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Motivational Inequality: Prevention Goals Induce More Effort Than Promotion Goals

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ABSTRACT

Regulatory focus theory describes two motivational strategies—promotion and prevention focus—that may be employed during goal directed action. Although a theory of motivation, there is no research examining differences in effort between promotion and prevention focus. Two studies are presented which test the hypothesis that goals pursued with a prevention focus, with its emphasis on duties, responsibilities, and avoidance of negative outcomes, will induce more effort than goals pursued with a promotion focus, which emphasizes hopes, ideals, and achieving positive outcomes. In addition, several potential mediators and moderators of this effect were examined. In Study 1, students who completed an essay designed to induce a prevention focus indicated that they planned to put marginally more effort into preparing for an upcoming exam than students who completed an essay to induce a promotion focus. In Study 2, participants worked on anagrams with either a prevention-focused incentive structure (i.e., losing or not losing money) or a promotion-focused incentive structure (i.e., gaining or not gaining money), and time spent working on the anagrams served as a measure of effort. There was no effect of regulatory focus in this study; however, when participants who indicated being unsuccessful in past academic situations were excluded from analyses, the predicted difference between conditions emerged. The potential role of regulatory fit—the match between one's dispositional and situational regulatory focus—was examined in both studies, and ruled out as an alternative explanation. Collectively, these studies provide the first evidence, albeit modest, of a difference between promotion and prevention focus in the amount of effort people put forth during goal pursuit, and they serve as a foundation for additional research into differences in motivational strength between promotion and prevention focus.

This dissertation is approved for recommendation
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Introduction

The study of motivation, or the energization and direction of behavior (Atkinson, 1964; Bargh, Gollwitzer, & Oettingen, 2010; see also Elliot & Covington, 2001), has a long and rich history in psychology. Early thinkers focused on pleasure and pain (Freud, 1920/2011), the power of discomfort and anxiety (Mowrer, 1950, 1952), and the importance of affect more generally in driving behavior (McClelland, Atkinson, Clark, & Lowell, 1953). Either implicit or explicit in all of these theories was the general principle of approach-avoidance motivation (Elliot, 2008; Elliot & Covington, 2001), considered to be a foundational aspect of human personality (Elliot & Thrash, 2002, 2010). Motivation often accompanies goals—cognitive representations of positively or negatively valenced future states or objects that people are committed to approaching or avoiding (Elliot & Fryer, 2008; Elliot & Niesta, 2009). In the present investigation, I explore how the strength of motivation may vary based on how goals are framed or construed.

Regulatory focus theory (Higgins, 1997) builds upon classic approach-avoidance distinctions by identifying two orientations—promotion and prevention focus—that influence the ways in which people approach desired end-states and avoid undesired end-states. Promotion focus involves a concern with gains and positive outcomes; people approach gains and avoid non-gains. In contrast, prevention focus involves a concern with losses and negative outcomes; people approach non-losses and avoid losses (Scholer & Higgins, 2008; see also Förster, Grant, Idson, & Higgins, 2001; Förster, Higgins, & Idson, 1998). These orientations have their roots in self-discrepancy theory (Higgins, Bond, Klein, & Strauman, 1986; Higgins, 1987), which highlights matches between one's current sense of self and the type of person or goals one would like to, or must, achieve. Specifically, the theory identifies two types of self—ideal and ought—

that are associated with different needs and goals. The ideal self is the type of person one aspires to be and is associated with nurturance needs. The ought self is the type of person one feels it is their obligation to be, and is associated with safety needs. The development of the ideal and ought selves, as well as a sensitivities to nurturance and safety needs, originate in childhood (Higgins, 1997; Higgins & Silberman, 1998; Keller, 2008; Manian, Papadakis, Strauman, & Essex, 2006). A promotion focus will predominate when parents provide a nurturing environment and direct the child's behavior through the presence and absence of positive outcomes and feedback. A prevention focus will predominate when parents ensure a safe environment and direct the child's behavior through the presence and absence of negative outcomes and feedback. In adulthood, promotion and prevention focus continue to be associated with nurturance and security concerns, respectively, as well as the awareness of discrepancies between one's ideal and ought selves and the actual self. In addition to being a trait-like quality that develops during childhood, regulatory focus can also be a temporary state induced by situational characteristics or the framing of a task or goal (Higgins, 1997).

Ample evidence highlights the distinct effects of promotion and prevention focus across a number of domains. When interrupted during a task, those in a prevention focus prefer to resume working on the same task compared to those in a promotion focus, who prefer to start a new task (Liberman, Idson, Camacho, & Higgins, 1999). Promotion focus cues also trigger more creative responses than prevention focus cues (Friedman & Förster, 2001; see also Baas, De Dreu, & Nijstad, 2008; Liberman, Molden, Idson, & Higgins, 2001), and a promotion focus is associated with more risk taking than is prevention focus (Crowe & Higgins, 1997; Hamstra, Bolderdijk, & Veldstra, 2011). Finally, promotion and prevention focus are associated with approach and avoidance motivation and behaviors, respectively, both at the behavioral and neural levels. For

behavior, participants working on promotion and prevention focused anagrams show greater approach and avoidance strength, respectively—as measured by arm flexion and extension—as they near task completion (Förster et al., 2001; Förster et al., 1998). At the neural level, dispositional promotion focus is associated with increased left frontal activity and decreased right frontal activity, with the opposite being true for dispositional prevention focus, patterns that are consistent with the activity associated with approach and avoidance motivation (Amodio, Shah, Sigelman, Brazy, & Harmon-Jones, 2004; see also Eddington, Dolcos, Cabeza, Krishnan, & Strauman, 2007).

Promotion and prevention focus each motivate distinct behaviors, but it is unclear if these motivations are equal in strength, that is, if the effort associated with goal pursuit is equivalent for promotion and prevention focus. The literature cited above does not provide a clear answer to this question because many of these studies do not focus on goal pursuit (e.g., choosing to trade in a prize for a new object; Liberman et al., 1999), or because they focus on behaviors that are not clearly linked to effort (e.g., risky driving; Hamstra et al., 2011). This is an important question because motivational strength will determine how much time people invest, and how much energy they expend, as they work toward their goals. The goal of the present investigation is to focus on the effort associated with promotion and prevention focus during goal pursuit, and whether these two motivational orientations induce the same amount of effort. I propose that the answer is *no*; there are theoretical reasons to believe that prevention focus should result in more effort during goal pursuit than promotion focus. I start with a review of classic and modern perspectives that provide evidence for the strength of prevention over promotion, highlight evidence from the regulatory focus literature that supports this prediction, present the results of

one pilot study that provides preliminary support for this hypothesis, and then describe two studies to test this prediction.

Prevention and Promotion in Maslow's Hierarchy

A classic conceptualization of motivation is Maslow's hierarchy of needs (1943a, 1943b, 1948). Maslow argued that human motivation is guided by the fulfillment of various needs, which are structured in a hierarchical fashion. According to Maslow, more basic needs (e.g., safety) must be satisfied before higher-order needs, (e.g., esteem and self-actualization) can be pursued. Safety needs occupy space near the bottom of the hierarchy; when there is a threat of danger, the motivation to seek safety trumps all else. It is only when a person feels safe that he or she can move on to other, "higher" needs such as seeking affiliation and approval, or striving toward self-fulfillment. Some of the details of the theory have been recently revised (Kenrick, Griskevicius, Neuberg, & Schaller, 2010), but the hierarchical structure remains, and safety and self-protection needs still take precedence over affiliation and esteem needs. Moreover, a recent theory of motivation that removes the hierarchical structure still highlights the need for security as a primary motivation (Forbes, 2011).

Although Maslow's hierarchy has been criticized in content and structure (Wahba & Bridwell, 1976), there is evidence for its usefulness and accuracy. Early research focused on need satisfaction in managers, finding that the least fulfilled needs were those related to self-actualization, which is to be expected of needs at the top of the hierarchy (Ivancevich, 1969; Porter, 1961). Recent evidence is more compelling. In a survey of more than sixty thousand participants in 123 countries, Tay and Diener (2011) explored the fulfillment of needs that correspond to those outlined in Maslow's hierarchy, and found support for their hierarchical arrangement. Although basic physiological and safety needs depend more on country factors,

such as poverty and disease rates, than do other needs, there was a general tendency for higher-order needs (e.g., feeling proud of something) to be fulfilled after more basic needs (e.g., feeling safe walking alone).

What is notable about Maslow's hierarchy in relation to regulatory focus theory is that many of the needs correspond to motives associated with promotion and prevention focus. The safety needs, which occupy space at the bottom of the hierarchy, correspond to prevention focus. This means that when people feel that their safety is threatened they will be motivated to seek safety, and will give this motive precedence over fulfillment of other needs, such as affiliation. In contrast, needs more consistent with a promotion focus are at the top of the hierarchy; these include needs associated with self-actualization, or striving to be one's ideal self. This suggests that prevention needs will take precedence over promotion needs and that, given two competing goals, the one that calls for a prevention focus on safety and security will be given preference over the one that calls for a promotion focus on nurturance and ideals.

Negative versus Positive Outcomes

A more recent theoretical integration highlights the relative power of negative events over positive events (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; see also Rozin & Royzman, 2001). Across a variety of domains, negative events, emotions, impressions, and outcomes have greater psychological impact than comparable positive events. When forming impressions, for instance, negative information about others tends to receive more attention and weight than positive information (Fiske, 1980; Skowronski & Carlston, 1989). Negative behaviors and emotions also impact romantic relationships to a greater degree than positive behaviors and emotions; for a relationship to survive, a lack of negative interactions is more important than the presence of positive interactions, and positive interactions should outnumber

negative interactions by a ratio of five to one (Gottman & Levenson, 1992; see also Gottman & Levenson, 1986). This effect also seems to be automatic; negatively valenced words reduce reaction times on Stroop-like tasks, and are also more likely to be remembered during free recall, suggesting that, without intention or control, we direct attention toward negative information in our environments (Pratto & John, 1991).

Another notable example of this phenomenon that is particularly relevant to the present investigation is loss aversion (Kahneman & Tversky, 1979, 1984); the psychological value and impact of a loss is greater than the value or impact of an equivalently sized gain. In a coin flip scenario, the amount that could be won by guessing the outcome correctly needs to be roughly three times greater than the amount that could be lost due to an incorrect guess in order for such a gamble to be accepted (Kahneman & Tversky, 1984). The general principle of loss aversion is also moderated by regulatory focus; the effect is exacerbated when individuals are in a prevention focus, and reduced or eliminated when people are in a promotion focus (Chernev, 2004). Recent evidence also links loss aversion to the motives in Kenrick et al.'s (2010) revised needs hierarchy; activation of more basic self-protection motives exacerbate loss aversion, while activation of higher-level mating motives attenuate or reverse loss aversion (Li, Kenrick, Griskevicius, & Neuberg, 2012). This mimics the effects of prevention and promotion focus on loss aversion, and further suggests a relationship between regulatory focus and the hierarchy of needs.

The general principle of negative information garnering more attention and having a greater psychological impact than positive information, as well as the links between loss aversion, regulatory focus, and needs, have implications for the motivational power of promotion and prevention focus. As described previously, a promotion focus involves approaching gains

and avoiding non-gains; the overall focus is on the presence or absence of positive outcomes. In contrast, a prevention focus involves approaching non-losses and avoiding losses; here, the overall focus is on the presence or absence of negative outcomes. Given the wealth of research demonstrating that "bad is stronger than good" (Baumeister et al., 2001), as well as evidence suggesting that prevention focus and related safety needs exacerbate loss aversion, making bad events seem subjectively worse (Chernev, 2004; Li et al., in press), I predict that prevention focus will be associated with greater motivational strength than promotion focus. This is consistent with Pratto and John's (1991) explanation of "automatic vigilance"; people automatically attend to negative information because this information may pose a threat and should be avoided. Furthermore, the automatic, nonconscious tendency to devote attention to negative stimuli interferes with the goals people are currently pursuing. I suspect that an analogous process exists for prevention focus; when goals are framed in prevention terms, or when people are currently in a prevention focus, they should devote more effort to ensuring that they successfully approach the desired end-state of avoiding a loss or negative outcome. It should be noted that both promotion and prevention focus involve approaching desired end states, for instance, earning high marks in college. However, this goal may be approached by either focusing on how to achieve the desired outcome, such as earning an A, or on how to avoid the undesired outcome, such as getting less than an A. The end state is the same in both cases, but when the goal is approached with a prevention focus there should be greater attention paid to the possible negative outcome of getting less than an A. This focus on the negative should lead to enhanced effort in achieving the desired outcome.

Evidence from the Regulatory Focus Literature

In addition to Maslow's hierarchy and the "bad is stronger than good" principle, there is evidence from the regulatory focus literature to suggest that prevention focus induces greater effort. One series of studies demonstrates that prevention focus is associated with completing tasks earlier (Freitas, Liberman, Salovey, & Higgins, 2002). Participants indicated that they would begin writing an essay for a fellowship application earlier when they were in a prevention focus, as compared to a promotion focus. In addition, when given both prevention and promotion tasks to complete (e.g., two types of anagrams), participants completed the prevention focus anagrams prior to the promotion focus anagrams. While these studies offer some evidence that goals with a prevention focus take a temporal precedence over goals with a promotion focus, there is no measurement of effort in these studies. It is unclear if participants will actually put more effort into or persist longer at tasks when they approach them with a prevention focus.

A second series of studies suggests that prevention focus becomes more influential as goals near in time (Pennington & Roese, 2003). Students rated the importance of promotion and prevention goals at various time points leading up to an exam, which revealed that promotion goals were dominant when the exam was in the distant future, but that the importance of these goals diminished as the exam neared. Prevention goals, on the other hand, were constant over time, which means that relative to the declining importance of promotion goals, the psychological weight of prevention goals increased as the exam date approached. This suggests that as the time to complete a goal diminishes there is a shift away from focusing on ideal standards that one would like to meet, and toward focusing on what absolutely must be done in order to avoid a failure.

In addition to this empirical evidence, the goals associated with prevention and promotion focus have also been conceptualized in ways suggesting that a prevention focus should take motivational precedence. This conceptualization describes the goals associated with promotion focus as "maximal" and prevention focus as "minimal" (Brendl & Higgins, 1996; see also Freitas et al., 2002; Idson, Liberman, & Higgins, 2000). Maximal goals involve striving toward high standards, with a failure to meet that standard associated with a less positive—though not necessarily negative—experience. Minimal goals, on the other hand, involve striving toward a minimum standard that must be met, with a failure to meet that standard associated with a negative experience. In other words, maximal goals are ideals that may be met to greater or lesser degrees, while minimal goals are obligations that must be met. The non-negotiable nature of minimal goals, and the prevention focus that is associated with pursuit of these goals, implies that greater effort should be put into ensuring that these goals are met.

The Issue of Regulatory Fit

The preceding sections highlight theoretical and empirical reasons for believing that prevention focus induces more effort during goal pursuit than promotion focus. At the same time, there is an abundance of evidence highlighting the importance of regulatory fit—the match between an individual's regulatory focus and whether the task at hand calls for a promotion or prevention focus (Higgins, 2000). Compared to when there is a mismatch between the regulatory focus of the task and the individual, situations involving fit typically result in improved performance (Förster et al., 1998; Shah, Higgins, & Friedman, 1998), more task enjoyment (Freitas & Higgins, 2002), increased persuasion (Cesario, Grant, & Higgins, 2004; Cesario & Higgins, 2008; Lee & Aaker, 2004), and greater value placed on objects associated with the task (Higgins, Idson, Freitas, Spiegel, & Molden, 2003).

The effects of regulatory fit are not challenged here; rather, there are three reasons that the effects observed in the regulatory fit literature are not relevant to the present investigation. First, there is the issue of what causes regulatory fit effects. In performance contexts it could be that more effort is put forth in regulatory fit situations, but it is also possible that effect of fit is due to processing fluency, and not increased effort (Lee & Aaker, 2004; see also Cesario Higgins, & Scholer, 2008; Vaughn, Childs, Maschinski, Niño, & Ellsworth, 2010). Second, regulatory fit may not apply in all goal pursuit contexts. Some goals may be neutral in terms of regulatory focus, framed neither in promotion or prevention terms, leaving only an individual's chronic or situational regulatory focus to determine the strategies used during goal pursuit. The reverse may also be true; an individual may not possess a strong dispositional or situationally induced regulatory focus, but the framing of a goal may call for a promotion or prevention orientation. In such cases, I expect that individuals with a prevention focus, or individuals working on tasks that activate a prevention focus, will put more effort into completing the goal. In the present studies, I focus on manipulating regulatory focus prior to or during the task to isolate the hypothesized effect from regulatory fit. Finally, even if regulatory fit does increase effort, I argue that the effect of prevention focus on effort should be independent of regulatory fit. That is, while a match between the regulatory framing of a task and an individual's chronic or situational regulatory focus may further enhance effort during goal pursuit (but cf. Vaughn, Malik, Schwartz, Petkova, & Trudeau, 2006), independent of these effects there should be greater effort put forth when tasks call for the strategies associated with a prevention focus.

The Role of Emotion

In addition to identifying the types of end states that are approached or avoided, and the strategies that are used to reach these end states, regulatory focus theory highlights distinct

patterns of emotional responding for promotion and prevention focus. When goals are pursued with a promotion focus, individuals experience cheerfulness upon reaching their goal and sadness when they do not. When goals are pursued with a prevention focus, however, individuals experience quiescence upon reaching their goal and anxiety when they do not (Higgins, 1987, 1997; Higgins, Shah, & Friedman, 1997; Higgins et al., 1986; Shah & Higgins, 2001). Anticipated emotions also follow this pattern; people expect to feel promotion- and prevention-related emotions following experiences that induce a promotion or prevention focus (Idson et al., 2000). It is important to note that these emotional responses are not equivalent in terms of level of arousal. Cheerfulness is a more arousing positive emotion than quiescence, while anxiety is a more arousing negative emotion than sadness, meaning that promotion focused individuals will feel more "energized" during goal pursuit by imagining the cheerfulness they will experience upon successful goal completion, while prevention focused individuals will feel more "energized" during goal pursuit by imagining the anxiety they will experience upon unsuccessful goal completion (Higgins, 1997). Because motivation is energized behavior toward a goal (Bargh et al., 2010; Elliot & Covington, 2001), these emotional responses should influence the effort associated with promotion and prevention focus.

These emotional distinctions are important for the present investigation because they offer a potential mediator for the increased effort induced by prevention focus. As mentioned previously, "bad is stronger than good" (Baumeister et al., 2001), meaning that potential failures to reach goals should garner more attention than potential successes. This is now compounded with the fact that negative prevention experiences are more emotionally arousing than negative promotion experiences. It may be the case that prevention focus results in more effort because people experience anxiety about potential failure, or because they try to avoid the anxiety they

would experience if they were to fail. I predict that either anxiety experienced during goal pursuit, or the anticipated anxiety associated with worrying about failing to reach the goal, will mediate the relationship between prevention focus and increased effort.

Effort versus Performance

If prevention focus is associated with increased effort, it may be reasonable to expect that this increase in effort will result in improved performance. In fact, performance is sometimes used as a measure of motivational strength; some researchers conceptualize effort and performance as being one and the same (e.g., Förster et al., 1998; Shah et al., 1998). However, there are reasons to suspect that the effort spent preparing for a goal and actual performance may, in some cases, be distinct, especially if the increased effort is the result of anxiety. For instance, the experience of anxiety during testing situations is related to impaired performance on standardized tests and a lower GPA, while the experience of generalized anxiety is actually related to a higher GPA (Sarason, 1957); this makes it unclear whether anxiety experienced as a result of pursuing a prevention-focused goal will enhance or impair performance. Furthermore, there are strategies that may counteract the effects of anxiety, such as defensive pessimism (Norem & Cantor, 1986a, 1986b). Defensively pessimistic individuals report more anxiety about performance and deal with this anxiety by setting lower standards than individuals who are not defensive pessimists (however, there are no differences between defensive pessimists and optimists on actual performance). Collectively, these findings suggest that anxiety may increase effort, but that performance will not necessarily improve as a result of this increase in effort.

Pilot Study

My primary prediction is that goals that call for or activate a prevention focus induce more effort than goals that call for or activate a promotion focus. An initial study provides

evidence for this prediction. Ninety-five participants were asked to read a series of goals that were either prevention framed (e.g., *You feel obligated to go to dinner with a friend*; *You feel it is your duty to volunteer at the homeless shelter*) or promotion framed (e.g., *You hope to study for an upcoming exam*; *You would ideally like to volunteer at the animal shelter*). Participants first read eight of these goals, half prevention framed and half promotion framed, and then read these eight goals again, only with the reverse regulatory focus framing. The order of presentation was counterbalanced between participants. For each goal, participants rated how much effort they imagined they would put into each goal on a 9-point scale ranging from "little/no effort" to "a lot of effort"; the mid-point of the scale was labeled "some effort".

A repeated measures *t*-test comparing prevention and promotion framed goals revealed that participants expected that they would put more effort into prevention goals ($M = 6.65$, $SD = 1.05$) than promotion goals ($M = 6.31$, $SD = 1.20$), $t(94) = 2.80$, $p = .006$. There was no main effect of order of goal presentation, nor an interaction between order and regulatory focus (both ps $> .30$). These results provide initial evidence for the hypothesis that prevention-focused goals induce more effort than promotion-focused goals.

The Present Investigation

The two studies reported below expand upon the pilot study in several ways. First, both studies include measures of promotion and prevention emotions—experienced prior to the task, anticipated as a result of success and failure, and experienced during the task (in Study 2)—to explore the potential mediating role of anxiety. The relationship between regulatory focus and emotions, described above, leads to the prediction that the increased effort associated with prevention focus is the result of increased anxiety.

Second, potential alternative explanations for differences in effort between promotion and prevention focus were examined. Specifically, two variables—self-handicapping and self-esteem—were measured in Study 1. Self-handicapping is the practice of creating obstacles to success, so that in the presence of failure there is a readily available explanation for that failure (Berglas & Jones, 1978; Jones & Berglas, 1978). Withholding effort is one way of creating a handicap (e.g., Harris & Snyder, 1986; Rhodewalt, Saltzman, & Wittmer, 1984). Furthermore, self-esteem has been linked to self-handicapping; individuals with high self-esteem, and who feel the need to protect that esteem, are more likely to engage in handicapping behavior (Harris & Snyder, 1986; Rhodewalt et al., 1984; Tice & Baumeister, 1990; but cf. Tice, 1990). To rule out the possibility that either self-handicapping or self-esteem is responsible for differences in effort between promotion and prevention focus, the interaction between regulatory focus and both trait self-esteem and self-handicapping were examined.

Third, two potential moderating variables—defensive pessimism and locus of control—were examined in both studies. As mentioned previously, defensive pessimism is a strategy of setting low standards to combat the anxiety associated with potential failure (Norem & Cantor, 1986a, 1986b). As such, individuals who utilize such a strategy may put forth more effort in order to prevent that potential failure. I argue that when people are prevention focused, they also put more effort into goal pursuit, and that this may also be due to increased anxiety about potential failure. Those who are defensively pessimistic, and who are also prevention focused, may put forth even more effort. This leads to the prediction of an interaction, where the difference in effort between promotion and prevention focused participants is exacerbated when individuals are also defensively pessimistic.

Locus of control, or one's belief that outcomes are within or outside of personal control (Lefcourt, 1966; Rotter, 1966), was also examined as a potential moderator. As described above, there is recent evidence for the hierarchical structure of the needs in Maslow's (1943a, 1943b, 1948) hierarchy (Tay & Diener, 2011). However, Tay and Diener noted that when basic needs could not be fulfilled due to factors such as widespread poverty and disease, people forego fulfilling basic needs and work on higher needs. This suggests that control is a factor in goal pursuit, such that when people lack control—or perhaps even perceive a lack of control—the nature of goal pursuit changes. In the context of the present investigation, this suggests that when people believe that they lack control over their outcomes (i.e., have an external locus of control) they may focus more on promotion goals, which are consistent with the higher needs in Maslow's hierarchy. However, when people believe that they do have control over their outcomes (i.e., have an internal locus of control) they may focus more on prevention goals, which are consistent with the lower, more basic needs. Thus, as with defensive pessimism, an interaction is predicted, with the difference in effort between promotion and prevention focused participants being greatest for those individuals with an internal locus of control, and the difference being reduced, or perhaps reversed, for those with an external locus of control.

Study 1

The goal of the first study was to demonstrate that students put more effort into studying for an exam when they are prevention focused. Achievement contexts provide a relevant domain in which to study motivational processes (Dweck & Elliott, 1983; Nicholls, 1984); in addition achievement motivation can be divided into approach-avoidance achievement motivations (Elliot & Harackiewicz, 1996; McClelland et al., 1953), making this domain useful for studying the related construct of regulatory focus. Participants completed an essay task to manipulate

regulatory focus. They were then asked how much time they intended to spend studying for an upcoming exam. To explore the role of anxiety, anticipated and experienced emotional reactions to the exam were assessed. Dispositional regulatory focus was also measured (prior to the manipulation) to demonstrate the independence of this effect from regulatory fit. Finally, a number of other variables (defensive pessimism, locus of control, self-esteem, and self-handicapping) that may moderate or serve as alternative explanations were measured. I made the following predictions:

1. Students will put more effort into studying for an exam when they are in a prevention focus than when they are in a promotion focus.
2. Anxiety will mediate this difference in effort.
3. Dispositional regulatory focus will not interact with manipulated regulatory focus.
4. Defensive pessimism may moderate the effect of regulatory focus, such that those in a prevention focus and who are defensively pessimistic will put in more effort.
5. Locus of control may moderate the effect of regulatory focus, such that those in the prevention condition and who have an internal locus of control will put in more effort.
6. The difference in effort between promotion and prevention focus will not be due to self-esteem or self-handicapping.

In addition to these predictions, this study also explored performance differences, in the form of exam grade. A strong prediction was not made, however; participants may do better if they indeed study more, but if anxiety mediates this effort difference, and persists through the performance context, then grades may suffer, thus eliminating any performance effects.

Method

Participants. Ninety-five University of Arkansas students (67% female, M_{age} = 21.85) participated in exchange for extra credit in a social psychology course. There were no gender differences in either study. Because not all participants completed the questionnaires at each time point, sample sizes vary by analysis.

Procedure. The study took place across three time points. At time one, roughly two weeks before their third social psychology exam, participants completed a number of questionnaires online. At time two, one week prior to the exam, participants completed the regulatory focus manipulation and the primary dependent measures. The third measurement took place on the day of the exam. The specific questionnaires administered at each time point are described below.

Time 1. Six questionnaires were posted online two weeks prior to the exam. Participants had five days to log on to the website and complete the questionnaires. Ninety-two participants completed this portion of the study.

Trait affect. First, participants completed a sixteen item measure of trait affect, adapted from the positive and negative affect schedule (Watson, Clark, & Tellegen, 1988). The questionnaire included items consistent with both the positive and negative emotions associated with promotion and prevention focus. Promotion-related items included *cheerful*, *joyous*, *low*, and *dejected*. Prevention-related items included *relaxed*, *calm*, *anxious*, and *tense*. Participants indicated the extent to which they typically experience each emotion on a Likert-type scale ranging from 1 (*little or none of the time*) to 4 (*most of the time*). Positive and negative composites of both promotion and prevention emotions were created; all had good reliability (αs

= .89, .81, .80, and .86 for promotion-positive, promotion-negative, prevention-positive, and prevention-negative, respectively).

Regulatory focus. Next, participants completed the regulatory focus questionnaire (Higgins et al., 2001). This eleven-item measure includes subscales for promotion focus (*How often have you accomplished things that got you "psyched" to work even harder?*) and prevention focus (*How often did you obey the rules and regulations that were established by your parents?*). Participants rated each item on a 5-point scale; precise labels on the endpoints vary depending on question content, but left side always represents disagreement and the right side always represents agreement. Reliability for both the promotion and prevention subscales was acceptable (αs = .81 and .75, respectively).

Defensive pessimism. The third questionnaire was the optimism-pessimism scale (Norem, 2001), a measure of defensive pessimism (Norem & Cantor, 1986a, 1986b). This twelve-item measure includes items to assess the extent to which people are optimistic or pessimistic about their performance (e.g., *I go into these situations expecting the worst, even though I will probably do OK*). One scale item—*I've generally done well in these situations in the past*—differentiates those who are defensively pessimistic (because they have done well in the past and thus have little reason to be pessimistic) from those who are realistically pessimistic (because they have not done well in the past and therefore should be pessimistic) or unrealistically optimistic (because they have not done well in the past and therefore should not be optimistic). Participants were instructed to think about academic testing situations when answering the questions, and responded on a 1 (*not at all true of me*) to 7 (*very true of me*) scale. Reliability was acceptable (α = .71), and per coding instructions, was computed after excluding those who

indicated not doing well in academic situations in the past (i.e., answering this question with a 4 or lower; Norem, 2001).

Self-esteem. Next, participants completed Rosenberg's (1965) ten-item measure of self-esteem. The items (e.g., *I am able to do things as well as most other people*) were answered using a scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), and reliability was very good ($\alpha = .93$).

Self-handicapping. The fifth questionnaire was a measure of self-handicapping (Rhodewalt, 1991). The questionnaire includes twenty-five items (e.g., *I sometimes enjoy being mildly ill for a day or two because it takes the pressure off*) which are answered on a 0 (*disagree very much*) to 5 (*agree very much*) scale. Reliability was acceptable ($\alpha = .77$).

Locus of control. The sixth and final questionnaire measured locus of control (Duttweiler, 1984). This 28-item questionnaire asks participants to "fill-in-the-blank" of each item with a scale number that corresponds to the percentage of the time that they feel or behave in a particular way. A sample item is, *I _____ like jobs where I can make decisions and be responsible for my own work,* with the response scale ranging from 1 (*rarely; less than 10% of the time*) to 5 (*usually; more than 90% of the time*). The three middle points on the scale are labeled with *about 30% of the time*, *about half the time*, and *about 70% of the time*, respectively. This scale had good reliability ($\alpha = .86$).

After completing these six questionnaires, participants provided demographic information (e.g., age, sex), and were informed of the date for the Time 2 questionnaire. Bivariate correlations between moderators (regulatory focus, defensive pessimism, self-handicapping, self-esteem, and locus of control) are presented in Table 1.

Time 2. One week prior to their exam, participants completed a questionnaire at the end of the class period, described as a follow-up to the online questionnaire. This questionnaire included the manipulation of regulatory focus, as well as the primary dependent measures of interest. The first page of the questionnaire was a baseline measure of state affect; participants were asked how they were currently feeling, at that moment. The same sixteen-item scale described for Time 1 was used; however, a five-point response scale was used instead of the four-point scale. Reliability for the four subscales was good (αs = .87, .73, .83, and .83 for promotion-positive, promotion-negative, prevention-positive, and prevention-negative, respectively).

Next, participants completed an essay task designed to induce a promotion or prevention focus. Those in the promotion condition were asked to describe their current hopes and goals, and how these differ from the hopes and goals they had growing up. Participants in the prevention condition were asked to describe their current duties and obligations, and how these differ from the duties and obligations they had growing up. This manipulation has been used successfully in previous research (e.g., Higgins, Roney, Crowe, & Hymes, 1994). Participants were provided with a full page on which to write their essay.

Following the manipulation, participants were asked to complete another measure of affect, but this time to indicate the extent to which they experience each of the emotions described previously when they think about their upcoming exam. As with the baseline measure, participants responded using a five-point scale. Reliability for the four subscales was good (αs = .89, .84, .88, and .88 for promotion-positive, promotion-negative, prevention-positive, and prevention-negative, respectively).

Next, participants answered the two primary dependent measures regarding effort—how many hours they anticipated studying for their exam in the next week, and how much effort they anticipated putting into preparing for their exam in the next week. The second question was answered on a 1 (*little or no effort*) to 9 (*a lot of effort*) scale. They also indicated their ideal grade, the grade they felt obligated to get, and their expected grade. Demographic questions (e.g., age, sex) were included at the end of the questionnaire.

Time 3. The final questionnaire was administered at the end of participants' third exam, after they had completed the exam but before they knew their grade. Participants first completed a measure of affect; this was worded the same as the baseline measure in Time 2. They then indicated how many hours they spent studying for their exam, how much effort they put into studying for the exam (on the same 9-point scale as Time 2), what grade they thought they earned on the exam, and what grade they expected to receive on the exam. After providing demographic information, participants were asked for permission to access their grade; all but two consented.

Results

Before beginning analyses, the data were examined for outliers and skew. One participant was an outlier (i.e., more than three standard deviations from the mean) on all measures of effort and was excluded from all analyses. In addition, the data were somewhat positively skewed; however, analyses on transformed data yielded results identical to those performed with untransformed data, so the original values were retained for ease of interpretation.

Promotion, Prevention, and Effort. The first prediction was that prevention focus would lead to more effort than promotion focus. Four questions—two asked prior to the exam, and two asked after the exam—served as measures of effort. Independent samples *t*-tests were

performed separately on these four measures, and also on two composites of these measures—one for pre-exam effort and one for post-exam effort.

Pre-Exam Effort. There was a significant difference between promotion and prevention on the number of hours participants intended to study for their exam, $t(80) = 2.22$, $p = .03$; those in the prevention condition ($M = 7.44$, $SD = 4.60$) intended to study more hours than those in the promotion condition ($M = 5.56$, $SD = 2.80$). There was no difference on self-reported effort, $t(82) = 1.01$, $p = .32$; however, the means did go in the predicted direction, with those in the prevention condition ($M = 7.83$, $SD = 1.38$), intending to put more effort into exam preparation than those in the promotion condition ($M = 7.52$, $SD = 1.44$). Finally, *z*-scores were computed for these two items, and they were combined into a composite measure of pre-exam effort. An analysis of this composite revealed a marginal effect, $t(82) = 1.76$, $p = .08$; those in the prevention condition ($M = .12$, $SD = .84$) anticipated putting more time and effort into studying than those in the promotion condition ($M = -.18$, $SD = .72$). This composite measure will be presented in all remaining analyses.

Post-Exam Effort. The difference between promotion and prevention on the number of hours participants reported studying for their exam was not significant, $t(80) = .93$, $p = .36$; however, means did go in the prediction direction, with those in the prevention condition ($M = 7.21$, $SD = 4.51$) reporting more hours studied than those in the promotion condition ($M = 6.33$, $SD = 4.04$). For self-reported effort there was a non-significant trend, $t(81) = 1.51$, $p = .14$; those in the prevention condition ($M = 7.07$, $SD = 1.61$), reported putting somewhat more effort into exam preparation than those in the promotion condition ($M = 6.51$, $SD = 7.07$). As with pre-exam effort, the two post-exam items were combined, and the analysis on this composite was not significant, $t(81) = 1.44$, $p = .16$. The means were in the predicted direction, however, with those

in the prevention condition (M = .14, SD = .81) reporting that they put more effort into preparing for their exam than those in the promotion condition (M = -.13, SD = .84). This composite measure will be presented in all remaining analyses.

Grade. Next, the impact of the regulatory focus manipulation on performance was examined. An average of participants' previous exam grades was created, and subtracted from their grade on the exam that followed the manipulation (one participant's exam difference score was an outlier, and was excluded from this analysis). While those in the prevention condition (M = 1.26, SD = 9.82) tended to do slightly better on the exam than those in the promotion condition (M = -.64, SD = 9.57), this difference was not significant, $t(78) = .88$, $p = .38$.

Dispositional Regulatory Focus. The next prediction was that dispositional regulatory focus would not interact with the manipulation of regulatory focus (i.e., that there would be no regulatory fit effect). To conduct these analyses, participants' scores on the prevention focus subscale were subtracted from their scores on the promotion focus subscale, and participants were grouped as being either predominantly promotion focused (if the difference score was positive), or predominantly prevention focused (if the difference score was negative). This grouping procedure has been used in previous research examining the effect of fit with this particular measure of regulatory focus (e.g., Cesario et al., 2004).

Pre-Exam Effort. A 2 (essay manipulation: promotion or prevention) × 2 (dispositional regulatory focus: promotion or prevention) ANOVA on the pre-exam composite measure of effort revealed the expected marginal main effect of manipulated regulatory focus, $F(1, 77) = 3.60$, $p = .06$, $\eta_p^2 = .05$. There was no main effect of dispositional regulatory focus, $F(1, 77) = 1.36$, $p = .25$, and importantly, there was no interaction, $F(1, 77) = .45$, $p = .51$.

Post-Exam Effort. The same analysis described above was performed on the post-exam composite measure of effort. This analysis revealed a trend of manipulated regulatory focus, $F(1, 76) = 2.36$, $p = .13$. Of interest, there was no main effect of dispositional regulatory focus, $F(1, 76) = 1.71$, $p = .20$, nor an interaction, $F(1, 76) = .04$, $p = .85$.

Grade. A final ANOVA was conducted on the grade difference score computed in the main analysis. First, there was no main effect of manipulated regulatory focus, $F(1, 74) = 1.12$, $p = .29$. There was, however, a main effect of dispositional regulatory focus, $F(1, 74) = 3.89$, $p = .05$, $\eta_p^2 = .05$; dispositionally prevention focused participants ($M = 3.06$, $SD = 9.46$) showed more improvement on their exam than dispositionally promotion focused participants ($M = -1.38$, $SD = 9.69$). The interaction was not significant, $F(1, 74) = 1.94$, $p = .17$.

Defensive Pessimism. The next set of analyses examined the interaction between manipulated regulatory focus and defensive pessimism. As described in the method section, those participants who indicated that they had not done well in academic testing situations in the past were excluded from the computation of defensive pessimism scores, and thus were excluded from these analyses. Defensive pessimism was left as a continuous measure, and a series of hierarchical linear regressions were performed. In each analysis, the main effects of regulatory focus (promotion = 0, prevention = 1) and defensive pessimism were entered on Step 1, and the interaction was entered on Step 2.

Pre-Exam Effort. The overall model for Step 1 was significant, $F(2, 58) = 3.58$, $p = .03$, $R^2 = .11$. The main effect for regulatory focus was a trend ($\beta = .19$, $p = .14$), while the main effect of defensive pessimism was significant ($\beta = .27$, $p = .04$). Step 2 did not account for additional variance, $F(1, 57) = .12$, $p = .73$, $\Delta R^2 = .002$, and the interaction was not significant ($\beta = .26$, $p = .73$).

Post-Exam Effort. The overall model for Step 1 was not significant, $F(2, 57) = 1.90$, $p = .16$, $R^2 = .06$. The main effect for regulatory focus was a trend ($\beta = .19$, $p = .13$), while the main effect of defensive pessimism was not significant ($\beta = .15$, $p = .26$). Step 2 did not account for additional variance, $F(1, 57) = .42$, $p = .73$, $\Delta R^2 = .01$, and the interaction was not significant ($\beta = .62$, $p = .42$).

Grade. The overall model for Step 1 was not significant, $F(2, 56) = 88$, $p = .42$, $R^2 = .03$. Neither the main effect for regulatory focus ($\beta = -.17$, $p = .21$) nor the main effect of defensive pessimism ($\beta = -.03$, $p = .81$) reached significance. Step 2, however, was significant, and accounted for additional variance, $F(1, 55) = 6.93$, $p = .01$, $\Delta R^2 = .11$, reflecting a significant interaction ($\beta = 1.72$, $p = .01$). Examination of the simple slopes revealed that for those in the promotion condition, defensive pessimism predicted a decrease in performance ($\beta = -.36$, $p = .05$). For those in the prevention condition, however, there was a trend toward defensive pessimism predicting improved performance ($\beta = .30$, $p = .10$).

Self-Esteem. The same analysis strategy described for defensive pessimism was used with the continuous measure of self-esteem.

Pre-Exam Effort. The overall model for Step 1 was a trend, $F(2, 78) = 2.33$, $p = .10$, $R^2 = .06$. The main effect for regulatory focus was significant ($\beta = .22$, $p = .04$), while the main effect of self-esteem was not significant ($\beta = .08$, $p = .47$). Step 2 did not account for additional variance, $F(1, 77) = .05$, $p = .83$, $\Delta R^2 = .001$, and the interaction was not significant ($\beta = -.13$, $p = .83$).

Post-Exam Effort. The overall model for Step 1 was not significant, $F(2, 77) = 1.10$, $p = .34$, $R^2 = .06$. The main effect for regulatory focus was a trend ($\beta = .17$, $p = .14$), while the main effect of self-esteem was not significant ($\beta = .01$, $p = .95$). Step 2 did not account for additional

variance, $F(1, 76) = .53$, $p = .47$, $\Delta R^2 = .01$, and the interaction was not significant ($\beta = -.43$, $p = .47$).

Grade. The overall model for Step 1 was not significant, $F(2, 75) = .31$, $p = .74$, $R^2 = .01$. Neither the main effect for regulatory focus ($\beta = -.05$, $p = .65$) nor the main effect of self-esteem ($\beta = .07$, $p = .53$) was significant. Step 2 did not account for additional variance, $F(1, 74) = .97$, $p = .33$, $\Delta R^2 = .01$, and the interaction was not significant ($\beta = -.59$, $p = .33$).

Self-Handicapping. The same regression analyses performed on defensive pessimism and self-esteem were conducted with the continuous measure of self-handicapping.

Pre-Exam Effort. The overall model for Step 1 was a trend, $F(2, 78) = 2.18$, $p = .12$, $R^2 = .05$. The main effect for regulatory focus was significant ($\beta = .22$, $p = .05$), while the main effect of self-handicapping was not significant ($\beta = .05$, $p = .62$). Step 2 did not account for additional variance, $F(1, 77) = 1.45$, $p = .23$, $\Delta R^2 = .02$, and the interaction was not significant ($\beta = .94$, $p = .23$).

Post-Exam Effort. The overall model for Step 1 was not significant, $F(2, 77) = 1.10$, $p = .34$, $R^2 = .03$. The main effect for regulatory focus was a trend ($\beta = .17$, $p = .14$), while the main effect of self-handicapping was not significant ($\beta = .01$, $p = .92$). The change from Step 1 to Step 2 was a trend, $F(1, 76) = 2.33$, $p = .13$, $\Delta R^2 = .03$, reflecting a trend in the interaction ($\beta = 1.20$, $p = .13$). However, an examination of the simple slopes revealed that neither was significant (promotion: $\beta = .18$, $p = .25$; prevention: $\beta = -.16$, $p = .32$).

Grade. The overall model for Step 1 was significant, $F(2, 75) = 4.15$, $p = .02$, $R^2 = .10$. The main effect for regulatory focus was not significant ($\beta = -.05$, $p = .65$), while the main effect of self-handicapping was significant ($\beta = -.31$, $p = .01$). Step 2 did not account for additional

variance, $F(1, 74) = .02$, $p = .88$, $\Delta R^2 = .00$, and the interaction was not significant ($\beta = .12$, $p = .88$).

Self-Esteem and Self-Handicapping. Because self-handicapping can be dependent upon self-esteem (e.g., Harris & Snyder, 1986; Rhodewalt et al., 1984; Tice, 1990; Tice & Baumeister, 1990), a regression exploring the interaction between self-handicapping, self-esteem, and regulatory focus were conducted. All main effects were entered on Step 1, the two-way interactions on Step 2, and the three-way interaction on Step 3. Of primary interest were two-way interaction between self-esteem and self-handicapping, and the three-way interaction. Neither of these were significant (two-way interaction: $\beta = .18$, $p = .80$; three-way interaction: $\beta = -7.52$, $p = .11$).

Locus of Control. Next, the same regression analyses described above were conducted on the continuous measure of locus of control.

Pre-Exam Effort. The overall model for Step 1 was a trend, $F(2, 78) = 2.32$, $p = .11$, $R^2 = .06$. The main effect for regulatory focus was significant ($\beta = .24$, $p = .04$), while the main effect of locus of control was not significant ($\beta = .09$, $p = .42$). Step 2 did not account for additional variance, $F(1, 76) = .09$, $p = .77$, $\Delta R^2 = .001$, and the interaction was not significant ($\beta = .26$, $p = .77$).

Post-Exam Effort. The overall model for Step 1 was not significant, $F(2, 76) = 1.90$, $p = .16$, $R^2 = .05$. The main effect for regulatory focus was marginal ($\beta = .22$, $p = .06$), while the main effect of locus of control was not significant ($\beta = .08$, $p = .46$). Step 2 did not account for additional variance, $F(1, 75) = .44$, $p = .51$, $\Delta R^2 = .01$, and the interaction was not significant ($\beta = .67$, $p = .51$).

Grade. The overall model for Step 1 was not significant, $F(2, 75) = 1.19$, $p = .31$, $R^2 = .03$. Neither the main effect of regulatory focus ($\beta = -.03$, $p = .83$) nor the main effect of locus of control ($\beta = .17$, $p = .15$) was significant. Step 2 did not account for additional variance, $F(1, 74) = .21$, $p = .65$, $\Delta R^2 = .003$, and the interaction was not significant ($\beta = .42$, $p = .65$).

The Role of Anxiety. I first explored anxiety as a potential mediator of increased effort. The first step was to establish that a relationship exists between manipulated regulatory focus and anxiety. This relationship was not found; there were no correlations between regulatory focus condition and anxiety measured in anticipation of the exam, after the exam, or either of these accounting for baseline and trait anxiety (all *p*s > .47). In addition, there were no correlations between regulatory focus and any of the other emotion measures (all *p*s > .28). Thus, neither anxiety nor any other emotions mediated the observed difference in effort between promotion and prevention focus.

Next, I explored the possibility that anxiety at the trait level impeded performance, whereas anxiety before performance enhanced performance. Neither of these relationships was observed (both *p*s > .25). In addition, performance was not related to any other emotion measures (all *p*s > .11). It therefore appears that emotions did not play a role in exam performance.

Discussion

Study 1 provided some support for the hypothesis that prevention focus leads to more effort than promotion focus; participants anticipated spending more hours studying for an exam after writing about their duties and obligation than their hopes and goals. Combined with a self-report measure of effort, this effect was marginal. This effect did not seem to persist over time; when asked how much time they actually spent studying, and how much effort they put in to preparing for the exam, there was no significant difference between the promotion and

prevention conditions (though the pattern of means was in the predicted direction). Also, there was no difference in performance; although participants in the prevention condition tended to do slightly better than those in the promotion condition, this difference did not approach significance.

There was also support for the independence of this effect from regulatory fit. There was no interaction between manipulated and dispositional regulatory focus on the measures of effort and performance. There was, however, a main effect of dispositional regulatory focus on performance; predominately prevention focused participants improved their exam grade more than predominately promotion focused participants. There were no strong predictions about how performance would be affected by the manipulation or any of the measured variables, making this an intriguing result that will receive further attention in the General Discussion.

Defensive pessimism did not interact with regulatory focus on the measures of effort, but there was an interaction on performance. For participants in the promotion condition, defensive pessimism predicted worse performance, whereas for participants in the prevention condition there was a trend, with defensive pessimism predicting better performance. This is an interesting interaction that sheds light not only on when a prevention focus can lead to better performance, but also when defensive pessimism enhances performance as well. Again, further consideration will be given to the meaning of this interaction in the General Discussion.

There was no interaction between either self-esteem or self-handicapping and regulatory focus, nor were there any main effects for self-esteem or self-handicapping. This finding rules out potential alternative explanations for observed differences in effort (i.e., that participants in the promotion condition had low self-esteem or were more likely to self-handicap).

There was also no main effect or interaction with locus of control. It was predicted that regulatory focus and locus of control would interact, such that participants with an internal locus of control and in the prevention condition would exhibit the most effort, while participants with an external locus of control and in the promotion condition would exhibit the least effort. This interaction was not observed, though this was an exploratory prediction based on suggestive evidence from one study (Tay & Diener, 2011).

Finally, the role of emotions was examined. It was predicted that anxiety would mediate the relationship between regulatory focus and effort, but there was no relationship between regulatory focus and anxiety or any of the other emotion measures, making mediation impossible. There was also no support for the exploratory prediction that anxiety experienced prior to the exam would enhance grades, while anxiety experienced during the exam would hinder performance; grades were not related to any of the emotion measures.

Study 1 provided some initial evidence for the prediction that prevention focus leads to increased effort. The primary weakness of this study, however, is that the only significant difference in effort was on a measure of behavioral intentions—students' reports of what they planned to do in the next week. Moreover, the difference on the indirect measure of actual behavior (asking students how much effort they actually put into exam preparation once the exam was over) was not significant. Study 2 rectifies this weakness by exploring actual effort in the laboratory.

Study 2

The goal of Study 2 was to replicate the findings of Study 1 with a behavioral measure of effort, since Study 1 relied on behavioral intentions, and it is often difficult to introspect about psychological states (e.g., Nisbett & Wilson, 1977). Regulatory focus was manipulated in the

context of an anagram task, with effort operationalized as the amount of time spent working on the task. As with Study 1, anxiety, dispositional regulatory focus, and a number of other potential moderators were measured. I made the following predictions:

1. Participants will put more effort into solving prevention-framed anagrams than promotion-framed anagrams, in the form of time spent working on anagrams.
2. Anxiety may mediate this difference in effort.
3. Dispositional regulatory focus will not interact with manipulated regulatory focus.
4. Defensive pessimism may moderate the effect of regulatory focus, such that those who are defensively pessimistic and working on prevention-framed anagrams will put in more effort.
5. Locus of control may moderate the effect of regulatory focus, such that those working on prevention anagrams and who have an internal locus of control will put in more effort.

Because self-esteem and self-handicapping did not moderate the effect in Study 1, these measures were excluded from Study 2. In addition to these predictions, this study also explored performance differences, in the form of correct answers to anagrams. In light of the results of Study 1, no differences in performance were expected.

Method

Participants. Eighty-two University of Arkansas students (71% female, M_{age} = 18.91) participated in exchange for partial completion of a course requirement.

Procedure. Participants self-selected for a study on personality, motivation, goals, and performance. Upon arrival, participants were told that they would be answering some questions about themselves and then completing an anagram task. All questionnaires and the anagram task were presented to participants via the MediaLab computer program.

Before receiving any details about the anagram task, participants completed a series of questionnaires. These were trait affect (all αs > .70), state affect (all αs > .76), dispositional regulatory focus (promotion α = .56, prevention α = .80), defensive pessimism (α = .67), and locus of control (α = .85). These questionnaires were the same as those used in Study 1, and bivariate correlations between moderators (regulatory focus, defensive pessimism, and locus of control) are presented in Table 2.

Next, participants received instructions for the anagram task. They were first given a description of what anagrams are, as well as an example of an anagram with multiple solutions. Following this, participants were told that they would work on eight anagrams, and that they had the chance to receive monetary payment based on their performance on the anagram task. The framing of this payment served as the manipulation of regulatory focus. Those in the promotion condition were told that they would start with $0, and would earn 50 cents for each correct answer on the anagram task. Those in the prevention condition were told that they would start with $4, and would lose 50 cents for each incorrect answer. This methodology has been used in previous research to effectively manipulate regulatory focus (e.g., Förster et al., 1998; Förster et al., 2001; Shah et al., 1998). It was emphasized that an answer would only count as correct if all possible solutions were entered, and if no incorrect solutions were entered; this was to protect against random guessing. Finally, participants were informed that each anagram had between one and four solutions, but that they would not know how many solutions any individual anagram had; this was to protect against a potential floor effect for anagrams with only one solution.

After receiving the anagram instructions and regulatory focus manipulation, participants completed another measure of state affect (all αs > .77). They then proceeded to the anagram task. They were allowed to spend as much time as they desired on each anagram, and continued

to the next anagram when they had entered their answers. Each anagram consisted of five letters that could be unscrambled to form either three or four words (e.g., *CAPSL* can be unscrambled to form the words *claps*, *clasp*, and *scalp*). After completing four anagrams, participants were given a mid-task measure of state affect (all αs > .81), and after completing the last four anagrams they were given a final post-task measure of state affect (all αs > .77). Finally, participants provided demographic information (e.g., age, sex). Although participants' answers to the anagrams were scored at a later time, they were not scored during the task; this was explained during the debriefing, and every participant was given the option of either a $2 cash payment or entry into a raffle for $20.

Results

Before beginning the analyses, the data were examined for outliers and skew. First, the task time measure of effort was positively skewed; however, analyses on transformed data resulted in the same patterns of results and significance levels as the untransformed data, so analyses on untransformed data are presented for ease of interpretation. Second, there were two outliers present in the untransformed data, but not in the transformed data, indicating that these data points were outliers because of the skew. Because analyses on both transformed and untransformed data yielded the same results, these two data points were retained.

Promotion, Prevention, and Effort. The first prediction was that participants would spend more time working on prevention anagrams than promotion anagrams. Although the means were in the predicted direction (prevention: $M = 57.22$, $SD = 30.29$; promotion: $M = 52.36$, $SD = 22.99$), this difference was not significant, $t(80) = .82$, $p = .42$. The total number of answers entered on the anagram task—whether correct or incorrect—was also examined as an alternative measure of effort. This also yielded a null result, $t(80) = .20$, $p = .85$; participants in

the promotion (M = 15.28, SD = 9.75) and prevention (M = 14.90, SD = 7.21) conditions entered nearly equal numbers of answers on the anagram task.

The effect of regulatory focus on performance was also examined. Performance was measured by dividing the number of correct answers on the anagrams by the total number of answers entered. Although participants in the prevention condition tended toward doing better (M = .67, SD = .21) than those in the promotion condition (M = .63, SD = .28), this difference was not significant, $t(80) = .76$, $p = .45$.

Although the primary prediction was not supported, analyses to examine the remaining predictions were still conducted, with the exception of the meditation analysis with anxiety. As there was no relationship between regulatory focus and effort, there was no effect to mediate.

Dispositional Regulatory Focus. Using the same procedure described in Study 1, participants were grouped as being predominantly promotion or prevention focused, and a 2 (condition: promotion or prevention) × 2 (disposition: promotion or prevention) ANOVA was conducted on the two measures of effort described above. For time spent on the task, there were no main effects for regulatory focus condition ($p = .36$) or dispositional regulatory focus ($p = .85$). Importantly, there was no interaction, $F(1, 78) = .33$, $p = .57$. Null effects were also observed for the total number of answers entered (all ps > .86). For performance, the main effect of dispositional regulatory focus was a trend, $F(1, 78) = 2.59$, $p = .11$, $\eta_p^2 = .03$; promotion focused participants tended to do better on the anagram task (M = .69, SD = .25) than prevention focused participants (M = .61, SD = .25). Neither the main effect of regulatory focus condition nor the interaction was significant (both ps > .38).

Defensive Pessimism. Next, the effect of defensive pessimism on effort and performance was examined, using the same regression analyses described in Study 1. As noted, those who

indicated that they had not done well in past testing situations were excluded from these analyses.

For task time, the overall model for Step 1 was marginal, $F(2, 50) = 3.58$, $p = .06$, $R^2 = .07$. The main effect for regulatory focus was significant ($\beta = .31$, $p = .03$); this indicates that when realistic pessimists and unrealistic optimists were excluded from analyses, participants in the prevention condition spent more time on the task than participants in the promotion condition. The main effect of defensive pessimism was a trend ($\beta = .21$, $p = .13$). Step 2 did not account for additional variance, $F(1, 49) = 1.36$, $p = .25$, $\Delta R^2 = .02$, and the interaction was not significant ($\beta = .90$, $p = .25$). Analyses on total answers entered and percent correct revealed no significant main effects or interactions (all model ps > .23, all β ps > .13).

Locus of Control. Next, the effect of locus of control on effort and performance was examined, using the same regression analysis described in Study 1. For task time, the overall model for Step 1 was not significant, $F(2, 79) = .47$, $p = .63$, $R^2 = .01$; neither the main effects of regulatory focus ($\beta = .08$, $p = .47$) or locus of control ($\beta = .06$, $p = .59$) were significant. Step 2 did account for additional variance, $F(1, 78) = 4.60$, $p = .04$, $\Delta R^2 = .06$, reflecting a significant interaction ($\beta = 2.16$, $p = .04$). Examination of simple slopes revealed that those in the promotion condition with a more external locus of control tended to spend more time on the anagrams (though the effect was not significant; $\beta = -.20$, $p = .22$). For those in the prevention condition the opposite effect was observed—those with a more internal locus of control tended to spend more time on the anagrams—though this effect was marginal ($\beta = .27$, $p = .07$). Analyses on total answers entered and percent correct revealed no significant main effects or interactions (all model ps > .33, all β ps > .33).

Affect and Performance. Although there was no main effect of regulatory focus on performance, the relationship between affect and performance was examined. This revealed that positive promotion emotions (e.g., joyous, cheerful) were related to better performance, both at the trait level (r = .22, p = .05), and state levels (baseline, r = .19, p = .10; pre-task, r = .22, p = .05; mid-task, r = .25, p = .02; post-task, r = .30, p = .01). There were also marginal relationships between performance and positive prevention emotions (e.g., relaxed, calm) as measured mid-task (r = .21, p = .07) and post-task (r = .21, p = .06), but no other measures of affect were related to performance (all ps > .18).

Discussion

Study 2 did not provide strong support for the hypothesis that prevention focus leads to more effort than promotion focus; participants spent equivalent amounts of time working on anagrams whether they were in a prevention or promotion focus. In addition, they entered an equivalent number of answers (whether right or wrong), and performance did not differ based on regulatory focus. It is worth noting, however, that when those participants who indicated not doing well in past academic testing situations were excluded for the defensive pessimism analyses, the predicted main effect of regulatory focus was significant. Perhaps these participants, who expected to do poorly on the anagrams, were not engaged in the task and hence spent little time on the anagrams, regardless of the regulatory focus manipulation. In fact, a follow-up test provides some support for this idea; excluded participants (i.e., those who indicated unsuccessful past performance on academic tests) spent less time on the anagrams (M = 46.11, SD = 19.82) than all other participants (M = 59.63, SD = 29.19), $t(80) = 2.23$, p = .03.

Like Study 1, there was no interaction between manipulated and dispositional regulatory focus on the measures of effort and performance. However, the main effect of dispositional

regulatory focus on performance was a trend; predominantly promotion focused participants tended to do better on the anagram task than predominantly prevention focused participants. This effect is different than the one observed in Study 1, where predominantly prevention focused participants tended to improve their exam grade more than predominantly promotion focused participants. Potential reasons for this difference between Studies 1 and 2 will be discussed in the General Discussion.

Although the main effect of defensive pessimism on task time was a trend, it did not interact with regulatory focus on either measure of effort or the measure of performance. This is in contrast to Study 1, where there was an interaction between defensive pessimism and regulatory focus on performance. Potential explanations for this discrepancy between Studies 1 and 2 will be explored in the General Discussion.

Based on the findings of Tay and Diener (2011), it was predicted that regulatory focus and locus of control would interact, such that participants with an internal locus of control and in the prevention condition would exhibit more effort, while those with an external locus of control and in the promotion condition would exhibit more effort. This interaction was observed, and the simple main effects were in the predicted direction. Although neither of the simple slopes were significant, this does provide some initial laboratory evidence to complement Tay and Diener's finding that those who lack control (or have an external locus of control) will move past the most basic motives (which are consistent with a prevention focus) and toward the higher motives (which are consistent with a promotion focus).

Finally, the relationship between affect and performance was examined. It was predicted that anxiety would mediate the relationship between regulatory focus and effort, and that the experience of anxiety before and during the task would differentiate those who did better on the

anagrams from those who did worse. However, because there was no effect of the regulatory focus manipulation on effort, or performance, there were no effects to mediate. Therefore, the relationship between affect and performance was examined independent of regulatory focus. This revealed that both promotion and prevention positive emotions (e.g., joyous, cheerful, relaxed, calm) were related to enhanced performance. Although these relationships were not observed in Study 1, the lack of a relationship between anxiety and performance is consistent with Study 1.

Study 2 expanded upon Study 1 by using a behavioral laboratory task to explore the effect of regulatory focus on effort. Unfortunately, this primary prediction was not supported. However, some of the observed relationships between regulatory focus and the various moderator variables were different than those observed in Study 1, making Study 2 useful for understanding how regulatory focus interacts with other variables to influence effort.

General Discussion

Research on regulatory focus theory has revealed many distinctions between two motivational strategies—promotion and prevention focus—in a variety of domains. Although regulatory focus theory concerns motivation, there has been no examination of whether or not promotion and prevention focus induce different amounts of effort during goal pursuit. Three distinct lines of literature suggest that there should, such that a prevention focus leads to more effort. The first is Maslow's (1943a, 1943b, 1948) hierarchy of needs; the more basic motives in this hierarchy are consistent with the emphasis that prevention focus places on safety and security, whereas the higher motives are consistent with the emphasis that promotion focus places on nurturance and esteem (Higgins, 1997; Higgins & Silberman, 1998). This suggests that goals pursued with a prevention focus should take precedence over, and thus be pursued with

more effort than, goals pursued with a promotion focus. The second source of support is the idea that "bad is stronger than good" (Baumeister et al., 2001; Rozin & Royzman, 2001), and that the psychological value of losses is greater than the value of equivalently sized gains (Kahneman & Tversky, 1979, 1984). Since prevention focused outcomes are framed in terms of losses and non-losses, while promotion focused outcomes are framed in terms of gains and non-gains, those goals pursued with a prevention focus should be more psychologically powerful, and lead to more effort. Finally, research from the regulatory focus literature suggests that a prevention focus will lead to more effort. When given both promotion and prevention goals to complete, people tend to complete the prevention goals first (Freitas et al., 2002), and as goals near in time one's relative prevention focus toward that goal tends to increase (Pennington & Roese, 2003).

A pilot study provided initial evidence for the hypothesis that prevention focus leads to more effort than promotion focus. Two additional studies provided a more rigorous test of this prediction as well as several potential moderators and mediators of this effect. Study 1 provided some support for this prediction, with students intending to put marginally more effort into preparing for an exam after writing about duties and obligations than after writing about hopes and goals. Study 1 also ruled out self-esteem and self-handicapping as alternative explanations for this difference in effort. The effect was not replicated in Study 2; participants spent statistically equivalent amounts of time working on anagrams, and entered the same number of solutions, in the promotion and prevention conditions. However, when participants who indicated not doing well in past academic testing situations (i.e., those who were realistically pessimistic and unrealistically optimistic) were excluded from analyses the predicted main effect of regulatory focus emerged. There was no effect of anxiety in either study.

There were some differences between studies in regards to three moderators—dispositional regulatory focus, defensive pessimism, and locus of control—and potential explanations for these differences are considered in turn.

Dispositional Regulatory Focus

Research demonstrates that when one's dispositional regulatory focus matches that of the context or task at hand, people experience "feeling right" from regulatory fit (Higgins, 2000), and this can have consequences such as improved performance (Förster et al., 1998; Shah et al., 1998), greater task enjoyment (Freitas & Higgins, 2002), and more persuasion (Cesario et al., 2004; Cesario & Higgins, 2008; Lee & Aaker, 2004). In the context of the present investigation, the regulatory fit perspective would predict the greatest amounts effort when prevention focused individuals work on prevention focused tasks *and* when promotion focused individuals work on promotion focused tasks (and both should be roughly equivalent). To test the effect of regulatory fit, dispositional regulatory focus was measured in both studies, and its interaction with manipulated regulatory focus was examined. No effect of fit was found in either study, on any measure of effort or performance. However, main effects of dispositional regulatory focus on performance were present in both studies. In Study 1, predominantly prevention focused participants improved their exam grade more than predominantly promotion focused participants. In Study 2, however, predominantly promotion focused participants tended to do better on the anagram task than predominantly prevention focused participants (though this was a non-significant trend).

One major difference between Studies 1 and 2 that may explain this difference is the performance context. Participants in Study 1 took an exam that would have real consequences for their course grade and, by extension, their GPA, while participants in Study 2 worked on an

inconsequential anagram task that, at most, could earn them a small amount of money. As such, participants in Study 1 were likely much more engaged in the task than participants in Study 2. There is some evidence for this idea; participants excluded from the defensive pessimism analyses due to a history of unsuccessful academic performance spent significantly less time on the anagrams, suggesting that this portion of the sample was less engaged in the task. A future study that manipulates task engagement, by offering large or small incentives or altering task consequences, could further explore this possibility. While no predictions were made about the main effect of dispositional regulatory focus, the finding that predominantly prevention focused participants in Study 1 tended to improve their grade more than predominantly promotion focused participants is consistent with the primary prediction about situational regulatory focus and effort. Finally, it is worth noting that the promotion focus subscale of the regulatory focus questionnaire was much less reliable in Study 2 than in Study 1, suggesting that the non-significant tendency for promotion-focused participants to do better on the anagram task than prevention focused participants should be interpreted with caution.

Defensive Pessimism

Defensive pessimism is a strategy of setting low standards, despite successful past performance, in order to deal with the anxiety associated with thinking about potential failure (Norem & Cantor, 1986a, 1986b). Because anxiety is also associated with prevention focus (Higgins, 1987, 1997; Higgins et al., 1986, 1997; Shah & Higgins, 2001), defensive pessimism was measured as a potential moderator of the effect of regulatory focus on effort and performance. In Study 1, defensive pessimism predicted more anticipated effort prior to the exam. There was also a significant interaction between regulatory focus and defensive pessimism for performance; defensively pessimistic students in the promotion condition showed a decrease

in exam grade, while those in the prevention condition tended to do better. This suggests an advantage for being defensively pessimistic and pursuing goals with a prevention focus; while either of these strategies alone may not affect performance, when used in tandem there may be performance benefits.

Like Study 1, defensive pessimism was related to effort in Study 2, in the form of time spent on the anagram task. However, the interaction between regulatory focus and defensive pessimism for performance was not replicated. As with the seemingly contradictory findings concerning dispositional regulatory focus, this may have been because of the performance context. Although anagrams were described as a measure of verbal ability, the anagram task may have been seen as more of a game than a test, making this particular context less relevant to defensive pessimism, which is a strategy used to prevent against failure in more consequential performance situations.

Locus of Control

Recent research exploring the pursuit of needs within Maslow's hierarchy found that people do indeed tend to pursue the lower needs of safety and security prior to the higher needs of esteem and actualization with one exception—when situational constraints prohibit the fulfillment of the lower needs (Tay & Diener, 2011). This suggests that control may be a potential moderator of the effect of regulatory focus on effort, and thus dispositional locus of control (Rotter, 1966) was measured in both studies. An interaction was predicted, such that an external locus of control would predict more effort in the promotion condition, but that an internal locus of control would predict more effort in the prevention condition. This prediction was not supported in Study 1; there were no significant main effects or interactions on any effort

or performance measures. In Study 2, however, the predicted interaction was observed (though neither of the simple slopes reached significance).

The interaction with locus of control is the only predicted effect that appeared in Study 2 rather than Study 1, and there may be a distinct reason for this inconsistency. Other than the performance context, the other major difference between Studies 1 and 2 is the manipulation of regulatory focus. In Study 1, participants completed an essay manipulation that emphasized either hopes and goals to induce a promotion focus, or duties and obligations to induce a prevention focus. In Study 2, however, regulatory focus was manipulated with the framing of the payment for performance on the anagram task. Those in the promotion condition were told that they would earn money for correct answers and not earn money for incorrect answers, while those in the prevention condition were told that they would lose money for incorrect answers and not lose money for correct answers. While both of these procedures are standard manipulations of regulatory focus, they do emphasize different aspects of these strategies that may also be related to distinct behaviors, and may interact differently with variables related to those behaviors. To my knowledge, no research has compared different manipulations of regulatory focus. There was, however, a comparison of two common measures of dispositional regulatory focus (Summerville & Roese, 2008). This investigation found that the two most widely used questionnaires tap different aspects of regulatory focus. The first is the measure used in this paper (Higgins et al., 2001), which taps into what Summerville and Roese term the *self-guide definition* by focusing on fulfilling different standards (e.g., hopes and goals vs. duties and obligations). The second measure (Lockwood, Jordan, & Kunda, 2002) taps the *reference-point definition* by focusing on the outcomes of goal-directed action—namely, gains and non-gains or non-losses and losses. Based on their examination of the relationship between these two scales,

and their relation to measures of approach-avoidance and positive and negative affect, Summerville and Roese conclude that the reference-point definition may be more closely related to approach-avoidance motivation than regulatory focus. It is possible, then, that the losses vs. gains manipulation may activate one's dispositional locus of control in a way that writing about hopes vs. duties does not, resulting in the significant interaction in Study 2, but not in Study 1.

The Role of Emotion

Given the relationship between prevention focus and anxiety, I predicted that anxiety would mediate the relationship between regulatory focus and effort. This relationship was not observed in Study 1, and was not relevant to Study 2 since the main effect of regulatory focus was not significant. In addition, there was no relationship between anxiety and performance independent of regulatory focus, though both positive promotion (i.e., cheerfulness) and prevention (i.e., relaxation) emotions were related to performance in Study 2. This lack of findings suggests that, while distinct patterns of emotional responding are associated with regulatory focus, they are not responsible for any differences in effort and performance. Though this is somewhat surprising, it should be noted that many effects observed in the regulatory fit literature are also not due to changes in mood (e.g., Higgins et al., 2003, Study 3). The lack of emotion effects here may be similar; prevention focus may lead to an increase in effort, but this effect is independent of anxiety, or any other emotions. Another possibility is that the manipulations of regulatory focus were simply not strong enough to induce an emotional change. This is particularly relevant to Study 1, as the manipulation occurred a week before the exam. It may have been too ambitious to expect a single essay to change levels of anxiety across time, and influence study habits and perhaps grades as well. A stronger manipulation, or a shorter

time-frame between the manipulation and measures of effort and performance, may yield more promising results in regards to the mediating role of affect.

Future Directions

The results of these two studies provide the foundation for additional research. While there was evidence for the primary prediction that prevention leads to more effort than promotion in Study 1, the lack of effect in Study 2 is concerning. Additional research could utilize a similar laboratory procedure, but perhaps adjust the task to ensure that participants consider it important to do well and are engaged. In addition, engagement in the task could be manipulated, to discern if greater effort is only associated with prevention focus, over promotion focus, when participants are invested in the task, or perceive it to be important.

It is also possible that the different manipulations of regulatory focus led to the differences between Studies 1 and 2. As mentioned above, there is empirical support for two different definitions of regulatory focus based on two different questionnaires used to measure dispositional promotion and prevention focus (Summerville & Roese, 2008). In addition to being potential explanations for the different patterns of interactions between locus of control and defensive pessimism in Studies 1 and 2, this may also explain the overall lack of effect in Study 2. The manipulation in Study 1 is more consistent with the self-guide definition, and Summerville and Roese provide evidence for this definition being distinct from approach-avoidance motivation. The manipulation in Study 2 is more consistent with the reference-point definition, which seems to have more in common with approach-avoidance than with the self-guide definition of regulatory focus. This suggests that regulatory focus may not have been successfully manipulated in Study 2, and this may explain the null effect. A comparison of these two manipulations, and how they relate to the self-guide and reference-point measures of

regulatory focus, would be a worthwhile future endeavor that could significantly advance the regulatory focus literature.

The interactions between regulatory focus and the exploratory moderator variables—defensive pessimism and locus of control—are also novel findings that beg for additional research. Defensive pessimism interacted with regulatory focus in the prediction of performance in Study 1, but not in Study 2. This again may be due to the difference in performance context between Studies 1 and 2, but could also be due to the different regulatory focus manipulations. It is also important to note that many participants must be excluded when exploring the effects of defensive pessimism, so future studies with larger samples—which could yield significant simple main effects—would also be important.

The interaction between locus of control and regulatory focus on effort in Study 2 is also noteworthy, and offers a variety of follow-up opportunities. Unlike defensive pessimism, control can be manipulated in the lab (e.g., Pittman & Pittman, 1979; Whitson & Galinsky, 2008; Zhou, He, Yang, Lao, & Baumeister, 2012). Future investigations into the relationship between regulatory focus and control should explore the interaction between experimentally manipulated locus of control and either measured or manipulated regulatory focus. Also, the reason for the lack of interaction between regulatory focus and locus on control in Study 1 could be illuminated by changing both the dependent measure of effort and performance context, as well as the manipulation of regulatory focus, to determine which of these factors is the likely reason for the difference in results between Studies 1 and 2. Here, too, the distinction between the self-guide and reference-point definitions of regulatory focus may be important (Summerville & Roese, 2008), with locus of control being related to the latter, and defensive pessimism being related to the former.

Conclusion

Two studies provide some initial support for the relationship between regulatory focus and effort, and the independence of this relationship from regulatory fit. There was evidence for defensive pessimism as a moderator of the relationship between regulatory focus and performance in Study 1, while in Study 2 there was an interaction between locus of control and regulatory focus on effort. While results were not consistent across the studies, these findings provide a framework for designing further research exploring how the motivational strategies used to pursue goals—along with other dispositional and contextual factors—influence both the effort put forth during goal pursuit and performance.

References

Atkinson, J.W. (1964). *An introduction to motivation*. Princeton, NJ: D. Van Nostrand Company, Inc.

Amodio, D.M., Shah, J.Y., Sigelman, J., Brazy, P.C., & Harmon-Jones, E. (2004). Implicit regulatory focus associated with asymmetrical frontal cortical activity. *Journal of Experimental Social Psychology, 40,* 225-232.

Baas, M., De Dreu, C.K.W., & Nijstad, B.A. (2008). A meta-analysis of 25 years of mood-creativity research: Hedonic tone, activation, or regulatory focus? *Psychological Bulletin, 134,* 779-806.

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

Baumeister, R.F., Bratslavsky, E., Finkenauer, C., & Vohs, K.D. (2001). Bad is stronger than good. *Review of General Psychology, 5,* 323-370.

Berglas, S., & Jones, E.E. (1978). Drug choice as a self-handicapping strategy in response to noncontingent success. *Journal of Personality and Social Psychology, 36,* 405-417.

Brendl, C.M., & Higgins, E.T. (1996). Principles of judging valence: What makes events positive or negative? In Zanna, M.P. (Ed.), *Advances in experimental social psychology* (pp. 95-160). San Diego, CA: Academic Press.

Cesario, J., Grant, H., & Higgins, E.T. (2004). Regulatory fit and persuasion: Transfer from "feeling right". *Journal of Personality and Social Psychology, 86,* 388-404.

Cesario, J., & Higgins, E.T. (2008). Making message recipients "feel right": How nonverbal cues can increase persuasion. *Psychological Science, 19,* 415-420.

Cesario, J., Higgins, E.T., & Scholer, A.A. (2008). Regulatory fit and persuasion: Basic principles and remaining questions. *Social and Personality Psychology Compass, 2,* 444-463.

Chernev, A. (2004). Goal orientation and consumer preference for the status quo. *Journal of Consumer Research, 31,* 557-565

Crowe, E., & Higgins, E.T. (1997). Regulatory focus and strategic inclinations: Promotion and prevention in decision-making. *Organization Behavior and Human Decision Processes, 69,* 117-132.

Duttweiler, P.C. (1984). The internal control index: A newly developed measure of locus of control. *Educational and Psychological Measurement, 44,* 209-221.

Dweck, C.S., & Elliott, E.S. (1983). Achievement motivation. In P. Mussen & E.M. Heatherington (Eds.), *Handbook of child psychology* (Vol. 4, pp. 643-693). New York, NY: Wiley.

Eddington, K.M., Dolcos, F., Cabeza, R., Krishnan, K.R.R., & Strauman, T.J. (2007). Neural correlates of promotion and prevention goal activation: An fMRI study using an idiographic approach. *Journal of Cognitive Neuroscience, 19,* 1152-1162.

Elliot, A.J. (2008). *Handbook of approach and avoidance motivation.* New York, NY: Psychology Press.

Elliot, A.J., & Covington, M.V. (2001). Approach and avoidance motivation. *Educational Psychology Review, 13,* 73-92.

Elliot, A.J., & Fryer, J.W. (2008). The goal construct in psychology. In J.Y. Shah & W.L. Gardner (Eds.), *Handbook of motivation science* (pp. 235-250). New York, NY: Guilford Press.

Elliot, A.J., & Harackiewicz, J.M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology, 70,* 461-475.

Elliot, A.J., & Niesta, D. (2009). Goals in the context of the hierarchical model of approach-avoidance motivation. In G.B. Moskowitz & H. Grant (Eds.), *The psychology of goals* (pp. 56-76). New York, NY: Guilford Press.

Elliot, A.J., & Thrash, T.M. (2002). Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology, 82,* 804-818.

Elliot, A.J., & Thrash, T.M. (2010). Approach and avoidance temperament as basic dimensions of personality. *Journal of Personality, 78,* 865-906.

Fiske, S.T. (1980). Attention and weight in person perception: The impact of negative and extreme behavior. *Journal of Personality and Social Psychology, 38,* 889-906.

Forbes, D.L. (2011). Toward a unified model of human motivation. *Review of General Psychology, 15,* 85-98.

Förster, J., Higgins, E.T., & Bianco, A.T. (2003). Speed/accuracy decisions in task performance: Built-in trade-off or separate strategic concerns? *Organizational Behavior and Human Decision Processes, 90,* 148-164.

Förster, J., Higgins, E.T., & Idson, L.C. (1998). Approach and avoidance strength during goal attainment: Regulatory focus and the "goal looms larger" effect. *Journal of Personality and Social Psychology, 75,* 1115-1131.

Freitas, A.L., & Higgins, E.T. (2002). Enjoying goal-directed action: The role of regulatory fit. *Psychological Science, 13,* 1-6.

Freitas, A.L., Liberman, N., Salovey, P., & Higgins, E.T. (2002). When to begin? Regulatory focus and initiating goal pursuit. *Personality and Social Psychology Bulletin, 28,* 121-130.

Freud, S. (2011). *Beyond the pleasure principle.* (G.C. Richter, Trans.). Buffalo, NY: Broadview Press. (Original work published 1920).

Friedman, R.S., & Förster, J. (2001). The effects of promotion and prevention cues on creativity. *Journal of Personality and Social Psychology, 81,* 1001-1013.

Gottman, J.M., & Levenson, R.W. (1986). Assessing the role of emotion in marriage. *Behavioral Assessment, 8,* 31-48.

Gottman, J.M., & Levenson, R.W. (1992). Marital processes predictive of later dissolution: Behavior, physiology, and health. *Journal of Personality and Social Psychology, 63,* 221-233.

Hamstra, M.R.W., Bolderdijk, J.W., & Veldstra, J.L. (2011). Everyday risk taking as a function of regulatory focus. *Journal of Research in Personality, 45,* 134-137.

Harris, R.N., & Snyder, C.R. (1986). The role of uncertain self-esteem in self-handicapping. *Journal of Personality and Social Psychology, 51,* 451-458.

Higgins, E.T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94,* 319-340.

Higgins, E.T. (1997). Beyond pleasure and pain. *American Psychologist, 52,* 1280-1300.

Higgins, E.T. (2000). Making a good decision: Value from fit. *American Psychology, 55,* 1217-1230.

Higgins, E.T., Bond, R.N., Klein, R., & Strauman, T. (1986). Self-discrepancies and emotional vulnerability: How magnitude, accessibility, and type of discrepancy influence affect. *Journal of Personality and Social Psychology, 51,* 5-15.

Higgins, E.T., Friedman, R.S., Harlow, R.E., Idson, L.C., Ayduk, O.N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: Promotion pride versus prevention pride. *European Journal of Social Psychology, 31,* 3-23.

Higgins, E.T., Idson, L.C., Freitas, A.L., Spiegel, S., & Molden, D.C. (2003). Transfer of value from fit. *Journal of Personality and Social Psychology, 84,* 1140-1153.

Higgins, E.T., Roney, C.J.R., Crowe, E., & Hymes, C. (1994). Ideal versus ought predilections for approach and avoidance: Distinct self-regulatory systems. *Journal of Personality and Social Psychology, 66,* 276-286.

Higgins, E.T., Shah, J., & Friedman, R. (1997). Emotional responses to goal attainment: Strength of regulatory focus as a moderator. *Journal of Personality and Social Psychology, 72,* 515-525.

Higgins, E.T., & Silberman, I. (1998). Development of regulatory focus: Promotion and prevention as ways of living. In J. Heckhausen & C.S. Dweck (Eds.), *Motivation and self-regulation across the life span* (pp. 78-113). New York, NY: Cambridge University Press.

Idson, L.C., Liberman, N., & Higgins, E.T. (2000). Distinguishing gains from nonlosses and losses from nongains: A regulatory focus perspective on hedonic intensity. *Journal of Experimental Social Psychology, 36,* 252-274.

Ivancevich, J.M. (1969). Perceived need satisfactions of domestic versus overseas managers. *Journal of Applied Social Psychology, 53,* 274-278.

Jones, E.E., & Berglas, S. (1978). Control of attributions about the self through self-handicapping strategies: The appeal of alcohol and the role of underachievement. *Personality and Social Psychology Bulletin, 4,* 200-206,

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47,* 263-292.

Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *American Psychology, 39,* 341-350.

Keller, J. (2008). On the development of regulatory focus: The role of parenting styles. *European Journal of Social Psychology, 38,* 354-364.

Kenrick, D.T., Griskevicius, V., Neuberg, S.L., & Schaller, M. (2010). Renovating the pyramid of needs: Contemporary extensions built upon ancient foundations. *Perspectives on Psychological Science, 5,* 292-314.

Koo, M., & Fishbach, A. (2008). Dynamics of self-regulation: How (un)accomplished goal actions affect motivation. *Journal of Personality and Social Psychology, 94,* 183-195.

Lee, A.Y., & Aaker, J.L. (2004). Bringing the frame into focus: The influence of regulatory fit on processing fluency and persuasion. *Journal of Personality and Social Psychology, 86,* 205-218.

Lefcourt, H.M. (1966). Internal versus external control of reinforcement: A review. *Psychological Bulletin, 65,* 206-220.

Li, Y.J., Kenrick, D.T., Griskevicius, V., & Neuberg, S.L. (2012). Economic decision biases and fundamental motivations: How mating and self-protection alter loss aversion. *Journal of Personality and Social Psychology, 102,* 550-561.

Liberman, N., Idson, L.C., Camacho, C.J., & Higgins, E.T. (1999). Promotion and prevention choices between stability and change. *Journal of Personality and Social Psychology, 77,* 1135-1145.

Liberman, N., Molden, D.C., Idson, L.C., & Higgins, E.T. (2001). Promotion and prevention focus on alternative hypotheses: Implications for attributional functions. *Journal of Personality and Social Psychology, 80,* 5-18.

Manian, N., Papadakis, A.A., Strauman, T.J., & Essex, M.J. (2006). The development of children's ideal and ought self-guides: Parenting, temperament, and individual differences in guide strength. *Journal of Personality, 74,* 1619-1645.

Maslow, A.H. (1943a). A theory of human motivation. *Psychological Review, 50,* 370-396.

Maslow, A.H. (1943b). Preface to motivation theory. *Psychosomatic Medicine, 5,* 85-92.

Maslow, A.H. (1948). 'Higher' and 'lower' needs. *Journal of Psychology: Interdisciplinary and Applied, 25,* 433-436.

McClelland, D.C., Atkinson, J.W., Clark, R.A., & Lowell, E.L. (1953). *The achievement motive*. New York, NY: Appleton-Century-Crofts, Inc.

Mowrer, O.H. (1950). *Learning theory and personality dynamics*. New York, NY: Ronald Press.

Mowrer, O.H. (1952). Motivation. *Annual Review of Psychology, 3,* 419-438.

Nicholls, J.G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346.

Nisbett, R.E., & Wilson, T.D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review, 84,* 231-259.

Norem, J.K. (2001). Defensive pessimism, optimism, and pessimism. In E.C. Chang (Ed.), *Optimism and pessimism: Implications for theory, research, and practice* (pp. 77-100). Washington, DC: American Psychological Association.

Norem, J.K., & Cantor, N. (1986a). Anticipatory and post hoc cushioning strategies: Optimism and defensive pessimism in "risky" situations. *Cognitive Therapy and Research, 10,* 347-362.

Norem, J.K., & Cantor, N. (1986b). Defensive pessimism: Harnessing anxiety as motivation. *Journal of Personality and Social Psychology, 6,* 1208-1217.

Pennington, G.L., & Roese, N.J. (2003). Regulatory focus and temporal distance. *Journal of Experimental Social Psychology, 39,* 563-576.

Pittman, N.L., & Pittman, T.S. (1979). Effects of amount of helplessness training and internal-external locus of control on mood and performance. *Journal of Personality and Social Psychology, 37,* 39-47.

Porter, L.W. (1961). A study of perceived need satisfactions in bottom and middle management jobs. *Journal of Applied Psychology, 45,* 1-10.

Pratto, F., & John, O.P. (1991). Automatic vigilance: The attention-grabbing power of negative social information. *Journal of Personality and Social Psychology, 61,* 380-391.

Rhodewalt, F. (1990). Self-handicappers: Individual differences in the preference for anticipatory, self-protective acts. In R.L. Higgins (Ed.), *Self-handicapping: The paradox that isn't* (pp. 69-106). New York, NY: Plenum Press.

Rhodewalt, F., Saltzman, A.T., & Wittmer, J. (1984). Self-handicapping among competitive athletes: The role of practice in self-esteem protection. *Basic and Applied Social Psychology, 5,* 197-209.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied, 80,* 1-28.

Rozin, P., & Royzman, E.B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review, 5,* 296-320.

Sarason, I.G. (1957). Test anxiety, general anxiety, and intellectual performance. *Journal of Consulting Psychology, 6,* 485-490.

Scholer, A.A., & Higgins, E.T. (2008). Distinguishing levels of approach and avoidance: An analysis using regulatory focus theory. In A. Elliot (Ed.), *Handbook of approach and avoidance motivation* (pp. 489-503). New York: Psychology Press.

Shah, J., & Higgins, E.T. (2001). Regulatory concerns and appraisal efficiency: The general impact of promotion and prevention. *Journal of Personality and Social Psychology, 80,* 693-705.

Shah, J., Higgins, E.T., & Friedman, R.S. (1998). Performance incentives and means: How regulatory focus influences goal attainment. *Journal of Personality and Social Psychology, 74,* 285-293.

Skowronski, J.J., & Carlston, D.E. (1989). Negativity and extremity biases in impression formation: A review of explanations. *Psychological Bulletin, 105,* 131-142.

Summerville, A., & Roese, N.J. (2008). Self-report measures of individual differences in regulatory focus: A cautionary note. *Journal of Research in Personality, 42,* 247-254.

Tay, L., & Diener, E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology, 101,* 354-365.

Tice, D.M. (1991). Esteem protection or enhancement? Self-handicapping motives and attributions differ by trait self-esteem. *Journal of Personality and Social Psychology, 60,* 711-725.

Tice, D.M., & Baumeister, R.F. (1990). Self-esteem, self-handicapping, and self-presentation: The strategy of inadequate practice. *Journal of Personality, 58,* 443-464.

Vaughn, L.A., Childs, K.E., Maschinski, C., Niño, P.N., & Ellsworth, R. (2010). Regulatory fit, processing fluency, and narrative persuasion. *Social and Personality Psychology Compass, 4,* 1181-1192.

Vaughn, L.A., Malik, J., Schwartz, S., Petkova, Z., & Trudeau, L. (2006). Regulatory fit as input for stop rules. *Journal of Personality and Social Psychology, 91,* 601-611.

Wahba, M.A., & Bridwell, L.G. (1976). Maslow reconsidered: A review of research on the need hierarchy theory. *Organizational Behavior and Human Performance, 15,* 212-240.

Watson, D., Clark, L.A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063-1070.

Whitson, J.A., & Galinsky, A.D. (2008). Lacking control increases illusory pattern perception. *Science, 322,* 115-117.

Zhou, X., He, L., Yang, Q., Lao, J., & Baumeister, R.F. (2012). Control deprivation and styles of thinking. *Journal of Personality and Social Psychology, 102,* 460-478.

Table 1

Correlations Between Study 1 Moderators

	Prevention Focus	Defensive Pessimism	Locus of Control	Self Esteem	Self Handicapping
Promotion Focus	.35**	-.31**	.62**	.80**	-.50**
Prevention Focus		-.19†	.38**	.32**	-.53**
Defensive Pessimism			-.26*	-.39**	.41**
Locus of Control				.44**	-.62**
Self Esteem					-.61**

Note. $^{\dagger}p < .10$, $*p < .05$, $**p < .01$

Table 2

Correlations Between Study 2 Moderators

	Prevention Focus	Defensive Pessimism	Locus of Control
Promotion Focus	-.07	-.28*	.52**
Prevention Focus		.15	-.16
Defensive Pessimism			-.41**

Note. *$p < .05$, **$p < .01$