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**The Dissertation Committee for Eunjoo Han Certifies that this is the approved
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**Whistle While You Work: The Role of Mindset and Mood on Goal
Motivation**

Committee:

Andrew D. Gershoff, Supervisor

Susan M. Broniarczyk

Julie R. Irwin

Rajagopal Raghunathan

Marlone D. Henderson

**Whistle While You Work: The Role of Mindset and Mood on Goal
Motivation**

by

Eunjoo Han, B.B.A.; M.S.B.A.

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Dedication

Dedicated to my parents, Byung-sung Han and Haeng-mi Ahn,
for their endless love, support, and encouragement.

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Whistle While You Work: The Role of Mindset and Mood on Goal Motivation

Eunjoo Han, Ph.D.

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Supervisor: Andrew D. Gershoff

My dissertation investigates the interactive effects of mindset and mood on motivation in consumers' goal striving. In seven studies, I find that for those in a process mindset, positive (vs. neutral) mood decreases motivation. Conversely, being in a positive (vs. neutral) mood leads to increased motivation for those in an outcome mindset. The reason for this is rooted in the mood-creativity link, which leads individuals to generate more activities, or means, by which a goal may be achieved when in a positive mood. For those in a process mindset, a large set of goal attainment activities decreases motivation because detailed implemental steps and processes alert people to the challenge in resource allocation. However, I find that outcome-oriented individuals view their goal attainment activities as opportunities or resources that will aid in goal achievement. As outcome-oriented individuals are less concerned about resource constraint, motivation increases in an outcome mindset even when a large number of activities are considered as means to attaining a goal.

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Introduction

Despite good intentions, people often fail in their goals even before actively striving toward them (Gollwitzer & Sheeran, 2006; Orbell & Sheeran, 1998). Those who aim to lose weight may initially purchase a gym membership yet fail to be motivated enough to ever show up. Students facing an exam may make repeated plans to study materials yet fail to read even once. Travelers may purchase language learning software, but may only use it once or twice before a trip. Understanding what leads people to be more or less motivated to strive toward their goals is important for both consumers and marketers. Consumers stand to benefit in achieving goals related to their health, self-improvement, savings, and acquisition. Marketers can benefit too, as consumers are more likely to be satisfied with the products and services they purchase.

The discrepancy between goal intention and goal execution has spurred considerable research on how to increase motivation in the pre-actional stage of goal pursuit. The pre-actional stage is an early stage of goal striving in which individuals plan for goal execution. One factor that has been found to be particularly important in goal motivation is whether an individual's mindset is implementation- or outcome-focused (Dalton & Spiller, 2012; Gollwitzer, Heckhausen, & Steller, 1990; Soman & Zhao, 2011; Taylor & Gollwitzer, 1995; Townsend & Liu, 2012). In a process mindset people tend to think about steps and processes that are needed to complete a goal, while in an outcome mindset people focus on the benefits of completing the goal.

Whether a process or an outcome mindset enhances motivation and facilitates goal

completion has itself been shown to depend on a number of factors. For example, the formulation of implementation intention, which is associated with a process mindset, is known to increase motivation in the early stage of goal striving (i.e., pre-actional stage) by connecting anticipated future situations to particular actions that may be taken to complete a goal (Gollwitzer, 1993). However, other work suggests that a process mindset may not always improve motivation. For example, for those in poor goal standing, concrete planning may decrease motivation and performance, because for them, consideration of activities that must be accomplished can increase emotional distresses and frustration (Townsend & Liu, 2012). A process mindset may also decrease goal commitment when individuals are in pursuit of multiple rather than single goals because detailed steps and processes for each of many actions may decrease goal commitment (Dalton & Spiller, 2012; Soman & Zhao, 2011).

An outcome mindset has been found to increase motivation too. Maddux and Rogers (1983) demonstrate that cigarette smokers' intention to reduce smoking was positively influenced by expectations of the desired outcome of reducing smoking and the averse outcome of continuing smoking. Stanley and Maddux (1986) also show that an outcome mindset increases people's motivation to perform health-enhancing behaviors. Still, the extent to which an outcome mindset benefits motivation depends on a number of factors (Oettingen, 1995; Pham & Taylor, 1997, 1999; Taylor, Pham, Rivkin, & Armor, 1998; Ülkümen & Cheema, 2011). For example, focusing on the desired states or outcome of pursuit was shown to decrease (vs. increase) motivation for ambiguous (vs. specific) goals (Ülkümen & Cheema, 2011). Also, imagining the desirable outcome of fulfilling a

goal was found to interfere with self-regulation if it substitutes a fantasy of success for progress toward a goal (Oettingen, 1995; Taylor et al., 1998). In one study (Pham & Taylor, 1997), participants were told to visualize themselves standing in front of the glass case where the grades were posted, moving their gaze to find a score, learning that they achieved an A, and feeling confident and proud. This outcome simulation did not enhance students' motivation to work toward their actual mid-term exam since it hindered students' emotional regulation (e.g., anxiety).

Although researchers have contributed to understanding the roles of mindset on motivation in goal striving, I have identified two important gaps in the literature. First, the extant literature on mindset and motivation does not fully address what causes the discrepancy in motivation between goal intention and goal execution. Although a large stream of research has provided evidence for advantages of implementation intention in increasing motivation (e.g., Gollwitzer, Heckhausen, & Steller, 1990; Taylor & Gollwitzer, 1995), the extent that a process mindset benefits motivation is not consistent and consumers still fail to initiate goal-directed actions in pursuit of a single goal despite concrete plans. This suggests that it is important for researchers to better understand the conditions in which people may not benefit from a process mindset.

Another important gap is on the limited understanding of contextual and situational factors that may moderate the relationship between mindset and motivation. Researchers have added to the literature by introducing goal-relevant factors, such as performance feedback, the number of goals being pursued, and goal specificity, as moderators on the

relationship between mindset and motivation (e.g., Dalton & Spiller, 2012; Huang & Zhang, 2013; Townsend & Liu, 2012; Soman & Zhao, 2011; Ülkümen & Cheema, 2011). However, little is known about how situational factors (e.g., incidental mood) may influence the effects of mindset on motivation.

The present research addresses these gaps by investigating the interaction between mindset and mood on motivation in the context of goal pursuits that are associated with common consumption experiences. As mood is omnipresent, consumers are always affected by it in all stages of goal striving (Andrade, 2005; Fishbach & Labroo, 2007; Labroo & Patrick, 2009; Pham, 1998). For example, a dieter may be more or less motivated to reach the goal of the day (e.g., consume less than 1500 calories) because he is in a good or bad mood (e.g., Fishbach & Labroo, 2007). Such a motivational issue may still exist even if he has formed concrete plans about the activities he will engage in, such as walking to a workplace and bringing a low calorie snack to work, to reach his diet goal. Thus, it is theoretically and practically relevant to understand what mindset individuals should have to stay motivated when they are in particular affective states. In the present research, I propose that the effect of mindset on motivation will be moderated by mood. Specifically, for those in a process mindset, a positive (vs. neutral) mood will lead to decreased motivation to work toward a goal. In contrast, for those in an outcome mindset, a positive (vs. neutral) mood will lead to an increase in motivation. I base this prediction on prior work that has demonstrated that positive mood, compared to neutral and negative moods, expands people's cognitive scope of attention, which leads to accessing a larger range of thoughts and actions to resolve a problem. Thus, I expect that those in a positive (vs. neutral)

mood will generate a greater number of activities that may serve as means to attaining a goal (Baas, De Dreu, & Nijstad, 2008; Fredrickson, 1998; Fredrickson & Joiner, 2002). Based on this, I further argue that mood will indirectly influence the effect of mindset on motivation by affecting the quantity of goal attainment activities that people generate or access. Because a process mindset involves focusing on detailed steps and processes of execution, process-oriented individuals are likely to consider the need for allocating resources associated with the activities (Dalton & Spiller, 2002; Lynch, Netemeyer, Spiller, & Zammit, 2010; Trope & Liberman, 2003; Zauberan & Lynch, 2005). Thus, the generation of a large number of goal attainment activities will raise concern regarding competition for available resources between different activities, leading to decreased motivation. Conversely, an outcome mindset involves focusing on having achieved a goal. By connecting each available activity to desired end benefits, an outcome mindset will frame a set of activities as potential opportunities or resources that may aid in successful goal achievement. Thus, outcome-oriented individuals are less likely to perceive resource constraint that may stem from having to engage in multiple activities required to complete a goal. If so, the concern about resource competition between different activities will not be pronounced in an outcome mindset. Therefore, the generation of a large number of goal attainment activities will still increase motivation.

Chapter 1: Conceptual Background

GOAL STAGES, MINDSETS, AND MOTIVATION

Goal pursuit is said to involve the stages of goal setting and goal striving (Bagozzi & Duholackia, 1999). First, goal setting involves the selection of a goal to be pursued, and the development of an intention to reach some specific desired states. So for a consumer, goal setting may involve deciding to lose weight by joining a personal coaching program, or it may involve deciding to acquire a level of foreign language ability prior to a trip abroad. The stage of goal setting is also characterized by a deliberative mindset (Gollwitzer, 1999; Heckhausen, 1986). With uncertainty about the value or benefit of achieving potential goals, the likelihood of success, and the resources required, individuals tend to engage in the appraisal by estimating and weighing the pros and cons of each (Atkinson, 1957; Locke & Latham, 2002; Taylor & Gollwitzer, 1995).

Once a goal is set, goal striving begins. This involves the planning, implementation, and monitoring of activities that are associated with achieving the goal (Bagozzi & Duholackia, 1999; Heckhausen & Gollwitzer, 1987; Gollwitzer & Sheeran, 2006; Myrseth & Fishbach, 2009). Because value-based deliberation ceases to be instrumental, individuals striving for goals focus less on value expectancy, and shift to focusing on goal execution (Gollwitzer, Heckhausen, & Steller, 1990). Research in goal striving tends to divide activated goal orientations into two mindsets: a process mindset and an outcome mindset (Soman & Zhao 2011; Ülkümen & Cheema, 2011; Trope & Liberman, 2003). A process mindset leads people to heavily focus on *how* to achieve a

goal, including the creation of implemental plans on how, where, and when to engage in particular actions to reach the goal. In contrast, an outcome mindset leads people to focus on the desired end benefits of pursuit.

Prior research has found conflicting effects of both process and outcome mindsets on motivation in goal striving. Gollwitzer and his colleagues argue that a process mindset should improve motivation because formulating implementation intention promotes the initiation of goal-directed behaviors by specifying situations in which particular goal-directed activities may be executed (Gollwitzer, 1993; Gollwitzer, Bayer, & McCulloch, 2005). By connecting anticipated future situations to specific actions to take, implementation intention is known to help individuals stay motivated in the pre-actional stage.

Yet many studies examining a process mindset suggest conditions under which implementation intention may hinder motivation. For example, concrete planning decreases motivation when multiple activities are considered for goal accomplishment. Miller (1960) argues that a plan for one activity is likely to compete with other activity plans also in the process of execution because of resource constraint. The anticipated competition for resources between different activities alerts people to the challenge of allocating resources across multiple activities (Lynch et al., 2010; Zauberman & Lynch, 2005). Similarly, Dalton and Spiller (2012) demonstrate that concrete planning demotivates individuals in pursuit of multiple goals since the process-based, implemental plan highlights the difficulty of executing each of many multiple actions. Soman and Zhao (2011) also report that people with implementation intention are more likely to remain in

a deliberative mindset when pursuing simultaneous multiple goals since a process mindset evokes trade-offs between goals. Finally, Townsend and Liu (2012) focus on pursuit of a single goal and find that individuals in poor goal standing do not benefit from a process mindset because it causes emotional distress by highlighting potential chances of failure.

Other researchers have explored how an outcome mindset can also increase motivation and the conditions under which this is likely to be the case. For example, Ülkümen & Cheema (2011) found that an outcome mindset increases motivation when a goal is explicitly stated (e.g., stating an exact savings amount in a saving goal). When individuals were activated with an ambiguous goal, the positive effect of an outcome mindset on motivation disappeared. As prior work in goal striving has shed further light on a process mindset, or implementation intention, there is still limited understanding of an outcome mindset and its effect on motivation in the pre-actional stage.

In the present research, I suggest a novel factor that moderates the effects of mindset on motivation: incidental moods. I argue this because mood has the ability to influence the quantity of available activities that people generate as means, or solutions to attaining a goal. Indeed, the Broaden-and-Build Theory of positive emotion argues that positive mood, compared to neutral and negative moods, expands one's scope of attention in perception, cognition, and action, and thus, helps individuals generate a large number of potential activities, ideas, or solutions for goals and challenges (Fredrickson, 1998, 2001). The generation of activities, or means, that may be employed to achieve the set goal is a key step in goal striving (Kopetz et al., 2012; Kruglanski et al., 2002). In this research, I argue that incidental moods will moderate the effects of mindset on motivation by

influencing people's accessibility to available goal attainment activities, and that the number of activities that individuals access will increase or decrease motivation depending on mindset. A process mindset, by highlighting detailed steps and processes required, is likely to lead individuals' attention to resource constraint and the need for allocating resources associated with the available activities. If so, a large set of activities will decrease motivation since it is likely to raise concern about competition for resources between available activities. Conversely, an outcome mindset, by highlighting desired end benefits of execution, is likely to frame a set of goal attainment activities as opportunities or resources that will aid in successful goal attainment. Since outcome-oriented individuals will focus less on resource constraint, a large number of goal attainment activities will still increase motivation without alerting people to the challenge of resource allocation across multiple activities. In the following section I develop this theory.

GOAL ATTAINMENT MEANS, MOOD, AND MOTIVATION

Goal Attainment Means and Motivation

Once people finalize, or choose, which goals to pursue, they must generate activities, or means, that may be employed to achieve the set goal (Kopetz et al., 2012; Kruglanski et al., 2002). Depending on the goal, means may include behavioral strategies, such as an idea about how to make repeated visits to a store or spend enough money to reach a reward level in a loyalty program; the use of products and services, such as a mobile app that might teach vocabulary when the goal is learning a new language; and even people, who may be instrumental in achieving the goal, such as a friend who might be a running

partner to help achieve a fitness goal (Kopetz et al., 2012; Markman, Brendl, & Kim, 2007; Shah & Kruglanski, 2003). Means are typically cognitively associated with a goal, and so may be accessed fairly automatically when a goal is initiated (Kopetz et al., 2012). More specifically, if a particular activity, or means, is proven instrumental to the attainment of a goal, a unique association is formed between the goal and the means. The goal-means association promotes stable and repetitive goal-directed behaviors whenever the same goal is activated. But means may also be actively generated, simulated, or constructed as one considers how a goal may be achieved (Taylor et al., 1998).

Striving toward a goal often entails the activation of numerous means that may include a variety of behaviors, plans, or objects (Etkin & Ratner, 2013; Kopetz et al., 2012). Multiple means for a single goal are often accessed or generated for several reasons. First, a single goal may require the completion of multiple sub-goals, for which each may require its own set of means to complete (Kruglanski et al., 2002). Second, people may not be certain about their future progress and the likelihood that any given means will lead to goal achievement. Thus, they may generate more means as potential solutions to create a consideration set of actions that may be evaluated and employed as needed.

In the present research, I argue that positive mood will facilitate the generation of goal attainment means in an early stage of goal striving. Theorists have long been interested in functional benefits of positive moods in information processing, attitudes, judgments, and decision making (e.g., Andrade & Ariely, 2009; Aspinwall, 1998; Schwarz & Clore, 1983). With respect to goals, positive mood has been shown to increase motivation by increasing psychological resources (Raghunathan & Trope, 2002), enhancing abstract

construal and high-level thinking (Labroo & Patrick, 2009), and by activating an approach behavioral mechanism toward an accessible goal (Fishbach & Labroo, 2007). In addition to these factors, I argue that mood also indirectly affects motivation by influencing the quantity of accessible goal attainment means, and the availability of these goal attainment means interacts with mindset to decrease motivation in a process mindset, and to increase motivation in an outcome mindset.

Mood and Goal Attainment Means

While negative emotions such as fear and anxiety were found to narrow the scope of attention, researchers provided evidence that positive affective states do the opposite (Isen & Means, 1983; Derryberry & Tucker, 1994; Derryberry & Reed, 1998; Easterbrook, 1959). Positive emotions—from mild emotions to high arousal emotions such as elation and excitement—were found to expand people’s cognitive scope of attention, facilitating an expansive thinking style (Derryberry & Tucker, 1994; Richards & Kinney, 1990). For example, creative writers in mildly and highly elevated (vs. neutral) moods exhibited a greater ease of developing new ideas, more rapid thinking, and greater speed of mental simulation (Andreason & Powers, 1975; Richards & Kinney, 1990). Similarly, positive mood’s effect on broadening the scope of attention has also been observed in research on tendencies toward attention to global versus local aspects of stimuli (Basso, Schefft, Ris, & Dember, 1996; Derryberry & Reed, 1998; Gasper & Clore, 2002). For example, in a task using a global-local visual attention paradigm where two configuration figures were compared to a standard figure (e.g. Kimchi & Palmer, 1982), participants in a positive (vs.

neutral and negative) mood were shown to make a judgment based on the global-configural aspects of the standard figure.

Building on the empirical evidence for the effect of mood on the scope of attention, the Broaden-and-Build Theory of positive emotion (Fredrickson, 1998, 2001) argues that positive mood, compared to neutral and negative moods, expands the scope of attention and cognition, widening a range of thoughts and actions to deal with a problem. Indeed, when faced with a problem, people experiencing positive affect tend to generate a variety of actions as potential solutions. For example, when participants in a particular mood state (positive vs. neutral vs. negative) were asked to list activities that they would do to remain with the feeling, those in a positive (vs. neutral) mood generated a longer list of activities that were mutually exclusive (Fredrickson & Branigan, 2005). Similarly, Fredrickson and Joiner (2002) found that happy people tend to step back from a given problem and think about different ways to deal with the problem (also called “Broad-minded coping”). So, not only do people in a positive mood step back and look at the bigger picture (Labroo & Patrick, 2009), they adopt a variety of unique strategies, activities, skills, and physical resources to attain goals and overcome challenges as they do so (Isen, 2001, 2008).

Research on how mood influences creativity also offers supporting evidence for the mood effect on the quantity of accessible goal attainment means. Creativity is a multifaceted concept that includes dimensions of fluency, originality, and flexibility. Studies exploring creativity have found that being in a positive mood increases creativity by promoting cognitive fluency in the context of goal pursuit (Baas et al., 2008; Guilford, 1967; Mumford & Gustafson, 1998; Simonton, 2003; Torrance, 1990). Specifically, being

in a positive mood promotes creativity by helping individuals generate or access a large number of non-redundant ideas and solutions for goals and challenges. It is important to distinguish the three facets of creativity since they are a function of different psychological processes and may have different effects on goal motivation (Baas et al., 2008; De Vet & De Dreu, 2007). For example, prior work has shown that perseverance and goal achievement motivation tend to be related to fluency (i.e., the quantity of accessible solutions) rather than flexibility (Fodor & Carver, 2000; Rietzschel, De Dreu, & Nikstad, 2007). Evidence further shows that affective states that influence fluency do not necessarily influence originality (Baas et al., 2008). So, for example, high arousal positive affect (e.g., excitement) was found to increase the quantity of composer Robert Schumann's work, but not the quality (Weisberg, 1994). Building on these findings, I argue that mood will indirectly influence motivation by affecting individuals' accessibility to a large number of unique means or activities that could be employed to achieve an activated goal.

HYPOTHESES

As noted above, prior work on both process and outcome mindsets offer mixed results with respect to their effects on motivation (e.g., Dalton & Spiller, 2012; Gollwitzer, 1993; Gollwitzer, Bayer, & McCulloch, 2005; Townsend & Liu, 2012). Here I argue that mood interacts with mindset to offer a predictable effect (see fig.1). Although a process mindset, or implemental planning, has been proven effective (e.g., Armitage & Arden, 2008; Bayer & Gollwitzer, 2007; Sheeran & Orbell, 1999, 2000), it may not benefit motivation when a large set of activities is considered as means to attaining a goal.

Research on conflicts of actions has demonstrated that a plan for one activity is likely to compete with other activity plans also in the process of execution when multiple actions are considered simultaneously (Lewin, 1935, 1951; Miller, 1960). As a process mindset leads individuals to consider the detailed steps and processes involved in working on available goal attainment activities, it alerts people to resource constraint, raising an issue concerning competition for available, but limited, resources between different activities (Lynch et al., 2010; Trope & Liberman, 2003; Shallice, 1972; Zauberan & Lynch, 2005). Individuals expecting the resource competition are typically led to decreased motivation due to the anticipated challenge of resource allocation across competing actions (Lewin, 1935, 1951; Miller, 1944; Shah & Kruglanski, 2002; Zeigarnik, 1938). The anticipated resource competition should be perceived more intense as individuals access to greater numbers of activities. Thus, a positive mood will decrease motivation for process-oriented individuals since being in a positive (vs. neutral) mood leads people to have a larger number of activities available to them. Conversely, an outcome mindset does not draw attention to resource constraint as it involves focusing on having achieved a goal. Furthermore, by connecting each available activity and the desired benefits of pursuit, an outcome mindset is expected to frame goal attainment activities as opportunities or resources that will aid in successful goal attainment. Therefore, outcome-oriented individuals will not anticipate the intense competition for resources between available activities even when a large set of goal attainment activities is considered. Thus, being in a positive mood, or generation of a large number of goal attainment activities is expected to increase motivation for outcome-oriented individuals. One may argue that mindsets could change individuals' incidental

moods; however, prior work on mood and mindset suggests that it would be highly unlikely in the current setting. For example, Taylor and Gollwitzer (1995) showed that a deliberation mindset, which highlights both pros and cons of pursuing a goal, leads to worsened mood. This result suggests that thinking of costs and risks involved in goal pursuit evokes negative moods, but considering pros of pursuing a goal does not necessarily increase positive mood. Considering that the primary interest of the present research is an outcome mindset where participants are focused on desired benefits of pursuit only, an outcome mindset is not expected to change moods substantially. Also, Taylor and Gollwitzer (1995) demonstrated that the reported levels of mood did not differ between the process mindset and control (i.e., no mindset manipulation) conditions. Thus, a process mindset will not change participant's moods on its own. Based on this theorizing, I hypothesize:

- H1:** For those in a process mindset, positive (vs. neutral) mood will lead to decreased motivation to work toward a goal.
- H2:** In an outcome mindset, positive (vs. neutral) mood will increase motivation to work toward a goal.
- H3a:** Mood will indirectly influence the relationship between mindset and motivation by affecting the quantity of available goal attainment activities.
- H3b:** The hypothesized mood by mindset interaction on motivation will be mediated by the anticipated resource competition between available activities.

In the following sections I present a set of four Pilot Studies and seven lab experiments to test these hypotheses. The objective of the Pilots was to provide evidence, in four consumer goal domains, of the effect of mood on the number of goal attainment means that people generate. Next, in Studies 1A and 1B, I provide preliminary evidence for the hypothesized interactive effect of mindset and mood on motivation in pursuit of academic accomplishment. Studies 2 and 3 were designed to further test the hypotheses related to the mechanism underlying the proposed relationship between mindset and mood on motivation. In Study 2, I show that the proposed relationship is driven by individuals' anticipated competition for resources between available activities. For robustness, this study adopts a weight-loss goal domain. In Study 3, I provide further evidence for the mood effect on the quantity of available goal attainment activities. I argue that mood indirectly moderates the relationship between mindset and motivation by influencing the number of goal attainment activities that people access or generate. If this is the case, the hypothesized mindset by mood interaction should disappear when mood is set to no longer influence the size of a set of activities that people generate. Study 3 adopts a foreign language learning goal. In Study 4, I provide confirming evidence for the mediating role of the anticipated resource competition between activities. If the proposed relationship is mediated by the anticipated competition for resources between activities, consideration of sequential, as opposed to simultaneous, execution of activities should diminish the effect of mood. As executing one activity at a time decreases concern about resource constraint, being in a positive mood, or a large set of available activities, should still increase motivation in a process mindset. This study also suggests a boundary condition for the negative effect of

positive mood on motivation in a process mindset: A process mindset should increase motivation when a large set of activities is considered if planning does not highlight the need for allocating resources associated with the activities. To this end, Study 4 focuses on a process mindset only. As in Study 2, Study 4 adopts a weight-loss goal domain. In Studies 5 and 6, I test the hypotheses in a credit card loyalty award goal, which is one of the most common consumer goals in the marketing context.

Chapter 2: Pilot Studies

The goal of Pilot Studies was to provide support for the notion that people in a positive mood spontaneously generate more goal attainment activities than those in more neutral mood, a necessary condition for my theory about the relationship between mindset and mood on motivation.

Four separate pilot studies were conducted involving four different consumer goals; (1) earning a loyalty program award, (2) a fitness goal, (3) an academic goal, and (4) a social goal. Participants in the first two studies (i.e., loyalty program award and fitness goals) were recruited from Amazon Mechanical Turk. I aimed to have 35 participants per condition, which required 70 participants in each study. Seventy-two participants entered the credit card loyalty award goal survey. Only 68 participants entered the survey for the day that I posted the fitness pilot study. Studies in pursuit of academic achievement and a social goal were conducted in a summer subject pool at University of Texas at Austin. The number of participants was determined based on the number of sign-ups for each study session. Table 1 provides detailed information about the goals and study sample sizes. All four pilots used a single factor (Mood: positive vs. neutral) between-subjects design and followed the identical experimental procedure. Participants were first told about a goal followed by the same mood manipulation.

In the positive mood condition, participants watched a 130 second video clip of BMW Mini Cooper's "Not Normal" advertising campaign (see: <https://youtube.googleapis.com/v/e5bEB0tmMQI>). In the neutral mood condition,

participants saw a video clip of a Chrysler advertisement (see: <https://youtube.googleapis.com/v/KlSn8Isv-3M?>). In each pilot study a manipulation check for mood was collected by having participants report their feeling (bad/good, unpleasant/pleasant, unhappy/happy) on a 7-point scale after watching the advertisements. Finally participants were reminded of the goal and asked to list activities that they would do to facilitate achieving the goal. For this, a screen showed 30 open fields, with instructions to provide only one activity per field. All participants were told that they would have three minutes to provide as many or as few activities as they wished.

RESULTS AND DISCUSSION

Manipulation check

The three mood items were averaged to create a composite measure of mood ($\alpha = .96$). As expected, those who watched the happy advertisement indicated that they were in a more positive mood ($M = 5.89$, $SD = 1.01$) than those who saw the neutral ad ($M = 4.98$, $SD = 1.29$; $t(266) = 6.45$, $p = .00$). Separate analysis for each pilot study also revealed that those who watched the happy advertisement were in a more positive mood than those who saw the neutral ad ($p_{\text{earning}} = .00$; $p_{\text{fitness}} = .01$; $p_{\text{academic}} = .01$; $p_{\text{social}} = .00$).

Effect of mood on the number of goal attainment activities

The study results were simultaneously analyzed in a single ANOVA that included mood and goal domain as independent variables with the number of goal attainment activities that participants generated as a dependent variable. The analysis revealed a main

effect of mood, $F(1, 260) = 13.70, p = .00$, with those in the positive mood condition ($M = 11.79, SD = 5.60$) having generated a larger number of activities than those in the neutral mood condition ($M = 9.48, SD = 4.41$). The results also showed a main effect of goal domain, $F(1, 260) = 3.01, p = .03$. There was no mood by goal domain interaction, $F(1, 260) = .11, p = .95$. Separate analysis for each pilot study revealed significantly greater number of activities listed in the positive mood condition in the Earning, Fitness, and Social goal studies ($p_{\text{earning}} = .03; p_{\text{fitness}} = .03; p_{\text{social}} = .05$). For the academic goal study, although directionally consistent with our hypotheses, the effect did not reach statistical significance ($t(56) = 1.21, p = .23$).

Overall, the Pilot Studies provide converging evidence that positive moods increase individuals' accessibility to available goal attainment activities; those in a positive mood listed a greater number of goal attainment activities than those in a neutral mood. Next, I present six studies that again measure the number of goal attainment activities, but then go on to explore how mindset and mood interact to influence subsequent motivation based on the quantity of available activities.

Chapter 3: Study 1A – Academic Goal

Study 1A aimed to provide an initial test of hypotheses 1 and 2. I predicted that for participants in a process mindset, positive (vs. neutral) mood would lead to decreased motivation. Conversely, being in a positive (vs. neutral) mood is expected to increase motivation for those in an outcome mindset.

PRETESTS

In study 1A, I conducted two pretests for different purposes. First was to ensure that the activated goal in the main study was important to participants. Second was to ensure that lists of words used in the main study would indeed evoke intended positive and neutral moods.

Since these participants in this study were undergraduate students, I expected that academic achievement was generally valued. The first pretest confirmed this. Fifteen participants from the same participant pool, but who did not participate in the main study, were asked to list and rank order their five most important goals. An exploratory content analysis showed that participants listed goals such as: an academic goal (e.g., earn a desired GPA, get two degrees, pass classes), a career goal (e.g., secure a job before graduation, find an internship, apply for graduate school), a saving goal (e.g., build up my savings account, saving for summer trip), or a social goal (e.g., become a better girlfriend, foster friendship and relationship, keep in touch with my friends). Of all goals submitted, every participant (100%) included an academic goal and it was listed as the most important goal

for 13 of the 15 participants (86.67%). Only two students mentioned other goals (e.g., social and enjoyment goals) as their top priority.

The second pretest was conducted to ensure that stimuli meant to evoke positive and neutral moods would do so. Adapting a word-priming task from Pyone and Isen (2011), 53 participants recruited from Amazon Mechanical Turk viewed a set of 10 different words and wrote down the first word that came to mind in response to each. The sets of words differed by condition. In the positive mood condition they included laughter, fun, tree, and peace. In the neutral mood condition, the word set included desk, building, street, and pencil. I selected these words from prior work that used the same word-priming task (e.g. Pocheptsova, Petersen, & Etkin, 2015; Pyone & Isen, 2011). After submitting a word for the 10th word, participants responded to questions asking whether they were feeling (1) unpleasant/pleasant, (2) unhappy/happy, and (3) emotionally unaroused/aroused on a 7-point scale. The two mood items (unpleasant/pleasant, and unhappy/happy) were averaged to create a composite measure of mood ($\alpha = .84$). Participants in the positive mood condition indicated that they were in a more positive mood ($M = 4.66$, $SD = 1.14$) than those in the neutral mood condition ($M = 4.16$, $SD = .59$; $t(51) = 2.03$, $p = .05$). The mood manipulation did not change participants' emotional arousal. Those in a positive mood ($M = 3.48$, $SD = 1.16$) reported the same level of arousal as those in a neutral mood ($M = 3.25$, $SD = 1.40$; $t(51) = .65$, $p = .52$).

The main study was conducted in a laboratory setting at a large public university. Two hundred forty-three participants (154 females) were recruited from an introductory

marketing course, and were offered a small extra credit for their participation. The study was conducted in early October, 2.5 weeks prior to mid-term examinations.

METHOD AND PROCEDURE

Two hundred forty-three students (154 females) participated in this study in return for partial extra credit in an introductory marketing course. The number of participants was determined based on the number of sign-ups from the subject pool for the study sessions. Due to the lab capacity restrictions, each session required maximum of 100 sign-ups. Thus, this study took place over three weeks. None participated in this study more than once. This study was a 2 (Mindset: Outcome vs. Process) X 2 (Mood: Positive vs. Neutral) between-subjects design (see Appendix A for materials used in this study).

All participants were first asked to set an academic goal by submitting the letter grade (e.g., A, A-, B+) that they wished to achieve in the introductory marketing course.

Next, we manipulated mood by using the word-priming task adapted from Pyone and Isen (2011). Participants viewed a set of 10 different words that were selected in the pretest. Identical to the procedure adopted in the pretest, participants viewed 10 different words and were instructed to write down the first word that came to mind in response to each. In this study, to avoid drawing participants' attention to their incidental moods there was no manipulation check (Pocheptsova, Peterson, & Etkin, 2015; Schwarz & Clore, 1983). However, subsequent studies do include a manipulation check. For robustness, I included manipulation check questions for subsequent studies.

After the mood manipulation, all participants were asked to spend 30 seconds to

think of potential activities that they would do to achieve their academic goal.

Next, mindset was manipulated using an adaptation of the method in Gollwitzer et al. (1990). Half of the participants were asked to describe the outcome of executing the potential goal attainment activities that they had just thought of. The other half was asked to make implemental plans of execution based on when, where, and how to execute their potential activities.

Lastly, as a measure of goal motivation, participants indicated how many hours they were expecting to spend studying for the course every week for the rest of the semester (Taylor & Pham, 1997).

RESULTS AND DISCUSSION

An initial analysis revealed that the number of hours that participants intended to spend studying (in hours) was highly skewed (Kurtosis = 6.97; Shapiro-Wilk test $w(243) = .85, p = .00$; Kolmogorov-Smirnov $z(243) = .18, p = .00$); therefore, I submitted the values to a standard log-transformation for analysis. For presentation purposes, I report the means in the actual number of hours that participants submitted.

Because participants were asked to set their own grade achievement goals, I first explored whether there was any difference in the distribution of grade goals between conditions. A descriptive analysis demonstrated that none of the participants aimed at a grade below B. 168 students (69.1%) aimed to get an A and 47 students (19.3%) sought an A-. 28 students (11.6%) aimed to get a B+ and B (14 students for each). I found that there was no difference in the distribution of reported grade goals between the mood conditions

($\chi^2(3) = 2.11, p = .55$). There was also no significant relationship between participants' grade goals and mindsets either ($\chi^2(3) = 4.10, p = .25$). In addition, an ANOVA with mindset and mood conditions as independent variables and participants' grade goals as a dependent variable was conducted. The reported grades (i.e., "A" to "C") were first converted to the 4.0 scale scores. There was no significant interaction between mindset and mood on the reported grade goals ($F(1, 239) = .21, p = .65$). Results showed neither a main effect of mindset ($F(1, 239) = 1.12, p = .29$) nor of mood ($F(1, 239) = 2.50, p = .11$). Thus, prior to testing the hypotheses, I ruled out the possibility that there was any a priori difference in participants' goals by condition.

To investigate the hypothesized mindset by mood interaction on motivation, an ANOVA was conducted with mindset and mood as independent variables and motivation as a dependent variable. Results showed neither a main effect of mindset ($F(1, 239) = 1.36, p = .24$) nor of mood ($F(1, 239) = .11, p = .74$). However, as predicted, the analysis revealed a significant mindset by mood interaction on motivation ($F(1, 239) = 9.32, p = .00$; see fig.2). Planned contrasts showed that among outcome-oriented individuals, people in a positive mood ($M = 4.42, SD = 2.28$) were willing to spend longer time studying than those in a neutral mood ($M = 3.57, SD = 1.74; F(1, 117) = 2.29, p = .02; d = .42$). When process-oriented individuals were considered, those who were in a positive mood ($M = 3.36, SD = 1.36$) reported lower motivation compared to those who were in a neutral mood ($M = 4.04, SD = 2.24; F(1, 122) = 2.02, p = .05; d = .37$). Another series of planned contrasts showed that among those who were in a positive mood, outcome-oriented individuals ($M = 4.42, SD = 2.28$) showed greater motivation than did process-oriented individuals ($M = 3.36, SD$

= 1.36; $F(1, 113) = 3.03, p = .00; d = .56$). Among those who were in a neutral mood, outcome-oriented individuals ($M = 3.57, SD = 1.74$) showed the identical level of motivation as process-oriented people ($M = 4.04, SD = 2.24; F(1, 126) = 1.32, p = .19; d = .23$).

A separate ANOVA ensured that differences in goal levels had no effect. In this analysis the transformed variable of grade goals on the 4.0 scale was included as a covariate in the model. Results were not affected by including this covariate. The hypothesized mindset by mood interaction remained significant ($F(1, 238) = 9.18, p = .00$). There was no main effect of mindset ($F(1, 238) = 1.26, p = .26$) nor of mood ($F(1, 238) = .15, p = .70$). A main effect of reported grades did not emerge either ($F(1, 238) = .40, p = .53$).

Another separate ANOVA ensured that gender had no effect. When gender was included as a covariate in the model, results were not affected by gender. The hypothesized mindset by mood interaction remained significant ($F(1, 236) = 10.82, p = .00$). There was no main effect of mindset ($F(1, 236) = 1.60, p = .21$) nor of mood ($F(1, 236) = .03, p = .87$). A main effect of gender did not emerge either ($F(1, 236) = 3.69, p = .06$).

Discussion

The results of Study 1A demonstrated the hypothesized mindset by mood interaction on motivation. For those in a process mindset, positive (vs. neutral) mood led to decreased motivation. Conversely, being in a positive (vs. neutral) mood increased motivation for those who were outcome-oriented. In the next study, I replicate this finding

to address a potential concern with the design of Study 1A. Specifically, one may argue that once a goal is set, individuals focus less on value expectancy, and shift to focusing on implementation. Thus, individuals may be more likely to be in a process mindset when generating activities as means to attaining a goal. To address this issue, I reversed the order of the mood and mindset manipulations in the identical setting to Study 1A.

Chapter 4: Study 1B – Academic Goal

Study 1B aimed to observe an interaction effect of mindset and mood on motivation in the reversed order of the mood and mindset manipulations. Identical to Study 1A, the study was conducted in the undergraduate population of a large public university, with students recruited from an introductory marketing course. This study was conducted in mid-to-late February, about 2 weeks prior to the mid-term exam period for the course.

METHOD AND PROCEDURE

One hundred seventy-four students (110 females) participated in this study in return for partial extra credit in an introductory marketing course. The number of participants was determined based on the number of sign-ups from the subject pool for the study sessions. Due to the lab capacity restrictions, each session required maximum of 100 sign-ups. Thus, this study took place over three weeks. None participated in this study more than once. This study was a 2 (Mindset: Outcome vs. Process) X 2 (Mood: Positive vs. Neutral) between-subjects design.

Identical to Study 1A, all participants were first asked to set an academic goal by submitting a desired letter grade (e.g., A, A-, B+) to achieve in the introductory marketing course.

Next, I manipulated mindset using an adaptation of the method in Gollwitzer et al. (1990). Half of the participants were asked to describe the desired end benefits of achieving the desired letter grade in the course. The other half was asked to describe how to achieve the desired letter grade based on implemental plans. They were also instructed that

implemental plans may include where, when, and how to fulfill requirements to achieve the desired grade in the course.

After the mindset manipulation, mood was manipulated by using the same word-priming task as Study 1A. To avoid drawing participants' attention to their incidental moods, I opted out manipulation check questions (Pocheptsova, Peterson, & Etkin, 2015; Schwarz & Clore, 1983).

After the mood manipulation, all participants were asked to think of potential activities that they would do to achieve their academic goal for 30 seconds.

Lastly, as a measure of goal motivation, participants indicated how many hours they were expecting to spend studying for the course every week for the rest of the semester.

RESULTS AND DISCUSSION

The effect of mindset and mood on motivation

An initial analysis revealed that the number of hours that participants intended to spend studying (in hours) was highly skewed (Kurtosis = .98; Shapiro-Wilk test $w(174) = .92, p = .00$; Kolmogorov-Smirnov $z(174) = .20, p = .00$); therefore, I submitted the values to a standard log-transformation for analysis. For presentation purposes, I report the means in the actual number of hours that participants submitted.

I first explored whether there was any difference in the distribution of grade goals between conditions. A descriptive analysis demonstrated that 152 students (87.4%) aimed to get an A and 18 students (10.3%) sought an A-. 4 students (2.3%) aimed to get a B+. None of the participants aimed at a grade below B+. I found that there was no difference

in the distribution of reported grade goals between the mood conditions ($\chi^2(3) = 1.25, p = .53$). There was no significant relationship between participants' grade goals and mindsets either ($\chi^2(3) = 2.24, p = .33$). In addition, we conducted an ANOVA with mindset and mood conditions as independent variables and participants' grade goals as a dependent variable. The reported grades (i.e., "A" to "C") were converted to the 4.0 scale scores. There was no significant interaction between mindset and mood on the reported grade goals ($F(1, 170) = 1.75, p = .19$). Results showed neither a main effect of mindset ($F(1, 170) = 1.14, p = .29$) nor of mood ($F(1, 170) = 2.69, p = .10$).

To investigate the hypothesized mindset by mood interaction on motivation, an ANOVA was conducted with mindset and mood as independent variables and motivation as a dependent variable. Results showed neither a main effect of mindset ($F(1, 170) = .15, p = .70$) nor of mood ($F(1, 170) = .00, p = .95$). However, as predicted, the analysis revealed a significant mindset by mood interaction on motivation ($F(1, 170) = 9.70, p = .00$). Planned contrasts showed that among outcome-oriented individuals, people in a positive mood ($M = 4.54, SD = 1.98$) reported intending to spend more time studying than those in a neutral mood ($M = 3.84, SD = 1.96; F(1, 96) = 2.22, p = .03; d = .35$). When process-oriented individuals were considered, those who were in a positive mood ($M = 3.50, SD = 1.33$) reported lower motivation compared to those who were in a neutral mood ($M = 4.38, SD = 1.70; F(1, 74) = 2.30, p = .24; d = .58$). Another series of planned contrasts showed that among those who were in a positive mood, outcome-oriented individuals ($M = 4.54, SD = 1.98$) showed greater motivation than did process-oriented individuals ($M = 3.50, SD = 1.33; F(1, 78) = 2.74, p = .01; d = .62$). Among those who were in a neutral mood, outcome-oriented individuals ($M = 3.84, SD = 1.96$) showed the identical level of motivation as process-oriented people ($M = 4.38, SD = 1.70; F(1, 92) = 1.83, p = .07; d = .29$).

Results were unaffected when the transformed variable of grade goals on the 4.0 scale was included as a covariate. The hypothesized mindset by mood interaction remained significant ($F(1, 169) = 9.12, p = .00$). There was no main effect of mindset ($F(1, 169) = .11, p = .74$) nor of mood ($F(1, 169) = .02, p = .88$). A main effect of reported grades did not emerge ($F(1, 169) = .55, p = .46$).

Another separate ANOVA ensured that gender had no effect. When gender was included as a covariate in the model, results were not affected by gender. The hypothesized mindset by mood interaction remained significant ($F(1, 169) = 9.64, p = .00$). There was no main effect of mindset ($F(1, 169) = .17, p = .68$) nor of mood ($F(1, 169) = .00, p = .97$). A main effect of gender did not emerge either ($F(1, 169) = .81, p = .37$).

Discussion

This study replicated the results of Study 1A despite reversing order of the mindset and mood manipulations. Again, in a process mindset, positive (vs. neutral) mood led to decreased motivation while it increased motivation among those who were outcome-oriented.

Recall that I have argued that the mood by mindset interaction is driven by people generating a larger number goal attainment activities in a positive versus a neutral mood. Mindset then influences how the activities are construed. In the process mindset tasks are construed as activities that must be completed, which increases concern over resource allocation, and decreases motivation. In the outcome mindset, activities are construed as opportunities to attain the goal, and this increases motivation. In the next study I more closely explore these relationships by directly looking at the effect of incidental moods on the quantity of goal attainment activities people generate or access. Further, I examine how

individuals construe their self-generated goal attainment activities depending on mindset and the mediating role of the anticipated competition for resources between activities.

Chapter 5: Study 2 – Weight-loss goal

The purpose of Study 2 was to replicate and extend the findings of Studies 1A and 1B in two important ways. First, in this study I explore the proposed underlying mechanisms: (1) the number of goal attainment activities generated; (2) how individuals perceive their goal attainment activities (i.e., activities to do or opportunities to utilize) and (3) the anticipated competition for resources between available activities. Unlike Studies 1A and 1B where participants were simply asked to think of the potential activities to execute, in this study I asked participants to provide lists of potential goal attainment activities and I counted the number of submitted activities to examine the mood effect on the quantity of available goal attainment activities.

Second, for robustness, the study examines motivation in a weight-loss goal domain. Weight control is a major concern in the United States; its estimated health care cost of obesity ranges from \$147 billion to nearly \$210 billion per year (<http://stateofobesity.org/healthcare-costs-obesity>). Indeed, prior researchers in consumer behavior have explored a weight-loss goal as it relates to motivation and self-control (Campbell & Warren, 2015; Sharpe, Staelin, & Huber, 2008), so this study also offers a substantive contribution to this work.

Third, Study 2 adopts a different mood induction technique from Pilot Studies and Studies 1A and 1B, which is expected to enhance robustness for the observed effects. In this case, participants' moods are manipulated by seeing a series of photos pre-tested to

evoke positive and neutral moods.

PRETEST

I conducted a pretest to create two sets of 10 photos that would evoke positive or neutral moods. Adapting a task from Pyone and Isen (2011), fifty-two participants recruited from Amazon Mechanical Turk viewed one of two sets of 10 different photos depending on condition. The images in the positive mood condition included flowers, trees, and puppies. In the neutral mood condition, the set of images included buildings, desks, and chairs. Images were selected from prior work that used the same mood induction technique (e.g., Pyone & Isen, 2011). The 10 pictures were displayed one at a time, with each image advancing to the next automatically after five seconds. After viewing the 10th photo, participants responded to questions asking whether they were feeling (1) unpleasant/pleasant, (2) unhappy/happy, and (3) emotionally unaroused/aroused on a 7-point scale. The two mood items (unpleasant/pleasant, and unhappy/happy) were averaged to create a composite measure of mood ($\alpha = .88$). Participants in the positive mood condition indicated that they were in a more positive mood ($M = 5.77$, $SD = 1.01$) than those in the neutral mood condition ($M = 4.79$, $SD = .88$; $t(50) = 3.72$, $p = .01$). The mood manipulation did not change participants' emotional arousal. Those in a positive mood ($M = 4.50$, $SD = 1.65$) reported the same level of arousal as those in a neutral mood ($M = 3.69$, $SD = 1.64$; $t(50) = 1.76$, $p = .08$).

METHOD AND PROCEDURE

Two hundred and seventeen individuals (122 females) recruited from Prolific.ac,

a UK-based online research panel, participated in this study in return for monetary rewards. Due to the limited research funds, each condition was aimed to have maximum of 55 participants and 217 participants entered the survey for the day that this study was posted. Only those who had a goal to lose weight were eligible to participate in this study. The study was a 2 (Mindset: Outcome vs. Process) X 2 (Mood: Positive vs. Neutral) between-subjects design (see Appendix B for materials used in this study).

All participants were first instructed to provide their weight-loss goal by submitting how many pounds they aimed to lose. I also asked them to provide deadline for their goal.

Next, adapted from Pyone and Isen (2011), mood was manipulated by exposing participants to a set of 10 pictures that evoked positive (e.g., flowers, puppies, and trees) or neutral (e.g., desks, chairs, buildings) moods. The two sets of pictures were pretested to be different in the affective valence but equivalent in arousal. The 10 pictures were displayed one at a time, with each image advancing to the next automatically after five seconds. After viewing the set of 10 pictures, mood was measured by having participants respond to the questions asking how they were feeling (i.e., bad/good, unpleasant/pleasant, and unhappy/happy) and how emotionally aroused they were at that moment on a 7-point scale.

After the mood manipulation, participants were given two minutes to generate a list of activities that they would do to facilitate their weight-loss goal. Specifically, participants were told to think of activities that they would do to achieve their weight-loss goal and list the activities in the fields presented on the screen. A screen offered 20 open

fields, and participants were instructed to list only one activity per field. They were informed that they did not have to fill out all fields provided. They were free to list as many or as few activities as they chose.

With their lists of goal attainment activities still on the screen, mindset was manipulated using the task based on Gollwitzer et al. (1990). As in Studies 1A and 1B, participants were instructed to either describe the outcome of executing their goal achievement activities or to describe implemental plans based on when, where, and how to execute their activities.

Motivation was measured in two ways. Mitchell (1997) defined motivation as psychological processes involved with arousal, direction, intensity, and persistence of voluntary actions that are goal directed. Also, high motivation to accomplish a goal means that an individual is ready to invest a lot of energy in goal pursuit (Föster, Liberman, & Higgins, 2005). Based on this, I measured the intensity of pursuit as an indicator of motivation by having participants report how hard they intended to work toward their weight-loss goal (i.e., “How hard do you think you will work toward your goal?”) based on a 7-point scale with 1 being “Not hard at all” to 7 being “Very much.” As a second measure of motivation, participants were asked to provide the date that they would initiate goal execution (i.e., Enter the date that you will start executing the activities). Prior work showed that high motivation is characterized by enhanced accessibility of goal-related constructs (e.g., goal attainment means and activities) (Bargh, 1997; Föster, Liberman, & Higgins, 2005). So, motivated individuals are known to effectively transform goal intention into goal execution (Ach, 1935, Goschke & Kuhl, 1993; Kuhl, 1983, 1987). Thus, I

assumed that motivated individuals would intend to start executing goal-directed actions earlier than those who are less motivated.

I argued that depending on mindset, there will be a difference in the extent to which available activities will be perceived as opportunities (vs. tasks to do) that will aid in goal achievement. To investigate this, participants were asked to report the extent to which they agreed with the following statement: “The activities that I listed will serve as great opportunities to accomplish my goal.” The response was submitted based on a 7-point scale anchored from “Strongly disagree” to “Strongly agree.” Also, I argued that generation of multiple activities may raise concern about competition for available resources between activities. However, such obstacles may not negatively influence motivation among individuals who believe that available activities will serve as opportunities to accomplish the goal. Finally, to examine the mediating role of the anticipated resource competition between activities, I asked participants to indicate the extent to which they agreed with the following statement: “These activities will compete for my resources (e.g., time, money, or self-control) during pursuit.” on a 7-point scale with 1 being “Not at all,” to 7 “Very much.” This measure was created based on prior work on an approach-approach conflict (Miller, 1944; Shah & Kruglanski, 2002; Zeigarnik, 1938).

RESULTS AND DISCUSSION

Manipulation check

The three mood items were averaged to create a composite measure of mood ($\alpha = .91$). As predicted, those in the positive mood condition indicated that they were in a

more positive mood ($M = 5.36$, $SD = 1.07$) than those in the neutral mood condition ($M = 5.07$, $SD = 1.03$; $t(215) = 2.04$, $p = .04$). Participants in a positive mood ($M = 3.30$, $SD = 1.51$) reported the same level of arousal as those in a neutral mood ($M = 3.39$, $SD = 1.48$; $t(215) = .43$, $p = .66$). Although I manipulated mindset after the mood manipulation, to ensure there was no a priori differences in mood by mindset condition, I conducted an ANOVA with mindset and mood as independent variables and the reported levels of mood as a dependent variable. Only a main effect of mood emerged ($F(1, 213) = 4.23$, $p = .04$). I found neither a significant interaction between mindset and mood ($F(1, 213) = .01$, $p = .92$) nor a main effect of mindset ($F(1, 213) = .61$, $p = .44$).

The effect of mindset and mood on motivation

An ANOVA was conducted with mindset and mood conditions as independent variables and motivation as a dependent variable (see fig.3). Results showed no main effect of mood ($F(1, 213) = .11$, $p = .75$), nor of mindset ($F(1, 213) = .80$, $p = .37$). However, the analysis revealed the predicted mood by mindset interaction ($F(1, 213) = 11.85$, $p = .00$). Planned contrasts showed that among outcome-oriented individuals, those in the positive mood condition showed greater motivation to pursue their weight-loss goal ($M = 5.60$, $SD = 1.28$) compared to those in a neutral mood ($M = 5.02$, $SD = 1.44$; $F(1, 112) = 2.26$, $p = .02$; $d = .42$). Conversely, among process-oriented individuals, those in a positive mood were less willing to pursue their weight-loss goal ($M = 4.79$, $SD = 1.47$) compared to those in a neutral mood ($M = 5.49$, $SD = 1.26$; $F(1, 101) = 2.60$, $p = .01$; $d = .51$). Another series of planned contrasts showed that among those who were in a positive mood, outcome-

oriented people ($M = 5.60$, $SD = 1.28$) showed greater motivation than those in a process mindset ($M = 4.79$, $SD = 1.47$; $F(1, 103) = 3.00$, $p = .00$; $d = .59$). When I examined those in a neutral mood, the effect of mindset was attenuated; there was no difference in motivation between outcome ($M = 5.02$, $SD = 1.45$) and process mindset conditions ($M = 5.49$, $SD = 1.26$; $F(1, 110) = 1.85$, $p = .07$; $d = .32$).

A separate ANOVA was conducted to examine the role of gender on motivation. Prior to including gender as a covariate in the model, I confirmed that gender did not interact with mindset ($F(1, 209) = 7.45$, $p = .01$), mood ($F(1, 209) = .01$, $p = .91$), and an interaction term of mindset and mood ($F(1, 209) = .32$, $p = .57$). When a mindset by mood ANOVA was conducted with gender as a covariate, the result of a mood by mindset interaction on motivation remained significant ($F(1, 212) = 10.55$, $p = .00$). The main effect of gender was significant as well ($F(1, 212) = 7.45$, $p = .01$). There was neither a main effect of mindset ($F(1, 212) = .62$, $p = .43$) nor of mood ($F(1, 212) = .01$, $p = .92$).

Participants' intended goal initiation date was used as a second measure of motivation. The number of days between the date on which data was collected and the date submitted by participants to initiate goal execution was calculated. Thus, higher numbers indicate a more delayed start, and therefore, lower motivation to initiate active goal execution. Results showed no main effect of mood ($F(1, 213) = 1.28$, $p = .26$), nor of mindset ($F(1, 213) = .90$, $p = .34$). However, the analysis revealed the predicted mindset by mood interaction ($F(1, 213) = 4.46$, $p = .04$). Planned contrasts demonstrated that among outcome-oriented individuals, those in a positive mood ($M = 8.25$ days, $SD = 8.10$) showed a greater willingness to initiate their pursuit compared to those in a neutral mood ($M =$

17.42 days, $SD = 25.91$; $F(1, 112) = 2.55, p = .01; d = .48$). Among process-oriented individuals, those in positive ($M = 16.90$ days, $SD = 26.51$) and neutral moods ($M = 14.13$ days, $SD = 18.02$) did not show a difference in their willingness to initiate goal execution ($F(1, 101) = .63, p = .53; d = .12$). Another series of planned contrasts showed that among those who were in a positive mood, outcome-oriented people ($M = 8.24$ days, $SD = 8.10$) were more willing to initiate goal execution compared to those in a process mindset ($M = 16.90$ days, $SD = 26.52$; $F(1, 103) = 2.34, p = .02; d = .44$). When we examined those in a neutral mood, there was no difference in the willingness to initiate pursuit between the outcome ($M = 17.42$ days, $SD = 25.91$) and process mindset conditions ($M = 14.13$ days, $SD = 18.03$; $F(1, 110) = .78, p = .44; d = .15$).

The role of the number of activities

A t-test comparing the number of goal attainment activities generated in the positive and neutral mood conditions was as predicted ($t(215) = 2.52, p = .01$), with those in a positive mood generating more goal attainment activities ($M = 5.85, SD = 4.10$) than those in a neutral mood ($M = 4.74, SD = 2.13$). This replicated the results of the Pilot Studies.

One may argue that is not just about the increased number of goal attainment activities that people generate in a positive mood, but about the qualitative differences of activity items generated in positive versus neutral moods. Indeed, research on mood and creativity has shown that a positive mood increases creativity by promoting one's ability to generate novel and infrequent ideas (Isen, Daubman, & Nowicki, 1987; Isen, Johnson,

Mertz, & Robinson, 1985). In order to further examine this, four independent coders blind to the hypotheses coded activity items submitted by each participant according to (1) How creative the submitted activity ideas are, (2) How novel these activity ideas are, and (3) How frequently these activity items are adopted by others. Two coders rated participants' responses based on how creative the submitted activities are and how frequently the activities are adopted by others. And the other two coders rated the responses according to how novel the submitted activity items are. I had the creativity and novelty of activities be rated by separate groups of coders since the ratings for one could influence those for the other. The submitted activities were rated based on a 7-point scale with 1 being "Not at all" to 7 being "Very much." Interjudge reliability was 82% for creativity, 88% for novelty, and 85.7% for frequency. The two coders' average scores were significantly correlated (For creativity, $r = .69$, $p = .00$; For novelty, $r = .71$, $p = .00$; For frequency, $r = .65$, $p = .00$), and disagreements were resolved through discussions. So the ratings from the four independent coders were averaged to create variables of creativity ($\alpha = .81$), novelty ($\alpha = .77$), and frequency ($\alpha = .82$). We first conducted an ANOVA with mindset and mood as independent variables and creativity as a dependent variable. There was no significant interaction of mindset and mood on creativity ($F(1, 213) = 1.26$, $p = .26$). I found neither a main effect of mindset ($F(1, 213) = .56$, $p = .45$) nor of mood ($F(1, 213) = 3.41$, $p = .07$). When I conducted the same analysis with novelty as a dependent variable, there was neither a mindset by mood interaction ($F(1, 213) = .10$, $p = .75$), nor a main effect of mindset ($F(1, 213) = 2.37$, $p = .12$). A main effect of mood did not emerge either ($F(1, 213) = 1.36$, $p = .24$). The same ANOVA with frequency as a dependent variable revealed

neither a significant mindset by mood interaction ($F(1, 213) = 1.51, p = .22$), nor a main effect of mindset ($F(1, 213) = .42, p = .52$), nor of mood ($F(1, 213) = .85, p = .36$). These results indicate that a greater creativity observed in the positive (vs. neutral) mood condition is associated with the number of available goal attainment activities that people generated, rather than the novelty of submitted activity items. This finding is consistent with prior work that shows a positive (vs. neutral) mood increases creativity by promoting cognitive fluency rather than flexibility or originality in some contexts of goal pursuit. Specifically, researchers have demonstrated that perseverance and goal achievement motivation tend to be more related to fluency (i.e., the quantity of accessible solutions) rather than novelty or flexibility (Fodor & Carver, 2000; Rietzschel, De Drew, & Nikstad, 2007). A descriptive analysis also showed that the mean value of novelty was 1.40 ($SD = .57$), which was significantly lower than the median point on the scale ($t(216) = -67.45, p = .00$). By contrast, the mean score of frequency was 5.22 ($SD = .84$), significantly higher than the median point on the scale ($t(216) = 21.42, p = .00$). This result suggests that individuals facing goal pursuit in which persistence or perseverance is a key for success tend to focus on generating ideas that are proven effective (and thus, frequently adopted by others pursuing the same goal) than ideas that are novel or infrequently adopted.

As I argued that mood indirectly influences the effect of mindset on motivation by affecting the quantity of goal attainment activities that people generate, I investigated the moderating roles of mindset and the number of activities on motivation to pursue a weight-loss goal. When motivation was regressed on the number of activities (mean centered), mindset (coded as 1 for an outcome mindset and -1 for a process mindset), and an

interaction term, the analysis revealed the hypothesized interaction ($\beta = .06, SE = .03, t(213) = 2.00, p = .05$). There was neither a main effect of mindset ($\beta = -.22, SE = .18, t(213) = 1.22, p = .25$) nor of the number of generated activities ($\beta = -.06, SE = .03, t(213) = 1.83, p = .07$).

To explicate the interaction of mindset and the number of activities, simple slope analysis was conducted (see fig.4). First, regression lines were plotted for one standard deviation above and below the mean for the number of goal attainment activities (Aiken & West, 1991). When I examined process-oriented individuals, those who generated a larger number of activities showed lower motivation than those who generated a fewer number of activities ($\beta = -.14, SE = .04, t = 3.41, p = .00$). Examining outcome-oriented individuals, there was no difference in motivation between those who generated a larger and fewer number of activities ($\beta = -.00, SE = .04, t = .01, p = .99$). This result suggests that the effect of mood on the relationship between mindset and motivation is driven by the number of goal attainment activities that people generate or access.

The mediating role of the anticipated resource competition between activities

My theoretical model suggests that the mindset either increases or decreases motivation depending on the number of goal attainment activities that people generate as a function of mood. I further argue that an outcome mindset, by highlighting the desired benefits of pursuit, frames a set of available goal attainment activities as opportunities that may aid in successful goal accomplishment. Thus, for those who generate a relatively large number of activities, outcome-, as opposed to process-, oriented people should believe that

there would be a large number of opportunities to utilize during pursuit.

To examine the effect of mindset and the quantity of available goal attainment activities on activity perception (i.e., activities vs. opportunities), the activity perception was regressed on mindset, the number of self-generated activities, and an interaction term. I found a significant interaction between the two factors ($\beta = .11$, $SE = .04$, $t = 2.76$, $p = .01$). The analysis did not reveal main effects of mindset ($\beta = -.42$, $SE = .25$, $t = 1.72$, $p = .09$) and of number of activities ($\beta = -.07$, $SE = .41$, $t = 1.81$, $p = .07$). To explicate the observed interaction, a simple slope analysis was conducted. First, regression lines were plotted for one standard deviation above and below the mean for the number of goal attainment activities (Aiken & West, 1991). Among those who generated a relatively large number of activities, outcome-oriented individuals perceived their activities more as opportunities compared to process-oriented individuals ($\beta = 1.84$, $SE = .62$, $t = 2.95$, $p = .00$). Examining individuals who generated a fewer number of activities, there was no difference in the activity perception between outcome- and process-oriented individuals ($\beta = -.03$, $SE = .21$, $t = 1.47$, $p = .14$).

I further assumed that generating a large set of goal attainment activities may raise an issue concerning competition for resources between activities. Also, I assumed that motivation toward a goal may not be negatively influenced by the anticipated obstacle if individuals believe that there would be opportunities that may aid in goal attainment (vs. activities to do).

To examine the effect of mindset and the number of activities on the anticipated

resource competition between activities, the anticipated competition for resources between activities was regressed on mindset, the number of self-generated activities, and an interaction term. A significant interaction emerged between the two factors ($\beta = -.06$, $SE = .03$, $t = 2.36$, $p = .03$). There was neither a main effect of mindset ($\beta = .24$, $SE = .17$, $t = 1.43$, $p = .15$) nor of the number of activities ($\beta = .03$, $SE = .03$, $t = 1.04$, $p = .30$). To explicate the observed interaction, simple slope analysis was conducted (see fig.5). When I examined outcome-oriented individuals, the size of a consideration set of goal attainment activities did not change the expectation of resource competition between activities ($\beta = -.03$, $SE = .03$, $t = -.78$, $p = .43$). Examining those in a process mindset, participants who generated a larger number of activities reported a higher expectation of resource competition than those who generated a fewer activities ($\beta = .10$, $SE = .05$, $t = 2.13$, $p = .03$).

Next, a mediation analysis was conducted to provide evidence for the mediating role of the anticipated competition for resources. I followed Preacher, Rucker, and Hayes (2007) using the PROCESS macro in SPSS for Model 8 (Hayes, 2012). In this analysis, mindset was the independent variable, motivation to pursue a weight-loss goal was the dependent variable, the anticipated resource competition was the mediator, and the number of goal attainment activities served as the moderator (see fig.6). The number of iterations for the bootstrap was 5,000, with the confidence interval at 95%. When the conditional indirect effects of mindset on motivation via individuals' expectation of resource competition were considered, the effect was significant for those who generated a relatively large number of goal attainment activities with a 95% CI excluding zero [-.184, -.015], but it was not significant for those who generated fewer activities [-.025, .111]. Indirect effects

of the highest order interaction with the anticipated competition for resources as a mediator was significant with 95% CI excluding zero as well [-.037 to -.003]. The conditional direct effects of mindset on the expectation of competition for resources was not significant, $\beta = .24$, $t = 1.43$, $p = .15$, 95% CI = -.092 to .581.

Discussion

In this study, I demonstrated the interactive roles of mood and mindset on motivation and the interaction between the number of activities and mindset on motivation. This study also provided evidence for the proposed underlying mechanisms by showing how individuals perceive their self-generated activities (i.e., activities vs. opportunities) and the anticipated competition for resources between activities that they consider executing. In the analyses conducted for the proposed underlying processes, I focused on the relationship between mindset and the number of activities since mood was expected to interact with mindset by influencing the number of activities that people access or generate.

In the next study, I aimed to corroborate the proposed effect of mood on the number of activities that people generate as means to attaining a goal. To this end, I manipulated the number of activities that people could generate. Half of the participants were free to generate as many or as few activities between mood conditions, as in Study 2. The other half was required to generate the exact same number of activities across mood conditions. I expected to replicate the findings of this study when participants were free to generate as many or as few activities that they would do; with greater motivation for those in an outcome mindset in a positive (vs. neutral) mood and diminished motivation for those in a

process mindset in a positive (vs. neutral) mood. However, if the effect of the positive mood is driven by the number of activities that are generated, then I should expect the effect to be diminished if the number of activities is held constant across mood conditions.

Chapter 6: Study 3 – Language learning goal

The goal of Study 3 was threefold. First, I aimed to corroborate the argument that the proposed relationship between mood and mindset on motivation is initially driven by the mood effect on the quantity of available goal attainment activities. In Study 2, I offered evidence of this by demonstrating a main effect of mood on the number of goal attainment activities participants generated. In this study I take this a step further. If indeed it is the fact that more generated activities in positive than in neutral moods drives the relationship between mood and mindset, then manipulating mood, while controlling the number of activities generated, should diminish the effect of mood. So in this study I allow half of participants to freely generate activities as in Study 2, while enforcing a common number of activities to be generated by the other half of participants.

The manipulation of the number of activities that participants must generate also allows me to examine an alternative explanation for the mood by mindset interaction. One may argue that the observed relationship between mindset and mood on motivation is driven not by generated activities but rather by regulatory fit. This alternative explanation would suggest that a person experiences regulatory fit in goal pursuit when strategic actions, means, and goal orientation fit his phenomenological or regulatory states (e.g., mood or regulatory focus) (Higgins, 2000, 2002). When there is regulatory fit, the manner of goal pursuit “feels right” and this increases the value of what a person is doing in a relevant domain. That is, the subjective experience of “feeling right” could transfer to other valuable experiences in the contexts of evaluation, persuasion, and motivation (Cesario, Grant, & Higgins, 2004; Freitas & Higgins, 2002). A positive mood indeed fits well with an outcome mindset as both lead to more broad and abstract construal and fits poorly with a process mindset as it is related to concreteness (Trope & Liberman, 2003; Trope,

Liberman, & Wakslak, 2007). Therefore, regulatory fit may be an alternative explanation for increased motivation in a positive mood with an outcome mindset, and decreased motivation for a positive mood in a process mindset. However, this explanation would be predicted to hold irrespective of the number of activities generated. So if indeed regulatory fit, as opposed to the quantity of available goal attainment activities, were driving the hypothesized mindset by mood interaction, I should expect to see the identical pattern of results to previous results regardless of whether a particular number of activities to generate is enforced or not. However, if the interaction is diminished when the number of generated activities is held constant across neutral and positive mood conditions, then in addition to offering evidence to support my number of activities hypothesis, it will also rule out the regulatory fit explanation.

The third objective of this study was to examine the robustness of the observed effects by exploring an alternative measure of motivation. In Studies 1A, 1B, and 2, I measured motivation using self-report intentions (the amount of time intended to spend working toward the goal (Study 1A and 1B), effort expected to expend (Study 2), time until expected commencement of work toward the goal (Study 2). Rather than looking at intentions, this study examined an actual behavior. Specifically, I measured the amount of time that participants actually spent working on a goal related activity.

Finally, toward further ensuring robustness of effects in this study I examine the goal of learning a foreign language using a computer based learning tool. I note that this is not an uncommon consumer goal. For example, more than 1.5 million individuals were enrolled in formal foreign language courses in 2013 (http://www.mla.org/enrollments_surveys), and the annual revenue of Rosetta Stone, a popular language software company, has reached 261 million dollars in 2014 (<https://finance.yahoo.com/q/is?s=RST>).

METHOD AND PROCEDURE

Three hundred thirteen undergraduate students (159 females, 2 unknown) from a large university participated in this study in return for partial extra course credit. The number of participants was determined based on the number of sign-ups from the subject pool for the study sessions. Due to the lab capacity restrictions, each session required maximum of 100 sign-ups. Thus, this study took place over four weeks. None participated in this study more than once. This study was a 2 (Mood: Positive vs. Neutral) X 2 (Activity generation: Free generation vs. Required to generate 10 activity items) X 2 (Mindset: Outcome vs. Process) between-subjects design (see Appendix C for materials used in this study).

Participants were first told that this research was being conducted in collaboration with a major language education software company, and that researchers were developing a Korean language program customized for college graduates and business professionals. Participants were also told that their primary task would involve learning eight Korean words based on a beta version of the software. Participants were further instructed that they would earn a five dollar cash reward if they successfully recognized five out of eight words at the end of the study. A pre-screen revealed that none of the participants were able to read, write, nor speak Korean.

After reading the cover story, mood was manipulated similar to the method used in the Pilot Studies, by having participants watch an 80 second video clip allegedly provided by a sponsor of the survey. Participants in the positive mood condition watched a modified version of Energizer's Gift of Life advertisement accompanied by cheerful and rhythmical ukulele music (<https://youtube.googleapis.com/v/nRy0W3jpk7Q>). In the neutral mood

condition, participants watched a YouTube video that contained photos of flowers as a slideshow accompanied by piano music (<https://youtube.googleapis.com/v/eSGFxezVPGY>). After the videos ended, all participants responded to the same mood manipulation check questions in the previous study on a 9-point scale.

After the mood manipulation, participants were asked to generate goal attainment activities that they would do in order to learn the Korean language. Depending on condition, participants were allowed to list as many activity items as they desired, or were restricted to a predetermined number. The free generation condition was nearly identical to that of Study 2. Participants were given three minutes to list as many or as few activities as they chose, by entering them into 30 available fields on the screen. In the restricted condition participants were told to list exactly 10 activity items. A pretest had shown that for this task, those in the positive mood condition listed 9.24 activities, so this number was selected with the aim of having those in the restricted condition generating at least as many items as those in the positive, free activity generating condition. For these participants the screen contained only 10 open fields and participants were instructed to write only one goal attainment activity in each field.

Next, with participants' lists of goal attainment activities on their screens, I manipulated mindset. As in the Prior Studies, those in the outcome condition described the potential outcome of executing the activities that they accessed or generated to learn the Korean language while those in the process condition described implemental plans based on when, where, and how they would execute the activities they accessed or generated as means to attaining the Korean language learning goal. All participants were allowed three minutes for this task.

Next, participants were presented with a chance to actually learn some Korean words using what was described as beta version software. To ensure a minimum level of motivation, all participants were informed that they would have the opportunity to learn 8 Korean words, and that they would earn a five dollar cash reward if they successfully recognized five of the words at the end of the survey. The next screen began the learning session. Participants viewed eight Korean words, each with its meaning in English, and an accompanying picture of the meaning. They were presented on a single screen, and participants could also listen to the Korean pronunciation for each word. I also instructed them to stay on the screen as long as they desired to better learn the eight Korean words.

As a behavioral measure of motivation, I measured the total amount of time (in seconds) that participants spent learning the eight Korean words before moving on to the word quiz. Prior work has shown that persistence or the amount of time that participants spend in a goal-congruent task is a good indicator of an individual's motivation (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998; Huang & Zhang, 2011; Zhang & Fishbach, 2010). Although there are many ways an individual may be able to spend time learning Korean, using language software is indeed goal congruent. In fact, of 290 participants included in the main analysis, 130 participants (44.82%) specifically mentioned language learning software (e.g., Rosetta Stone) and online language courses in their activity lists.

Finally, after they chose to complete the learning task, participants took a short word recognition quiz. Participants were asked to drag and drop 18 Korean words, including the eight words that they had seen in the learning task and ten new words, into one of the two boxes provided to indicate whether they believed they had or had not seen the word.

RESULTS AND DISCUSSION

Prior to analysis, 23 participants in the restricted condition were eliminated because they failed to generate the 10 activity items as instructed. Thus, the analyses included 290 participants (153 females, 2 unknown).

Manipulation check

The three mood items were averaged to create a single measure of mood ($\alpha = .93$). As intended, participants in the positive mood condition reported that they were in a more positive mood ($M = 5.78, SD = 1.56$) than those in the neutral mood condition ($M = 5.39, SD = 1.73; t(288) = 2.02, p = .04$). In addition, there was no significant difference in the level of arousal by mood conditions. Participants in a positive mood ($M = 2.80, SD = 1.56$) reported the same level of arousal as those in a neutral mood ($M = 2.52, SD = 1.39; t(288) = 1.67, p = .10$). To ensure there was no a priori differences in mood by mindset condition, I conducted an ANOVA with mindset and mood as independent variables and the reported level of mood as a dependent variable. I found a main effect of mood on the reported level of mood ($F(1, 286) = 4.53, p = .03$). Unexpectedly, a main effect of mindset on the reported levels of mood was significant as well ($F(1, 286) = 4.55, p = .03$). The analysis did not reveal a significant mindset and mood interaction ($F(1, 286) = .29, p = .59$). Although I found a main effect of mindset, this is coincident since mindset was not manipulated before measuring moods.

As the reported level of mood in the neutral mood condition was significantly higher than the median point on the scale ($t(144) = 2.74, p = .01$), I conducted a separate test to make sure that the selected mood induction stimuli evoke moods in different valence as intended. In this test, 36 participants from the same participant pool who did not participate in the main study viewed the identical video clip depending on condition. After

the videos ended, participants responded to the same mood manipulation check questions in Study 3 on a 7-point scale. Participants in the positive mood condition reported that they were in a more positive mood ($M = 5.26$, $SD = 1.04$) than those in a neutral mood ($M = 4.45$, $SD = 1.38$; $t(34) = 2.00$, $p = .05$). Participants in a positive mood ($M = 3.84$, $SD = 1.71$) reported the same level of arousal as those in a neutral mood ($M = 3.23$, $SD = 1.64$; $t(34) = .07$, $p = .29$).

The number of goal attainment activities as a function of mood

I examined the mood effect on the number of accessible goal attainment activities in the free activity generating condition. Replicating the result of Study 2, I found a main effect of mood on the number of goal attainment activities ($t(156) = 2.66$, $p = .01$) with people in the positive mood condition generating a larger number of activities ($M = 9.70$, $SD = 3.25$) to facilitate the learning goal than those in the neutral mood condition ($M = 8.42$, $SD = 2.72$). Although I manipulated mindset after the mood manipulation, to ensure there was no a priori differences in mood by mindset condition, I conducted an ANOVA with mindset and mood as independent variables and the number of generated activities as a dependent variable. I found neither a significant interaction between mindset and mood ($F(1, 286) = .19$, $p = .66$) nor a main effect of mindset ($F(1, 286) = 2.21$, $p = .14$). Only a main effect of mood emerged ($F(1, 286) = 6.21$, $p = .01$).

The interactive roles of mindset and mood on motivation

An initial analysis revealed that the total amount of time (in seconds) that participants in the learning task was highly skewed (Kurtosis > 1 ; Shapiro-Wilk test $w(290) = .86$, $p = .00$; Kolmogorov-Smirnov $z(290) = .13$, $p = .00$); therefore, I submitted the values to a standard log-transformation for analysis. For presentation purposes, I report the means in the actual amount of time. A 2 (Mood) X 2 (Activity generation) X 2 (Mindset)

ANOVA with participants' learning time as the dependent variable yielded a significant three-way interaction ($F(1, 282) = 3.67, p = .05$) (see fig. 8).

Follow up analysis shed light on this interaction. First, when participants were free to generate as many or as few activity items to their goal attainment activity lists, the results replicated those of Studies 1A, 1B, and 2. A two-way ANOVA of mindset and mood on motivation yielded the hypothesized mindset by mood interaction ($F(1, 154) = 7.15, p = .01$). Planned contrasts showed that among outcome-oriented individuals, those in a positive mood ($M = 240.49, SD = 114.44$) showed greater motivation to learn the eight Korean words than those in a neutral mood ($M = 206.43, SD = 102.52$), but this difference was only directional ($F(1, 82) = 2.59, p = .11; d = .27$). When process-oriented individuals were considered, those in a positive mood ($M = 177.08, SD = 86.72$) spent significantly less time learning the eight Korean words compared to those in a neutral mood ($M = 220.85, SD = 100.12; F(1, 72) = 4.43, p = .04; d = .47$).

Another series of planned contrasts revealed that in the positive mood condition outcome-oriented people ($M = 240.49, SD = 114.43$) spent more time learning the eight Korean words than process-oriented people ($M = 177.08, SD = 86.72; F(1, 80) = 8.12, p = .01; d = .62$). In the neutral mood condition, individuals with an outcome mindset ($M = 206.43, SD = 102.52$) spent a similar amount of time as those in a process mindset ($M = 220.85, SD = 100.12; F(1, 74) = .74, p = .39; d = .14$).

A separate ANOVA ensured that gender had no effect. In this analysis gender was included as a covariate in the model. Results were not affected by including this covariate. The hypothesized three-way interaction remained significant ($F(1, 279) = 3.77, p = .05$). A main effect of gender did not emerge ($F(1, 279) = .11, p = .74$).

Excluding 23 participants who failed to generate 10 activity items did not change the pattern of the observed interaction. When the 23 participants were included in a 2

(Mood) X 2 (Activity generation) X 2 (Mindset) ANOVA with participants' learning time as a dependent variable, the analysis still revealed a significant three-way interaction ($F(1, 305) = 4.18, p = .04$).

Next, I examined participants who were required to generate exactly 10 activity items. Based on my theorizing, the interaction observed in the free activity generation condition should disappear when the number of accessible goal attainment activities was held constant. As predicted, an ANOVA of mood and mindset on motivation yielded a main effect of Mindset only ($F(1, 128) = 16.04, p = .00$). I found neither a mood by mindset interaction ($F(1, 128) = .00, p = .96$) nor a main effect of Mood ($F(1, 128) = .03, p = .86$).

The observed patterns of results corroborate the argument that it is the quantity of available activities that people generate as a function of mood that drives the proposed relationship between mood and mindset on motivation. Additional analyses revealed that the number of activities generated by those in the positive mood–free generation condition ($M = 9.61, SD = 3.62$) did not differ from 10 ($t(81) = .98, p = .33$). But the number of activities generated by those in the neutral mood–free generation condition ($M = 8.69, SD = 2.70$) was significantly lower than 10 ($t(76) = 4.26, p = .00$), and the pattern of motivation in this condition was distinct from the other three conditions. These findings indicate that the interaction between mindset and mood on motivation was driven by the number of goal attainment activities that individuals generated as a function of mood. When I examined a main effect of mindset across the three conditions showing the identical pattern of motivation (i.e., the positive mood–free generation, positive mood–10 activities, and neutral mood–10 activities conditions), analyses consistently revealed a main effect of mindset ($p_{positive-free} = .00; p_{positive-10} = .00; p_{neutral-10} = .05$).

This result also offers evidence that the proposed relationship between mindset and mood on motivation is not due to regulatory fit (Labroo & Patrick, 2009; Trope et al.,

2007). If the proposed relationship were driven by regulatory fit and not the availability of goal attainment activities, regardless of whether the number of activities is restricted or free, I should expect to see the same pattern of results. However, this was not the case. Indeed, consistent with the hypotheses, requiring that participants generate an equal number of activities in both the positive and neutral mood conditions eliminated the difference in motivation found when participants were not restricted.

As I argued that mood indirectly influences the effect of mindset on motivation by affecting the quantity of goal attainment activities that people generate, I examined the moderating role of the number of activities on the relationship between mindset and motivation. When I regressed the log adjusted time people spent trying to learn the target words on the number of activities, mindset (coded 1 for an outcome mindset and -1 for a process mindset), and an interaction term, the analysis revealed the hypothesized interaction between mindset and the number of activities ($\beta = .01$, $SE = .00$, $t(286) = 2.10$, $p = .04$). There was neither a main effect of mindset ($\beta = -.04$, $SE = .04$, $t(286) = .82$, $p = .41$) nor of number of activities ($\beta = .00$, $SE = .01$, $t(286) = .28$, $p = .78$). A simple slope analysis (Aiken & West, 1991) demonstrated that among outcome-oriented individuals, those who generated a relatively large number of activities spent more time learning than those who generated a fewer activities ($\beta = .02$, $SE = .01$, $t = 2.53$, $p = .01$). Examining those in a process mindset, those who generated a fewer activities were found to spend more time learning than those who generated a relatively large number of activities ($\beta = -.02$, $SE = .01$, $t = 1.93$, $p = .05$).

Although performance was not the primary focus of interest, I examined whether those who spent a longer (vs. shorter) time learning performed better on the quiz. A simple linear regression analysis revealed that individuals' performance in the quiz was explained by the amount of time that participants spent learning the eight Korean words ($\beta = 3.67$,

SE = .65, $t = 5.61$, $p = .00$), suggesting that mood and mindset interacted both to influence the time spent learning, and ultimately the amount of material that was learned. A 2 (Mood) X 2 (Activity generation) X 2 (Mindset) ANOVA with participants' performance in the quiz as the dependent variable yielded a significant three-way interaction ($F(1, 282) = 8.42$, $p = .00$). Follow up analyses on performance revealed the similar patterns of results to motivation in the condition of free activity generation. When participants were free to generate as many or as few activity items, a two-way ANOVA of mindset and mood on motivation yielded a significant interaction between mindset by mood ($F(1, 154) = 7.96$, $p = .00$). Planned contrasts showed that among outcome-oriented individuals, those in a positive mood ($M = 14.17$, $SD = 2.84$) showed greater performance than those in a neutral mood ($M = 13.23$, $SD = 2.70$), but this difference was only directional ($F(1, 82) = 1.57$, $p = .12$; $d = .34$). When process-oriented individuals were considered, those in a positive mood ($M = 13.28$, $SD = 2.12$) performed worse compared to those in a neutral mood ($M = 14.69$, $SD = 2.70$; $F(1, 72) = 2.50$, $p = .01$; $d = .58$). Another series of planned contrasts revealed that in the positive mood condition outcome-oriented people ($M = 14.17$, $SD = 2.84$) showed greater performance than process-oriented people ($M = 13.28$, $SD = 2.12$), but the difference was only directional ($F(1, 80) = 1.61$, $p = .11$; $d = .35$). Unexpectedly in the neutral mood condition, individuals with a process mindset ($M = 13.23$, $SD = 2.70$) showed a greater performance than those in an outcome mindset ($M = 14.69$, $SD = 2.70$; $F(1, 74) = 2.32$, $p = .02$; $d = .54$).

Discussion

I successfully replicated key findings from prior studies including the interactive roles of mindset and mood on motivation. More importantly, I provided confirming evidence that mood interacts with mindset by changing people's accessibility to available

goal attainment activities. Also, the result from Study 3 suggests that the proposed relationship between mindset and mood on motivation is not driven by regulatory fit. When a predetermined number of activities to be generated was enforced, those in a neutral mood condition showed an identical pattern of result to those in a positive mood condition.

Chapter 7: Study 4 – Planned Sequential Activity Execution

Study 4 aims to provide confirming evidence for the mediating role of the anticipated resource competition between available activities. If the observed relationship between mindset and mood on motivation is indeed driven by the anticipated competition for resources, consideration of sequential, as opposed to simultaneous, activity execution should diminish the effect of mood. As executing one activity at a time decreases concern about resource constraint (Miller, 1960; Shallice, 1972), being in a positive mood, or generation of a large set of activities, should lead to increased motivation in a process mindset. This study also suggests a boundary condition for the negative effect of positive mood on motivation in a process mindset: A process mindset would not always decrease motivation when a large set of activities is considered if planning does not alert people to the resource constraint. Thus, Study 4 focuses on a process mindset only; I found that outcome-oriented individuals were less concerned about resource constraint since available activities were perceived as opportunities that could aid in successful goal attainment. Thus, as in prior studies, half of the participants were asked to make implemental plans based on when, where, and how to execute available goal attainment activities. The other half also made implemental plans, but they were asked to plan sequential activity execution. As in Study 2, I adopted a weight-loss goal domain.

METHOD AND PROCEDURE

One hundred and eighty-five individuals (110 females) recruited from Amazon Mechanical Turk participated in this study in return for monetary rewards. Due to the limited research funds, each condition was aimed to have maximum of 50 participants. One hundred and eighty-five participants entered the survey for the four days that this survey link was posted. Only those who had a plan to lose weight were eligible to participate in this study. The study was a 2 (Process mindset: Control vs. Sequential execution) X 2 (Mood: Positive vs. Neutral) between-subjects design (see Appendix D for materials used in this study).

All participants were first instructed to provide their weight-loss goal by submitting how many pounds they aimed to lose. I also asked them to provide deadline for their goal.

Next, mood was manipulated by using the same mood induction technique adopted in Study 2. Participants viewed a set of 10 pictures that evoke positive (e.g., flowers, puppies, and trees) or neutral (e.g., desks, chairs, buildings) moods depending on condition. The 10 pictures were displayed one at a time, with each image advancing to the next automatically after five seconds. After viewing the set of 10 pictures, mood was measured by having participants respond to the questions asking how they were feeling (i.e., bad/good, unpleasant/pleasant, and unhappy/happy) and how emotionally aroused they were at that moment on a 7-point scale.

After the mood manipulation, participants were asked to generate a list of activities that they would do to facilitate their weight-loss goal. They were instructed to move on to

the next questionnaire once they submitted all activities that they would do. The screen offered 15 open fields, and participants were instructed to list only one activity per field.

With the list of goal attainment activities still on the screen, all participants were put in a process mindset, but this was manipulated in two different ways. In the control condition, participants were instructed to describe implemental plans based on when, where, and how to execute their activities. This was identical to the process mindset manipulation used in Studies 1A, 1B, 2, and 3. In the sequential execution condition, before making implemental plans, participants were led to think of doing one activity at a time instead of assuming to execute multiple activities simultaneously. They described implemental plans for the available activities in the same format (i.e., when, where, and how to execute each of the available activities) as those in the control condition.

Lastly, motivation was measured by asking when they would initiate goal execution. Participants were instructed to provide a specific date that they aimed to begin their goal of losing weight.

RESULTS AND DISCUSSION

Manipulation check

The three mood items were averaged to create a composite measure of mood ($\alpha = .93$). As predicted, those in the positive mood condition indicated that they were in a more positive mood ($M = 5.73$, $SD = 1.11$) than those in the neutral mood condition ($M = 5.24$, $SD = 1.13$; $t(183) = 2.98$, $p = .00$). Participants in a positive mood ($M = 3.75$, $SD = 1.53$) reported the same level of arousal as those in a neutral mood ($M = 3.42$, $SD = 1.61$;

$t(183) = 1.46, p = .14$). Although I manipulated process mindset after the mood manipulation, to ensure there was no a priori differences in mood by process mindset condition, I conducted an ANOVA with process mindset and mood as independent variables and the reported levels of mood as a dependent variable. I found neither a significant interaction between process mindset and mood ($F(1, 181) = .63, p = .43$) nor a main effect of process mindset ($F(1, 181) = .25, p = .61$). Only a main effect of mood emerged ($F(1, 181) = 9.51, p = .00$).

The effect of process mindset and mood on motivation

An initial analysis revealed that the number of hours that participants intended to spend studying (in hours) was highly skewed (Kurtosis = 35.91; Shapiro-Wilk test $w(185) = .36, p = .00$; Kolmogorov-Smirnov $z(185) = .35, p = .00$); therefore, I submitted the values to a standard log-transformation for analysis. For presentation purposes, I report the means in the actual number of days that participants submitted.

An ANOVA was conducted with process mindset and mood conditions as independent variables and motivation as a dependent variable (see fig.8). Results showed neither a main effect of mood ($F(1, 181) = 1.13, p = .29$), nor of process mindset ($F(1, 181) = 1.67, p = .20$). However, the analysis revealed the predicted process mindset by mood interaction ($F(1, 181) = 5.07, p = .03$). Planned contrasts showed that among those in the process-control condition, those in a positive mood showed a lower willingness to initiate their pursuit ($M = 15.25$ days, $SD = 32.90$) compared to those in a neutral mood ($M = 3.76$ days, $SD = 4.74$; $F(1, 75) = 4.09, p = .05$; $d = .49$). Conversely, among participants in the

sequential execution condition, those in positive ($M = 4.55$ days, $SD = 8.89$) and neutral ($M = 6.80$ days, $SD = 18.84$) moods did not show a difference in their willingness to initiate goal execution ($F(1, 106) = .95, p = .33; d = .15$). This result indicates that the negative effect of positive mood on motivation disappears when goal attainment activities are planned to be sequentially executed. Another series of planned contrasts showed that among those who were in a positive mood, those in the process-control condition ($M = 15.25$ days, $SD = 32.90$) were less motivated to initiate their pursuit compared to those who considered sequential activity execution ($M = 4.55$ days, $SD = 8.89; F(1, 92) = 5.47, p = .02; d = .44$). When I examined those in a neutral mood, the effect of process mindset diminished; there was no difference in participants' willingness to initiate goal execution between those in the process-control ($M = 3.76$ days, $SD = 4.78$) and sequential execution conditions ($M = 6.80$ days, $SD = 18.84; F(1, 89) = 1.01, p = .32; d = .22$).

A separate ANOVA ensured that gender had no effect. In this analysis gender was included as a covariate in the model. Results were not affected by including this covariate. The hypothesized process mindset by mood interaction remained significant ($F(1, 180) = 5.05, p = .03$). There was no main effect of process mindset ($F(1, 180) = 1.72, p = .19$) nor of mood ($F(1, 180) = 1.30, p = .25$). A main effect of gender did not emerge either ($F(1, 180) = .61, p = .43$).

The role of the number of goal attainment activities

A t-test comparing the number of goal achievement activities generated in the positive and neutral mood conditions was as predicted ($t(183) = 2.02, p = .04$), with those in a positive mood generating more goal attainment activities ($M = 6.86, SD = 3.97$) than those in a neutral mood ($M = 5.80, SD = 3.09$). Although I manipulated mindset after the activity generation task, to ensure there was no a priori differences in mood by process mindset condition, I conducted an ANOVA with process mindset and mood as independent variables and the number of generated activities as a dependent variable. Only a main effect of mood emerged ($F(1, 181) = 4.89, p = .03$). I found neither a significant interaction between process mindset and mood ($F(1, 181) = 2.52, p = .11$) nor a main effect of process mindset ($F(1, 181) = .43, p = .51$).

As I argued that mood indirectly influences the effect of process mindset on motivation by affecting the quantity of available activities, I investigated the moderating roles of process mindset and the number of activities on participants' willingness to initiate goal execution. When participants' willingness for goal execution was regressed on the number of activities (mean centered), process mindset (coded as -1 for the process-control condition and 1 for the sequential execution condition), and an interaction term, the analysis revealed a main effect of process mindset ($\beta = .23, SE = .08, t(181) = 2.79, p = .01$), which indicates that those who considered sequential activity execution ($M = 5.59$ days, $SD = 14.35$) were generally more motivated to initiate goal-directed actions than participants in the process-control condition ($M = 9.13$ days, $SD = 23.32$). There was also

a main effect of number of activities, ($\beta = .02$, $SE = .01$, $t(181) = 2.03$, $p = .04$), which indicates that those who generated a fewer number of activities were more motivated to initiate their goal-directed actions than those who generated a larger number of activities. More importantly, the analysis revealed the hypothesized process mindset by number of activities interaction ($\beta = -.04$, $SE = .01$, $t(181) = 3.85$, $p = .00$). To explicate the interaction of mindset and the number of activities, a simple slope analysis was conducted (see fig.9). First, regression lines were plotted for one standard deviation above and below the mean for the number of goal attainment activities (Aiken & West, 1991). When I examined individuals in the process-control condition, those who generated a larger number of activities were less willing to initiate goal execution than those who generated a fewer number of activities ($\beta = 2.09$, $SE = .69$, $t = 3.05$, $p = .00$). Examining those who planned sequential activity execution, there was no difference in participants' willingness for goal execution between those who generated a larger and fewer number of activities ($\beta = -.50$, $SE = .44$, $t = 1.12$, $p = .26$). This result suggests that regardless of the number of available activities a process mindset does not lead to decreased motivation when activities are planned to be sequentially executed.

Discussion

In the process-control condition, I successfully replicated the findings from prior studies: Positive mood led to decreased motivation when participants made implemental plans without considering sequential activity execution. By contrast, positive mood increased motivation when participants made plans to execute one activity at a time. This

finding provides confirming evidence for the proposed underlying mechanism (i.e., the anticipated competition for resources between available activities): The effect of mood on motivation diminished when planning did not alert individuals to the challenge of resource allocation. Not only that, this finding also suggests a boundary condition for the negative effect of mood on motivation in a process mindset. For those who plan sequential activity execution, being in a positive mood, or generation of a large set of available activities, increased motivation to work toward a goal. This finding indicates that people may benefit from a process mindset, or implemental planning, even when there are many actions required for goal accomplishment.

Chapter 8: Study 5 – Credit Card Loyalty Award Goal

While some goals are intrinsically rewarding, others could be motivated by extrinsic rewards (Deci & Ryan, 1985). In prior studies, I activated goals that participants might have set on their own (e.g., academic achievement, a weight-loss goal, and a learning or self-improvement goal). In these cases, consumers sought to accomplish goals since the goals were intrinsically rewarding. However, consumers may pursue goals for extrinsic rewards created by marketers. For example, credit card companies offer sign-up bonus points that could be redeemed in a variety of ways when a new credit card is launched. To earn the sign-up bonus points, consumers need to sign up for the credit card and reach a specific level of spending on the card in a specified period of time. Consumers enticed by the sign-up bonus offer would open the new credit card and set a goal to spend the specified amount of money on the card. This type of goal is different from other goals examined in prior studies since this is a goal created by a marketer as an enticement to do something that consumers would otherwise not engage in. Because of it, this sort of goal may be in conflict with other goals that consumers desire to accomplish. For example, consumers may be constantly pursuing a savings goal for the future, and a spending goal activated by marketers for the sign-up bonus points would be competing with the goal related to wealth accumulation.

In Study 5, I aimed to examine the hypothesized mindset by mood interaction in goal pursuit that is extrinsically rewarding. To this end, Study 5 adopted a credit card loyalty award goal. This context of pursuit is particularly interesting because credit card

loyalty awards are commonly offered to consumers, yet research shows that although many people sign up for such programs, 65% of cardholders fail to redeem bonus rewards due to the lack of motivation to achieve the specified level of spending (Liu & Brock, 2009).

METHOD AND PROCEDURE

One hundred fifty-one students (65 females, 1 unknown) from a large university participated in this study in return for partial extra credit in an introductory course. The number of participants was determined based on the number of sign-ups from the subject pool for the study sessions. Due to the lab capacity restrictions, each session required maximum of 50 sign-ups. Thus, this study took place over three weeks. None participated in this study more than once. This study was a 2 (Mindset: Outcome vs. Process) X 2 (Mood: Positive vs. Neutral) between-subjects design (see Appendix E for materials used in this study).

All participants were told about a credit card offer and promotion based on an actual college student credit card (see: <http://www.cardhub.com/d/citi-forward-card-252c/>). The promotion offered 10,000 points (equivalent to \$100 in cash or merchandise credit) if one used the card for \$650 in purchases in the first 3 months. Additional information described other features of the credit card (no annual fee, no international transaction fee, 0% APR for first year, etc.).

After learning about the credit card offer, mood was manipulated by having participants watch an unrelated advertisement. In the positive mood condition, participants watched a two minute video clip of the Coca-Cola Happiness machine campaign (see:

https://www.youtube.com/watch?v=lqT_dPApj9U). In the neutral mood condition participants saw a two minute video clip advertising 3M mirror tape (see: <https://youtube.googleapis.com/v/3FY8tHiQDq0>). In addition, as a manipulation check, mood was measured by having participants respond to questions asking whether they were feeling (1) bad/good, (2) unpleasant/pleasant, (3) unhappy/happy, and (4) emotionally unaroused/aroused on a 7-point scale.

After the mood manipulation, participants were asked to spend up to 3 minutes to generate a list of activities that they could do in order to earn 10,000 reward points if they were to sign up for the credit card. The screen displayed 30 open fields, and participants were instructed to provide as many or as few activities as they could think of, but to provide only one activity item in a single field.

Next, with participants' lists of goal attainment activities still on their screens, goal-oriented mindset was manipulated. Adapted from Gollwitzer et al. (1990), half of the participants were asked to describe the outcome of executing the self-generated goal attainment activities. The other half was asked to make implemental plans of execution based on when, where, and how to execute each of the goal attainment activities. All participants were told that they would be allowed five minutes for this task.

As a measure of goal motivation, participants indicated their willingness to sign up for this new credit card (i.e., "How willing are you to apply for this new credit card?") on a 7-point scale with 1 being "Not at all" to 7 being "Very much."

RESULTS AND DISCUSSION

Manipulation check

The three mood items (good/bad, unpleasant/pleasant, and unhappy/happy) were averaged to create a composite measure of mood ($\alpha = .92$). As expected those who watched the happy advertisement indicated that they were in a more positive mood ($M = 5.74$, $SD = 1.05$) than those who saw the neutral ad ($M = 4.55$, $SD = 1.14$; $t(149) = 6.63$, $p = .00$). The mood manipulation also changed participants' emotional arousal. Those in a positive mood ($M = 5.00$, $SD = 1.41$) reported higher levels of arousal than those in a neutral mood ($M = 3.38$, $SD = 1.46$; $t(149) = 6.94$, $p = .00$).

The effect of mindset and mood on motivation

An ANOVA with mood and mindset conditions as independent variables and motivation as a dependent variable was conducted. To control for arousal differences between mood conditions, the arousal score was included as a covariate in the analysis. Results showed neither a main effect of mood ($F(1, 146) = 1.02$, $p = .31$) nor of mindset ($F(1, 146) = .04$, $p = .85$), nor of arousal ($F(1, 146) = 2.31$, $p = .13$). However, as predicted, the analysis revealed a significant mood by mindset interaction on motivation ($F(1, 146) = 10.39$, $p = .00$; see fig.10). Planned contrasts showed that among those in a positive mood, outcome-oriented individuals ($M = 4.38$, $SD = 1.81$) showed a greater willingness to sign up for the new credit card than did process-oriented individuals ($M = 3.45$, $SD = 1.77$; $t(76) = 2.29$, $p = .02$; $d = .52$). Unlike findings from previous studies, participants in the neutral mood condition showed the opposite: Outcome-oriented individuals ($M = 3.53$,

$SD = 1.71$) were less willing to sign up compared to process-oriented people ($M = 4.46$, $SD = 1.67$; $t(71) = 2.35$, $p = .02$; $d = .55$).

Another series of planned contrasts showed that among outcome-oriented individuals, people in a positive mood ($M = 4.38$, $SD = 1.81$) showed greater motivation to apply for the new credit card compared to those in a neutral mood ($M = 3.53$, $SD = 1.71$; $t(72) = 2.06$, $p = .04$; $d = .48$). When process-oriented individuals were considered, those in a positive mood ($M = 3.45$, $SD = 1.77$) reported lower motivation to sign up compared to those in a neutral mood ($M = 4.46$, $SD = 1.67$; $t(75) = 2.59$, $p = .01$; $d = .59$).

A separate ANOVA ensured that gender had no effect. In this analysis gender was included as a covariate in the model. Results were not affected by including this covariate. The hypothesized process mindset by mood interaction remained significant ($F(1, 145) = 10.13$, $p = .00$). There was no main effect of mindset ($F(1, 145) = .01$, $p = .94$) nor of mood ($F(1, 145) = .03$, $p = .86$). A main effect of gender did not emerge either ($F(1, 145) = .45$, $p = .50$).

The role of the number of goal attainment activities

People in a positive mood ($M = 9.17$, $SD = 4.16$) listed more activities to achieve the goal of earning 10,000 reward points than did those in a neutral mood ($M = 8.05$, $SD = 2.60$; $t(149) = 1.95$, $p = .05$). Although mindset was manipulated after the listing task, I submitted an ANOVA of mood and mindset on the number of goal attainment activities that people accessed with arousal as a covariate to ensure that the two variables are not, by chance of random assignment, jointly related to the quantity of goal attainment activities.

As predicted, the analysis revealed only a main effect of mood ($F(1, 146) = 3.71, p = .05$). Neither a main effect of mindset ($F(1, 146) = .47, p = .49$) nor a mood by mindset interaction emerged ($F(1, 146) = .30, p = .59$). In addition there was no effect of arousal ($F(1, 146) = .20, p = .65$).

I argued that the number of activities that are generated interacts with mindset to influence motivation. To explore this, I regressed participants' willingness to sign up for the credit card on the number of goal attainment activities, mindset (coded as 1 for an outcome mindset and -1 for a process mindset), and an interaction term. The analysis did not reveal a main effect of number of activities ($\beta = -.03, SE = .04, t(147) = .33, p = .42$). However, a main effect of mindset emerged ($\beta = -1.00, SE = .38, t(147) = 2.62, p = .01$). More importantly, there was a significant effect of the interaction between mindset and the number of activities generated on motivation ($\beta = .12, SE = .04, t(147) = 2.85, p = .00$; see fig.11). To explicate the observed interaction, a simple slope analysis was conducted. Following Aiken and West (1991), I plotted regression lines at one standard deviation above and below the mean for the number of goal attainment activities. When I examined people who generated a relatively large number of activities, I found that those in an outcome mindset showed a greater willingness to sign up for the credit card compared with those in a process mindsets ($\beta = 1.41, SE = .61, t = 2.30, p = .02$). When I observed people who generated a relatively few number of activities, process-oriented individuals were more willing to sign up for the credit card than outcome-oriented individuals ($\beta = -.61, SE = .31, t = 1.92, p = .06$).

Discussion

I found an interactive role of mindset and mood on motivation in pursuit of a credit card loyalty award goal. Unexpectedly though, a cross-over interaction emerged: Among those in a positive mood, outcome-oriented individuals were more motivated to sign up for the credit card than those who were process-oriented. By contrast, process-oriented individuals showed a greater willingness to sign up than those who were outcome-oriented in a neutral mood. Different reasons may underlie the observed inconsistency between this study and prior studies. It may be due to the context of this pursuit. As addressed, this type of goal is distinct from other goals adopted in prior studies (e.g., academic achievement, a weight-loss goal, and a learning goal) since a credit card loyalty award goal is created by marketers as an enticement to do something that consumers would otherwise not do. In this case, goal accomplishment is extrinsically, as opposed to intrinsically, rewarding. Or the observed inconsistency may be a result of measurement error upon hypotheses testing. If so, the cross-over interaction between mindset and mood on motivation should not be replicated. To examine if the observed pattern of result is replicated in the same context of pursuit, I recruited participants from the same participant pool, but who did not participate in Study 5 and ran the nearly identical experiment for Study 6.

Chapter 9: Study 6 – Credit Card Loyalty Award Goal

The purpose of Study 6 was to examine whether the observed cross-over interaction between mindset and mood on motivation is replicated. Due to the limited number of sign-ups, 87 students participated in this study in return for partial extra credit. I followed the same experimental procedure as Study 5, but participants in this study were not asked to list goal attainment activities that they would do to earn the 10,000 sign-up bonus points. Instead, as in Studies 1A and 1B, participants were instructed to think of activities that they would do to achieve the earning goal for 30 seconds after the mood manipulation.

RESULTS AND DISCUSSION

The observed pattern of result – a cross-over interaction—emerged in Study 6 as well. An ANOVA with mood and mindset conditions as independent variables and motivation as a dependent variable was conducted. Results showed neither a main effect of mood ($F(1, 83) = .50, p = .48$) nor of mindset ($F(1, 83) = .00, p = .98$). However, the analysis revealed a significant mood by mindset interaction on motivation ($F(1, 83) = 9.48, p = .00$). Planned contrasts showed that among those in a positive mood, outcome-oriented individuals ($M = 4.58, SD = 1.74$) showed a greater willingness to sign up for the new credit card than did process-oriented individuals ($M = 3.30, SD = 1.89; t(40) = 2.25, p = .03; d = .70$). In the neutral mood condition, outcome-oriented individuals ($M = 3.00, SD = 1.88$) showed lower motivation to sign up for the new credit card compared to process-oriented people ($M = 4.29, SD = 2.14; t(43) = 2.12, p = .04; d = .64$). This result signals that

there might be some undiscovered factors that drive motivation in pursuit of a credit card loyalty award goal, and this may explain why a cross-over interaction emerged in this context of goal pursuit. Another series of planned contrasts showed that among outcome-oriented individuals, people in a positive mood ($M = 4.57$, $SD = 1.74$) showed greater motivation to apply for the new credit card compared to those in a neutral mood ($M = 3.00$, $SD = 1.88$; $t(45) = 2.90$, $p = .01$; $d = .87$). When process-oriented individuals were considered, those in a positive mood ($M = 3.30$, $SD = 1.89$) reported lower motivation to sign up for the new credit card compared to those in a neutral mood ($M = 4.29$, $SD = 2.14$), but this difference did not reach significance ($t(38) = 1.54$, $p = .13$; $d = .49$).

Chapter 10: General Discussion

Prior research has found that one's mindset, whether outcome or process oriented, can influence motivation in goal pursuit. Yet these findings are mixed with respect to only when and how mindset leads to increased or decreased goal completion. The present research explores how incidental mood interacts with mindset to affect motivation. I find that for those in a process mindset, positive (vs. neutral) mood decreases motivation, but for those in an outcome mindset, the effect is the opposite with positive (vs. neutral) mood increasing motivation. The process for the interaction is rooted in the mood-creativity link: The Pilot Studies and Studies 2, 3, 4, and 5 provided converging evidence that those in a positive (vs. neutral) mood generate more ideas and potential solutions that may be employed to achieve a goal. Seven lab studies provided evidence for the interactive roles of mindset and mood on motivation. Studies 2 and 3 further showed that the proposed relationship between mindset and mood on motivation was mediated by the anticipated competition for available resources between activities. In a process (vs. outcome) mindset, individuals are more likely to be alerted to resource constraint, so an issue of resource allocation is constantly pronounced. Thus, the generation of a large number of activities as a function of positive mood raises concern about resource competition between activities that people generate, leading to decreased motivation. By contrast, an outcome mindset frame a set of goal attainment activities as opportunities or resources that aid in successful goal attainment. As resource constraint is less of an issue for outcome-oriented individuals, a large set of available goal attainment activities still increases motivation in the pre-

actional stage of goal striving since it does not alert participants to the challenge of resource allocation. Study 4 provided confirming evidence for the mediating role of the anticipated competition for resources between available activities. When available activities were planned to be sequentially executed, the effect of mood diminished; as executing one activity at a time decreases concern about resource constraint, being in a positive mood, or a large set of available activities, still increase motivation in a process mindset. This study also suggested a boundary condition for the effect of positive mood on motivation in a process mindset. A process mindset does not decrease motivation even when a large set of activities is considered if planning does not highlight the need for allocating resources associated with the activities. In Studies 5 and 6, the interactive roles of mindset and mood on motivation were replicated in goal pursuit that was extrinsically rewarding. Participants were activated with a goal to earn 10,000 sign-up bonus points, equivalent to \$100 in cash, by making \$650 on purchases with the credit card in three months. Unlike prior studies, I found a cross-over interaction between mindset and mood on motivation; in the neutral mood condition, process-oriented individuals showed a greater willingness to sign-up for the credit card than outcome-oriented individuals. This finding suggests that a process mindset, or implemental planning, may increase motivation in a neutral mood, or in consideration of a few number of activities, when consumers are driven by extrinsic rewards in pursuit.

Across the studies the effects were shown in multiple goal domains including academic goals (Studies 1A and 1B), weight-loss goals (Studies 2 and 4), learning goals (Study 3), and consumer loyalty program goals (Studies 5 and 6). In addition, mood was

manipulated by using a word-priming task (Studies 1A and 1B), have participants look at photographs (Studies 2 and 4) and see videos (Pilot Studies, and Studies 3, 5, and 6). Finally, motivation was measured both by self-reported intent (Studies 1A, 1B, 2, 5, and 6), expected time until a goal effort would be initiated (Studies 2 and 4), and through actual behaviors (Study 3).

THEORETICAL AND MARKETING IMPLICATIONS

The present research contributes to the literature on mindset and goal motivation by demonstrating why individuals still fail to initiate goal-directed actions when they have a concrete plan to achieve a goal. Although researchers have contributed to understanding the roles of a process mindset on motivation in goal striving, the extant body of research has not fully addressed what causes the discrepancy in motivation between goal intention and goal execution. The present research adds to the literature by introducing a factor that could moderate the effect of mindset on motivation in pursuit of a single goal.

I also add to the literature on mood and goal motivation by introducing another way in which mood could influence individuals' goal motivation. Researchers have shown that positive mood increases motivation by increasing psychological resources, enhancing abstract construal and high-level thinking, and by activating an approach behavioral mechanism toward a set or activated goal (e.g., Fishbach & Labroo, 2007; Labroo & Patrick, 2009; Raghunathan & Trope, 2002). The present research demonstrates that mood also indirectly affects motivation by influencing individuals' accessibility to available activities that could serve as means to attaining a goal. More specifically, the quantity of

goal attainment means or activities that people generate as a function of mood was shown to moderate the relationship between mindset and motivation. In terms of the roles of mindset on motivation, prior work introduced conditions under which a process mindset could hinder motivation; however, discussions were mostly centered on goal-relevant factors, such as performance feedback, the number of goals being pursued, and goal specificity (Dalton & Spiller, 2012; Huang & Zhang, 2013; Townsend & Liu, 2012; Soman & Zhao, 2011; Ülkümen & Cheema, 2011). Thus, my dissertation facilitates a greater understanding of a situational influence on the relationship between mindset and motivation by introducing mood as a potential moderator for the effect of mindset on motivation and unraveling the processes underlying the observed effects.

I also contribute to mood-creativity research by providing evidence for the enhanced cognitive fluency (i.e., the quantity of goal attainment means or activities that individuals generate) as a function of positive mood in the context of goal pursuit. Consumer research on mood and creativity has largely focused on the dimensions of cognitive flexibility and originality (e.g., Isen & Daubman, 1984; Kahn & Isen, 1993). So there has been limited understanding of the role of positive mood on motivation and performance through the heightened cognitive fluency. The present research reduces the gap by addressing how the promoted cognitive fluency as a function of positive mood could influence motivation in goal pursuit where perseverance is a key for successful goal accomplishment.

From a consumers' perspective, these findings may offer practical guidance on how to resolve the motivational discrepancy between goal intention and goal execution.

Research on mindset and motivation does not fully address what causes motivational issues in the pre-actional stage and how to resolve them. Gollwitzer and his colleagues have demonstrated that a process mindset, or implementation intention, increases motivation in the pre-actional stage (e.g., Gollwitzer, Heckhausen, & Steller, 1990; Taylor & Gollwitzer, 1995; Taylor & Pham, 1997, 1999). Despite concrete plans, however, consumers still fail to initiate goal-directed actions. The present research adds to the literature by demonstrating the negative effect of a process mindset on motivation in a positive mood or in consideration of a large number of goal attainment activities. When multiple actions are to be executed simultaneously, a concrete plan for one activity is likely to compete with other activity plans (Miller, 1960). Such competition between different action plans for available resources raises concern about resource allocation (Lewin, 1935, 1951; Lynch et al., 2010, Miller, 1944, 1960; Shah & Kruglanski, 2008; Trope & Liberman, 2003; Zauberaman & Lynch, 2005). Thus, when individuals are focused on detailed steps and processes required for goal accomplishment, it is important to stay in a neutral mood so they do not spontaneously generate a large set of goal attainment activities. Regardless of mood, if a large set of activities must be considered, it may benefit to focus on connecting each available activity to the desired end benefits of pursuit. This would help individuals stay motivated at least until they initiate goal-directed actions.

From a managerial standpoint, marketers may consider including positive mood induction features in their products or services along with messages to keep consumers' focus on the outcome especially when consumers consider doing a large number of activities as means to attaining a goal. For example, fitness applications such as Fitbit and

Noom Diet Coach may induce positive moods whenever people login or set the goal of the day and display messages that draw attention to the desired outcome of execution. Similar strategies can be exerted in other goal-oriented products, services, and promotions such as online education programs, frequency program rewards, and donation drives. When demotivation is desired, such as when a social program wishes to diminish unwanted behavior that is otherwise associated with positive feelings, it may be beneficial to focus consumers' attention on the process that would normally be required to achieve the goal. For example, if a municipality wanted to curtail snowmobile use on its public trails, it might remind people to consider all that must be done to get the snowmobile ready to ride.

POTENTIAL FOLLOW-UP STUDIES AND FUTURE RESEARCH

Although I find the effects of mindset and mood across multiple goals, it is possible that in some domains mood may play less of a role in the number of means or activities that are generated. Some goals may have only a finite set of potential solutions that are easily accessible regardless of mood. For example, college students preparing for an exam may focus on studying lecture notes, textbooks, and other materials covered in the class, but beyond that may find it difficult to generate other means to improve performance. This situation would suggest a boundary condition for the effect of mood on the relationship between mindset and motivation.

There would be other situational factors that may diminish or intensify the observed effect of mood on motivation. For example, if individuals are under high cognitive load, an ability to generate goal attainment activities would be limited regardless of mood.

Indeed, high cognitive load or low processing capacity is known to decrease deliberation (Gilbert & Hixon, 1991; Sherman & Hamilton, 1994). For example, research on processing capacity has demonstrated that people are more likely to rely on stereotypes when their processing capacity is low. So under high cognitive load, stereotypical information is easily adopted and processed to expand a perceiver's base of knowledge because stereotyping reduces the amount of information the perceiver should consider (Bodenhausen, 1990; Pratto & Bargh, 1991; Sherman, Lee, Bessenoff, & Frost, 1998). A similar effect may exist in the roles of mood on motivation: Under high cognitive load, positive (vs. neutral) mood may not increase, or even decrease, the number of goal attainment activities that individuals are able to access. Thus, it would be interesting to see the effect of mood on the relationship between mindset and motivation under varying degrees of cognitive load.

Another venue for future research would be an investigation of the potential qualitative differences that may exist in sets of goal attainment activities created under positive versus neutral moods and their impacts on motivation. In some goal domains, being in a positive (vs. neutral) mood may lead to more original (i.e., uncommon and infrequent) ideas and solutions for goal achievement. Study 2 provided evidence that lists of activities that were generated in positive versus neutral moods did not differ in terms of novelty. Specifically, in a weight-loss goal domain all participants, irrespective of mood condition, were focused on generating activities that were proven instrumental, rather than novel. Thus, qualitative differences in activities do not account for the current findings. Also, if being in a positive mood helps individuals generate qualitatively better activity items, those in a positive (vs. neutral) mood should show a greater willingness to work

toward a goal no matter what mindset they have. Still, it is worth investigating situations where different moods may lead to qualitatively different ideas and problem solutions. For example, those in a positive (vs. neutral) mood may come up with ideas that will make pursuit more efficient when faced with a set of multiple goals.

Conclusion

In conclusion, my dissertation investigates the interactive effects of mindset and mood on motivation in consumers' goal striving. Across a set of four Pilot Studies and seven experiments, I found that for those in a process mindset positive (vs. neutral) mood decreases motivation. Conversely, being in a positive (vs. neutral) mood leads to increased motivation for those in an outcome mindset. The reason for this was found to be rooted in the mood-creativity link: Positive emotions—from mild emotions to high arousal emotions such as elation and excitement—enhances creativity by promoting individuals' cognitive fluency. That is, individuals generate more activities, ideas, or means, by which a goal may be achieved when in a positive (vs. neutral) mood. For those in a process mindset, a large set of goal attainment activities decreases motivation because detailed implemental steps and processes increase concern about competition for available resources between activities. However, I find that outcome-oriented individuals view their goal attainment activities as opportunities or resources that will aid in goal achievement. Thus, motivation increases in an outcome mindset even when a large number of activities are considered as means to attaining a goal.

These findings make a substantial contribution to the literature on mindset and goal motivation. They introduce one of the possible reasons why consumers still fail to initiate goal-directed actions after goal setting despite concrete plans and suggest potential solutions for the negative effects of a process mindset on motivation. When individuals are focused on detailed steps and processes required for goal accomplishment, it is important

for them to stay in a neutral mood so they do not spontaneously generate a large set of goal attainment activities. Or, if a large set of activities is required to consider, it may benefit motivation to focus on the connecting each available activity to the desired end benefits of pursuit.

Table and Figures

Table 1. Pilot Studies: The Number Of Goal Attainment Activities Generated

Pilot			Positive	Neutral
Study	Goal	n	Mood	Mood
1	Credit Card Loyalty Award – Earn points by spending at least \$4000.	72	13.03 (6.49)	10.19 (4.42)*
2	Fitness – Participant provided personal fitness goal.	68	10.91 (5.79)	8.26 (4.18)*
3	Academic – Achieve desired grade in an introductory course.	58	12.59 (6.83)	10.71 (4.96)
4	Social – Build networks in the local community.	70	10.90 (4.97)	8.74 (3.72)*

Figure 1. Theoretical Model

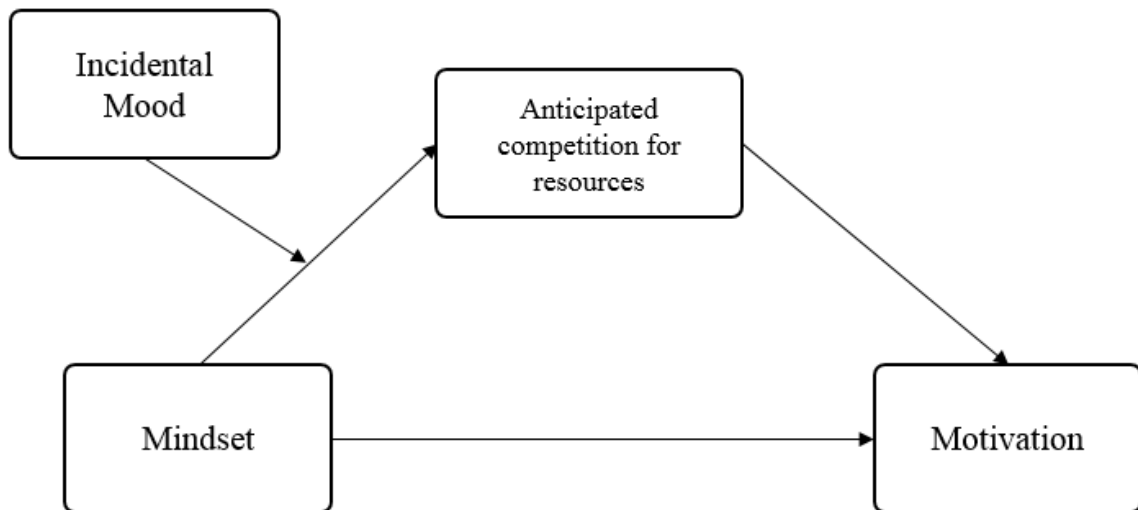


Figure 2. Mindset and Mood on Motivation (Study 1A)

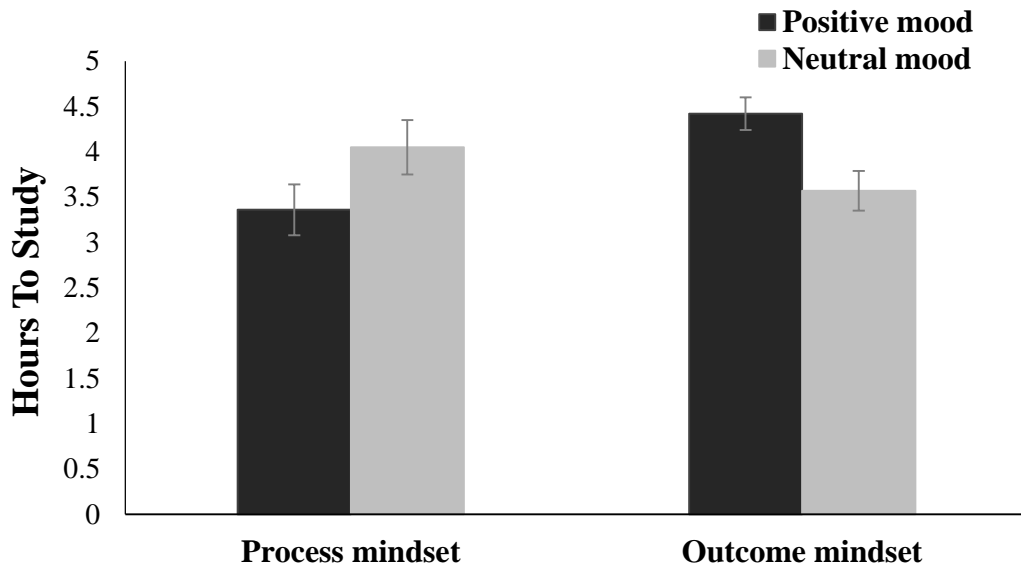


Figure 3. Mindset and Mood on Motivation (Study 2)

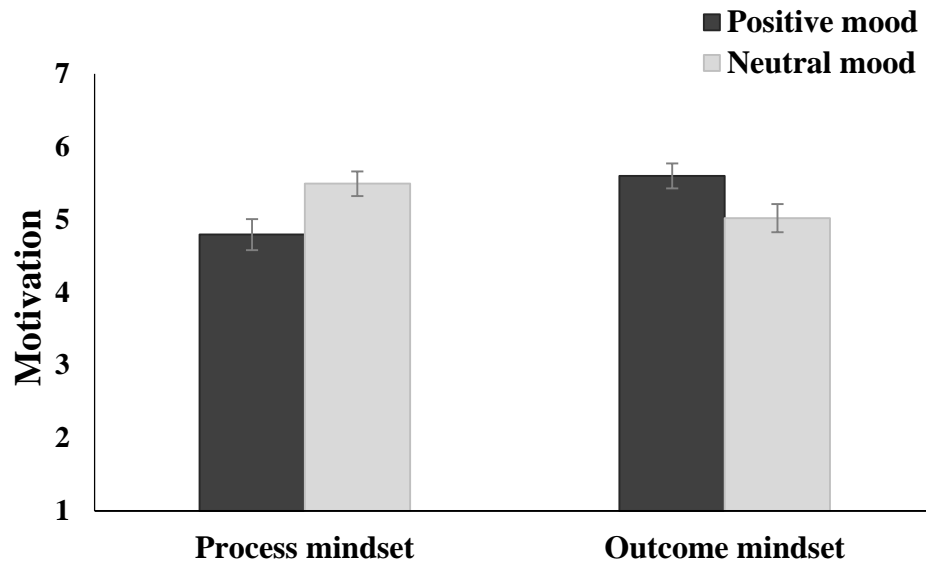


Figure 4. Number of Activities and Mindset on Motivation (Study 2)

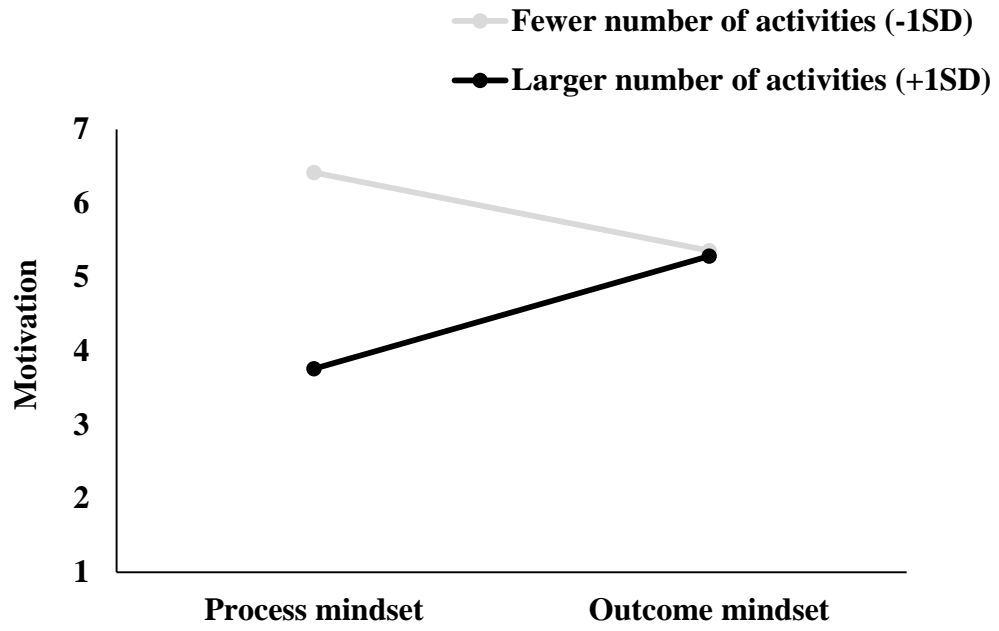


Figure 5. Anticipated Competition for Resources between Activities (Study 2)

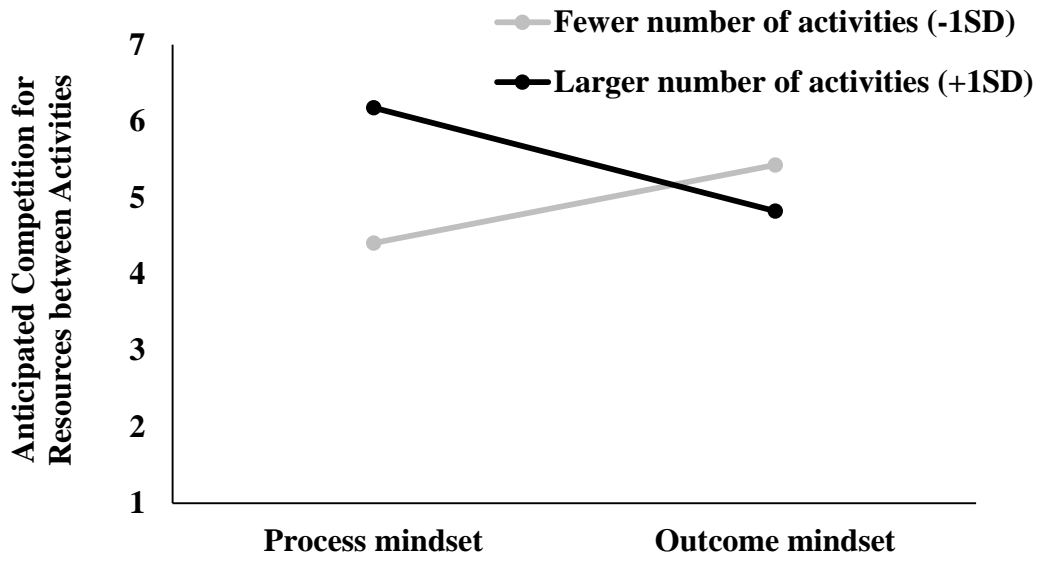
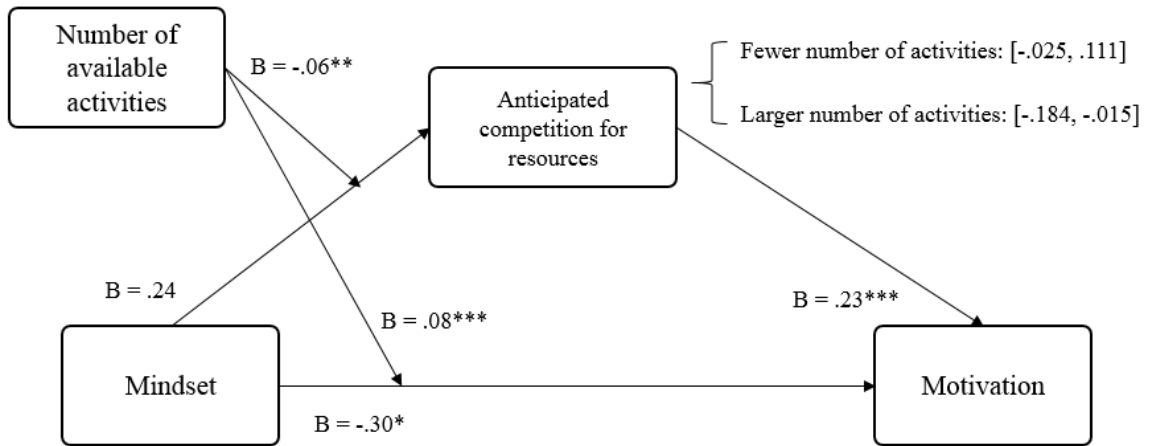


Figure 6. Mediation Analysis (Study 2)



Note. $*p < .10$, $**p < .05$, $***p < .01$, $****p < .001$.

Figure 7. Mindset and Mood on Motivation (Study 3)

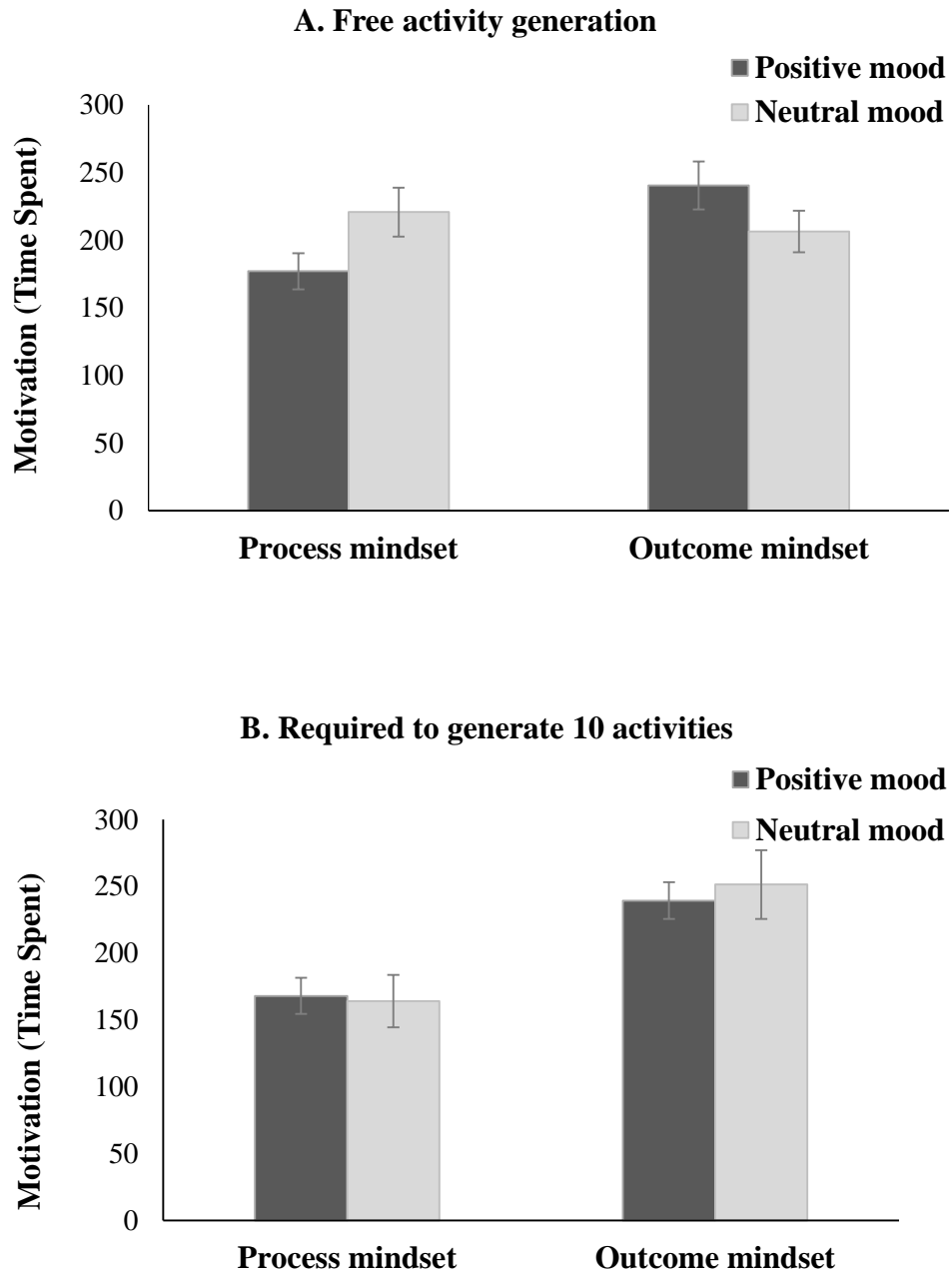


Figure 8. Process Mindsets and Mood on Motivation (Study 4)

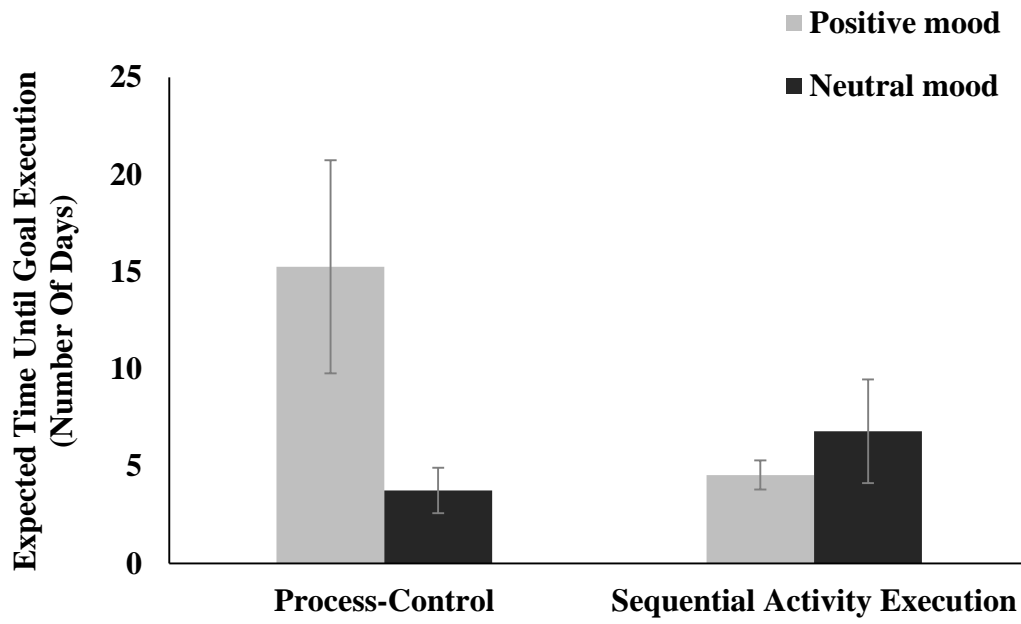


Figure 9. Number of Activities and Process Mindsets on Motivation (Study 4)

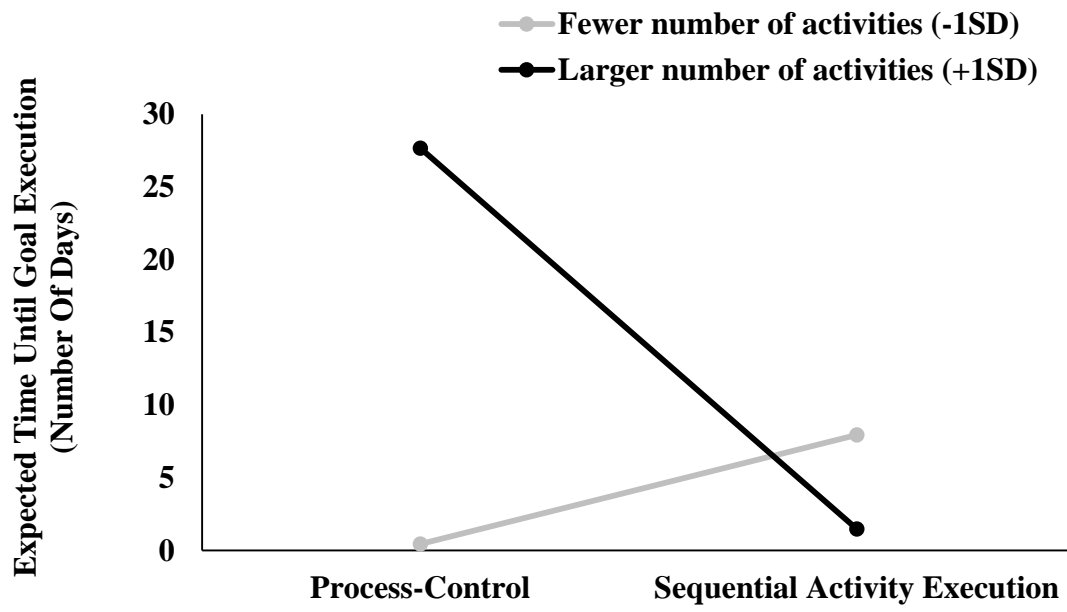


Figure 10. Mindset and Mood on Motivation (Study 5)

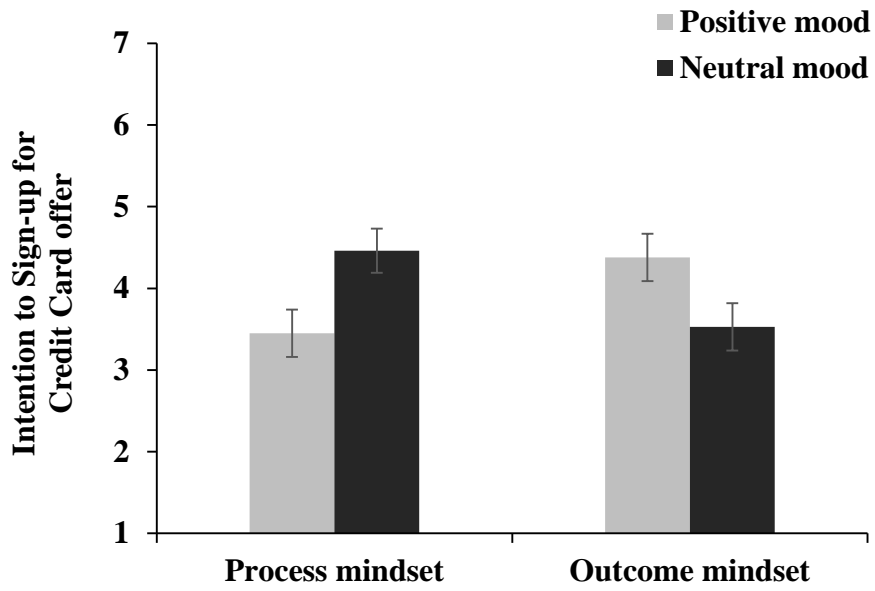
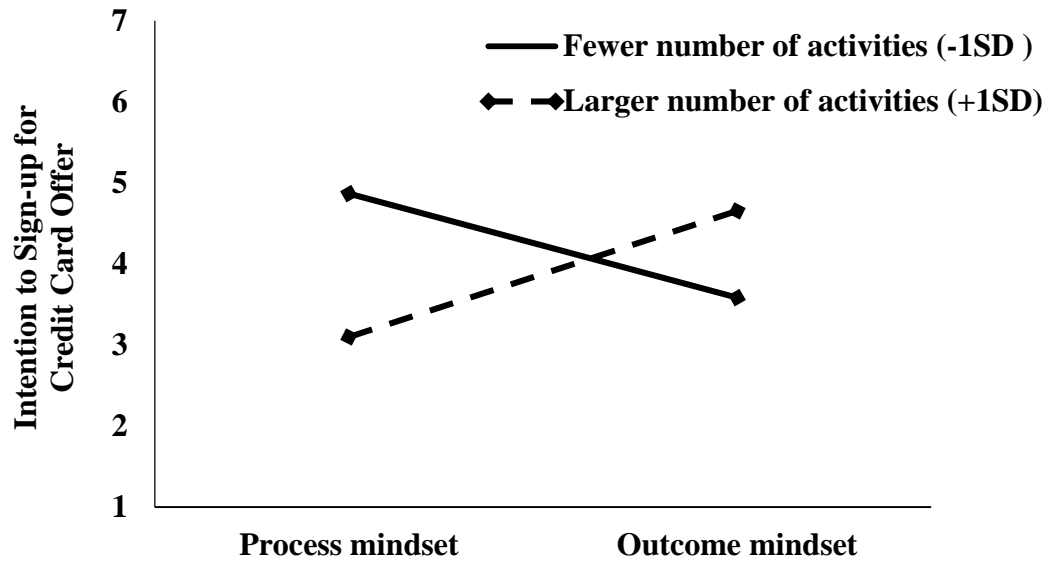


Figure 11. Number of Activities and Mindset on Motivation (Study 5)



Appendices

Appendix A1. Goal Setting (Studies 1A and 1B)

Before starting, what grade do you aim to earn in the Principles of Marketing course (MKT337 or 320F)?

"My goal is to earn a grade of _____."

C

C+

B-

B

B+

A-

A

Appendix A2. Mood Induction (Positive vs. Neutral) (Studies 1A and 1B)

1. Please write the first word that comes to mind in response to the word below:

fun

>>

1. Please write the first word that comes to mind in response to the word below:

bus

>>

Appendix A3. Mindset Manipulation (Outcome vs. Process) (Studies 1A and 1B)

On this screen, please describe **the desired end benefits of executing the activities.**

You will be able to move on to the next screen in 2 minutes.

On this screen, please describe **implemental plans based on where, when, and how you are going to execute the activities.**

You will be able to move on to the next screen in 2 minutes.

Appendix B1. Goal Setting (Study 2)

Great. This survey contains two unrelated parts. In Part 1, you will view 10 photos and evaluate them. In Part 2, you will share your thoughts about your weight loss goal.

Before viewing the photos, please make a clear goal statement for your weight loss:

"I aim to lose _____ pounds (lbs) by _____."

Unit (lbs)

Date (mm/dd/yyyy)

Appendix B2. Mood Induction (Positive vs. Neutral) (Study 2)



Appendix B3. Activity Listing Task (Study 2)

Now, please think of different activities that you would do to lose *[customized to the set goal]* pounds and list these activities in the fields below.

Enter one activity only in a single field.

Once you've generated all activities that you would do, please click >> to move on to the next questionnaire. You are NOT required to fill in all fields provided.

Appendix C1. Mood Induction (Positive vs. Neutral) (Study 3)



The screen will automatically advance to the next page once this video ends.



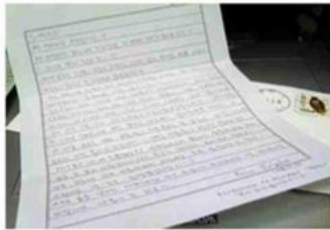
The screen will automatically advance to the next page once this video ends.

Appendix C2. Korean Learning Task (Study 3)

Please wear the headset ready .
You can spend as long as you desire on this screen to learn the 8 Korean words.



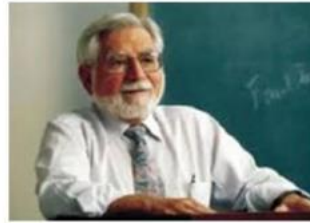
편지



Letter



교수



Professor

Appendix C3. Quiz (Study 3)

Quiz

There is a list of 18 Korean words including the 8 words that you learned in this task.

Drag and drop words in the left box if you believe that you learned them on the previous screen.
Drag and drop words in the right box if you believe that you did not learn them.

Click >> to move on to finish this task.

Items	"I learned this word!!"	"I did not learn this word!"
공책		
고저		
곳		
노트북		
커피빈		
꽃		
교수		
물		
사탕		
마우스		
편지		
커피		
교수		
마우스		
커피		
노트		
과자		
편지		

Appendix D1. Process Mindset Manipulation (Control) (Study 4)

You will make **implemental plans for each of the activities that you listed**.
Make sure you describe implemental steps of each activity including when, where, and how you will execute them.

Click >> to make plans!

Activity: One hour jogging in the morning

When (Starting Date; Hours to work on the activity; Day or night time etc.):
(e.g., I will start this activity on March 1 2016; from 9-10pm every day; for two months)

Where:

With whom:

How:

>>

Appendix D2. Process Mindset Manipulation (Sequential Execution) (Study 4)

You will make **implemental plans for each of the activities that you listed**. Make sure you describe implemental steps of each activity including when, where, and how you will execute them.

When making plans, consider doing **one activity at a time**. For example, a person who plans for a strict diet, daily exercise, and personal training may focus on sticking to the diet for the first two weeks, then personal training for another two weeks, and then shift to focusing on daily exercises for the following months.

Do not consider doing multiple activities simultaneously.

Activity: One hour jogging in the morning

When (Starting Date; Hours to work on the activity; Day or night time etc.):

(e.g., I will start this activity on March 1 2016; from 9-10pm every day; for two months)

Where:

With whom:

How:

>>

Appendix E1. Goal Activation (Studies 5 and 6)



A major U.S. bank is considering the launch of a new credit card for college students and offering a sign-up bonus program.

You will receive 10,000 points, equivalent to \$100 in cash or merchandise credit, if you used this credit card for \$650 in purchases for the first 3 months from account opening.

Appendix E2. Mood Induction (Positive vs. Neutral) (Studies 5 and 6)



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