points for each block (Sub-goal), and 2) To earn the best grade

for this task (Primary goal). The participants then rated both the Sub-goal and the Primary goal in Questionnaire 2.

Next participants started the computer game. Word puzzles from the Remote Associates Test (Mednick & Mednick, 1967; Bowers, Regehr, Balthazard, & Parker, 1990) were presented on the computer for participants to solve. The participants were instructed that they should respond as quickly as possible to the computer prompts, that their responses would be scored by the computer on accuracy and speed, and that each puzzle presentation would time-out if a maximum time was reached. The maximum time was 25 seconds, however participants were not told the specific amount of time.

The game program was tailored to present one of the five conditions, depending on the participant number that was drawn and entered into the computer by the participant. This kept the experimenter blind to the condition. In the game, participants were given a practice block that contained four puzzles after which the trial blocks began. Following each trial block they were given success or failure feedback for either the primary or sub-goal, or no feedback, depending on their condition assignment. Following blocks one and three, the participants made ratings of their current affect, expectancy, and intended effort on their assigned level of goal. After the computer task was completed, the participants completed a final paper and pencil questionnaire, in which they rated their mood again (Questionnaire 3).

The participants were then debriefed and the experimenter eventually inquired whether they were suspicious of the feedback. Most participants said the puzzles were so difficult that they thought it was plausible that the feedback they received was true. In

other words, it was somewhat difficult for them to gauge how well they were doing compared to their peers.

### *Materials*

#### *Part 1: Questionnaire 1*

*Background questions.* The participants reported their gender, age, ethnicity, year in school, current Grade Point Average and their ACT score from college entrance.

*Academic Contingency of Self-worth.* The Academic subscale of the Contingency of Self-worth Scale (CSWS: Crocker, Luhtanen, Cooper, & Bouvrette, 2003) was administered. The five items (e.g. “Doing well in school gives me a sense of self respect.”) were rated on a scale of strongly disagree (1) to strongly agree (5). Reliability for this scale was  $\alpha = 0.727$ .

#### *Part2: Questionnaire 2*

The questions below were asked regarding these goals: 1) To earn the most points for each block (Sub-goal), and 2) To earn the best grade for this task (Primary goal). We asked these questions to all participants to characterize the two levels of goals.

*Goal difficulty.* Participants rated each goal as to how difficult they thought it was, on a scale of not at all (1) to extremely (5), for both the sub-goal and primary goal.

*Goal importance.* Participants rated each goal as to how important it was to them, on a scale of not at all (1) to extremely (5), for both the sub-goal and primary goal.

#### *Part 2: The computer task*

*Word puzzles.* Word puzzles from the Remote Associates Test were presented for the computer game. Again, the puzzles were presented in five blocks of five, with a four

puzzle practice block at the beginning. All participants received the same puzzles. Difficult puzzles were used so that the failure feedback would be believable.

*Success or Failure feedback.* After each block, the computer presented feedback that was determined by the condition assignment. The type of feedback was consistent throughout all of the blocks for each participant. The computer reported the following for all participants: “This completes the block. Press ‘5’ to view your results.” The next screen read, “Your responses are evaluated on accuracy and speed,” and then one of the following:

- For this block, the points you have earned put you in the 87<sup>th</sup> percentile compared to other college students. (Sub-goal/Success)
- For this block, the points you have earned put you in the 47<sup>th</sup> percentile compared to other college students. (Sub-goal/Failure)
- Overall, you are on target to receive the grade of “A” compared to other college students. (Primary goal/Success)
- Overall, you are on target to receive the grade of “D” compared to other college students. (Primary goal/Failure)

Participants in the no feedback condition went on to the next block without receiving the message about viewing results and without any feedback.

The following items were presented after blocks one and three of the computer task:

*State affect during the game.* Participants rated six mood words after blocks one and three. The positive words were: pleased, content, and satisfied. The negative words were: discouraged, depressed, and agitated. The instructions read: “Select the number on

the rating scale that best describes the way you feel. To what degree does this word describe you?” Positive and negative mood scores following blocks one and three were computed for each participant. The reliability for the positive mood scores were  $\alpha=0.896$  and  $\alpha=0.940$  for blocks one and three; the reliability for the negative mood scores were  $\alpha=0.836$  and  $\alpha=0.791$  for blocks one and three.

*Expectancy for future goal performance.* After blocks one and three, participants rated the question, “How well do you expect to do in the future on this goal?” on a scale of not at all (1) to extremely (5), for the specific goal level to which they were assigned that was shown at the top of the computer screen.

### *Part 3: After the computer task*

*Final mood.* Participants completed a paper and pencil measure of the six mood words after the computer game. The instructions read: “Indicate to what extent you feel this way right now,” on a scale of very slightly or not at all (1) to extremely (5). The final positive mood  $\alpha$  was 0.715, and the final negative mood  $\alpha$  was 0.767.

## Results

### *Descriptive statistics*

To test for unexpected initial condition differences, means were examined for all of the Part 1 variables using ANOVA. There were no condition differences for GPA, ACT, current affect, or academic contingency of self worth (all  $p$  values  $> .10$ ).

Paired sample  $t$ -tests were used to determine if there were within-subject differences for the primary goal and the sub-goal. For the ratings of initial difficulty and importance, there was a difference such that ratings for the primary goal were higher than

for the sub-goal. Specifically for initial difficulty ( $t(117)= 4.29, p<.01$ ), the primary rating ( $M=3.32$ ) was higher than the sub-goal rating ( $M=3.07$ ); and for importance ( $t(117)=4.11, p<.01$ ), the primary rating ( $M=4.14$ ) was higher than for the sub-goal ( $M=3.91$ ). This difference was expected given our assumption that the high level would be more important and meaningful.

### *Testing the experimental effects*

#### *Two-way interaction of success/failure and goal level*

*Expectancy.* Expectancy after block three was examined using an ANOVA<sup>1</sup> with block one Expectancy as a baseline to control for initial levels of expectancy and to examine change in expectancy resulting from the feedback. There was a significant main effect for Success,  $F(1,88)=19.8, p<.01$ , and a significant interaction ( $F(1,88)= 9.33, p<.01$ ) (see Table 1). Expectancy was lowest for the Primary goal/Failure feedback condition ( $M= 2.04$ ) compared to Subgoal/Failure ( $M= 2.96$ ) and both Primary goal/Success ( $M= 3.92$ ) and Subgoal/Success ( $M= 3.74$ ). The means are graphed in Figure 2. We compared the Primary/Failure condition to all of the other three conditions for the outcome of expectancy in a planned contrast. The Primary/Failure condition differed from the other three ( $F(3, 89)=16.79, p<.01$ ; difference from Subgoal/Success= $1.696, p<.01$ , difference from Primary/Success= $1.873, p<.01$ , and difference from Subgoal/Failure= $0.913, p<.01$ ). Thus, expectancy in the Primary/Failure condition differed from all others.

In a planned contrast comparing the no feedback condition to all of the other four conditions for the outcome of change in expectancy, only the contrast between the

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<sup>1</sup> Note that the “no feedback” condition was not included in the ANOVA analyses as it was a hanging control. The “no feedback” condition was addressed later with planned contrasts.

Primary/Failure condition and the no feedback condition was significant ( $F(4, 113)=6.16$ ,  $p<.01$ , difference= -0.55). Thus, the Primary/Failure condition differed from all other conditions, including a no feedback control condition, for change in expectancy.

*Negative affect.* Negative affect after block 3 was examined using an ANOVA with block 1 negative affect as a baseline to control for initial levels of negative affect during the game. There was a significant main effect for Success,  $F(1,88)=18.3$ ,  $p<.01$ , and a significant interaction ( $F(1,88)= 4.15$ ,  $p< .05$ ), as can be noted in Table 2 and Figure 3a. Negative affect was highest for the Primary goal/Failure feedback condition ( $M = 2.62$ ) compared to Subgoal/Failure ( $M = 2.27$ ) and both Primary goal/Success ( $M = 1.55$ ) and Subgoal/Success ( $M = 1.94$ ). We compared the Primary/Failure condition to all of the other three conditions for the outcome of change in negative affect in a planned contrast. The Primary/Failure condition differed from the other three ( $F(3, 89)= 6.94$ ,  $p<.01$ ; difference from Subgoal/Success= -0.681,  $p<.01$ , difference from Primary/Success=-0.661,  $p<.01$ , and difference from Sub-goal/Failure=-0.435,  $p<.01$ ). Thus, change in negative affect was significantly greater in the Primary/Failure condition.

In a planned contrast comparing the no feedback condition to all of the other four conditions for the outcome of change in negative mood, the contrast between the Primary/Failure condition and the no feedback condition was significant (difference= 0.548,  $F(4, 113)=5.30$ ,  $p<.01$ ). Thus, the Primary/Failure condition differed from all other conditions, including a no feedback control condition, for change in negative affect.

*Positive affect.* Positive affect after block 3 was examined using an ANOVA with block 1 positive affect as a baseline to control for initial levels of positive affect during the game. There was a significant main effect for Success,  $F(1,88)= 11.4$ ,  $p<.01$ , and a

significant interaction ( $F(1,88) = 3.82, p = .05$ ). Positive affect was lowest for the Primary goal/Failure feedback condition ( $M = 1.93$ ) compared to Subgoal/Failure ( $M = 2.61$ ) and both Primary goal/Success ( $M = 3.19$ ) and Subgoal/Success ( $M = 3.40$ ), as can be noted in Table 3 and Figure 3b. We compared the Primary/Failure condition to all of the other three conditions for the outcome of change in negative affect in a planned contrast. The Primary/Failure condition differed from the other three ( $F(3, 89) = 3.97, p < .01$ ; difference from Subgoal/Success = 0.623,  $p < .01$ , difference from Primary/Success = 0.588,  $p < .01$ , and difference from Sub-goal/Failure = 0.623,  $p < .01$ ). Thus, change in positive affect was significantly less in the Primary/Failure condition.

In a planned contrast comparing the “no feedback” condition to all of the other four conditions for the outcome of change in positive mood, the contrast between the Primary/Failure condition and the no feedback condition was significant (difference = -0.755,  $F(4, 113) = 4.14, p < .01$ ). Thus, the Primary/Failure condition differed from all other conditions, including a no feedback control condition, for change in positive affect.

#### *Individual difference moderator*

The individual difference of Academic Contingency of Self-worth (ACSW) was considered as a moderator of these effects. As ACSW was an individual difference on a continuous scale, multiple regression was used in which Success/Failure and Primary/Sub-goal were dummy coded. A centered score for ACSW was used. A product term was created for the 3-way interaction as well as the three 2-way interactions.

When all of the elements were entered into the regression equation after the third step, the 3-way interaction was significant for change in expectancy ( $\beta = 0.21, t(85) = 2.14, p = .035$ ), as can be seen in Table 4. In this final step the 2-way interaction of

success/failure and level of goal was significant ( $\beta = 0.28$ ,  $t(85) = 2.93$ ,  $p < .01$ ), as well as the main effect of success/failure ( $\beta = 0.413$ ,  $t(85) = 4.32$ ,  $p < .01$ ), and the main effect of level of goal ( $\beta = -0.236$ ,  $t(85) = -2.47$ ,  $p < .01$ ). For the other outcomes of positive or negative affect, the 3-way interaction was not significant.

As can be seen in Figure 4, those students whose self-worth was contingent upon their academic performance and who received primary goal failure feedback, had the greatest expectancy decrease. Again, this 3-way interaction indicated a particular case where students were most vulnerable to failure feedback when they were high in ACSW.

### Brief Discussion

The data from this experiment indicated that there was indeed an effect of receiving feedback for a primary goal versus a sub-goal. When failure feedback was given for a primary goal, participants had decreases in expectancy and positive mood as well as increases in negative mood. Clearly, the combined effect of focusing on the primary goal and experiencing failure was detrimental to mood and expectancy in this laboratory experiment. Perhaps because the primary goal was felt to be more important, and possibly more aligned with global self-goals, failure on the primary goal had more of an impact on mood and expectancy.

Academic contingency of self-worth combined with failure at the higher primary goal level was found to differentially affect the outcome of expectancy for the task. This adds to our knowledge about contingencies of self-worth. When a person's self-worth is vulnerable and changeable, not only does failure hurt, but failure at a higher level, more self-relevant goal really affects goal expectancy for the future. This finding supports the notion that both the high level goal and ACSW were indications of what was truly

important to a person. Perhaps the advice to “keep your nose to the grindstone” would be especially useful for those high in contingent self-worth.

The strengths of this study lay in the experimental design. Participants were randomly assigned to the conditions so any differences between conditions are likely due to the valence of feedback and goal level. Experiments allow us to infer causality, as all that differs between conditions is the treatments.

At the same time, there were some limitations to this study due to the experimental laboratory setting. In order to test goals in the lab, we needed to use somewhat artificial goals that may not have been very meaningful to participants. Also, the laboratory setting only allowed us to look at goals that could be pursued in a very short time frame. Therefore, we could not examine the question of goal pursuit over a longer amount of time in this experiment. Additionally, participants were given false feedback that was somewhat artificial and the effects of such false feedback may not generalize to what occurs in our daily lives. We addressed these issues in Study 2 by looking at college students’ goals that were self-evaluated over a longer period of time.

## STUDY TWO

Study 2 was a longitudinal experimental study that allowed us to look at the effects of evaluating progress at either level of goal focus over time, with success or failure varying naturally for individuals. This longitudinal design allowed for the observation of behavior over time via meaningful personal goals, while still having participants focus on one type of goal. The study included one experimental factor: assigned level of goal focus, which was manipulated throughout seven weeks of a semester.

All participants were asked to set two related academic goals: a sub-goal of studying for a specific course a target number of hours each week (Study Hours Goal) and a primary goal of obtaining a specific letter grade for the course (Grade Goal). Throughout the study, participants were prompted in weekly questionnaires to evaluate their progress consistently for either the Study Hours goal or the Grade goal, depending on their random assignment to condition. These differences in goal focus and evaluation, taken in conjunction with reported success or failure on the goal, were expected to affect the participants' thoughts about the goals, their associated mood, and their expected final grade for the course.

In this study we tested key hypotheses in two different ways. First, we took advantage of the longitudinal aspect of the study by looking at the cumulative effects of progress and the assigned level of goal focus. In other words, the repeated framing of evaluation at one versus the other level of goal was expected to impact final mood and perceived performance. For these analyses, mean cumulative progress could be thought

of as a continuous measure of the success/failure concept. These analyses take a between subject approach.

Second, an orthogonal analytic approach was used to consider reports at the week level. As each participant made a dichotomous choice of success or failure for each week, each weekly report could be thought of as a two-factor experiment, similar to Study 1. Essentially this weekly approach could be thought of as a direct replication of the experiment, with seven repetitions (each week) for each participant. Notably, with this approach, the number of observations increased from 105 participants to approximately 735 weekly reports. To account for the person-level dependence of responses we used multilevel analyses using SAS Proc Mixed. These analyses take a within subject approach as it accounts for a person's fluctuation around their own mean. One main difference in this design was that the participants decided their own success or failure status instead of being given false feedback.

## Hypotheses

### *Hypothesis 1*

We expected a main effect of mean cumulative progress, such that when a person perceived high progress on either type of goal, they would have higher levels of positive mood, expected course grade, and actual course grade, and lower levels of negative mood compared to those who perceived less progress. In other words, experiences of progress would increase positive mood and expected course grade, whereas experiences of low progress would increase negative mood and decrease expected course grade.

Likewise, this hypothesis was applied to the week level of analyses. We expected a main effect of the Success/Failure choice on the dependent variables of positive and

negative mood for the week. A person's sense of whether they are succeeding or failing for the week was expected to affect their subsequent mood for that week.

*Hypothesis 2 –Cumulative approach*

We expected a 2-way interaction of mean cumulative progress and type of goal focus (Grade versus Hours) for the outcomes. Specifically, when a person perceived less progress on the Grade Goal (i.e. Failure/Grade), he or she would have the lowest levels of expected course grade and the greatest reduction in positive affect and increase in negative affect over the semester. This hypothesis considers mean cumulative progress ratings across the seven weeks of the study, and also the cumulative effects of focusing on either level of goal.

*Hypothesis 3—Weekly approach*

We expected a 2-way interaction of weekly Success/Failure (dichotomous choice) and type of goal focus (Grade versus Hours) on current mood at the week level. Specifically, if a person states that she has failed on the Grade Goal for that week (Failure/Grade), he or she would have the lowest levels of mood for the week. This subgroup of the Grade Goal participants would have the *lowest levels of mood* compared to the other three conditions. Again, perceiving failure at the primary goal level (Failure/Grade) would be associated with the lowest levels of mood at the weekly level.

*Hypothesis 4—Individual difference moderator*

Congruent with Study 1, we expected that there would be an individual difference effect for students whose self-worth was contingent on the academic domain. Specifically, as in Study 1, a 3-way interaction was predicted such that for those with high academic contingency of self-worth (ACSW), low progress framed for the primary

goal would lead to lowest levels of positive affect, highest negative affect and the lowest expected grade compared to those who did not have high ACSW. In other words, academic contingency of self-worth was expected to be a moderator that increased the negative effects of low progress, particularly for the primary goal focused group.

## Method

### *Participants*

Students from the University of Missouri-Columbia participated in this study for partial course credit for Psychology 1000. One hundred thirteen university students participated in the first questionnaire. Five participants did not complete any surveys after week one, and three participants completed fewer than seven weekly surveys; all of whom were considered dropouts. One hundred five participants completed at least seven of the eight weeks of the study, and this was considered the final sample. Attrition analyses showed there were no differences between the retained participants and the dropouts for any of the initial measures (all  $p$  values  $> .10$ ).

There were 43 males and 69 females and one participant who did not indicate gender. Twelve of the participants said they were black, 88 white, 8 Asian, 2 Hispanic and 2 indicated "other" race. Eighty participants were 19 years old, 7 were 20 years old, 11 were 21 years old, with the remaining 11 participants being 22 years or older. Of the final sample, there were 54 participants in the Grade goal focus condition and 51 participants in the Study Hours goal condition.

### *Procedure*

This prospective, longitudinal study took place over eight weeks. In the first session, participants thought of a course that they expected to be difficult and then set

both a Grade Goal (the primary goal) and a Study Hours Goal (sub-goal). Then in the following weekly surveys one factor was manipulated: a focus on the Grade Goal versus the Study Hours Goal. The type of goal focus was manipulated by asking the participants to evaluate their progress on only one of the goals.

Participants began the study within the first few weeks of fall semester. First they completed individual difference measures in Questionnaire 1. Participants were then asked to think of and indicate a difficult course that they wanted to do well in for the semester. Then participants were asked to write down a Grade Goal and a Study Hours (per week) goal for the course that they stated. The participants rated both the Grade Goal and Study Hours goal regarding several initial goal variables in a paper and pencil questionnaire (Questionnaire 2).

For the weekly surveys, participants completed questionnaires that were administered over the internet. These short online surveys inquired about the participants' current mood and goal progress on *either* the Grade Goal or the Study Hours goal. These were completed on a weekly basis for seven weeks following the initial questionnaire.

The final questionnaire of the study was completed at the end of eight weeks using an online survey. Participants completed final measures of mood and ratings of expected final grade, as well as ratings of their feelings about their Grade goal and Study hours goal.

### *Materials*

#### *Initial session, Questionnaire 1*

*Background questions.* The participants reported their gender, age, ethnicity, year in school, and high school or previous year Grade Point Average.

*Academic Contingency of Self Worth.* The academic subscale of the Contingency of Self Worth Scale (CSWS: Crocker, Luhtanen, Cooper, & Bouvrette, 2003) was administered. The five items (e.g. “Doing well in school gives me a sense of self respect.”) were rated on a strongly disagree (1) to strongly agree (5) scale. Reliability for this scale was  $\alpha = 0.773$ .

#### *Initial session, Questionnaire 2*

The following questions were asked regarding the Grade Goal and the Study Hours goal to characterize qualities of the goals.

*Goal importance.* Participants rated both goals as to how important the goal was to them, on a scale of not at all (1) to extremely (5). A rating was given for the Grade Goal and the Study Hours goal.

*Goal difficulty.* Participants rated both goals as to how difficult they thought the goal would be to achieve, on a scale of not at all (1) to extremely (5). A rating was given for the Grade Goal and the Study Hours goal.

*Goal expectancy.* Participants rated the following for each goal, “How well do you expect to do on this goal?” on a scale of not at all (1) to extremely (5). A rating was given for the Grade Goal and the Study Hours goal.

#### *Weekly surveys*

The weekly questionnaires asked the following questions regarding *either* the Grade Goal or the Study Hours Goal, depending on the condition to which the participant was assigned. The questionnaires were essentially the same from week to week.

*Goal progress for the week.* Goal progress was determined from a few goal related questions. Participants were asked to rate the following questions: “How would

you rate your *progress* on this goal this week?” on a likert scale ranging from very poor (1) to exceptional (5), “How would you rate your *effort* on this goal this week?” on a scale of very little (1) to very much (5), “To what degree did you *do well* on this goal this week?” on a scale of very slightly or not at all (1) to very much (5), “To what degree have you experienced *success* this week on this goal?” on a scale of not at all (1) to extremely (5). Reliability of these four items within each week ranged from  $\alpha = 0.823$  to  $\alpha = 0.907$ . A mean cumulative progress score was calculated. Overall reliability for the mean of the seven weekly questionnaires was  $\alpha = 0.891$ .

*Dichotomous success/failure evaluation.* Each week participants evaluated their goal by making a dichotomous choice of success or failure on the goal. Then they were asked to write about their success or failure, in order to make this evaluation more salient.

*Current positive mood and negative mood.* Next, participants rated several mood words for a measure of state mood. The instructions asked participants to read each word and “indicate to what extent you have felt this way in the past week.” The three positive affect words were *pleased*, *content*, and *satisfied*; the three negative words were *agitated*, *depressed*, and *discouraged*. Reliability of the positive and negative mood items within each week ranged from  $\alpha = 0.918$  to  $\alpha = 0.941$  (positive mood) and from  $\alpha = 0.844$  to  $\alpha = 0.948$  (negative mood). Overall reliability for the seven weekly questionnaires was  $\alpha = 0.911$  for positive mood and  $\alpha = 0.924$  for negative mood.

#### *Final Questionnaire*

*Final Positive and Negative Mood.* The week 8 survey asked participants to rate the same six mood words as were used in the weekly surveys for a measure of final state mood. The instructions were for them to read each word and “indicate to what extent you

have felt this way in the past week.” Reliability of the final positive and negative mood items was  $\alpha = 0.907$  and  $\alpha = 0.883$  respectively.

*Expected course grade.* In week 8, participants were asked to indicate the grade that they expected to receive for the course at the end of the semester. The letter grades were coded A=4, B=3, C=2, and D=1. The mean expected grade was  $M = 3.13$  ( $SD = .817$ ).

*Actual course grade.* The participant’s course grade at the end of the semester was obtained from the University registrar’s office with permission of the student. Seventy students gave permission for their grades to be released. We compared the responses from the 70 students to those students who did not release their grades and found no significant differences in any of the outcome variables of mood and expected course grade. We did the same comparison for the initial individual difference measures and found no differences as well. There was a marginal difference in Academic Contingency of Self-worth, such that the students who did not release their grade had lower scores ( $t = -1.83$ ,  $p = .07$ ,  $M = 3.76$  versus  $M = 4.03$ ), indicating that for those who did not release their grade, their self-esteem was less contingent upon academic performance.

## Results

### *Descriptive statistics*

To test for unexpected initial condition differences, means were examined for all of the initial session measures using ANOVA. There were no condition differences for GPA, initial affect, or Academic Contingency of Self-worth (all  $p$  values  $> .10$ ). Also, mean ratings for the goals were compared by condition using ANOVA. The ratings for goal importance and goal difficulty did not differ by condition for these preliminary goal measures (all  $p$  values  $> .10$ ).

The goal ratings were compared to examine within-person differences between the Grade goal and the Study Hours goal. Using paired sample  $t$ -tests, we found that the Grade goal was rated consistently higher for goal importance and goal difficulty ( $t(112)=5.72, p<.01$ , Grade goal  $M=4.40$  and Study hours goal  $M=3.93$ ; and  $t(112)=5.38$ , Grade goal  $M=4.01$  and Study hours goal  $M=3.55$ , respectively), as was found in Study 1. The within-person ratings of goal expectancy were marginally different ( $t(112)= 1.83, p=.07$ , Grade goal  $M=3.87$  and Study hours goal  $M=3.76$ ). These differences indicated that the grade goal was more important and difficult in general for participants, as expected.

### *Longitudinal analyses*

In the longitudinal analyses, we examined final mood and expected final grade, considering initial baselines of expectancy and mood as well as the mean cumulative progress from the weekly surveys that were completed throughout the study. This approach considers the participant's own mean evaluation of progress across the seven weeks prior to the final eighth week. Thus, the 2-way interaction of level of goal focus and mean cumulative progress could be examined for its effect on the dependent

variables of final mood and expected grade. Further, by controlling for the baselines of expectancy and mood, we can examine change in these variables. Mean cumulative progress was a continuous measure, so multiple regression models were used in these analyses.

### *Negative affect outcome*

To control for baseline negative affect (week 1), this measure was included in the regression model that was tested. Scores were mean-centered to reduce potential collinearity. First, in step one, baseline negative affect, assigned level of goal focus (coded sub-goal=-1, primary goal= 1) and mean cumulative progress were entered. In step two, the interaction term for assigned level of goal focus and mean cumulative progress was entered.

Table 5 shows there was an interaction of level of goal focus and mean cumulative progress accounted for unique variance ( $\beta = -0.186$ ,  $t(94) = -2.13$ ,  $p = .036$ ). As can be seen in Figure 5, the costs of framing failure for the high level goal are clear, as negative affect was the highest in that case. Similarly, negative affect was the lowest after high progress in the Grade goal condition. A test of the simple slope of the line for primary goal focus was significant ( $t(99) = 2.675$ ,  $p < .01$ ).<sup>2</sup> The slope for the line for sub-goal focus was not different from zero ( $t(99) = -.446$ ,  $p > .10$ ), thus negative affect did not differ when focusing on the low level goal and experiencing differing degrees of progress. For the high level Grade goal condition, when a person was making progress, his or her negative mood decreased, whereas if a person had less progress his or her negative mood increased.

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<sup>2</sup> Per Preacher (2003), the formula to test for significance of simple slopes is a t-test where:  $t = \text{simple slope} / \text{standard error for simple slope}$  with  $(N - k - 1)$  degrees of freedom.

### *Positive affect outcome*

To control for baseline positive affect (week 1), this measure was included in the regression model that was tested. Scores were mean centered. First, in step one, baseline positive affect, assigned level of goal focus (coded sub-goal= -1, primary goal= 1) and mean cumulative progress were entered. In step two the interaction term for level of goal focus and mean cumulative progress was entered. Table 6 shows the results of the regression. There was a significant main effect of progress ( $\beta = 0.359$ ,  $t(94)= 3.83$ ,  $p < .01$ ). In this regression model, the interaction term was not a predictor of final positive affect ( $p > .10$ ). As noted above, goal progress was the main effect predictor of positive affect. Positive mood was not influenced by the level of goal evaluation.

### *Expected course grade outcome*

Previous performance and goal expectations were controlled for in a model predicting expected course grade. Scores were mean centered to reduce collinearity. A multiple linear regression model was tested in which previous semester GPA, baseline goal expectancy, assigned level of goal focus (coded sub-goal= -1, primary goal= 1) and mean cumulative progress were entered in step one. In step two the interaction term for condition and mean cumulative progress was entered.

Table 7 shows results for the regression model, presenting the coefficients calculated at each step. In this model predicting expected course grade, there was a significant main effect of mean cumulative progress ( $\beta = 0.230$ ,  $t(94)= 2.44$ ,  $p = .01$ ), and the interaction of level of goal focus and mean cumulative progress accounted for unique variance ( $\beta = 0.260$ ,  $t(94)= 2.98$ ,  $p < .01$ ). Previous GPA and baseline expectancy remained significant predictors of expected course grade ( $\beta = 0.291$ ,  $t(94)= 3.36$ ,  $p < .01$ ,

and  $\beta = 0.266$ ,  $t(94) = 2.93$ ,  $p < .01$ , respectively). As can be seen in Figure 6, there are greater costs and as well as greater benefits for expected grade when a person focuses on evaluating their primary goal. A test of the simple slope of the line for primary goal focus was significant ( $t(99) = 3.37$ ,  $p < .01$ ). The slope for the line for sub-goal focus was not different from zero ( $t(99) = 0.64$ ,  $p > .10$ ), thus expected grade differed when focusing on the primary goal but not when focusing on the sub-goal.

#### *Actual course grade*

The same model was examined for prediction of Actual course grade including the following measures: previous GPA, baseline expectancy, assigned level of goal focus, mean cumulative progress, and the interaction of level of focus and mean cumulative progress. Of all of these potential predictors, previous GPA was the only significant predictor ( $\beta = 0.45$ ,  $t = 3.81$ ,  $p < .01$ ), indicating that actual course grade was not influenced by any of the study variables other than previous performance.

#### *Academic Contingency of Self-Worth as a moderator*

For all of the outcomes, a fully specified model was tested for the 3-way interaction of ACSW, assigned level of goal focus and mean cumulative progress, similar to the model tested in Study 1. None of the 3-way interactions were significant (all  $p$  values  $> .10$ ). It should be noted that ACSW did not correlate with the mood outcomes or the grade outcomes.

### *Week level analyses*

#### *Two-way interaction of Success/Failure and Primary/Sub- goal at the week level*

Again, the design of this study allowed for a within-subject analysis in which outcomes during each week could be examined for the effects of that participant's weekly dichotomous choice of success or failure. Also, looking at the week level of analysis makes a good parallel to the 2X2 design of Study 1. A multilevel model (using Proc Mixed in SAS), was created in which week was the Level 1 factor and person was the Level 2 factor, to account for the within-person variation or variation around a person's own mean. In these multilevel analyses the degrees of freedom varied depending on whether the variable was a person level variable ( $d.f.= 102$ ) or a week level variable ( $d.f.= 617$ ).

*Negative affect for the week.* In a multilevel analysis to predict state negative affect, assigned level of goal focus (coded as Grade goal focus= 1 and Study hours goal focus= -1), Success/Failure (coded as Success= 1 and Failure= -1), and the interaction term for level of focus and Success/Failure were entered into the model. There was a main effect of Success/Failure ( $Estimate= -0.567$ ,  $t(617)= -16.93$ ,  $p<.01$ ) and the interaction term was also a significant predictor of state negative mood ( $Estimate= -0.063$ ,  $t(616)= -1.86$ ,  $p=.06$ , see Table 8).

*Positive affect for the week.* In a multilevel analysis to predict state positive affect, assigned level of goal focus (coded as Grade goal focus= 1 and Study hours goal focus= -1), Success/Failure (coded as Success= 1 and Failure= -1), and the interaction term for level of focus and Success/Failure were entered into the model. There was a main effect of Success/Failure ( $Estimate= 0.644$ ,  $t(617)= 17.35$ ,  $p<.01$ ) and the interaction term was

also a significant predictor of state positive affect ( $Estimate = 0.072$ ,  $t(617) = 1.95$ ,  $p = .051$ , see Table 9).

*Academic Contingency of Self Worth as a moderator at the week level.* For all of the outcomes, a fully specified test for the 3-way interaction of ACSW, assigned level of goal focus and Success/Failure was performed at the week level. None of the 3-way interactions were significant (all  $p$  values  $> .10$ ).

### Brief Discussion

Study 2 built upon Study 1 by examining the phenomenon in a natural goal pursuit setting, in which the goals were more meaningful to the college student participants. This longitudinal experiment showed the cumulative effects of focusing at one level of goal consistently. Participants self-evaluated their own progress, and cumulative progress and level of goal focus interacted to differentially affect final negative mood and expected grade for the semester. This study showed that the effects of level of evaluation also take place in a meaningful goal pursuit setting over time.

This study also allowed us to examine a similar design to Study 1, however with participants evaluating their own success or failure, and using a multilevel model approach. Even when controlling for within-person variation, experiencing "failure for the week" with a primary goal focus was related to higher levels of negative affect and less positive affect as seen in the week level analyses. This replication of the experiment furthers support for the differential effects of failure on a primary goal.

Academic contingency of self-worth did not indicate the same 3-way interaction effects in this study. Possible explanations for this are reviewed more in the final discussion.

Thinking of failure with regard to a primary goal such as the Grade Goal has detrimental effects for mood and expectancy. The primary goal was more important for the participants and possibly more meaningful. Thinking of goals in a hierarchical framework, the primary level grade goal is closer to the global self, and evaluations regarding this goal have implications for the self. Thus, failure on the primary goal has a greater impact on mood and expectancy because such failure might be more threatening to the ideal global self.

## DISCUSSION

Study 1 had an experimental design in which the factor of level of goal evaluation was crossed with valence of feedback. By manipulating both the level of evaluation and feedback valence in a controlled setting, we tested the effects of success versus failure for a sub-goal versus a primary goal on the outcomes of mood and expectancy for future tasks. We found that when a person received failure feedback framed for a primary goal, he or she experienced the highest levels of negative affect and the lowest levels of positive affect and expectancy for future tasks. This Primary goal/Failure combined effect differed from all other cells in planned contrasts for the dependent measures of negative and positive affect, and expectancy. This 2 x 2 experimental design distilled down the detrimental effects of thinking of failure at a higher level of goal. Additionally, a person's level of academic contingency of self-worth was found to moderate the effects on the outcome of expectancy, such that those high in ACSW had greater decreases in expectancy when they received Primary goal/Failure feedback.

Study 2 was a longitudinal design in which college student's goal pursuit was examined throughout 8 weeks. All participants set both a study hours goal and a letter grade goal, but were assigned to focus on one level. During the following weeks, the participants evaluated their own progress on their assigned level of goal. We found that when a person self-reported lack of progress framed for a primary goal, he or she experienced the highest levels of negative affect and the lowest expected grade for the course. Additionally, we were able to examine the responses for each week considering the two factors of self-reported success versus failure and primary versus sub-goal focus,

similar to the design of Study 1. In a multilevel model that accounted for the within subject variance, the interaction of success/failure and level of focus was found to predict negative and positive mood for the week. Taking two different approaches to the data, Study 2 showed, both cumulatively and within a slice of goal pursuit, self-reported failure regarding a primary goal was associated with greater negative affect, less positive affect, and a lower expected grade.

Taken together, these two studies form a convincing picture. Study 2 replicated the experimental findings of Study 1, both in a cumulative approach that took place over eight weeks, and at the weekly report level that could be thought of as a mini-experiment. As would be expected, failure feedback or lack of progress leads to negative affect. Both studies had data that showed the differential effects of framing failure feedback on a primary versus sub-goal. The picture is a little less clear regarding success. For Study 1 the effects of success combined with either primary or sub-goal focus were the same for positive affect and expectancy. For Study 2 however, when progress was high (success), the participants who were focused on the higher level goal had a higher expected grade and lower negative affect. This difference in the data makes it unclear whether primary goal success increases expectancies compared to sub-goal success, or if all success is generally felt the same.

Another difference in the data was that academic contingency of self-worth moderated the effects of Study 1 but did not for Study 2. The data from the experiment showed that in a laboratory setting the effect of academic contingency of self-worth was to increase the negative effects of primary goal failure. These results were not replicated in the longitudinal study. It may be that the effects of ACSW are most measurable within

a short time frame, and that over time the effects stabilize. Also, ACSW may have been conflated with the self-report of progress variable in Study 2. Perhaps a person high in ACSW is more susceptible to feedback from another source (as in Study 1) instead of self-evaluations (as in Study 2).

Additionally, the moderating effect of ACSW supports the notion that primary goals are more relevant to the self, more important, meaningful and likewise more risky. When an academic goal was very self-relevant, the consequences of primary goal failure were the worst. Yet even without that individual difference, the interaction that was found indicated that whoever was assigned to evaluate the primary goal and experienced lack of progress or failure, suffered mood-wise. I would argue that these effects were due to the self-relevant nature of the primary goals. Failing to get a good grade is much more meaningful than not clocking study hours, and so failing at this goal has implications for the broader self. As these studies have shown, these implications result in greater mood volatility and changes in expectancy for the future.

#### *Optimism and pessimism*

The possibility that the effects of evaluating a primary goal versus a sub-goal might map on to the effects of optimism and pessimism (Seligman, 1991; Carver & Scheier, 2001; Peterson, Seligman, & Vaillant, 1988) was considered in the current studies. The individual difference of optimism and pessimism has been shown to be related to the degree to which a person makes global attributions for failure (Carver & Scheier, 2001) or generalizes failure, and so would be one possible moderator for the effects found here. However, in the current research no moderating effect was found for

optimism/pessimism on the outcomes, nor were there any interactions of optimism/pessimism with level of goal and success/failure, and thus it was not reported.

*Spreading from low levels to high levels*

People may differ in their ability to keep a sub-goal failure “contained,” as opposed to letting it spread to influence primary goal evaluation. Letting failure spread upward is “generalizing” sub-goal failures into failure on the primary goal.

Generalization has been approached within attribution theory as occurring when a person makes global attributions for specific failures (Carver & Scheier, 1998; Peterson & Barrett, 1987; Mikulincer, 1989). Generalization was tested as a moderator in the current research, with no effects. Likewise, if the individual difference of generalization did not cause greater spreading of the effects of failure (i.e. decrease in mood overall) from the low level goal to the high level goal, we can assume that framing feedback or evaluations at the lower level overrides the tendency to generalize.

The data extend our knowledge of the conditions under which it might be best to focus on the sub-goal level of an activity. These studies give empirical support to the notion that when a task becomes difficult it is best to focus on a lower level (per Action Identification theory, Vallacher & Wegner, 1989). The current studies build upon this notion by demonstrating that action identification does not solely occur at the lowest level of actions, but also at the broader level of personal goals.

Also, the data extend our knowledge of proximal and distal goals. As shown in the current research, proximal sub-goals are associated with greater stability of mood and motivation in some cases. Further, the current research gives some indication of why it might be better to focus on sub-goals. Proximal, sub-goals are essentially less influenced

by failure feedback. Sub-goals are better because distal, primary goals are riskier for mood and motivation.

In another way the current studies build on previous research because we compared the effects of positive and negative feedback in conjunction with levels of goals specifically, which has not been done before. Levels of goals have been compared in the proximal and distal goal research (Bandura & Schunk, 1981; Brown, 2005), and response to failure on goals has been studied (Ilies & Judge, 2005; Kluger & Denisi, 1996; Wrosch et al., 2003). The current studies combined the goal level approach and success and failure feedback to discern what the effects are in each case. By making such an experimental comparison (in Study 1), we can make conclusions about the effects of framing feedback on either level of goal. Further, Study 2 replicated these findings in a more natural goal pursuit setting.

#### *The phenomena in the context of other theories*

These studies built upon previous research by showing the specific effects of level of goal and feedback valence. Several branches of research have explored similar phenomena: the tendency to make global generalizations (Carver, 1998; Seligman, 1991), abstinence violation effects (Carels, Douglass, Cacciapaglia, & O'Brien, 2004; Marlatt & Gordon, 1985), and the "What the Hell" effect (Cochran & Tesser, 1996; Polivy & Herman, 1985) are all examples of the detrimental effects of thinking of behaviors at a higher level. Global generalizations are when small failures are generalized to the global level of attribution. Likewise, relapses might be more severe when a person feels a sense of global failure. The current research verified these detrimental effects of thinking of the higher level by testing the high versus low goal framing model in both an experiment and

a prospective study. The current research distilled the essential 2 x 2 underlying these theories and supports the notion that more global, self-relevant goal evaluation is not a good strategy when facing failure. The advice to take one day at a time or keep failures in perspective by “keeping your nose to the grindstone” rings true.

*Process and outcome focus*

Sub-goals and primary goals might be similar to having a process versus outcome focus. Pham and Taylor (1999) have shown that students did better on a course (an exam score and hours studied) when they did mental simulations about the process of studying for an exam versus thinking of the ideal outcome for the exam. The authors state that the greater cognitive links to action and planning that are developed through mental simulation likely caused better performance. If a sub-goal is process focused and the primary goal is outcome focused, the links to planning and action might be why a sub-goal focus might be better. Perhaps focusing on sub-goals helps a person to be action focused and plan as well.

Though Pham & Taylor’s outcome versus process idea might be similar to the high and low levels of goal focus idea, there are still differences. Sub-goals and primary goals may both be framed in terms of either the process and/or outcome. Creating smaller sub-goals that serve a primary goal might be a form of planning or a process focus. Alternatively, sub-goals could be outcome focused. Thus, primary goals and sub-goals do not always necessarily map on to the process versus outcome focus model. Pham and Taylor’s (1999) approach does not consider hierarchical goal levels or goals explicitly. They note that links to planning and action may be greater after thinking about a process,

however they do not consider personal goal type variables that might be associated with planning and action (Gollwitzer & Brandstatter, 1997).

### *Limitations*

Both studies utilized self-report of mood and feelings about the goals. This brings up the possibility of demand characteristics. Participants rated their mood after receiving task feedback in Study 1 or after evaluating their own goal progress in Study 2. Thus, they may have felt some demand to report feeling better after success and feeling worse after failure. Although these demand effects might account for the main effect of success/failure, it is unlikely that the demand for such responses could account for the differing effects of level of goal focus. Further, there is likely to be variation in responses to demand characteristics among participants (i.e. some participants might feel strong demand while others do not) and therefore the mean responses are likely to be accurate and demand characteristics not an issue.

Further, the outcomes of these studies were somewhat limited to affect and expectancy. Behavioral outcomes would provide even more support for the model. It should be noted that the outcome of actual course grade was examined for Study 2, however the effects of primary goal framed progress were not found for this more objective outcome. Instead, final course grade was predicted solely by previous GPA, indicating that previous performance and ability were likely to be the strongest influence of this behavioral outcome. Further research might address other types of behavioral outcomes, with the consideration that the effects might take place largely at the mood and self-regulation level. Likewise, a possible indirect effect on behavioral outcomes such as course grade, via goal expectancy, might be explored further.

### *Future Directions*

These studies were relevant to the domain of academic goals. The Study 1 participants played a game that was similar to completing tasks for a letter grade, and the goals of the longitudinal study were specifically academic goals. It is expected that the hierarchical framing of goal feedback would also apply to other domains of motivated behavior such as physical activity and training, diet and eating habits, or career goals. However, this is an open question that would need to be tested with future research.

These studies manipulated and controlled which level of goal the participants focused on in order to test the effects of repeated focus at either level. However, people may be more likely to naturally shift between levels of goal. This may be due to demands of the situation, for example when the task is difficult versus well-learned. There also may be an individual difference in the tendency to shift between the levels, or this shifting when necessary may be a skill that is learned over time. Others may get “stuck” and fail to shift focus when necessary. A future direction would be to examine the natural shifting of focus between levels, to determine the conditions under which a person shifts focus, and to establish what the individual difference correlates are of such shifting.

Another research direction concerns the association strength between the low and high level goals. Thinking of the sub-goal may activate thoughts of the primary goal, and vice versa. As the sub-goal and primary goal are associated to some degree within a hierarchy, they share cognitive activation and accessibility tendencies (Kruglanski et al., 2002). The strength of association between the sub-goal and the primary goal will vary for individuals and for differing goals, and this would affect the likelihood of activation. For example, it is likely that a primary goal will become accessible and salient when a

sub-goal is primed and the link between the goals is strong (Kruglanski et al., 2002). Future research could consider the strength of cognitive links between goals and the effects of success and failure feedback, as well as the effects of priming either level of goal on the outcomes of mood and motivation, as well as behaviors. Priming thoughts of a lower level goal might help a person to more easily make the shift to that level of focus and evaluation when necessary.

### *Conclusion*

These studies indicate one example of what Little (1989) referred to as the tradeoff between doing what is meaningful (high level focus) and what is manageable (low level focus). There certainly are benefits to thinking of goals at a higher level; these higher level goals are more meaningful and holistic, and give us a sense of direction in our lives. However, when focusing solely on the higher level goal, a person is more vulnerable to the detrimental effects of failure. Focusing on the higher level leads to decreases in overall mood and expectancy for future efforts after failure. Clearly, in many ways a lower level goal focus is more manageable and desirable.

Evaluating goal progress at the higher primary goal level has costs, specifically if a person isn't perceiving progress on the goal. Lower level, proximal goals were shown in this research to be better because the costs of failing on the lower level goal are not as great. In other words, focusing on a lower level goal offers a protective factor and helps to maintain mood, goal expectancy and motivation for the goal. These studies have shown the effects of focusing solely at one level of goal. The data support the notion that it is better, during times of difficulty, to focus on the lower level short-term goal and "keep your nose to the grindstone." Perhaps for some people this might be a strategy that

can be learned through experience, and this strategy might be utilized as a way to self-regulate mood in the face of setbacks.

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## APPENDIX 1

Table 1

Study 1: Analysis of Variance for Expectancy

Source	df	F	p
Baseline expect	1	73.76**	.000
Success/Failure	1	19.81**	.000
Primary/Subgoal	1	3.86	.053
SF X PS	1	9.33**	.003
Within-group error	88	(.557)	

Note. Values enclosed in parentheses represent mean square errors.  
 \*p< .05. \*\*p< .01.

Table 2

Study 1: Analysis of Variance for Negative Affect

Source	df	F	p
Baseline NA	1	172.64**	.000
Success/Failure	1	18.32**	.000
Primary/Subgoal	1	2.48	.119
SF X PS	1	4.15*	.044
Within-group error	88	(.309)	

Note. Values enclosed in parentheses represent mean square errors.

\*p< .05. \*\*p< .01.

Table 3

Study 1: Analysis of Variance for Positive Affect

Source	df	F	p
Baseline PA	1	94.54**	.000
Success/Failure	1	11.41**	.001
Primary/Subgoal	1	6.597*	.012
SF X PS	1	3.82*	.054
Within-group error	88	(.309)	

Note. Values enclosed in parentheses represent mean square errors.

\*p < .05. \*\*p < .01.

Table 4

## Study 1: Summary of Hierarchical Regression Analysis for Variables Predicting Expectancy

Variable	<i>B</i>	<i>SE B</i>	$\beta$
Step 1			
Success/Failure (SF)	0.315	0.083	.37**
Primary/Subgoal (PS)	-0.168	0.084	-.198*
ACSW	-0.207	0.135	.119
Step 2			
Success/Failure (SF)	0.311	0.081	.366**
Primary/Subgoal (PS)	-0.169	0.081	-.199*
ACSW	-0.189	0.134	-.141
SF X PS	0.248	0.083	.292**
ACSW X PS	-0.068	0.133	-.05
ACSW X SF	0.105	0.131	.077
Step 3			
Success/Failure (SF)	0.351	0.081	.413**
Primary/Subgoal (PS)	-0.200	0.081	-.236*
ACSW	-0.215	0.131	-.160
SF X PS	0.238	0.081	.280**
ACSW X PS	-0.042	0.131	-.030
ACSW X SF	0.046	0.131	.034
ACSW X SF X PS	0.282	0.131	.210*

Note.  $R^2 = .168$  for Step 1;  $\Delta R^2 = .079$  for Step 2;  $\Delta R^2 = .039$  for Step 3 ( $ps < .05$ ).  
\* $p < .05$ . \*\* $p < .01$ .

Table 5

Study 2: Summary of Hierarchical Regression Analysis for Variables Predicting Final Negative Affect

Variable	<i>B</i>	<i>SE B</i>	$\beta$
Step 1			
Baseline NA	0.461	0.089	.489**
Primary/Subgoal (PS)	0.002	0.085	.002
Mean progress (MP)	-0.103	0.183	-.053
Step 2			
Baseline NA	0.486	0.088	.516**
Primary/Subgoal (PS)	0.002	0.084	.002
Mean progress (MP)	-0.059	0.180	-.031
PS X MP	-0.365	0.172	-.186*

Note.  $R^2 = .260$  for Step 1;  $\Delta R^2 = .034$  for Step 2 ( $ps < .05$ ).

\* $p < .05$ . \*\* $p < .01$ .

Table 6

Study 2: Summary of Hierarchical Regression Analysis for Variables Predicting Final Positive Affect

Variable	<i>B</i>	<i>SE B</i>	$\beta$
Step 1			
Baseline PA	0.254	0.083	.286**
Primary/Subgoal (PS)	-0.096	0.091	-.095
Mean progress (MP)	0.732	0.191	.356**
Step 2			
Baseline PA	0.252	0.083	.284**
Primary/Subgoal (PS)	-0.096	0.092	-.095
Mean progress (MP)	0.738	0.193	.359**
PS X MP	-0.072	0.186	-.034

Note.  $R^2 = .255$  for Step 1,  $p < .01$ ;  $\Delta R^2 = .001$  for Step 2,  $p > .10$ .  
 \* $p < .05$ . \*\* $p < .01$ .

Table 7

## Study 2: Summary of Hierarchical Regression Analysis for Variables Predicting Expected Course Grade

Variable	<i>B</i>	<i>SE B</i>	$\beta$
Step 1			
Baseline Expectancy	0.333	0.106	.297**
GPA	0.004	0.001	.261**
Primary/Subgoal (PS)	0.018	0.073	.021
Mean progress (MP)	0.449	0.151	.286**
Step 2			
Baseline Expectancy	0.299	0.102	.266**
GPA	0.004	0.001	.291**
Primary/Subgoal (PS)	0.035	0.070	.043
Mean progress (MP)	0.361	0.148	.230*
PS X MP	0.414	0.139	.260**

Note.  $R^2 = .311$  for Step 1;  $\Delta R^2 = .062$  for Step 2; ( $ps < .01$ ).

\* $p < .05$ . \*\* $p < .01$ .

Table 8

## Study 2: Multilevel Mixed model predicting weekly negative affect

Parameter	Estimate	SE	df	t	Z	Sig
Estimates of fixed effects						
Intercept	2.371	0.0627	103	37.80		<.01
Primary/Subgoal (PS)	0.032	0.0627	103	0.51		0.60
Success/Failure (SF)	-0.567	0.0335	617	-16.93		<.01**
SF X PS	-0.063	0.0333	617	-1.88		0.06†
Estimates of covariance parameters						
UN (1,1)	0.3182	0.0537			5.92	<.01**
Residual	0.4408	0.02512			17.55	<.01**

Note. † $p < .10$ . \* $p < .05$ . \*\* $p < .01$ .

Table 9

## Study 2: Multilevel Mixed model predicting weekly positive affect

Parameter	Estimate	SE	df	t	Z	Sig
Estimates of fixed effects						
Intercept	2.710	0.0615	103	44.07		<.01**
Primary/Subgoal (PS)	-0.028	0.0614	103	-0.46		0.64
Success/Failure (SF)	0.644	0.0372	617	17.35		<.01**
SF X PS	0.0723	0.0370	617	1.95		0.051*
Estimates of covariance parameters						
UN (1,1)	0.2785	0.0504			5.52	<.01**
Residual	0.5556	0.0316			17.56	<.01**

Note. † $p < .10$ . \* $p < .05$ . \*\* $p < .01$ .

Figure 1

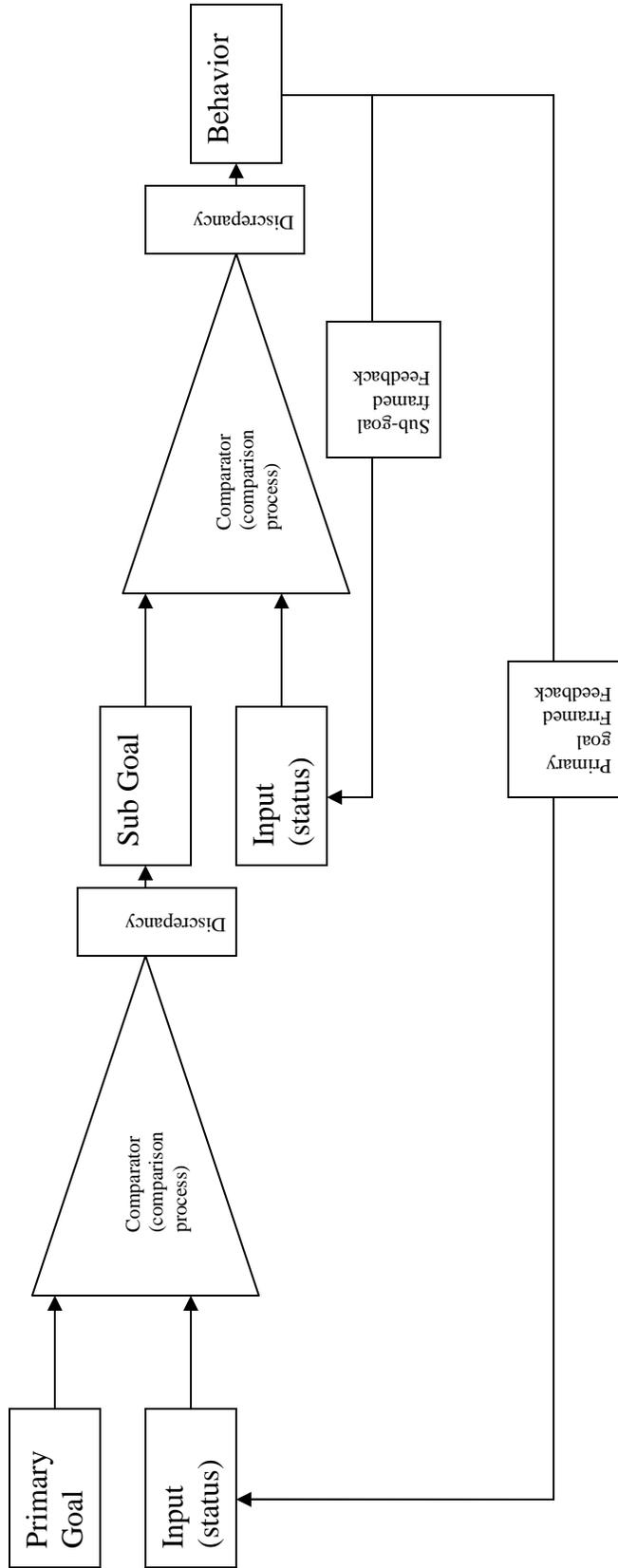
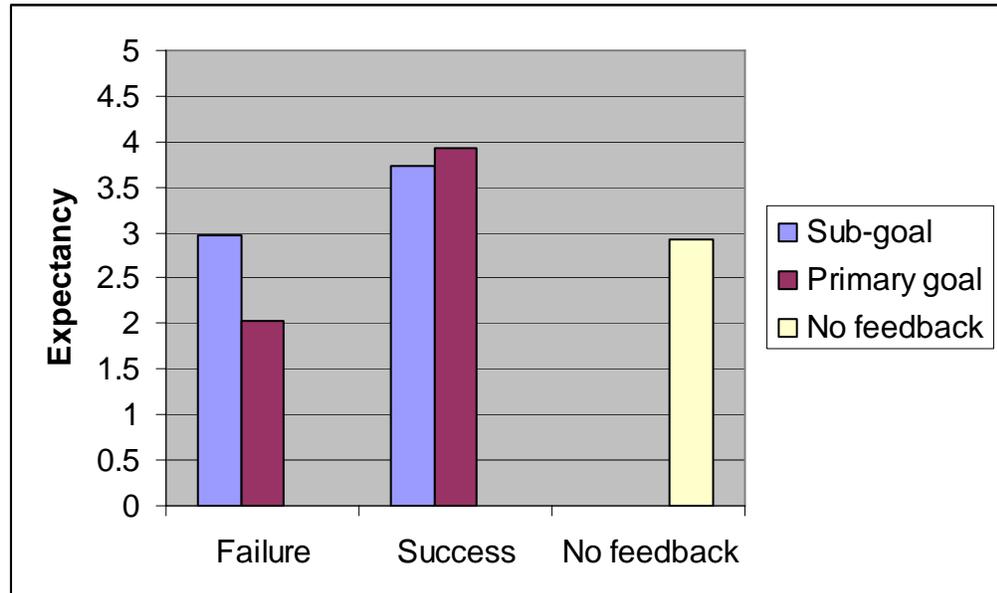


Figure 2

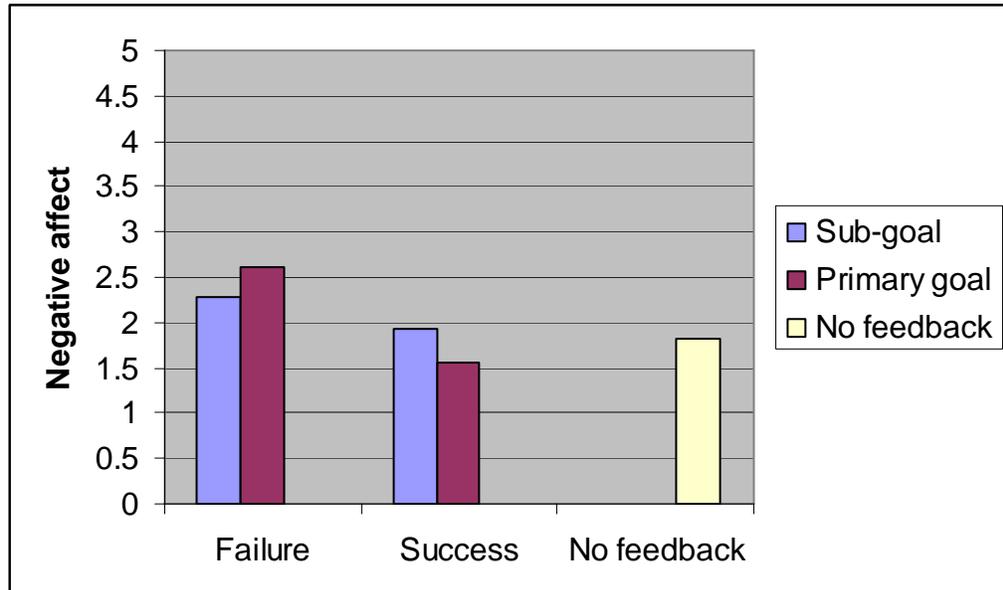
Study 1: Means for Expectancy



$F(1,88) = 9.33, p < .01$

Figure 3a

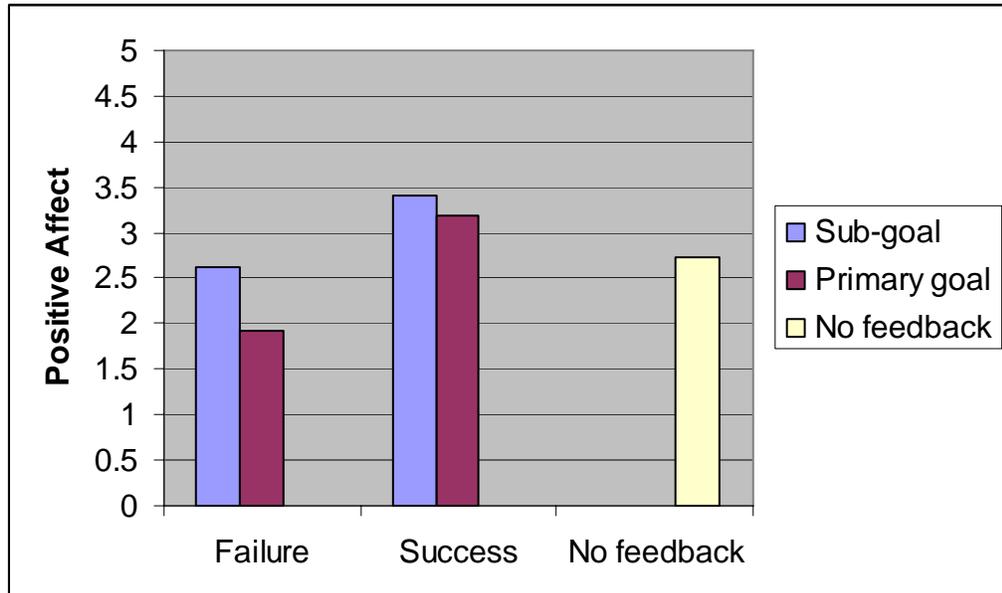
Study 1: Means for Negative affect



$(F(1,88)= 4.15, p < .05)$

Figure 3b

Study 1: Means for Positive affect



$F(1,88) = 3.82, p = .05$

Figure 4

Study 1: Expectancy with ACSW

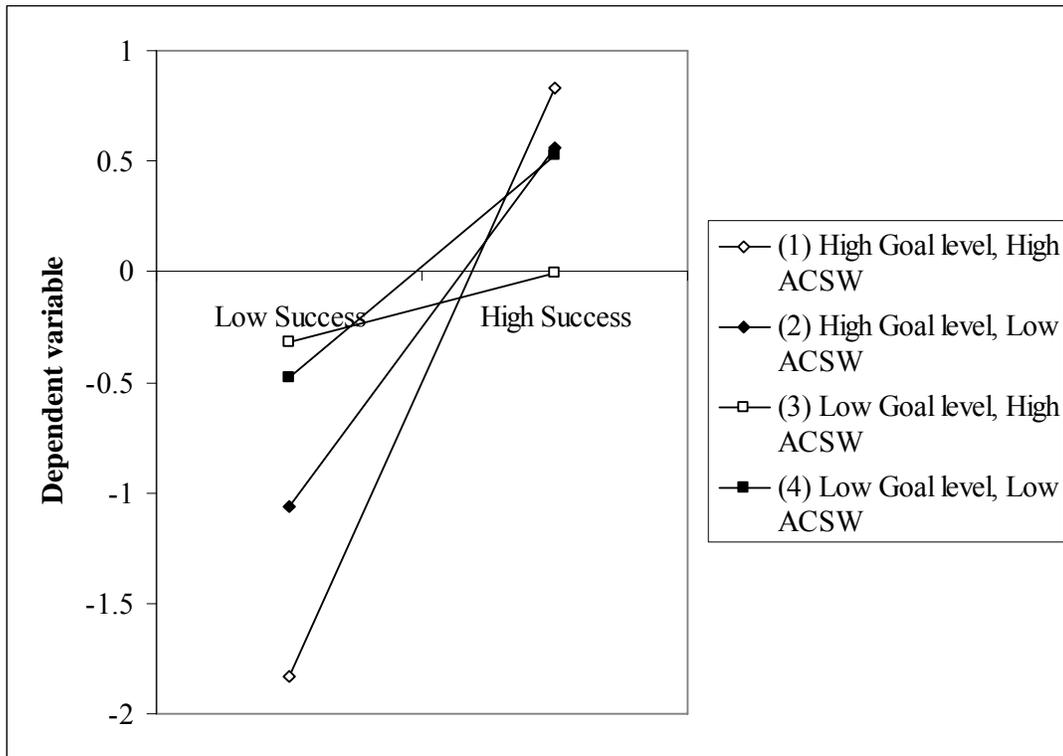


Figure 5

Study 2: Regression results for Negative Affect

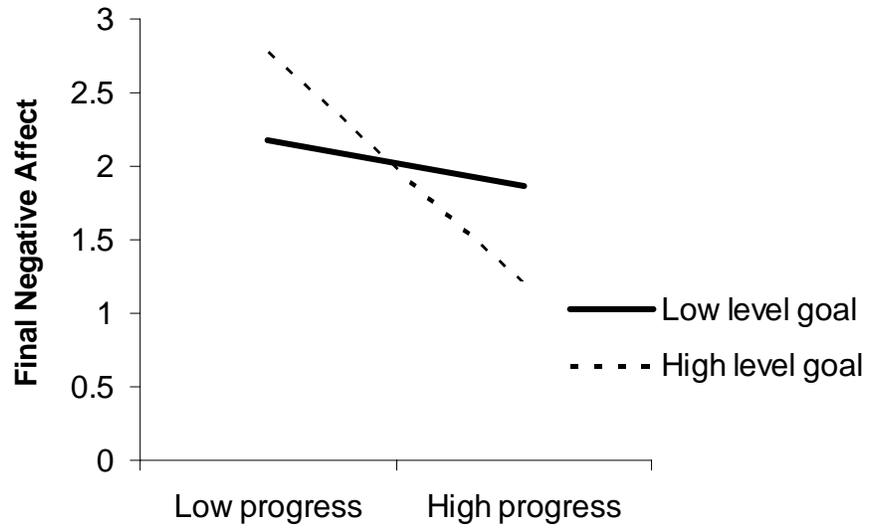
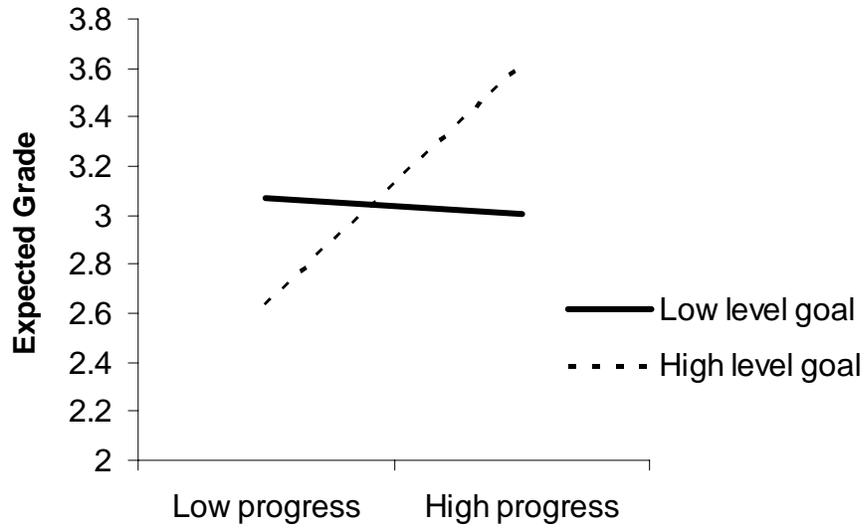


Figure 6

Study 2: Regression results for Expected Grade



## VITA

Linda Houser-Marko was born in Sioux Falls, South Dakota in 1970. She was raised in the family home with her sister, Deborah, and her brother, Robert Jr. She graduated from Washington High School, where her father Robert graduated as well. She attended Gustavus Adolphus College in St. Peter, Minnesota, a small liberal arts college where she majored in English. After graduating from college, a sense of adventure took her to St. Louis, Missouri, where she discovered the variety of uses for a B.A. in English, including temporary jobs at a paint-coating manufacturer and the medical director's office of a St. Louis hospital.

She then married Shaun Marko, and they spent some time in Sioux Falls and Minneapolis while Shaun pursued his computer science education. Linda enrolled in the University of Missouri-Columbia graduate school to earn a doctorate in psychology. She worked on a variety of projects throughout the years in the Sheldon Motivation Lab. During this period she also gave birth to two beautiful daughters. She finally completed her dissertation research in 2007, with much rejoicing.