Pursuing Perfection or Pursuing Protection?: Self-Evaluation Motives Moderate the Behavioral Consequences of Counterfactual Thoughts

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Abstract

Counterfactual thoughts identifying how a past performance could have been better (e.g., “If only I had studied for the exam, I would have gotten an A!”) have been shown to increase effort and performance on future tasks. The present work examines whether current self-evaluation motives moderate this link between past and future behavior. In two studies, we demonstrate that the preparatory benefits of counterfactual thoughts are limited to situations in which individuals pursue a self-improvement motive. When individuals are instead motivated by self-protection concerns, counterfactuals can be used to excuse poor performance, undermining any desire to improve in the future. The behavioral consequences of counterfactual thoughts are therefore dependent upon active self-evaluation motives.
Pursuing Perfection or Pursuing Protection?: Self-Evaluation Motives Moderate the Behavioral Consequences of Counterfactual Thoughts

Thinking about the past offers the opportunity to evaluate our progress towards important goals, improve upon past mistakes, and learn about our personal strengths and weaknesses. Imagine the thoughts of a student who has just learned of a poor grade on an exam. Perhaps the student would say to him or herself “if I had studied, I would have passed the test” or “if I hadn’t been sick and missed so many classes, the test would have been easy.” Upward counterfactual thoughts such as these identify how an outcome could have been better, and are strongly evoked by difficulties that arise during goal pursuit (Epstude & Roese, 2008). Because these thoughts identify factors that hindered a past performance, they have important consequences for future goal-directed action. Consistent with this view, past work has shown that upward counterfactual thinking facilitates the formation of future intentions (Smallman & Roese, 2009), increases self-efficacy (Tal-Or, Boninger, & Gleicher, 2004), and improves task performance (Roese, 1994).

Because counterfactual thoughts involve the evaluation of goal progress, they should also be relevant to judging the self (Epstude & Roese, 2008; McCrea, 2008; Sanna, Chang, & Meier, 2001). Therefore, we suggest that self-evaluation motives are an important moderator of the consequences of counterfactual thinking for subsequent affect and behavior. We focus in the present work on the operation of self-improvement and self-protection motives in counterfactual thinking. A person concerned with self-improvement and personal growth may use counterfactuals to determine how a failure occurred and identify corrective actions to be taken in the future. In contrast, individuals concerned with self-esteem protection may use counterfactuals to shift the blame for failure, with the consequence that no corrective actions are taken.

Returning to the example of the failing student, thinking “if I had studied, I would have passed
the test” may reflect disappointment and increase intentions to change one’s behavior. Alternatively, the very same thought may suggest an excuse for a performance that would otherwise be attributed to a lack of ability. In this case, there would be little incentive for the student to change his or her behavior. Our research was designed to test whether overarching self-evaluation motivations moderate the consequences of counterfactual thoughts for subsequent preparatory effort and performance in this manner.

**Models of Self-Evaluation**

Self-evaluation is the process by which individuals make judgments about and modify the self-concept (Sedikides & Strube, 1997), and has been identified as a critical aspect of self-regulation (Taylor, Neter, & Wayment, 1995). Two of the primary motives in self-evaluation are self-improvement, the desire to consider one’s past shortcomings in order to grow in the future, and self-enhancement and protection, the desire to positively judge one’s performance and ability in order to maintain or increase self-esteem (Crocker & Park, 2004; Greenwald, 1980; Sedikides & Strube, 1997; Taylor et al., 1995; Trope, 1986). The existence of these motives has been demonstrated in a wide range of contexts, including social comparison (Taylor et al., 1995), task choice (Trope, 1986), information search (Butler, 1993; Trope, Ferguson, & Raghunathan, 2001), and causal attribution (Zuckerman, 1979). For example, attributing failure to a lack of effort has different motivational consequences, depending on whether the individual is concerned with self-improvement or self-protection. Effort attributions for failure on threatening tasks have been shown to protect mood and self-esteem, thereby serving self-protection concerns (Covington & Omelich, 1979; Jones & Berglas, 1978; Weiner, 1985). When individuals are instead motivated by self-improvement, attributions of failure to a lack of effort maintain expectations of success and increase subsequent task persistence (Bandura, 1977; Weiner, 1985).
Which motive an individual pursues in a given situation depends on a number of factors. For example, when ability in a domain is perceived as malleable rather than fixed (Dunning, 1995; Dweck & Leggett, 1988), when individuals adopt mastery-approach rather than performance-avoidance goals (Elliot & Church, 2003; Elliot, Cury, Fryer, & Huguet, 2006), when self-worth is not staked on the outcome of the task (Butler, 1993; Crocker & Wolfe, 2001), or when self-protection concerns have already been addressed (D. K. Sherman & Cohen, 2006; Trope et al., 2001), long-term self-improvement motivations are stronger than more short-term self-protection motivations. Both motives arise to some degree in many situations (Taylor et al., 1995), and as a result, they can often come into conflict. For example, self-protection concerns might lead one to discount or ignore potentially useful negative feedback, whereas self-improvement concerns might require attention to information that could be damaging to mood and self-esteem (D. K. Sherman, Nelson, & Steele, 2000; Trope et al., 2001). This conflict has been noted by researchers who argue that the pursuit of self-esteem can have negative implications for performance and self-regulation (Baumeister, Campbell, Krueger, & Vohs, 2003; Crocker & Park, 2004), and that attempts to cope with controllable events solely through the regulation of emotion are less effective than more problem-focused approaches (Lazarus & Folkman, 1984).

Counterfactual Thinking

Upward counterfactuals have been shown to serve a preparative function (Epstude & Roese, 2008; Roese, 1994). Epstude and Roese (2008) postulated two pathways through which counterfactuals affect subsequent behavior: one specific to thought content and one neutral with regard to thought content. The content-specific pathway involves the identification of corrective actions (Smallman & Roese, 2009). Because upward counterfactuals suggest why a better performance did not occur, individuals can convert these thoughts into behavioral intentions. For
example, the thought “if I had studied more, I could have done better on the exam” can easily be translated into the strategy “I will study more for the next exam.” Smallman and Roese (2009) found substantial support for the notion that counterfactual thoughts facilitate the spontaneous formation of corresponding future intentions. In contrast, the content-neutral pathway involves benefits of counterfactual thinking for performance that are independent of any specific strategy mentioned in the thought (Epstude & Roese, 2008). Content-neutral effects could involve increased self-efficacy (Tal-Or et al., 2004), facilitation of flexible processing (Galinsky & Moskowitz, 2000), or heightened task motivation (Markman, McMullen, & Elizaga, 2008). The present work particularly focuses on the consequences of counterfactual thought for task motivation. For example, the Reflection-Evaluation Model (REM, Markman & McMullen, 2003) proposes that affect resulting from counterfactual thinking influences judgments of whether one has met the goal for a task. Negative affect resulting from upward counterfactual thinking can be taken as evidence that goal progress has been insufficient, and so task effort is increased (see also Gendolla, 2000; Hirt, Levine, McDonald, Melton, & Martin, 1997). Similar predictions are made by a number of classic models of motivation. For example, both control theory (Carver & Scheier, 1999) and social cognitive theory (Bandura & Cervone, 1983; Bandura & Locke, 2003) hold that goal-directed effort is increased only when the person perceives a discrepancy between the goal and current performance. Markman, McMullen, and Elizaga (2008) found evidence for these predictions, demonstrating that benefits of counterfactual thinking for task persistence and performance were mediated by negative affect. Thus, upward counterfactual thinking seems to involve a trade-off of negative affect in the present for improved performance in the future.

Counterfactual Thinking and Self-Evaluation
Another way to conceptualize the consequences of counterfactual thinking is to consider the implications of these thoughts for self-evaluation. Because of their role in evaluating progress toward important goals (Epstude & Roese, 2008) and in guiding judgments of causality (Wells & Gavanski, 1989), counterfactuals have important implications for judging the self (McCrea, 2008; Sanna et al., 2001). Indeed, previous research has demonstrated that self-evaluation motives affect the generation of counterfactual thoughts (McCrea, 2007; Roese & Olson, 1993; Sanna et al., 2001). We believe that self-evaluation motives also moderate the affective and behavioral consequences of counterfactual thinking. However, there have been only a few studies testing this contention. For example, Shalvi, Dana, Handgraaf, and De Dreu (2011) recently examined whether the availability of upward counterfactuals could be used to justify unethical behavior. Participants in these studies tended to report the best outcome of a series of die-rolls made in private, even when only the first roll of the die was supposed to be counted. In other words, the relative ease of imagining that one “could have” rolled a six made it easier for participants to claim that they had in fact rolled a six. The motive to justify their deceitful action therefore led participants to report the counterfactual alternative as the real outcome.

McCrea (2008) examined the role of self-evaluation in counterfactual thinking within the context of self-handicapping behavior. Self-handicapping is a self-protective strategy in which the individual creates an obstacle to success (e.g., not preparing adequately for a test) in order to shift blame away from the self, and onto the handicap, should failure ensue (Jones & Berglas, 1978). In attribution terms, failure is attributed to low effort (an unstable cause) rather than to low ability (a stable cause, Covington & Omelich, 1979; Weiner, 1985). From the perspective of counterfactual thinking, self-handicapping facilitates the generation of upward counterfactual thoughts that can be used to excuse failure (S. J. Sherman & McConnell, 1995). That is,
individuals may find it easier to excuse a poor performance if they are able to say “I could have succeeded” if not for the handicap. To test this prediction, McCrea (2008) examined the consequences of upward counterfactual thinking in the context of a threatening test of intelligence. Using a modified induced-compliance procedure, participants were led to practice insufficiently for the intelligence test, and they subsequently received failure feedback. Half of the participants were asked to consider the thought “if I had practiced more, I would have gotten a better score,” whereas the remainder of participants considered a neutral statement. All participants then completed a measure of state self-esteem and a second version of the test. Individuals who considered the upward counterfactual reported more positive self-esteem, but lower effort and performance on the subsequent test, than did individuals in the control condition. When faced with a threatening performance, individuals used the upward counterfactual as an excuse for failure. As would be expected from attributional models (Covington & Omelich, 1979; Jones & Berglas, 1978), self-esteem was maintained, but motivation to improve on the subsequent task was undermined. Consistent with the REM (Markman & McMullen, 2003), upward counterfactuals did not increase task effort or performance when they were processed in a manner that maintained or increased positive affect. In other words, when the upward counterfactual is used as an excuse, goal progress is considered sufficient and there is little motivation to take corrective action.

These findings suggest that the same counterfactual thought can have different behavioral consequences, dependent on the self-evaluation motives of the individual. However, McCrea (2008) did not explicitly compare the consequences of upward counterfactual made in the service of self-protection to those made in the service of self-improvement. The present work was designed to do just that. Specifically, we test the extent to which achievement goals and the prior
satisfaction of self-protection motives via self-affirmation influence the consequences of an upward counterfactual thought for subsequent preparation and performance. We examine these questions in the context of insufficient effort, which could serve as a self-handicap when participants seek to protect self-esteem (Jones & Berglas, 1978; McCrea, 2008), or motivate additional effort when individuals seek to improve their performance (Bandura, 1977; Markman et al., 2008; Roese, 1994; Weiner, 1985). We predicted that, when individuals pursue self-improvement, upward counterfactuals would lead to increased preparative effort and performance. When individuals pursue self-protection, we expected that upward counterfactual thoughts would be used to excuse failure, thereby undermining preparative effort and performance.

**Study 1 – Prior Satisfaction of Self-Protection Motives**

In an initial study, we examined the moderating role of self-improvement motives in determining the consequences of upward counterfactual thinking for preparatory effort on an ego-threatening task. Participants were told they would be taking memory tests predictive of intelligence and academic success. They received failure feedback on the first memory test. Preparatory effort for the subsequent test was the key measure of interest. To manipulate self-evaluation motives, we relied on past work demonstrating that individuals are more likely adopt a self-improvement motive if their self-protection concerns have been previously addressed. Affirming the overall integrity of the self reduces a variety of self-protective behaviors, including downward social comparison (Tesser & Cornell, 1991), rejecting threatening feedback (D. K. Sherman et al., 2000), and self-handicapping (McCrea & Hirt, 2011; Siegel, Scillitoe, & Parks-Yancy, 2005). Based on these findings, we predicted that the prior satisfaction of self-protection concerns via self-affirmation would result in the adoption of a self-improvement motive. As a
result, participants in this condition were expected to invest more effort preparing for the subsequent task if they considered an upward counterfactual thought indicating their failure was due to inadequate effort than if they considered a neutral thought. Conversely, those facing an ego-threatening task who had not previously affirmed the self were expected to pursue a self-protection motive. Under a self-protection motive, the same counterfactual should be used to excuse failure, thereby undermining any benefit of the thought for subsequent task motivation. Thus, we predicted that within the no affirmation condition, preparatory effort in the counterfactual thought condition would be equivalent to or lower than preparatory effort in the control thought condition.

**Method**

**Participants and Design**

Participants were 80 students at the University of Konstanz who participated in the study in exchange for research credit. Five participants were dropped from the final analyses because they reported either that they did not believe that practice helped on the Swahili task or that doing well on the two memory tasks was not important to them. The remaining participants were 44 women and 31 men, 89% of whom were age 25 or younger. Participants were randomly assigned to conditions in a 2 (affirmation vs. no affirmation) x 2 (upward counterfactual vs. control) between subjects design.

**Materials and Procedure**

Participants completed the Rosenberg (1965) measure of trait self-esteem as part of a prescreening questionnaire prior to registering for the study. Upon arriving to the lab for the main experiment, participants were informed that they would be completing several memory tests during the study. They were then asked to provide basic demographic information,
including their age and gender. Participants were told the first task was a “subjective” test of memory. This task constituted the affirmation manipulation (see Cohen, Aronson, & Steele, 2000). Those assigned to the self-affirmation conditions selected one of eleven values (e.g., sense of humor, relationships with family and friends) that most exemplified their character. None of the values were related to academic performance or general intelligence. They were then asked to write a few sentences explaining the importance of the value and to remember three instances in which the value had played a significant role in their life. Participants in the no-affirmation conditions were asked to list everything they had had to eat in the past 48 hours in as much detail as possible.

Following the affirmation manipulation, participants were informed that the next task they would complete was an objective measure of working memory and had been found to be related to both intelligence and academic performance. They were also told that practice had been shown to have a significant effect on performance on the memory test. Specifically, participants were told that they needed at least three minutes of practice on the memory task to achieve their optimal performance. After ensuring that participants understood the importance of practice to the task, they were notified that a computer programming error had occurred which assigned too many participants to the practice condition. Participants were asked if they would not mind being in the “no practice” condition. They were told that the choice to practice was their own. This induced compliance technique (adapted from McCrea, 2008) was used to reinforce the notion that not practicing was freely chosen. All participants agreed to be in the no-practice condition. Next, participants were administered an adapted version of the Computation Span Task (Oberauer, Sueß, Schulze, Wilhelm, & Wittmann, 2000), a measure of working memory. Participants had to decide within a two-second window whether the solution to a math
problem was true or false (e.g., 4 + 3 = 8?). After a series of 4 to 8 items, participants were asked to recall the digits that appeared on the right-side of each equation, in the order in which they had been presented. Participants completed fifteen trials of the computation span task (three trials of four-digit sequences, three trials of five-digit sequences, etc.). Order of trial presentation was randomized. Following the task, all participants received false feedback that they had scored in the bottom 40% of participants.

Next, participants were asked to consider a thought that had been supposedly written by a previous participant in reaction to his performance on the computation span task. Those assigned to the counterfactual condition were presented with an upward counterfactual statement (i.e., “If I had practiced more, I would have done better.”), whereas those assigned to the control condition were presented with a neutral statement (i.e., “The test items were similar to each other.”). All participants were asked to consider how the statement related to their own performance and re-typed the statement word-for-word three times before moving on to the next task. In this manner, the content of the thought considered by participants was held constant (see also McCrea, 2008).

The final task was described as a second type of objective memory test in which participants had to learn the German translation of Swahili words. None of the participants knew Swahili, and the words used were actually created by the researchers. The “correct” translations were counterbalanced across participants. On a given trial, a Swahili word (e.g., “mjinala”) was presented for five seconds, surrounded by four possible translations (e.g., career, pattern, gesture, abyss). Participants were to select the correct translation for the Swahili word. Following their selection, the answer was presented in the middle of the screen (in green for supposedly correct answers, or in red for supposedly incorrect answers). Participants then pressed a key to advance
to the next trial, or the next trial automatically began after 20 seconds. There were 20 word-pairs, and participants were instructed to repeat the trials as many times as they wanted without a time limit in order to learn the correct translations of all the Swahili words. They could quit the practice session at any point, and the computer recorded the time in seconds participants spent learning the translations. Following the practice session, participants were told they did not need to complete the Swahili test. They were then asked to indicate using five-point scales to what extent they thought that practice was helpful for the Swahili test (1 = *not at all* to 5 = *very helpful*), and to what extent it was important for them to perform well on each memory test (1 = *not at all* to 5 = *very important*).

**Results**

**Manipulation Checks**

Participants retained in the analyses believed that practicing for the Swahili test was helpful ($M = 4.75$), and rated the importance of the computation span ($M = 3.53$) and Swahili ($M = 3.72$) tests as moderately high. Participants did not significantly differ on these measures across experimental conditions (all $F$s < 2.76, $p$s > .10), and controlling for scores on these measures did not alter the results. Among those given the opportunity to self-affirm, the majority (62.5%) of participants chose to write about social skills or relationships, followed by sense of humor and artistic sensibilities (22.5%).

**Practice Time**

Because individuals high in self-esteem have more resources with which to affirm the self (Steele, Spencer, & Lynch, 1993), we controlled for trait self-esteem in our analysis. A 2 (self-affirmation vs. control) x 2 (upward counterfactual vs. control) ANCOVA was conducted on the practice measure, with self-esteem scores included as a covariate. This analysis revealed that
high self-esteem individuals practiced significantly longer than did low self-esteem individuals, \( F(1,70) = 4.52, p < .05 \). There was also a main effect of self-affirmation, \( F(1, 70) = 15.32, p < .001, \eta^2 = .18 \). Participants who had the opportunity to self-affirm practiced significantly longer on the Swahili task, relative to those in the control condition. This effect was qualified by a significant Self-affirmation \( \times \) Thought interaction, \( F(1, 70) = 6.56, p < .05, \eta^2 = .09 \), see Figure 1. To probe this interaction, the effect of counterfactual thought within each affirmation condition was tested while controlling for trait self-esteem. Within the self-affirmation condition, exposure to counterfactual thoughts increased practice effort relative to the control thought, \( F(1,34) = 4.99, p < .05, \eta^2 = .13 \). However, within the no-affirmation control condition, practice was non-significantly lower in the counterfactual condition than in the control condition, \( F(1,35) = 1.90, p = .17, \eta^2 = .05 \). There was no main effect of thought condition, \( F < 1, p = .45, \eta^2 < .01 \).

Discussion

As predicted, the prior opportunity to affirm the self moderated the behavioral consequences of counterfactual thinking. Based on prior research (McCrea & Hirt, 2011; D. K. Sherman et al., 2000), we assumed that self-affirmation would free participants to pursue a self-improvement motive. As a result, upward counterfactuals would be processed in a manner that facilitated improvement. Indeed, individuals in this condition practiced longer on a subsequent task as a result of considering an upward counterfactual thought, relative to a control thought. These findings are consistent with past work (e.g., Markman et al., 2008) showing that upward counterfactual thoughts increase persistence on subsequent (nonthreatening) tasks.

Without a chance to affirm the self, the threatening nature of the task was expected to induce a self-protection motivation among participants. As a result, we expected that upward counterfactuals would be processed in a manner that excuses poor performance and undermines
motivation to improve. As predicted, individuals in the no affirmation condition did not practice more as a result of considering an upward counterfactual thought, relative to the control condition. These findings are consistent with past work showing that upward counterfactual thoughts concerning a prior self-handicap protect self-esteem, but can undermine subsequent persistence (McCrea, 2008). Thus, the operation of different self-improvement motives explains the apparent discrepancy between work showing preparatory benefits of upward counterfactual thoughts (e.g., Roese, 1994) and work showing that the same thoughts can undermine effort (McCrea, 2008).

**Study 2 – Manipulation of Motives Through Achievement Goals**

Study 2 was designed to replicate and extend these findings. First, we added a measure of performance. Second, we utilized a different manipulation of self-evaluation motive, namely achievement goals. Achievement goals provide both the standard and valence for evaluating competence on a task. As a result, they have a number of important implications for how individuals pursue a task and how they respond to feedback on that task (Elliot, 1999; Elliot & Dweck, 1988). Mastery goals are those in which an individual uses his or her own past performance as a standard for evaluating competence, whereas performance goals are those in which the performance of others serves as a standard for evaluating competence (Elliot & McGregor, 2001). These goals can be further divided into approach or avoidance goals, depending on whether the goal is framed in terms of meeting the standard or avoiding failure to meet the standard. Indeed, it is not possible to define a goal standard as mastery or performance without at least implicitly referencing the approach-avoidance dimension as well (Elliot & McGregor, 2001). Importantly for our purposes, past work has shown that mastery-approach goals are most closely tied to the motive to improve and develop new skills, whereas
performance-avoidance goals maximize the evaluative threat of a task and thus attempts to protect the self from the negative implications of failure (Elliot, 1999; Elliot & McGregor, 2001). For example, individuals who hold mastery-approach goals are more likely to attempt to learn task-relevant material, engage in deep processing and preparatory effort, persist when faced with failure, and they exhibit heightened self-determination, intrinsic motivation, need for achievement, positive emotionality, and self-efficacy, compared to those pursuing other goals (Butler, 1993; Elliot, 1999; Elliot & Dweck, 1988; Elliot & McGregor, 2001; Grant & Dweck, 2003; van Yperen, 2006). In contrast, individuals holding performance-avoidance goals engage in more shallow processing, put forth less preparatory effort, adopt the perfectionistic standards of others, and they exhibit more learned helplessness, extrinsic motivation, fear of failure, negative emotionality, and worry, compared to those pursuing other goals (Butler, 1993; Elliot, 1999; Elliot & Dweck, 1988; Elliot & McGregor, 2001; Grant & Dweck, 2003; van Yperen, 2006).

Because the self-handicapping strategy is central to our predictions concerning the effects of upward counterfactual thoughts on subsequent behavior, it is important to consider links between achievement goals and this self-protective strategy. Consistent with the pattern of findings outlined above, individual differences in the tendency to self-handicap are negatively related to the adoption of mastery goals, but positively related to the adoption of performance-avoidance goals (Elliot & Church, 2003; Rhodewalt, 1994; Urdan, 2004). Moreover, individuals assigned a performance-avoidance goal exhibit more self-handicapping behavior than do individuals assigned a mastery or no goal (Elliot et al., 2006; Lovejoy & Durik, 2010). Additionally, self-handicapping is maximized in public settings (Hirt, McCrea, & Kimble, 2000; Kolditz & Arkin, 1982) and under conditions of prevention regulatory focus (Hendrix & Hirt,
Thus, both normative standards for evaluating competence and avoidance framing seem to increase the self-protection motive (and thus self-handicapping behavior in particular), relative to intrapersonal standards and approach framing.

In contrast to the effects of performance-avoidance and mastery-approach goals, performance-approach and mastery-avoidance goals appear to reflect motivational hybrids (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002). For example, performance-approach goals are associated with both need for achievement and fear of failure, whereas mastery-avoidance goals are related to both fear of failure and higher class engagement (Elliot & McGregor, 2001). Findings from studies examining the relationship between achievement goals and self-handicapping behavior are also quite mixed. For example, performance-approach goals have been found to either predict increased self-handicapping (Midgley, Arunkumar, & Urdan, 1996), to predict self-handicapping only in certain contexts (Lovejoy & Durik, 2010; Midgley & Urdan, 2001), or not to predict self-handicapping at all (Elliot et al., 2006; Midgley & Urdan, 1995). Mastery-avoidance goals are a relatively late addition to theories of achievement goals and so there is little empirical evidence concerning their impact on self-handicapping behavior. However, Lovejoy and Durik (2010) recently reported that individuals with a mastery-avoidance goal orientation were more likely to claim self-handicaps, but not to behaviorally self-handicap.

Based on this past work, we elected to manipulate underlying self-evaluation motives in Study 2 by assigning individuals to pursue either a mastery-approach or a performance-avoidance goal. Given that our primary interest was in manipulating underlying self-evaluation motivations, we chose to focus on these two goal orientations because they most clearly foster self-improvement and self-protection motives, respectively. We predicted that, when individuals pursue a mastery-approach goal (and thus self-improvement), upward counterfactual thoughts
will lead to increased preparatory effort and performance on a subsequent task, compared to a control thought. In contrast, when individuals pursue a performance-avoidance goal (and thus self-protection), the same upward counterfactual thought should undermine motivation to improve, resulting in the same or reduced preparatory effort and performance on a subsequent task compared to a control thought.

Method

Participants and Design

Participants were 101 undergraduate students from the University of Wyoming who participated in the study in exchange for partial course credit. Data from four participants were excluded from the analyses for the following reasons: one participant had an extremely low practice time (107 ms), indicating inadvertent responding; two participants did not follow directions on the second memory task; one participant indicated that performing well on the two memory tasks was not important. Thus, 97 (56 female, 41 male) participants were retained in the final analyses, 90.7% of whom were age 25 or younger. Participants were randomly assigned to conditions in a 2 (mastery-approach vs. performance-avoidance goal) x 2 (upward counterfactual vs. control) between subjects design.

Materials and Procedure

Upon arriving to the lab, participants were informed that they would be taking two memory tests and were asked to provide basic demographic information including age and gender. Achievement goals were manipulated based on the work of Elliot and McGregor (2001). In the mastery-approach goal condition, participants were told that performance on the memory tests predicts academic ability and future career success, and that people can improve their basic memory skills through practice and effort. Participants were given the goal to try their best to
improve their performance on the two memory tests. In the performance-avoidance goal condition, participants were told that, though most college students are proficient on the memory tasks, some students lack memory ability and are more likely to struggle in academics and their future careers. These participants were told that the researchers were only interested in whether they could manage to avoid performing worse than other participants. They were given the goal to demonstrate that they do not lack memory ability relative to other students.

Following the introduction of the goals, participants were given the same instructions concerning the adapted computation span task as in Study 1, including the importance of prior practice. They were induced not to practice, completed the computation span task, and received false feedback that they achieved a score of 66% on the memory test. In addition, participants in the performance-avoidance goal condition were told that they had scored below average in memory ability.

Next, a counterfactual statement (i.e., “If I had asked to practice the memory test, I would have done better”) was presented to participants in the counterfactual condition, whereas a neutral statement (i.e., “The test items were pretty similar to each other”) was presented to participants in the control condition. All participants were asked to consider how the statement related to their own experience and re-typed the statement word-for-word three times before moving on to the next task.

The second memory test involved learning a series of 15 pictures (i.e., stones, statuettes, painted flowers, etc.) that later had to be serially recalled. Participants were told that the memory skills needed on the picture test were the same as those required for the prior computation span test. They were instructed to try to learn the picture sequence during a practice session. All of the pictures would be presented in sequence for ten seconds each. Following the initial presentation,
participants would have the option of reviewing the sequence up to seven additional times. They were instructed to review the sequence until they felt they could recall the pictures in the correct order. Participants in the mastery-approach condition were reminded that their goal was to improve their performance and beat their score from the first test, whereas those in the performance-avoidance condition were reminded that their goal was to demonstrate that they were not below average in memory ability. They were then shown the entire sequence of pictures once, and were subsequently given the opportunity to review the sequence an additional seven times. After each picture was presented, participants had the opportunity to quit the practice session and complete the memory test, or to continue practicing. Time spent and the number of pictures viewed were recorded by computer.

Upon completing the practice session, the memory test was administered. Participants were asked to recall the pictures (using a brief description) in the exact order they had been presented. Following the memory test, participants completed several manipulation checks. They were presented with a list of goals and asked to indicate which goal(s) they had pursued on the memory tasks, checking all that applied (to do better than everyone else; to do better on the picture test than on the math test; to try my best no matter what; other). Participants were also asked to indicate to what extent practice was helpful for learning the picture sequence, using a five-point scale (1 = not at all to 5 = very helpful). They were also asked how important it was for them to perform well on the computation span task and the picture sequence task, using a five-point scale (1 = very unimportant to 5 = very important).

Results

Manipulation Checks
Participants retained in the analyses believed that practicing for the picture sequence task was helpful ($M = 4.18$), and rated the importance of the computation span ($M = 3.58$) and picture sequence ($M = 3.60$) tasks as moderately high. Participants did not significantly differ on these measures across experimental conditions (all $F$s < 1.69, $p$s > .19), and controlling for scores on these measures did not alter the results.

To determine whether the goal manipulation was effective, we created a goal index as follows: Those indicating they were trying to outperform others were assigned a score of 1, those indicating they were trying to improve across the tasks were assigned a score of -1, and those selecting both or neither goal were assigned a score of 0. A 2 (mastery-approach vs. performance-avoidance) x 2 (upward counterfactual vs. control) ANOVA revealed only a main effect of goal condition, $F(1, 91) = 25.70$, $p < .001$, $\eta^2 = .22$, indicating that individuals were more likely to adopt a performance goal and less likely to adopt an improvement goal in the performance-avoidance condition ($M = -0.34$) than in the mastery-approach goal condition ($M = -0.91$).

**Practice Index**

Overall practice time ($M = 69.43$ sec, $SD = 69.48$) and number of pictures reviewed ($M = 24.89$, $SD = 21.48$) were square-root transformed to eliminate positive-skew. These scores were highly correlated ($r = .82$). Consistent with past work (e.g., Hirt et al., 2000; McCrea, 2008), a summary index was calculated by standardizing and summing the transformed scores (Cronbach’s $\alpha = .90$). A 2 (mastery-approach vs. performance-avoidance) x 2 (upward counterfactual vs. control) ANOVA conducted on the practice index revealed a significant Goal x Thought condition interaction, $F(1, 93) = 4.78$, $p < .05$, $\eta^2 = .05$, see Figure 2. Within the performance-avoidance goal condition, those exposed to the upward counterfactual practiced
significantly less than did those in the control condition, $t(48) = 2.28, p < .05, \eta^2 = .10$. Within
the mastery-approach goal condition, there was no effect of thought condition, $t(45) < 1, p = .35$.

There were no main effects of thought or goal condition, $F(1, 93) < 1, ps > .48$.

**Memory Performance**

Performance on the memory test was assessed by how many pictures participants correctly
recalled. Scoring criteria were strict in that, in order to be correct, participants had to accurately
describe the picture in the correct serial position. A 2 (mastery-approach vs. performance-
avoidance) x 2 (upward counterfactual vs. control) ANOVA revealed a significant Goal x
Thought condition interaction, $F(1, 93) = 4.50, p < .05, \eta^2 = .05$, see Figure 3. Within the
mastery-approach goal condition, those exposed to the upward counterfactual performed better
than did those in the control condition, $t(45) = 2.02, p = .05, \eta^2 = .08$. Within the performance-
avoidance goal condition, this effect was not significant, $t(48) = 1.01, p = .32, \eta^2 = .02$.

There were no main effects of thought or goal condition, $F(1, 93) < 1, ps > .47$.

**Mediation Analyses**

Following the guidelines of Muller, Judd, and Yzerbyt (2005) for testing mediated
moderation, we next examined whether the practice index mediated the Goal x Thought
condition interaction on memory performance. Effect coding was utilized for the dichotomous
condition variables (i.e., performance-avoidance goal = 1, mastery-approach goal = -1;
counterfactual thought = 1, control thought = -1), and the practice index was centered (see also
Aiken & West, 1991). The goal, thought condition, and Goal x Thought condition interaction
terms were entered in the first step of a regression model predicting memory performance. The
practice index and Goal x Practice index interaction terms were entered in the second step of the
model. According to Muller et al. (2005), mediated moderation would be evidenced by a
significant practice index effect, and a nonsignificant Goal x Thought condition interaction, in this model. As seen in Table 1, the practice index effect was significant, whereas the Goal x Thought condition interaction was no longer significant.\(^3\) A Sobel test revealed a significant indirect effect, \(z = 2.03, p < .05\). Thus, the observed performance effects were due to the degree of preparatory effort exhibited by participants.

**Discussion**

Study 2 demonstrated that upward counterfactual thoughts are beneficial for subsequent tasks when individuals pursue a self-improvement motive, but that these same thoughts can undermine efforts on subsequent tasks when individuals are motivated by self-protection concerns. When individuals pursue a mastery-approach goal, thoughts about how a past performance could have been better are likely to be used as an assessment of goal progress. These thoughts indicate that performance was inadequate, suggest that improvement is possible, and provide strategies for corrective action. As a result, performance should improve. Consistent with this prediction, we observed that upward counterfactual thinking improved performance within the mastery-approach condition. On the other hand, when individuals pursue a performance-avoidance goal, they are likely to be concerned with protecting self-esteem. In this context, upward counterfactuals can provide excuses for failure, shifting blame to unstable causes. Dissatisfaction with performance is reduced and the motivation to improve is undermined. Consistent with this prediction, we observed that upward counterfactual thinking reduced preparatory effort when individuals pursued a performance-avoidance goal. Moreover, the performance benefits of upward counterfactual thinking found in the mastery-approach condition were eliminated.
We chose to contrast the effects of pursuing a performance-avoidance goal with those of pursuing a mastery-approach goal because they most cleanly relate to underlying self-protection and self-improvement motives, respectively. In contrast, performance-approach and mastery-avoidance goals likely represent a mix of these two motives (Harackiewicz et al., 2002) and are therefore less directly relevant to testing the predictions of our model. Of course, this leaves open the question of whether our findings were driven by the intrapersonal vs. normative nature of the mastery-performance dimension or the strategic means suggested by the approach-avoidance dimension. While additional research is required to definitively address this question, past work on achievement goals (Elliot & McGregor, 2001; Harackiewicz et al., 2002; van Yperen, 2006) and self-handicapping behavior (Elliot et al., 2006; Hendrix & Hirt, 2009; Hirt et al., 2000; Lovejoy & Durik, 2010; Rhodewalt, 1994) suggests that both variables independently influence self-evaluation motives, and therefore the likely consequences of counterfactual thinking for affect and behavior. In other words, we suspect that both performance goals and avoidance framing would independently contribute to the motive to protect the self, each making it more likely that individuals would use upward counterfactuals to excuse poor performance. Conversely, both mastery goals and approach framing should independently contribute to the motive to improve, each making it more likely that individuals would use upward counterfactuals to identify corrective actions and increase effort. This remains an interesting direction for further study.

**General Discussion**

Counterfactuals help us to evaluate the past, thereby providing information relevant to judging the self. The consequences of these thoughts for future behavior are therefore critically dependent upon how individuals wish to view the self. Consistent with this view, self-evaluation
motives influence the generation of counterfactual thoughts (McCrea, 2007; Roese & Olson, 1993; Sanna et al., 2001). Our findings extend this past work to demonstrate that the very same counterfactual thought can have different consequences for subsequent behavior, dependent upon the self-evaluation motive currently active.

Considering counterfactual thoughts within a self-evaluation framework allows for an integration of apparently discrepant findings in the literature. On the one hand, upward counterfactual thoughts have been shown to serve a preparatory function, leading to increased persistence, performance, and the formation of intentions to take corrective action (Epstude & Roese, 2008; Markman et al., 2008; Smallman & Roese, 2009). On the other hand, McCrea (2008) found that the same thoughts can be used to excuse poor performance, maintaining self-esteem in the face of failure, but eliminating any preparatory benefits. Our findings indicate that overarching self-evaluation motives influence which of these two patterns emerges. When individuals are pursuing improvement or have already addressed self-protection concerns, upward counterfactuals concerning a lack of effort increase subsequent persistence and facilitate performance. These findings are consistent with past work suggesting that attributing failure to a lack of effort maintains self-efficacy and leads to persistence and improvement on tasks (Bandura, 1977; Weiner, 1985). On the other hand, when individuals are faced with an ego-threatening failure, they may generate and interpret upward counterfactuals in a manner that excuses this poor performance. Upward counterfactuals concerning a self-handicap serve to shift blame to relatively unstable causes of failure, which in turn can preserve mood and self-esteem (Covington & Omelich, 1979; Jones & Berglas, 1978). Counterfactual excuses may be functional in the short-term by blunting the negative consequences of failure for mood and self-esteem in this manner, but the long-term consequences are less desirable. By reducing self-blame and
negative affect, excusing upward counterfactuals undermine motivation to improve in the future. Preparatory effort is reduced and subsequent performance suffers.

Limitations and Future Directions

The current findings add to a growing body of research demonstrating that the consequences of counterfactual thought are not rigidly determined by thought content (e.g., upward or downward direction). For example, the REM (Markman & McMullen, 2003) suggests that the consequences of these thoughts are determined by the manner in which they are processed. Upward counterfactuals lead to more negative affect, increased persistence, and better performance when they are used to evaluate actual performance against a counterfactual standard. However, the same thought can lead to more positive affect, decreased persistence, and worse performance when individuals vividly imagine (i.e., reflect on) the counterfactual alternative (Markman et al., 2008). In a similar manner, self-evaluation motives moderate the consequences of upward counterfactuals. Our findings are consistent with the REM in the sense that upward counterfactuals do not result in negative affect when they are used to excuse failure, and so persistence and performance suffer. Self-evaluation motives may in fact operate on counterfactual thoughts in the manner envisioned by the REM. That is, self-evaluation motives could determine whether individuals spontaneously engage in reflection or comparison when processing counterfactual thoughts. Future research could test whether achievement goals or the opportunity to self-affirm moderate the use of evaluation or reflection in processing counterfactuals.

We examined the consequences of counterfactual thinking for task preparation and performance with experimenter-provided thoughts in order to control for any effects of thought content. It is important to note that similar effects have been observed in studies in which
individuals generated their own counterfactual thoughts. For example, McCrea (2008) reported that upward counterfactuals could undermine persistence and performance, even when participants generated these thoughts. Likewise, Markman et al. (2008) found that processing style determined the behavioral consequences of self-generated counterfactuals. Moreover, these studies demonstrated similar consequences of counterfactual thinking using a variety of tasks and measures, including intentions to study for a psychology exam, practicing for a nonverbal intelligence test, and persisting on unsolvable anagrams. Thus, we do not believe that our findings are limited to memory and learning tasks or to cases in which the counterfactual thought is experimenter-provided.

It is worth considering however whether differences in the content of the counterfactual thought would further moderate the pattern of results we observed. Our studies focused on the consequences of upward counterfactual thoughts, as they appear to be more frequently generated following failure (Epstude & Roese, 2008). What about the operation of self-evaluation motives on downward counterfactual thoughts? Downward counterfactual thoughts indicate how an outcome could have been worse (e.g., “At least I got a B, I could have gotten an even worse grade”). Downward counterfactuals are more frequently generated following success, and typically result in more positive affect (Markman, Gavanski, Sherman, & McMullen, 1993; Roese, 1994). However, inducing individuals to focus on the fact that a negative outcome “almost” occurred can also motivate efforts to improve (a so-called "wake-up call", McMullen & Markman, 2000). According to our model, this “wake-up call” should be most likely to occur when individuals are pursuing a self-improvement motive. In contrast, downward counterfactuals should be used to boost mood and self-esteem when individuals are more concerned with self-enhancement.
Other features of the counterfactual thought may enhance or minimize their impact on subsequent behavior. We focused on the effects of an “additive” counterfactual thought concerning a lack of effort. That is, the counterfactual concerned what one should have done. One might ask whether the same results would obtain when the counterfactual concerned what one should not have done. Such “subtractive” counterfactuals are evoked by prevention failure (Roese, Hur, & Pennington, 1999) and lead to greater persistence under prevention framing (Markman, McMullen, Elizaga, & Mizoguchi, 2006; Spiegel, Grant-Pillow, & Higgins, 2004). From this perspective, considering an additive counterfactual thought may have resulted in increased persistence because of greater regulatory fit (Higgins, Idson, Freitas, Spiegel, & Molden, 2003) or value placed on the task in the mastery-approach goal condition than in the performance-avoidance goal condition in Study 2. Additional research is required to directly test this explanation for our results, but several pieces of evidence speak against it. In Study 1, we found that the consequences of counterfactual thought were moderated by prior affirmation of the self, even when there was no manipulation of approach-avoidance framing. In addition, McCrea (2008, Study 4) found reduced task motivation as a result of considering excusing counterfactuals, even though these thoughts involved the subtraction of a handicap (i.e., participants considered thoughts including “If I did not have to listen to the distracting noises, I would have done better”). Finally, differences in task importance did not account for our results, contrary to what one would expect if regulatory fit had increased the value of the task (Higgins et al., 2003). Taken together, we believe the results of the present studies are most consistent with the view that the behavioral consequences of upward counterfactual thoughts are moderated by whether the individual pursues a self-improvement or self-protection motive.
Beyond framing of the thought, certain counterfactuals more easily come to mind or are simply more compelling than others. For example, individuals tend to generate counterfactuals concerning controllable features of the situation, particularly their own behavior (Markman, Gavanski, Sherman, & McMullen, 1995). Thoughts concerning one’s own behavior are also more likely to impact future behavior by identifying corrective actions (Smallman & Roese, 2009) and suggesting that improvement is possible (Tal-Or et al., 2004). As shown in many studies of self-handicapping (e.g., McCrea, 2008; McCrea & Hirt, 2001), intentionally dysfunctional behavior can also provide an effective excuse for failure. Beyond controllability, counterfactuals can also differ in their potency (Petrocelli, Percy, Sherman, & Tormala, 2011). Potency is a product of the perceived likelihood of the antecedent (if-part) having occurred and the perceived likelihood that the antecedent would have led to the consequent (then-part). Counterfactuals that have a higher perceived potency have a stronger impact on affect and perceived responsibility for outcomes (Petrocelli et al., 2011). Although it remains to be tested, more potent counterfactuals should also have a stronger impact on behavior. The more compelling the counterfactual, the greater should be the desire to improve, and the more effective should be the excuse. Thus, we suggest that the consequences of counterfactuals for persistence and performance when pursuing a self-improvement or self-protection motive would be even stronger to the extent that the counterfactual thought is potent or concerns a controllable behavior.

A final avenue for future research would be to examine the operation of other self-evaluation motives in counterfactual thinking. For example, self-verification is identified as another common self-evaluation motive (Sedikides & Strube, 1997; Swann, 1987). In this case, individuals may process counterfactuals in a manner that reinforces current views of the self.
Similarly, the desire to justify past actions may also impact the consequences of counterfactual thought. As discussed earlier, Shalvi et al. (2011) observed that the availability of an upward counterfactual allowed greater justification of cheating behavior. Escalation of commitment is another well-documented example of self-justification (Arkes & Blumer, 1985; Staw, 1976). In this case, reluctance to admit a mistake leads to inappropriate persistence in a failing course of action. We would predict that counterfactual thoughts increase persistence following large prior investments, as individuals are pushed by a desire to justify those previous losses.

**Conclusion**

Counterfactual thinking provides an important bridge between the past and the future. Reflecting on the past allows us to better understand the world and ourselves. However, the implications of this knowledge for future action depend greatly on how we want to view the self. Thus, one of the paradoxes of mental time travel is that it remains wedded to the whims and desires of the present.
References


Footnotes

1 A summary index of practice effort is superior in our view because it is less affected by practice speed (i.e., those who practice many items quickly or few items slowly will tend to have moderate, rather than extreme, scores). When analyzed separately, significant Goal x Thought condition interactions were found on both practice time and number of items practiced, $F_s > 4.17, ps < .05$.

2 Using a boot-strapping procedure (Preacher & Hayes, 2008) with the interaction contrast as the independent variable, the recall measure as the dependent measure, and the practice index as the mediator also revealed a significant indirect effect (Sobel test $z = 2.03, p < .05$).

3 The significant Goal x Practice index interaction revealed that the benefits of practice were stronger within the performance-avoidance condition. However, given the absence of a main effect of counterfactual thought condition on the practice index, this result is not consistent with Muller et al.’s (2005) criteria for moderated mediation.
Table 1. *Mediation analysis* (Study 2)

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<th>Mediation model</th>
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Figure 1. Self-affirmation x Thought interaction on Swahili task practice time (Study 1)
Figure 2. Goal x Thought condition interaction on practice index (Study 2)
Figure 3. *Goal x Thought condition interaction on memory performance (Study 2)*