ABSTRACT

CONSTRUAL LEVEL AS A MODERATOR OF THE OPPORTUNITY-REGRET ASSOCIATION

by Joshua Buchanan

Construal level theory (Trope & Liberman, 2003) has provided insight into many areas of psychology. One area of research that has been relatively unexplored within this framework is regret. Three studies examine the hypothesis that construal level moderates the relationship between future opportunity (both the ability to change a negative outcome and the ability to attain related goals) and regret. Specifically, I predict that those who think abstractly about a situation will experience more regret when they perceive higher levels of future opportunity, but those who think concretely about a situation will experience more regret when they perceive lower levels of future opportunity. Although an initial examination suggested previous studies were manipulating an aspect of construal level (Study 1), the predicted moderation was not supported, even when using multiple manipulations of construal level (Studies 2a and 2b). Possible explanations for these results are discussed.
CONSTRUAL LEVEL AS A MODERATOR OF THE OPPORTUNITY-REGRET ASSOCIATION

A Thesis

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Introduction

People view the world in different ways. Where some people may see soccer as a slow, boring sport, others see it as “the beautiful game.” Where some may see a modern sculpture as simply a collection of red metal, others see it as a magnificent work of art. The aspects of a sport or a piece of art that individuals focus on allow different people to have different understanding of the same situation. The soccer critic may focus on the score (or lack thereof) while the soccer lover may focus on the artistic movement of the players.

Individuals also view situations and actions in different ways. People come to terms with cancer diagnoses differently, with two ends of a spectrum being acceptance and denial. People evaluate progress in differing terms, where a second place finish could be viewed as one step closer to a goal or a failed attempt at success. These distinctions can also manifest within the same individual, and can result in having a different viewpoint from one day to the next. These views can influence how people think, behave, and react to situations, and can influence which emotions they experience. One distinction these viewpoints may make, as posited by Construal Level Theory (CLT; Trope & Liberman, 2003), differentiates between a broad or specific focus. This theory has offered important insights into how people understand and navigate everyday situations (Kanten, 2011; Fujita, 2008; Burrus & Roese, 2006), yet can still provide further insight into other related areas of life, such as how people understand, and are motivated by, poor decisions and their negative outcomes.

One of the many unresolved endeavors of the regret literature is the relationship between regret and the opportunity a person has in the future, or had in the past, to remedy a negative situation (Roese & Summerville, 2005; Beike, Markman, & Karadogan, 2009; Summerville, 2011). By considering the viewpoint an individual has when recalling a regrettable situation, researchers might better predict when regret is more or less likely to be experienced. The marriage of construal level with research on regret can not only apply construal level to a new phenomenon, but also clarify an unresolved issue in the regret literature. However, it is first imperative to understand how levels of construal function.

Construal Level Theory

CLT (Trope & Liberman, 2003) posits that individuals can understand situations in two different ways: concretely or abstractly. Those in a concrete mindset focus on the specific details and peripheral aspects of a situation. Conversely, those in an abstract mindset focus on the broader context and central aspects of a given situation, understanding it as a whole. The differences between concrete and abstract mindsets can be distinguished on several dimensions. Concrete mindsets are generally associated with low-level concepts whereas abstract mindsets are associated with high-level concepts (Trope & Liberman, 2000). Concrete mindsets concern sub-ordinate goals while abstract mindsets are pertinent to super-ordinate goals (Vallacher & Wegner, 1987). Additionally, those thinking concretely often understand a situation in terms of “how” (How exactly should I go about working out on a weekly basis?), whereas those thinking abstractly understand situations in terms of “why” (Why is working out on a weekly basis beneficial to my life as a whole?) (Freitas, Gollwitzer, & Trope, 2004). Abstract, high-level construal uses simple or vague details, is more broadly structured, and focuses on primary features whereas concrete, low-level construal uses complex details, is not structured within a whole, and focuses on secondary features (Trope & Liberman, 2003). Each of these
characteristics has a bidirectional relationship with construal level; for example, thinking in terms of “how” places people in a concrete mindset, but being in a concrete mindset also encourages people to think in terms of “how.”

Another phenomenon that influences (and is also influenced by) construal level is psychological distance (Liberman, Trope, & Stephan, 2007; Trope & Liberman, 2010). Psychological distance represents how close or distant an individual feels to something. Liberman, Trope, and Stephan (2007) identify four different categories of psychological distance: temporal distance (whether an event happened recently or well in the past), spatial distance (whether the event is physically close or far away from the individual), social distance (whether the event is happening to the self or an unknown other), and hypothetical distance (whether a hypothetical outcome was more or less likely to have occurred). Each modality of psychological distance maps onto the dimensions of construal level. If a situation is psychologically near (e.g., reading about a robbery that occurred at a neighbor’s house), the individual forms a low-level construal. If a situation is psychologically distant (e.g., reading about a robbery that occurred in another town), the individual instead forms a high-level construal. Although psychological distance is not a necessary element of construal level, it can be used to manipulate construal level (Kanten, 2011; Burrs & Roese, 2006; Rim, Uleman, & Trope, 2009). Conversely, individuals in a concrete mindset often view situations as psychologically closer than those in an abstract mindset (e.g., a foreign city seems physically closer when in a concrete mindset compared to an abstract mindset; Alter & Oppenheimer, 2008).

CLT has provided several insights into other psychological phenomena. Individuals predict longer times needed to perform a task, and perceive time units as smaller when in an abstract mindset (Kanten, 2011). Those in an abstract mindset are more likely to utilize self-control to delay gratification (Fujita, Trope, Liberman, & Levin-Sagi, 2006; Fujita, 2008). People are more likely to believe that fate is a plausible explanation for an outcome when in an abstract mindset (Burrs & Roese, 2006). Thinking abstractly facilitates the generation of spontaneous trait inferences (Rim, Uleman, & Trope, 2009). The application of CLT to a wide range of phenomena suggests its importance to everyday life.

More specifically, research has examined the role construal level plays in decision-making. Work on fluency has found that receiving information in a disfluent manner (e.g., reading a difficult-to-read font or tiny print) puts people in an abstract mindset, and consequently influences judgments of spatial distance. For example, people judge the distance to a city as larger in an abstract mindset compared to a concrete mindset (Alter & Oppenheimer, 2008). Research examining CLT and consumer choice has found that when making a decision between noncomparable items (e.g., choosing between an iPod and a GPS rather than choosing between two different GPS models), individuals use abstract features more than concrete details to help justify their decisions (Johnson, 1984, 1988). Because of this, individuals who are thinking concretely while making such a decision view it as more difficult than those thinking abstractly (Liberman, Trope, & Wakslak, 2007; Dhar & Kim, 2007; Freitas, Gollwitzer, & Trope, 2004). Construal level also affects post-decisional evaluations of outcomes, specifying how information is framed or focused on. When people make a choice irrelevant to current goals, they focus on specific details and have a low-level construal (Dhar & Kim, 2007). Alternatively, when individuals are committed to a high-level goal when making a relevant choice they pay attention...
to abstract features (e.g., a person choosing a coffee maker based on how well it fits into that person’s kitchen) and have a high level construal (Fishbach, Dhar, & Zhang, 2006).

Further work has integrated the goal pursuit literature with construal level theory. Research on goal pursuit makes a distinction between focusing on the strength of a goal (goal commitment) and the pursuit of the goal (goal progress) (Fishbach & Dhar, 2005). When commitment is signaled, individuals continue to perform goal-consistent behaviors towards that goal. Alternatively when progress is signaled, the partial attainment of a goal allows individuals to focus on other goals, and goal-consistent behavior related to the original goal ceases. Because abstract and concrete mindsets differ in their focus on super- and sub-ordinate goals respectively, those with a concrete mindset view a particular behavior as striving towards a low-level goal. This signals goal progress, and the individual is therefore less interested in continuing goal-consistent behavior. Alternatively, those in an abstract mindset focus on the larger context of a high-level goal, signaling goal commitment, and are more interested in behaving in a goal-consistent manner (Fishbach, Dhar, & Zhang, 2006). Additionally, the same study showed that manipulating the psychological distance of the goal-related behavior (in this case temporal distance) had similar effects on commitment and progress. Specifically, instead of directly manipulating construal level, framing the behavior as recently occurring directs focus onto subordinate goals. This signals goal progress, and lessens commitment to that goal. These differences between goal commitment and goal progress motivations demonstrate that individuals utilize the information they have to pursue goals differently depending on how they construe both the goal-related behavior and the situation.

Regret & Counterfactual Thinking

Because the construal level of individuals influences how they make decisions, pursue goals, and evaluate decisions, the influence of construal level should also extend to both regret and counterfactual thinking. Thoughts of “what might have been” or “if only” allow people to think about the paths not traveled that could have led to a different outcome than what actually transpired. These counterfactual thoughts let individuals retrace their steps and compare their situation to a hypothetical self that encountered either a more or less beneficial result (Roese, 1997). When people compare their current situation to an imagined alternative where things would have been better, it is known as an upward counterfactual. Comparing the situation to an imagined alternative where things would have been worse is known as a downward counterfactual. The two-pronged nature of the counterfactual thought allows for individuals to benefit and learn from their mistakes (Smallman & Roese, 2009; Épstude & Roese, 2008). Specifically, the antecedent suggests the corrected course of action one should have taken (“If only I had studied the night before the exam”) and the consequent emphasizes the optimal result (“I would not have failed the test”).

Roese and Summerville (2005) define regret as “a negative emotion predicated on an upward, self-focused counterfactual inference” (p. 1273). In simpler terms, regret arises when individuals think “what might have been” about a prior decision that resulted in a negative outcome (Gilovich & Medvec, 1995; Zeelenberg, 1999). As humans, we experience regret on a regular basis. Research has found that regret is one of the most reported emotions in daily life, behind only love in frequency (Shimanoff, 1984). Whether choosing the wrong hair color, not intervening in an argument, or selecting the wrong item from a menu, people make decisions every day that lead to the experience of regret.
Regret is often linked to the pursuit of goals. Both regret and counterfactual thinking are evaluative tools; people often use them to compare their current state to an ideal state (Markman & McMullen, 2003). As outlined by Carver and Scheier (1990, 1998, 1999a, 1999b, 2011), individuals frequently compare their current progress on a goal to their ideal progress. When performing better than anticipated, people experience positive affect. When performing worse than anticipated, people experience negative affect, and are often spurred into action. Although not directly mentioned by Carver and Scheier, regret is one specific form of negative affect that should arise when the progress made is insufficient. When individuals think about something they did (or did not do), they use counterfactuals to evaluate whether or not the actual outcome is worse than the ideal outcome. If the actual outcome is evaluated as worse, the individuals experience regret. However, the magnitude of the regret is also determined by how people perceive their progress toward a goal related to the outcome. People compare their current progress (hampered by the negative outcome) to the ideal amount of progress they should have made at that point in time. If they feel as though they are not progressing toward the goal at the appropriate rate, more regret manifests and more focus is placed on attaining said goal. The strong tie regret has to the pursuit of goals allows the emotion to play a functional role and spur positive action (Roese & Summerville, 2005; Epstude & Roese, 2008).

**Regret and Construal Level**

Some work has integrated construal level theory and psychological distance with regret and counterfactual thinking. Research suggests that temporally near and temporally distant regrets are qualitatively different (Kahneman, 1995), and that regrets of inaction (or failure to act) are both more intense when temporally distant (Gilovich & Medvec, 1994) and more frequent when thinking abstractly (Leach & Plaks, 2009). Further research following Trope and Liberman’s (2003) seminal paper shows that thinking concretely increases searching for unpleasant truths (seeking out information confirming negative suspicions) in regards to peripheral or secondary decisions of an event (Shani, Igou, & Zeelenberg, 2009). Liberman, Trope, and Wakslak (2007) also show that regrets about events in the recent past and near future, although similar to each other, are qualitatively different from regrets about the distant past and distant future. More recent research has demonstrated that behavioral intentions are more quickly formed when a counterfactual thought is about a recent, rather than distant, event and when the intention is to be acted out in the near, rather than distant, future (Smallman & McCulloch, 2012). These studies focus on meaningful but secondary characteristics of regret (e.g., differences in action vs. inaction) using CLT, but fail to address a more crucial issue: identifying what circumstances produce the most regret. The current research hopes to utilize CLT to uncover how and when individuals experience the most regret.

In their paper addressing consumer choice, Dhar and Kim (2007) suggest (but do not empirically test the prediction) that construal level may influence ratings of regret. The authors posit that there can be a difference between the construal level an individual has at the time of the decision, and the construal level at the time of the evaluation of the decision. When construal level at decision differs from construal level at evaluation, more regret should arise. For example, if a person makes a decision in a concrete mindset, the individual looks at specific details of an option and other low-level features in order to make the best decision. However, if that same person evaluates the decision in an abstract mindset (which is often the case), the individual focuses on high-level features of the option that may be worse than the high-level...
features of other options. Because the person is using two different criteria for judging the effectiveness of a decision, reevaluating the decision could lead to more regret. From this, the authors suggest that construal level at evaluation could moderate the relationship between construal level at decision and regret.

However, there is potentially a simpler explanation of the relationship between construal level and regret. One of the major distinctions between high- and low-level construal is how an individual evaluates a situation: people in concrete mindsets live in the present whereas people in abstract mindsets consider the big picture (Trope & Liberman, 2003). When evaluating the success of a decision, those thinking concretely can evaluate if the specific decision was successful, and if unsuccessful, whether the outcome can be remedied. Alternatively, those thinking abstractly can determine if the decision played into greater goals effectively, and if it did not, whether there are other actions that can be taken to move towards those goals. People using both thought processes identify a negative outcome and calculate whether or not there is opportunity to remedy the situation. This hints that opportunity could play an important role in the relationship between construal level and regret.

Previous work on regret has suggested that opportunity (both past and future) plays a major role in how powerful or intense regret may become (Kahneman & Miller, 1986; Roese & Summerville, 2005; Beike, Markman, & Karadogan, 2009; Summerville, 2011). In terms of past opportunity, the more opportunity an individual believes he or she had at the time of the event to influence the negative outcome, the more regret he or she will experience (Kahneman & Miller, 1986; Beike, Markman, & Karadogan, 2009). This relationship between regret and past opportunity is bi-directional, as the more regret people experience, the more they think counterfactually about past opportunities (Burris & Roese, 2006). Additionally, focusing on past opportunities is equally likely regardless of construal level. Past opportunity appears to play a key role in the intensity of regret while not depending on construal level.

The role of future opportunity, however, has been a hotly debated issue. Three theories on the subject have been proposed. The Future Opportunity Principle (Roese & Summerville, 2005) states that people experience the most regret when they are able to further attain positive outcomes within that same domain. That is, the more future opportunity an individual perceives the more regret the individual will experience. In multiple studies, the authors demonstrated that the most frequently regretted domains of life also allowed for the most future opportunity to attain positive outcomes. For instance, two of the more consistently regretted domains were education and romance, both of which are characterized by high future opportunities. A subsequent study demonstrated that individuals instructed to recall a regrettable situation with high of perceived future opportunity experienced more regret than those instructed to recall a regrettable situation with low perceived future opportunity.

Alternatively, some more recent research suggests the opposite. The Lost Opportunity Principle (Beike, Markman, & Karadogan, 2009) states that people experience the most regret when they had opportunity at the time of the event to influence the negative outcome, but no longer have the opportunity to change the result in the present. That is, the less future opportunity the individual perceives the more regret the individual will experience. This theory suggests that when possible opportunities to remedy a situation are recognized, hope arises instead of regret (Snyder, 2002). Regrets manifest only when those future opportunities do not present themselves and the individual is stuck with the poor decision. Through multiple studies,
the authors demonstrate both that the most commonly regretted life domains are characterized by low levels of future opportunity, and regret intensity is tied to lower perceived levels of future opportunity.

The Dynamic Opportunity Principle (Summerville, 2011) attempts to give a more complete account of the relationship between future opportunity and regret by carefully considering the temporal factors driving both principles. In a study examining the time course of naturalistic regrets of prospective sorority sisters, the author demonstrates that both principles are relevant depending on the circumstances. Specifically, initial levels of regret were positively correlated with ratings of past opportunity and negatively correlated with ratings of future opportunity. These immediate regrets appear to fall under the pattern outlined by the Past Opportunity Principle (Beike, Markman, & Karadogan, 2009). As time progresses, however, ratings of future opportunity, specifically the ability to attain relevant goals in the future, were positively related to the persistence of regret. This relationship runs contrary to that of initial levels of regret, and instead supports the Future Opportunity Principle (Roese & Summerville, 2005). These findings suggest that psychological distance, in this case temporal distance, moderates the relationship between future opportunity and regret: when initially thinking of an immediate regret there is a negative relationship between future opportunity and regret, however, when thinking of this same regret from a distance, a positive relationship between future opportunity and regret arises.

As was hinted at earlier, Summerville (2011) teases apart two forms of future opportunity to help clarify the Dynamic Opportunity Principle. When Roese and Summerville (2005) asked people to think of a general regret related to their current goals, they framed future opportunity as whether there was a possibility that the goal could still be met. Conversely, when Beike, Markman, and Karadogan (2009) asked people to think of a specific event with a regrettable outcome, they framed future opportunity as whether the outcome could be reversed or changed. Summerville (2011) labels each definition as a separate construct: goal attainability focuses on achieving future goals and outcome mutability focuses on changing the outcome of an event.

Examining how the two constructs relate to construal level explains how these apparently conflicting accounts of future opportunity coexist. As mentioned earlier, when considering the success of a decision, those in an abstract mindset evaluate in terms of attaining goals and those in a concrete mindset evaluate in terms of the success of the specific outcome. Additionally, individuals in an abstract mindset view future opportunity as the ability to further attain goals, whereas those in a concrete mindset view it as the ability to modify the outcome. Thus, when Roese and Summerville (2005) asked people to think about life domains and to think of future opportunity in terms of goal attainability, people ended up thinking in broad, abstract terms. Conversely, when Beike, Markman, and Karadogan (2009) asked people to think about specific events and to think of future opportunity in terms of outcome mutability, people ended up thinking in specific, concrete terms. Each methodology appears to be priming a specific construal level, suggesting that asking people to think of a regrettable situation either in terms of broad goals or specific events encourages them to think in an abstract or concrete mindset respectively. It is also important to note that the relationship between future opportunity and regret differs as a result of the two methodologies: Roese and Summerville (2005) found that higher perceived future opportunity, in this case goal attainability, leads to more regret whereas Beike, Markman, and Karadogan (2009) found that lower perceived future opportunity, in this
case outcome mutability, leads to more regret. Therefore, if the methodology utilized is indeed priming the participant to think in either a concrete or abstract mindset, it appears that this mindset may determine the relationship between future opportunity and regret. This hypothesis is supported by data suggesting that temporal distance moderates the relationship between future opportunity and regret (Summerville, 2011).

Because each study uses either goal attainability or outcome mutability as the construct of future opportunity, it is possible that the mere presentation of the construct is moderating the relationship between future opportunity and regret. Simply considering outcome mutability could lead people to report more regret when they perceive less future opportunity, and considering goal attainability could lead individuals to report less regret when they perceive less future opportunity. While this is a plausible hypothesis, I argue that the instructions as a whole given to the participants, not simply the construct of future opportunity presented, are manipulating construal level. The differential use of these constructs in previous research may simply an artifact of the construal level of the study, not the catalyst. Because the instructions used by Roese and Summerville had an abstract focus, the researchers used a measure of future opportunity (goal attainability) that also had an abstract focus. Similarly, because the instructions used by Beike, Markman, and Karadogan had a concrete focus, the researchers used a measure of future opportunity (outcome mutability) that also had a concrete focus. Both constructs address the same overarching concept. If the instructions, and not the construct of future opportunity, are manipulating construal level, when both constructs are measured together they should have similar relationships with reports of regret regardless of construal level.

Together, these previous results offer initial support that the construal level a person is in determines how perceived future opportunity (goal attainability or outcome mutability) relates to experiences of regret. The construal level of individuals determines how they evaluate a situation, which determines how they assess future opportunity to remedy a situation (in terms of attaining specific goals or broad life goals). Focusing on either a sub-ordinate or super-ordinate goal determines how future opportunity interacts with regret. When thinking of sub-ordinate goals, the regret caused by a negative outcome, along with the dwindling future opportunity, spurs people into action. When thinking of super-ordinate goals, people are inspired by the regret of past failures when there is still ample opportunity in the future to remedy them. This suggests that construal level is moderating the relationship between future opportunity and regret. Specifically, I predict that when individuals thinking abstractly perceive higher future opportunity they will report more regret, and when individuals thinking concretely perceive higher future opportunity they will report less regret.

Research Overview

In three studies, I attempt to demonstrate that construal level moderates the relationship between future opportunity and regret. In Study 1, I examined the specific instructions used by Roese and Summerville (2005) and Beike, Markman, and Karadogan (2009) to determine if the instructions were affecting construal level. Specifically, I predicted that the instructions used by Roese and Summerville (2005) would put people in an abstract mindset, and the instructions used by Beike, Markman, and Karadogan (2009) would put people in a concrete mindset. In Studies 2a and 2b, I directly examined the predicted moderation. Both studies manipulated construal level separately from the regret recall instructions, with each study using a different manipulation. For both studies, I predicted that construal level would moderate both the
relationship between goal attainability and regret, and the relationship between outcome mutability and regret.

Study 1

The first study examined the methodology used in previous research (Roese & Summerville, 2005; Beike, Markman, & Karadogan, 2009) from the perspective of construal level theory. I predicted that the differences between these two papers in the relationship between regret and future opportunity were due to the instructions used. Specifically, the objective of this initial study was to test the claim that the directions given to the participants in these articles were manipulating construal level. By giving participants the exact regret elicitation instructions used in the previous literature and assessing subsequent construal level of the participants, I aimed to demonstrate that individuals are placed in an abstract mindset when given the Roese and Summerville (2005) instructions, and individuals are placed in a concrete mindset when given the Beike, Markman, and Karadogan (2009) instructions.

Method

Eighty introductory psychology students (43 female) from Miami University participated in partial fulfillment of a course requirement. The average age of the participants was 18.7 years. Participants were seated in front of a computer in a cubicle and randomly assigned to read one of four possible regret elicitation instructions. The elicitations were taken directly from Roese and Summerville (2005) and Beike, Markman, and Karadogan (2009) and gave detailed instructions on what type of regret the participants should recall. Because the previous literature was examining differences in future opportunity, each elicitation had two versions which asked participants to write about a regrettable situation characteristic of either high or low future opportunity. To retain the exact elicitations from these articles, four different instruction sets were used in the study. Those who received instructions from the Roese and Summerville (2005) article read the following:

“Think of the area of life where you feel you have the [MOST / LEAST] opportunity. That is, where [you have the greatest freedom to do what you want or the most effective skills that enable you to modify circumstances for the better / your choices are constrained, decided often by other people, or simply tough to put into effect. In other words, where you feel that things are more fixed, unchangeable, and hard to modify according to your own desires]. People often see how the past might have been better. You might have acted differently, said something different, and subsequent events might then have unfolded in a different way. In the area of life that you just thought about, have you ever had one of these thoughts about what might have been that was especially compelling or obvious to you? Something you couldn’t help but think about repeatedly?”

Those who received instructions from the Beike, Markman, and Karadogan (2009) article read these instructions:

“People often see how the past might have been better. You might have acted differently, said something different, and subsequent events might then have unfolded in a different way. Have you ever had one of these thoughts about what
might have been that was especially compelling, or obvious to you? Something you couldn’t help but think about repeatedly? Try to think of an outcome or event that [DOES / DOES NOT] provide you with a future opportunity to improve upon that outcome or event in the future (i.e.., it is a [potentially repeatable / nonrepeatable] event or outcome).

Participants were then asked to spend a few minutes writing about their regrettable situation on the computer. After they finished writing, the participants then answered a series of questions measuring construal level. These questions addressed several well-established aspects of concrete and abstract thinking: thinking in terms of concrete pictures and images or abstract words (Amit, Algom, & Trope, 2009), thinking about situations from a first-person perspective or a third-person perspective (Libby & Eibach, 2002), and focusing on the feasibility of an action rather than the desirability of the outcome (Liberman & Trope, 1998). To assess construal level, simple, single-item measures of each of these dimensions were used. According to the previous research, an individual in an abstract mindset should be more likely to think in terms of abstract words (“When recalling the situation, did you think about it in terms of words or in terms of pictures or images?”), from a third-person perspective (“When recalling the situation, did you think about it from a 1st person perspective [through your eyes] or from a 3rd person perspective [watching your actions and the situation unfold]?”), and in terms of desirability (“In this situation, did you focus more on how much you did or did not want to do the things you did, or more on how much the situation allowed or did not allow you to act as you wished?”).

Participants also completed a two-item measure of regret. Although both Roese and Summerville (2005) and Beike, Markman, and Karadogan (2009) used a single item to measure regret (“How emotionally intense is the regret you described?”), an extra item was added to better measure the construct (“How much regret did you feel about this situation?”). Participants also completed an item measuring hope (“I feel hope about the situation described”), since Beike, Markman, and Karadogan (2009) suggested that people experience hope rather than regret when future opportunity is high. All questions were rated on a 7-point Likert scale with (1) signaling low levels or disagreement and (7) signaling high levels or agreement. After finishing the questionnaire, participants completed an additional demographic questionnaire and were debriefed and thanked for their participation.

Results

Initially I collapsed across opportunity level (high versus low) to compare participants who received instructions from the Roese and Summerville (2005) article to participants who received instructions from the Beike, Markman, and Karadogan (2009) article. I then compared these two groups on the items measuring the three dimensions of construal level. These data are presented in Figure 1. Chi-square analyses revealed that the one-item measure distinguishing between words and pictures differed significantly based on condition, \( \chi^2 (1) = 5.50, p = .02 \). Specifically, individuals were more likely to say that they were thinking in terms of abstract words when given the directions from the Roese and Summerville (2005) article than when they were given the directions from the Beike, Markman, & Karadogan (2009) article; 13 of 41 participants (32%) were thinking abstractly after reading the Roese & Summerville directions while only 4 of 39 participants (10%) were thinking abstractly after reading the Beike, Markman, & Karadogan directions. However, the single-item measures distinguishing between 1st person and 3rd person perspectives and desirability and feasibility did not differ depending on condition.
For the item assessing person perspective, 6 of 41 participants (15%) were thinking in a first person perspective after reading the Roese & Summerville directions while 4 of 39 participants (10%) were thinking in a third person perspective after reading the Beike, Markman, & Karadogan directions, \( \chi^2 (1) = 0.35, p = .55 \). For the item distinguishing between desirability and feasibility, 25 of 41 participants (61%) were thinking abstractly after reading the Roese & Summerville directions while 29 of 39 participants (74%) were thinking abstractly after reading the Beike, Markman, & Karadogan directions, \( \chi^2 (1) = 1.63, p = .20 \).

As an additional test of my hypotheses, I added the binary outcomes of each of the three construal level items into a single measure of construal level, ranging from 0 to 3. The construct represented the number of items that had an abstract response, with higher scores representing higher levels of abstraction (\( M = 1.01, SD = 0.65 \)). By combining different dimensions of construal level into a single measure, the construct may be able to better represent the individual’s construal level. A comparison between participants in the Roese and Summerville (\( M = 1.07, SD = 0.69 \)) conditions and participants in the Beike, Markman, and Karadogan (\( M = 0.95, SD = 0.60 \)) conditions revealed no significant differences, \( t(78) = -0.86, p = .39 \) (Figure 2). Although the conditions differed on one measure of construal level, the conditions did not differ on the combined abstraction score.

I examined if the current study replicated previous findings. This was not the case, as the interaction term in a regression predicting regret from opportunity type, source article, and their interaction was not significant, \( \beta = -0.08, t(76) = -0.41, p = .69 \). Contrary to past research, among participants given the Roese and Summerville (2005) instructions, those instructed to think about a situation with high future opportunity (\( M = 3.86, SD = 1.84 \)) did not report significantly higher levels of regret than those instructed to think about a situation with low future opportunity (\( M = 4.28, SD = 1.33 \)), \( t(39) = -0.83, p = .41 \). Again contrary to past findings, among participants given the Beike, Markman, and Karadogan (2009) instructions, those instructed to think about a situation with low future opportunity (\( M = 4.53, SD = 2.06 \)) did not report higher levels of regret than those instructed to think about a situation with high future opportunity (\( M = 4.43, SD = 1.69 \)), \( t(37) = -0.17, p = .87 \).

I also conducted additional analyses to examine the claim that, in high future opportunity situations, people experience hope rather than regret (Beike, Markman, & Karadogan, 2009). An initial one-way ANOVA suggested differences between conditions on reported levels of hope, \( F (3,76) = 5.75, p < .01 \). Collapsing across conditions, those instructed to write about a regrettable situation with high future opportunity (\( M = 4.55, SD = 1.44 \)) reported significantly higher levels of hope than individuals instructed to write about a situation with low future opportunity (\( M = 3.21, SD = 1.63 \)), \( t (78) = 3.90, p < .001 \). However, these ratings were not dependent on the instructions given, as the interaction term in a regression of ratings of hope on opportunity type, source article, and their interaction was not significant, \( \beta = -0.25, t(41) = -1.38, p = .17 \). Likewise, a one-way ANOVA did not suggest differences between conditions on reported levels of regret, \( F (3,76) = 0.58, p = .63 \). Again collapsing across conditions, those in the high future opportunity conditions (\( M = 4.14, SD = 1.77 \)) reported equivalent levels of regret as those in the low future opportunity conditions (\( M = 4.39, SD = 1.70 \)), \( t (78) = 0.65, p = .52 \). Although people in the high future opportunity conditions experienced more hope about the situation, it appeared to be unrelated to feelings of regret.

**Discussion**
By taking a closer look at the exact instructions used in previous research examining the relationship between future opportunity and regret, several intriguing patterns arose. As predicted, the directions pulled from both the Roese and Summerville (2005) and Beike, Markman, and Karadogan (2009) articles were manipulating an aspect of construal level, specifically thinking either in terms of words (abstract) or images and pictures (concrete). Specifically, the directions used by Roese and Summerville were placing people in an abstract mindset and the directions used by Beike, Markman and Karadogan were placing people in a concrete mindset. The data showed initial signs that the instructions manipulated construal level, and opened the door for more direct testing of the primary hypothesis.

However, it is important to note that not every result was promising. Only one of the three direct measures showed differences in construal level relative to the instructions followed. While previous research has demonstrated that the other two dimensions differ depending on construal level (Libby & Eibach, 2002; Liberman & Trope, 1998), these dimensions may not be as applicable to this task as the distinction between words and pictures. When considering that the recalled situation occurred in a 1st person perspective, it seems less likely that individuals would recall such experiences from a 3rd person perspective. The data supported this claim, as only 13% of total participants reported recalling the situation from a 3rd person perspective. Additionally, the distinction between the feasibility and desirability of a situation may also be an unnatural dimension to examine within the context of recalled memories. In retrospect, the phrasing of the question may have been too awkward for participants to comprehend which may have led to confused or uninformed responses. Second, asking individuals about their goal-pursuit motivations during a past event is not a common occurrence, and people may have been unsure how to respond even if they understood what the question was asking.

The procedure for this study included direct measures of construal level; in this case, single-item questions assessing three dimensions on which construal level has been known to differ. While past research has shown more consistent differences in construal level using indirect measures such as the Behavioral Identification Form (BIF; Vallacher & Wegner, 1987) or the Heider-Simmel demonstration video (Henderson, Fujita, Trope, & Liberman, 2006; Trope & Liberman, 2010), little work has used questions directly asking the participant about dimensions of construal level. In fact, previous work has either used these dimensions as the independent variable (Amit, Algom, & Trope, 2009; Libby, Shaeffer, & Eibach, 2009), or as characteristics of a story or vignette (Liberman & Trope, 1998). It is unclear if people are truly aware of their current construal level, hence why most research on construal level utilizes these indirect measures. I instead chose direct measures of construal level as a more stringent assessment of the instructions’ ability to manipulate construal level. Because direct measures are not typically used, it is unclear if individuals are able to consistently report their level of construal. Therefore, the null results found in two of the three measures are unsurprising. However, the fact that the instructions were significantly different on even one direct measure of construal level is a testament to the instructions’ ability to manipulate construal level.

However, it is troubling that the current study was unable to replicate the findings of both Roese and Summerville (2005) and Beike, Markman, and Karadogan (2009). The theoretical basis underlying the primary hypothesis is driven by these previous results. Few obvious differences exist between the current methodology and those of Roese and Summerville (2005; Study 2b) and Beike, Markman, and Karadogan (2009; Study 2). The most glaring difference is...
that the current study asked participants to complete direct measures of construal level before answering the questions assessing regret. Forcing people to explicitly consider their level of construal could very well impact ratings of regret, especially if there is a difference between the construal level the individual was in at the time of the regrettable situation and the current construal level at recall (Dhar & Kim, 2007). Unfortunately, with the way the study was designed, it is impossible to know if this was occurring. Although the focus of the study was to determine if the instructions used in previous research manipulate construal level, it is extremely disconcerting that these initial findings were unable to replicate previously established patterns.

**Study 2a**

The results of Study 1 demonstrated that previous methodologies used to examine the relationship between future opportunity and regret potentially, and unintentionally, manipulated an aspect of construal level. The findings provided initial support to the claim that this relationship is moderated by construal level. Studies 2a and 2b tested this hypothesis directly. Several key methodological factors differentiate these studies from those conducted by Roese and Summerville (2005) and Beike, Markman, and Karadogan (2009). Participants first completed a regret recall task before completing a mindset manipulation exercise. Separating the construal level manipulation from the regret recall instructions can better determine if construal level, and not some other aspect of the instructions used in previous research, is moderating the relationship between future opportunity and regret. Additionally, participants rated levels of regret, perceived goal attainability, and perceived outcome mutability. I hoped to empirically support my previous prediction that, if construal level is held constant, goal attainability and outcome mutability will both have the same relationship to regret. I therefore predicted that when thinking concretely, the more future opportunity individuals perceive the less regret they report, and when thinking abstractly, the more future opportunity individuals perceive the more regret they report.

**Method**

**Participants.** Forty-six students enrolled in undergraduate introductory psychology courses at Miami University participated in fulfillment of a course requirement. Four subjects were later removed for not following directions, leaving a total of 42 participants (23 female). The average age of the participants was 19.2 years.

**Materials.**

**Regret elicitation.** Unlike Study 1, both conditions received the same regret elicitation, which was phrased similarly to the elicitation found in Roese and Summerville (2005):

“People often see how the past might have been better. You might have acted differently, said something different, and subsequent events might then have unfolded in a different way. Have you ever had one of these thoughts about what might have been about a romantic situation that was especially compelling or obvious to you? Something you couldn’t help but think about repeatedly?”

In contrast to the first study, participants were asked to limit their regrettable situation to that of the romantic domain. This was modified to eliminate possible confounds of people writing about domains that might be more or less regrettable or prone to high or low ratings of
future opportunity. Romance is frequently reported as one of the most regretted life domains (Roese & Summerville, 2005; Beike, Markman, & Karadogan, 2009), so there were no predicted issues with accessibility of these types of regrettable situations.

**Construal level manipulation.** The mindset induction exercise completed by the participants has successfully manipulated construal level in previous research (Freitas, Gollwitzer, & Trope, 2004). In this exercise, people are asked to either think of how or why one would improve and maintain their health. Initially the instructions give an example of how or why one would complete a mundane task (in this case, participating in a psychology experiment), and then each participant is asked to provide three answers to whichever question is assigned to them. Those in the *concrete* condition are asked to list three means by which they could improve and maintain health. Those in the *abstract* condition are asked to list three ways in which improving and maintaining health could help them attain important goals. After listing each answer, participants rate on a 5-point scale (1 being “a little” and 5 being “very, very much”) how helpful each of their responses would be in either improving and maintaining health (*concrete* condition) or attaining important goals (*abstract* condition).

After giving responses and rating them in helpfulness, participants then complete a diagram that further extends the concrete or abstract mindset (Figure 3). Those in the *concrete* condition are asked to think increasingly concretely about how they can improve and maintain their health. Those in the *abstract* condition are asked to think increasingly abstractly about why improving and maintaining their health helps them achieve goals.

**Procedure.** After providing consent, participants were directed to individual cubicles and seated in front of a computer screen. Participants were presented with instructions to recall and write about a regrettable romantic situation. Participants were then randomly assigned to either the *abstract* or *concrete* condition, and completed the previously described mindset manipulation exercise (Freitas, Gollwitzer, & Trope, 2004). After completing the task, participants were presented with a series of questions related to the previously recalled regret (see Appendix). These questions measured regret intensity (three items, $\alpha = 0.87$), perceived goal attainability (two items, $\alpha = 0.76$), and perceived outcome mutability (two items, $\alpha = 0.81$). All items were measured using 7-point Likert scales, with (1) representing “Strongly disagree,” and (7) representing “Strongly agree.”

Additionally, participants were asked two questions used for the composition of a rough estimate of construal level. Although a well-established manipulation of construal level was used, the rough estimate was utilized to empirically test the manipulation’s effectiveness. Participants were asked to note the actual temporal distance from the regret (“Approximately how long ago (in weeks) did the situations described occur?”), and their perceived temporal distance from the regret (“Thinking of the situation you wrote about, how distant do you feel from this situation?”). The perceived distance item was measured using a 7-point Likert scale, with (1) representing “Not very distant,” and (7) representing “Very distant.” After finishing the questionnaire the participants completed an additional demographic questionnaire and were debriefed and thanked for their participation.

**Results**
Although both outcome mutability and goal attainability had previously been lumped under the term future opportunity, the two measures were not significantly correlated \((r = .25, p = .11)\); only 6.25% of the variance was shared between them. These results provide further evidence that outcome mutability and goal attainability are two separate constructs (Summerville, 2011). Additionally, when examining each condition individually, outcome mutability and goal attainability were significantly correlated when considered in a concrete mindset \((r = .43, p = .045)\), but not significantly correlated when considered in an abstract mindset \((r = .06, p = .79)\). This demonstrates a more complicated relationship than predicted.

Using separate multiple regressions, I tested the primary hypothesis that construal level \((\text{concrete vs. abstract})\) moderates the impact of future opportunity (outcome mutability and goal attainability) on regret. Analysis of the data revealed that neither relationship was moderated by construal level. For outcome mutability, the interaction term in a regression predicting regret from outcome mutability, construal level, and their interaction was not significant, \(\beta = 0.04, t(41) = 0.16, p = .87\) (Figure 4). There were also no main effects of outcome mutability (\(\beta = -0.02, t(41) = -0.07, p = .94\)) or construal level (\(\beta = 0.23, t(41) = 0.43, p = .67\)) on regret. For goal attainability, the interaction term in a regression predicting regret from goal attainability, construal level, and their interaction also was not significant, \(\beta = 0.17, t(41) = 0.78, p = .44\) (Figure 5). Again, there were no main effects of goal attainability (\(\beta = -0.37, t(41) = -1.39, p = .17\)) or construal level (\(\beta = 0.25, t(41) = 0.48, p = .64\)) on regret.

Additional analyses examined a rough estimate of construal level to evaluate the effectiveness of the mindset manipulation. The rough measure was created by subtracting the standardized item measuring perceived distance from the standardized measure of actual distance. This score indicated if participants felt closer to the regret than reality or more distant from the regret than reality. That is, positive scores suggested a concrete mindset and negative scores an abstract mindset. The data suggested that those in the concrete condition \((M = -0.01, SD = 1.23)\) did not differ in construal level from those in the abstract condition \((M = 0.01, SD = 1.02), t(40) = 0.08, p = .94\). Further analyses examined the rough measure as a dichotomous variable, with all positive scores, regardless of intensity, classified as concrete \((0)\) and all negative scores classified as abstract \((1)\). This measure also suggested that those in the concrete \((M = 0.45, SD = 0.51)\) and abstract \((M = 0.55, SD = 0.51)\) conditions did not differ in their level of construal, \(t(40) = 0.61, p = .55\). These combined manipulation checks suggest that the mindset induction exercise utilized in this study may not have effectively manipulated construal level.

**Discussion**

Study 2 directly examined if construal level moderated the relationship between future opportunity and regret. Although the results of Study 1 suggested that the differences found in the relationship could be accounted for by construal level, the results of Study 2a did not provide support for the predicted moderation. Specifically, neither the relationship between goal attainability and regret, nor the relationship between outcome mutability and regret were significantly moderated by construal level.

Examining the relationship between outcome mutability and goal attainability reiterated the importance of distinguishing between the two constructs (Summerville, 2011). Although the constructs were not significantly correlated when examined as a whole, the relationship differed depending on the construal level of the participant. Specifically, the distinction between the two
constructs was enhanced when thinking abstractly. When asked to assess the ability to attain goals in the future, the goals that people considered may have differed by construal level. Individuals may have considered sub-ordinate goals similar to attaining the specific outcome in the concrete and super-ordinate goals distinct from the specific outcome in the abstract. In this sense, goal attainability may have more closely resembled outcome mutability in a concrete mindset when compared to an abstract mindset. Although this distinction might suggest the constructs have differing relationships with regret, both outcome mutability and goal attainability had similar relationships with regret in each condition (i.e., positive in the abstract and negative in the concrete), albeit not significant. These results support the hypothesis that, although outcome mutability and goal attainability are not always related, the two constructs have a similar relationship with ratings of regret.

A troubling issue that arose from this study was the apparent failure to manipulate construal level. As mentioned earlier, the rough measure of construal level suggested that the manipulation exercise did not effectively place participants in the intended level of construal. These results are unexpected, as this manipulation has repeatedly been used to manipulate construal level (Fujita et al., 2006, Fujita & Han, 2009; Wakslak & Trope, 2009). The reason for this pattern of data is not readily apparent, although the possibility does exist that this specific manipulation is not well suited to this methodology. Asking participants to consider sub-ordinate or super-ordinate goals was intended to get people to think in a concrete or abstract mindset, respectively. However, the goals that people created may have had characteristics that were not congruent with the intended mindset, specifically in terms of goal progress or goal commitment (Fishbach & Dhar, 2005). For example, when asked to think concretely about how they can improve their health, some participants may have created goals characteristic of goal commitment rather than goal progress, such as committing to a steady workout regimen. This would have led to individuals in the concrete condition having an abstract mindset. A rough examination of participants’ responses in the concrete condition supported this claim: people were thinking more abstractly (as measured by the rough estimate of construal level) after providing behaviors characteristic of goal-commitment ($M = -0.46, SD = 0.95$) versus behaviors uncharacteristic of goal-commitment ($M = 0.29, SD = 1.35$), although the difference was not significant, $t(20) = 1.44, p = .17$. Alternatively, the rough estimate may not be a reliable assessment of construal level, as the measure is not commonly used to assess construal level. For that reason, a follow up study was conducted that used a new manipulation of construal level. The goal of this study was to determine if the null results found in Study 2a were accounted for by the issues with Freitas, Gollwitzer and Trope’s (2004) manipulation.

**Study 2b**

Although the results of Study 2a suggested that construal level does not moderate the relationship between future opportunity and regret, a rough estimate of construal level suggested that the manipulation did not impact participants’ construal level in the intended way. Therefore, the aim of Study 2b was to retest the predicted moderation using a different manipulation of construal level. Although the manipulation used in Study 2a seemed appropriate for the goal-relevant mechanisms discussed in both the regret and construal level literature (Fishbach & Dhar, 2005; Summerville, 2011), it is possible that the manipulation had the unintended effect of priming goal commitment within the context of formulating sub-ordinate goals. I therefore chose to move away from the focus on action intentions and chose another well-established
manipulation of construal level (Fujita et al., 2006; Wakslak & Trope, 2009; Hansen & Trope, 2012). Instead of having participants write about how or why they perform certain tasks, the current mindset manipulation instead asks people to think of either sub-ordinate exemplars or super-ordinate categories of provided words. The task focuses on a different dimension of construal level, and allows participants to think in either a concrete or abstract mindset without also thinking about goal-directed behavior. Again, similar to the hypothesis for Study 2a, I predicted that when thinking concretely, the more future opportunity individuals perceive the less regret they will report, and when thinking abstractly, the more future opportunity individuals perceive the more regret they will report.

Additionally, participants were indirectly asked to self-code the construal level of their recalled regret prior to the construal manipulation. Previous research has suggested that the change in construal level, rather than just the level of construal the individual is in at the time of the recall, could have a large impact on reports of regret (Dhar & Kim, 2007). An individual recalling a situation in which a poor decision was made when viewed through a concrete mindset (for example, choosing a product for aesthetic reasons rather than functionality) may be evaluated in a more positive light when viewed through abstract eyes. Alternatively, reinforcement of the same mindset may actually exacerbate feelings of regret beyond normal levels. Study 2a may have created confounds if participants in one condition were more likely to experience a conflict of construal level than participants in another condition. In the present research, I wished to ensure that the construal level was consistent across conditions. I also wished to ensure that the possibility of individuals “switching” construal level was consistent across conditions. Participants completed a series of items framed as “autobiographical questions” that assessed the construal level of their recalled regrettable situation.

Method

Participants. Eighty-two participants (52 women) were recruited from Amazon’s Mechanical Turk worker pool (http://www.mturk.com) for participation in the study. Utilizing this population for psychological research has yielded a more demographically diverse sample than the typical undergraduate population, while still maintaining the reliability of data collected via traditional methods (Buhrmester, Kwang, & Gosling, 2011; Mason & Suri, 2012; Rand, 2012; Summerville & Chartier, in press). The average age of the participants was 34 years.

Materials.

Construal level manipulation. Similar to the mindset manipulation used by Freitas, Gollwitzer, and Trope (2004), the current manipulation has repeatedly manipulated construal level in previous research (e.g., Fujita et al., 2006; Fujita & Han, 2009; Hansen & Trope, 2012). In this exercise, participants are presented with a series of fifteen words. For each of these words, depending on condition, the individuals are instructed to provide either a category that the word fits into (abstract condition) or an example of the word (concrete condition). Those in the abstract condition receive the following instructions:

“You will now complete a short word generation task. In this task, you will be provided with a series of words. Your task will be to type a different word that you think each provided word is an example of. That is, ask yourself the question: ‘[Provided word] is an example of what?’ Then type the answer you come up
with. For instance, if we gave you the word ‘POODLE,’ you might type ‘DOGS’ or even ‘ANIMALS,’ as a poodle is an example of a dog or animal. Be creative and come up with the most general word for which the provided word is an example.”

Alternatively, those in the concrete condition read the following directions:

“You will now complete a short word generation task. In this task, you will be provided with a series of words. Your task will be to type a different word that is an example of this word. That is, ask yourself the question: ‘An example of [provided word] is what?’ Then type the answer you come up with. For example, if we gave you the word ‘DOGS,’ you might write down the example ‘POODLE’ or even ‘PLUTO’ (the Disney character). Be creative, and try to think of as specific an example of the category as you can.”

After reading the instructions, participants then type a new word relevant to the provided word. The stimuli presented are words that could easily be placed either into a category or given an example of (e.g., table, vegetable, drink, etc.), and were either taken from previous literature (Fujita et al., 2006) or chosen by the author.

Procedure. The procedure for this study was similar to Study 2a. Participants received the same recall instructions from Study 2a, and were given some time to recall and write about a regrettable romantic situation. Participants then completed a short questionnaire in which they indirectly coded the construal level of their writing (see Appendix). These items examined well-established concrete and abstract qualities of their recalled regret, such as focus on self or others, and use of pronouns or adjectives (Trope & Liberman, 2003; 2010). The questionnaire was framed as an “autobiographical writing questionnaire,” but was specified to the paragraph participants had just written, and not their writing in general.

Participants were then randomly assigned to either the abstract or concrete condition, and completed the previously described mindset manipulation exercise (Fujita et al., 2006). After completing the task, participants were given a moment to think back about the regret they had previously written about, and then completed the same questionnaire from Study 2a. However, due to a technical error, only one construct of future opportunity was measured. The items measured regret intensity (three items, $\alpha = 0.84$), perceived outcome mutability (two items, $\alpha = 0.68$), and both actual and perceived distance. Participants then completed an additional demographic questionnaire and were debriefed and thanked for their participation.

Results

I initially analyzed the autobiographical questionnaire items looking for differences in construal level before the manipulation exercise. The results revealed no differences between conditions on any of the individual questions (all $p$’s > .20). Additionally, those in the concrete ($M = 3.03, SD = 0.48$) and abstract ($M = 2.93, SD = 0.46$) conditions did not differ on an aggregate abstraction score combining the items, $t(80) = 1.01, p = .23$. I calculated a rough estimate of change in construal level by dichotomizing the autobiographical abstraction aggregate (scores of 3 or above being coded as abstract) and comparing it to the assigned condition. Those in the concrete condition had an equal number of “switchers” as those in the
abstract condition, \(t(80) = -0.24, p = .81\). These findings suggested that construal level prior to the manipulation exercise did not differ by condition, nor did the number of individuals “switching” construal level differ by condition. This suggests that the differences between conditions in participants’ initial levels of construal were not responsible for the ensuing results.

Using separate multiple regressions, I again tested the hypothesis that construal level (concrete vs. abstract) moderates the impact of outcome mutability on regret. Similar to the results of Study 2a, analysis of the data failed to support the predicted moderation. The interaction term in a regression predicting regret from outcome mutability, construal level, and their interaction was not significant, \(\beta = -0.03, t(81) = -0.21, p = .83\) (Figure 6). Additionally, there was no main effect of condition (\(\beta = 0.28, t(41) = 1.38, p = .17\)) or outcome mutability (\(\beta = 0.08, t(41) = 0.56, p = .58\)) on regret.

I again created a rough manipulation check by subtracting the item measuring perceived distance from the standardized measure of actual distance, indicating if participants felt closer or more distant to the regret than reality. That is, positive scores suggested a concrete mindset and negative scores an abstract mindset. Comparing the two conditions, those in the concrete condition (\(M = -0.31, SD = 1.18\)) felt more distant from the described situation than they actually were when compared to those in the abstract condition (\(M = 0.34, SD = 1.31\)), \(t(80) = 2.37, p = .02\). This is troubling, as individuals in the abstract condition should feel more distant from the regrettable situation, not those in the concrete condition. These results suggest that the mindset manipulation exercise was ineffective, or, at the very least, some participants in the concrete condition were actually in an abstract mindset, or vice versa. As in Study 2a, the rough measure was also transformed into a dichotomous variable, with all positive scores (regardless of intensity) recoded as concrete (0) and all negative scores recoded as abstract (1). Similar to the continuous variable, those in the concrete condition (\(M = 0.60, SD = 0.49\)) were thinking more abstractly than those in the abstract condition (\(M = 0.38, SD = 0.49\)), \(t(80) = 2.02, p = .047\).

**Discussion**

Study 2b again tested the hypothesis that construal level moderates the relationship between future opportunity and regret. Although a different manipulation of construal level was used than in Study 2a, the results of the study again did not support the predicted moderation. Although an initial measure suggested that participants’ construal level did not differ by condition before the manipulation, a rough estimate of construal level after the manipulation exercise suggested that the mindset induction exercise was either ineffective or had the opposite effect.

The initial measure of construal level had similar drawbacks to the rough estimate of construal level analyzed as part of the final questionnaire. Although participants may not have been aware of the true nature of the “autobiographical writing” items, without the paragraph as a reference, it is unclear if they were able to correctly answer the questions. It is therefore important to use caution in interpreting these data. Although the “autobiographical questionnaire” showed no baseline differences in construal level between conditions, it may have been more of a hindrance than informative. It is possible that merely presenting abstract and concrete concepts within the questionnaire may have unintentionally primed the concept of construal level, and dampened the impact of the mindset manipulation. In fact, a contrast effect may have occurred where individuals who were initially thinking concretely or abstractly
focused more on the questions that addressed the opposite construal level. In this case, the questionnaire may have acted as a mindset manipulation. It is also worth noting the failure to measure ratings of perceived goal attainability. Although I am unable to ascertain if construal level would have moderated the relationship between goal attainability and regret, the similarities between the results of Studies 2a and 2b suggest there would not have been a significant moderation. It is unfortunate that technical errors caused the construct to go unmeasured, but future research examining future opportunity should continue to measure both outcome mutability and goal attainability to account for differences between the two.

**General Discussion**

Three studies tested the hypothesis that the relationship between perceived future opportunity (both outcome mutability and goal attainability) and regret is moderated by construal level (concrete or abstract). When viewed collectively, the data did not support this proposed moderation. Although an initial examination suggested that the specific instructions used in the previous literature successfully manipulated an aspect of construal level (Study 1), direct tests of the proposed moderation failed to provide support for the hypothesis, even when using two different widely-used manipulations of construal level (Study 2a & 2b).

Although the data does not appear to support the predicted moderation, the design of the studies may have failed to control for other confounding variables. Although the original work demonstrating the Future and Past Opportunity Principles examined retrospective regrets (Roese & Summerville, 2005; Beike, Markman, & Karadogan, 2009), more recent research has shed light on how these principles might interact by examining more recently occurring, naturalistic regrets, and how they progress over time (Summerville, 2011). It may be the case that asking individuals to think about a regrettable situation in the past may automatically and unintentionally place individuals into an abstract mindset due to the psychological distance created by the task. This could then conflict with any attempted manipulation of construal level. At the very least, the instructions, regardless of condition, could be forcing people to think more abstractly than they were previously. Indeed, in Studies 2a and 2b, participant ratings of perceived time passed since the regrettable situation were above the midpoint (albeit not significantly) regardless of abstract or concrete mindset, suggesting the possibility of an overall abstract influence. Within a naturalistic setting, this diffuse abstract influence may not arise. Asking individuals about situations that either have recently occurred or are fresh within their mind could prevent psychological distance from having an unwanted impact.

However, the explanation that simply recalling a regrettable situation places the individual in an abstract mindset fails to account for the results of Beike, Markman, and Karadogan (2009, Study 2). These findings can be reconciled with this proposed “abstract effect” in several ways. First, and somewhat less likely, it is possible that a majority of the participants recruited by Beike and colleagues recalled recent regrettable events, thereby eliminating the abstract influence. Second, some aspect of the experiment may have reinforced a concrete mindset, and led to more recent regrets being recalled. This could include experimenter interactions with the participants, the manner in which the study was presented, or even stimuli present in the lab space where the study was conducted. Although such subtle distinctions have not been empirically tested as successful manipulators of construal level, the possibility exists that subtle cues (such as physical distance between the experimenter and participant) may manipulate construal level. Finally, unlike both Roese and Summerville (2005) and the current
studies which asked participants to recall a regrettable situation without explicitly defining regret, Beike and colleagues presented the definition of regret before the regret recall. By considering the concrete definition of regret, rather than just the abstract concept, participants may have begun thinking concretely, resulting in the recall of temporally near regrets.

Another troubling aspect of the current research was the inability of Study 1 to replicate previous findings. As mentioned earlier, Dhar and Kim (2007) proposed that the difference between the construal level and individual has at the time of a decision and the construal level an individual has at the time of evaluation may moderate ratings of choice satisfaction and, in this case, regret. Therefore, manipulating construal level once and examining how that impacts the relationship between opportunity and regret may not address the true impact of construal level. Although this issue was raised as a possible problem with the methodology used in Study 1, it is not unreasonable to see similar problems with the methodologies used in both Study 2a and Study 2b. When asking individuals to think about a regrettable situation in the past, people could think of a situation that is either temporally near or distant, about a friend or a stranger, or about something physically close or far away, all of which could lead to a concrete or abstract mindset respectively. Past research has shown that psychological distance (in this case temporal distance) does indeed moderate the relationship between future opportunity and regret (Summerville, 2011). People could also consider the level of construal they were in at the time of the decision, which, depending on if it is consistent or counter to their current construal level, could lead to decreased or increased feelings of regret about the situation. Furthermore, if these individuals complete a mindset manipulation exercise, the differences between current construal level, prior construal level, and construal level at the time of the decision could impact evaluations of the regrettable situation. This is unique to regret, as much of the research involving construal level focuses on phenomenon that are less temporally variant, such as snap judgments and self-control (Liberman, Trope, & Wakslak, 2007; Fujita et al., 2006; Wakslak & Trope, 2009). The complex temporal characteristics of regret may make testing for construal level as a moderator difficult.

Another worrisome aspect of the current findings was the apparent failure to successfully manipulate construal level. Unfortunately, there are no clear indicators as to why the manipulation exercises failed. The literature has not identified any situational or personality factors that influence the ease to which an individual’s construal level might be changed. For example, individuals that score high on narcissism may be more resistant to manipulations in general, or older individuals may be more set in their ways and may not have the mental capacity to shift perspectives so easily. Additionally, there have not been any documented issues with the specific manipulations used in the current research. This may be a case of research gone unpublished, as studies that have failed to manipulate construal level might also have failed to find significant results related to the proposed hypotheses. I conducted several follow-up studies examining this issue, and again failed to manipulate construal level using more established measures such as the BIF (Vallacher & Wegner, 1987). Future research on the relationship between construal level, future opportunity, and regret may more effectively manipulate construal level through psychological distance rather than mindset manipulations.

Although these findings did not support the hypothesized relationship between future opportunity and regret, the literature has only begun to fully understand the role of future opportunity. The distinction between outcome mutability and goal attainability has only recently been brought to light (Summerville, 2011), and it is still uncertain precisely how similar the
constructs are. In Study 2a, although both constructs had similar relationships with ratings of regret, the two constructs were not significantly correlated. It may be pertinent to understand how each construct interacts with other characteristics of regret (such as regrets of action vs. inaction) before one can comprehensively understand the complex relationship both constructs have with regret and construal level.

Future studies need to address the multitude of construal-related confounds that may have impacted the current research. Ideally, this can be achieved by creating a scenario in which the mindset manipulation task is the only aspect of the methodology being manipulated. In other words, constructs such as the temporal distance of the recalled situation, mindset at the time of the recalled situation, and mindset entering the study should all be held constant. Although that may appear easier said than done, these stringent stipulations may be attained if the recalled regret is also manipulated by the experiment. The design of such a study might consist of two sessions: the first session where the initial construal level of the participant is manipulated before the participant makes a decision in which he or she experiences regret, followed by a second session, several weeks later, where the same participant has his or her construal level measured before completing the mindset manipulation task and providing ratings of regret. This methodology would allow the experimenter to control for the psychological distance of the regrettable situation, the construal level at the time of the decision, the construal level before the mindset manipulation, and the construal level being manipulated. It may also be possible to pinpoint naturalistic regrets that fall within these strict criteria. If certain decisions tend to be made in a specific construal level (e.g., an individual making a modest wager on a horse race is presumably thinking concretely about the specific race and his or her decision to place a bet), the other confounds mentioned, such as temporal distance, could be accounted for. The findings of such a scenario could provide a better indication of whether or not construal level moderates the relationship between future opportunity and regret.

Overall, the current research attempted to integrate two broad literatures. Although these three studies failed to draw any strong conclusions about the interaction between construal level, future opportunity, and regret, careful examination of the multiple impacts construal level possibly had on the results confirms the importance of accounting for the mindset (be it concrete or abstract) of the individual. The many possible influences of construal level suggests that the relationship between future opportunity and regret may not be as simple as originally conceptualized, and suggests more generally that how an individual views a game of soccer, a piece of art, or a second place finish may impact when, and how intensely, an emotion is experienced.
References


Figure 1. Amount of abstract responses for each of the three questions assessing construal level in Study 1. Each question distinguishes between those given the instructions from Roese & Summerville (2005) and those given the instructions from Beike, Markman, & Karadogan (2009). Bars represent percentage of total responses with the abstract response (i.e., words, 3rd person perspective, and desirability).
Figure 2. Study 1 means of the abstraction score by those given the instructions from Roese & Summerville (2005) and those given the instructions from Beike, Markman, & Karadogan (2009).
Figure 3. Mindset manipulation diagrams for both abstract and concrete mindsets used in Study 2a, taken from Freitas, Gollwitzer, and Trope (2004).
Figure 4. Study 2a ratings of regret as a function of ratings of perceived goal attainability by those in the concrete and abstract conditions.
Figure 5. Study 2a ratings of regret as a function of ratings of perceived outcome mutability by those in the concrete and abstract conditions.
Figure 6. Study 2b ratings of regret as a function of ratings of perceived outcome mutability by those in the concrete and abstract conditions.
Appendix

Research materials:

AUTOBIOGRAPHICAL WRITING STYLE QUESTIONNAIRE

In this paragraph, I used a lot of details and specifics when I wrote.
In this paragraph, I wrote about things broadly and described the big picture.
In this paragraph, I wrote primarily about myself.
In this paragraph, I wrote primarily about others.
In this paragraph, I used a lot of pronouns.
In this paragraph, I used a lot of adjectives.
In this paragraph, I primarily wrote short sentences.
In this paragraph, I primarily wrote long sentences.

OPPORTUNITY-REGRET QUESTIONNAIRE

Regret
I wish I’d done things differently.
I feel a lot of regret about the way this turned out.
I feel regret about the situation described.

Goal Attainability
Right now, I feel able to meet my romantic goals.
Right now, I feel I have opportunity in the future to achieve my romantic goals.

Outcome Mutability
I presently have opportunity to modify the described event.
Right now, I feel able to change the outcome of the described event.

Perceived Distance
How distant do you feel from the situation you wrote about?