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**Why Dichotomize? The Combined Effects of Abstract and Concrete  
Processing on Rumination**

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Processing on Rumination**

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# **Why Dichotomize? The Combined Effects of Abstract and Concrete Processing on Rumination**

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This report examines the affects of different types of thinking on rumination. Because of the relationship between rumination and psychopathology, many researchers have attempted to understand what types of processing end the ruminative cycle. Some researchers have proposed that thinking concretely (i.e. the specific details of events) will end rumination. These same researchers argue that thinking about events from an abstract perspective (general meaning of an event) is detrimental. However, several recent studies have shown that abstract processing under certain conditions can be beneficial. Though both sides of the debate discuss abstract and concrete as existing within a hierarchy, research to date has only treated these levels dichotomously. Adopting a Goal Progress Theory perspective, this report proposed a study that asks participants to traverse through multiple level of the construal hierarchy, and argues for the benefits of combining both abstract and concrete processing.

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## Chapter 1: Introduction

Negative events are certain to arise in each of our lives. Sometimes, we are able to process a negative event without major impact on our psychological well-being. At other times, we may repetitively focus on the negative consequences of the event, forming a ruminative cycle. Addressing this issue, Nolen-Hoeksema defined rumination as “the process of thinking perseveratively about one’s feelings and problems” (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008, p. 400). One important reason for understanding the triggers and mechanisms of rumination is the connection between rumination and psychopathology (see the review by Watkins, 2008). Research indicates that rumination predicts the severity, likelihood, and duration of depression and is associated with negative affect (Nolen-Hoeksema, 2000; Spasojevic & Alloy, 2001; McIntosh & Martin, 1992). Specifically in the context of negative life events, such as a natural disaster or the death of a loved one, a ruminative style predicts future depressive symptoms (Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Parker, & Larson, 1994). Moreover, several studies found negative events may induce short-term rumination, which in turn, may increase distress and perpetuate long-term depression (e.g. Moberly and Watkins, 2008; Lyubomirsky and Nolen-Hoeksema, 1993; Nolen-Hoeksema, 1991; Nolen-Hoeksema & Morrow, 1992). Because of the relationship between rumination and depression, it is important to determine the types of processing that allow one to avoid or break out of rumination.

Level of construal, conceptualized as the degree of abstraction present in an individual’s perceptions of events, has recently gained much attention as an important construct in understanding rumination (Watkins, 2008). The different levels of construal can be described as falling within a hierarchy of mental representations. Whereas high-level construals are abstract and represent the purpose or the “why” of a situation, low-level construals are concrete and

represent the details or the “how” of a situation (Watkins, 2008; Freitas, Gollwitzer, & Trope, 2004; Liberman & Trope, 2003; Vallacher & Wegner, 1987). For example, suppose an individual experiences an argument with a romantic partner. The individual might adopt a high-level construal of the situation, thinking, “We do not have a good relationship.” Alternatively, the individual could adopt a lower-level construal of the situation, thinking, “I was tired from work. I just wanted to have a quiet night together watching a movie. However, when asked to do the dishes, I heard the nagging tone in my partner’s voice. I got angry.” Several experiments have demonstrated that adopting a low-level, concrete perspective reduces rumination and negative affect in both clinical and non-clinical samples (Moberly & Watkins, 2006; Watkins, Moberly, & Moulds, 2008; Watkins, Baeyens, & Read, 2009). Additionally, Watkins and colleagues have theorized that adopting high-level, abstract construals during processing of negative content is akin to ruminating (Moberly & Watkins, 2006; Watkins, 2004; Watkins 2008).

However, evidence is mixed as to whether adopting high-level, abstract construals will always yield negative consequences. Kross and Ayduk (2008) found that adopting a high-level, yet self-distanced perspective, reduced negative affect when thinking about a negative experience. They argue that a distanced analysis of negative events allows an individual to focus on the “whys” and meaning of a situation without focusing on symptoms. Additionally, Rude, Mazzetti, Pal, and Stauble (2009) manipulated mode of processing in response to a rejection experience, and found that non-evaluative, abstract processing was beneficial in reducing rumination and negative affect. Thus, research is conflicted with regard to the benefit of higher-level construals in processing.

One theory that offers a possible framework for understanding the relationship between level of construal and rumination is Goal Progress Theory (Martin & Tesser, 2006). Goal Progress Theory holds that higher-level goals are more enduring, general, and abstract, and lower-level goals are more immediate, detailed and concrete. Thus, Goal Progress Theory is a useful way to conceptualize level of construal, because levels of construal can be thought of in terms of the individual's goal hierarchy. For instance, if we examine the earlier example of the argument, a higher-level goal could be "having a good relationship" and a lower-level goal might be "watching a movie together tonight." Goal Progress Theory defines rumination as "conscious thinking directed toward a given object for an extended period of time" (Martin & Tesser, 1989, p. 306). Furthermore, it holds that rumination occurs when achievement of important higher-level goals is repeatedly thwarted and will continue until the goal is reached, a substitute means of attaining the goal is found, or the individual disengages from the goal (Martin & Tesser, 2006).

Building upon Goal Progress Theory, this study seeks to examine the different levels at which one can process a negative interpersonal event and reduce rumination. Previous studies offered conflicting results regarding higher-level, abstract processing and treated level of processing as either exclusively low-level or exclusively high-level (e.g., Moberly & Watkins, 2006; Kross & Ayduk, 2008). To address these limitations, this study will explore whether abstract processing can reduce rumination and whether a mixture of abstract and concrete processing can reduce rumination more than either concrete processing or abstract processing alone. The proposed study asks participants to recall a negative interpersonal experience and then guides them to adopt a lower-level perspective, higher-level perspective, or a perspective

combining both types of processing. Rumination will be measured one day and one week after the manipulation.

## Chapter 2: Integrative Analysis of the Literature

The following integrative analysis reviews several types of processing that are beneficial in reducing rumination after a negative event. The analysis begins with a broad discussion of rumination and psychopathology. The next section highlights several prominent theories of rumination. This is followed by an analysis of the recent research by Watkins and colleagues into the effects that processing at different levels of construal have on rumination. Then, research that conflicts with Watkins' current conceptualization is presented. The final section provides an examination of limitations in the current research and argues for research that combines multiple levels of processing in response to a negative life event.

### *Rumination*

#### *Defining Rumination*

Rumination has no unified definition. Nevertheless, the major theories probably have more in common than not; definitions discuss rumination as a form of repetitive thought that usually centers on themes of discrepancy between current and desired status and that stagnates processing (Smith & Alloy, 2009). Of the multiple theories of rumination, the most widely used comes from Nolen-Hoeksema's work on ruminative response styles. In this line of research, rumination was traditionally defined as "thoughts that focus one's attention on one's depressive symptoms and on the implications of these symptoms" (Nolen-Hoeksema, 1991, p. 569). For example, the ruminative styles questionnaire developed by Nolen-Hoeksema and Morrow (1991) asks individuals to rate statements like, "I think about how hard it is to concentrate." Recently, Nolen-Hoeksema has broadened her view, defining rumination "as the process of thinking perseveratively about one's feelings and problems" (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008, p. 400). Others have taken an even more inclusive definition. For example, Martin and

Tesser (1996) defined rumination as “a class of conscious thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thoughts” (p. 7). A further exploration of various definitions will be presented with the specific theories of rumination. However, before discussing the intricacies of particular theories, it will be useful to examine why it is important to study rumination, namely, the connection between psychopathology and rumination research as a whole.

### *Background on the Connection between Rumination and Psychopathology*

Rumination has been associated with several forms of psychopathology. For instance, rumination predicted heightened binge drinking and symptoms of alcohol abuse (Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema & Harrell, 2002). Other studies found that rumination has both an association with anxiety and an ability to predict anxiety (e.g., Ciarrochi et al., 2003; Fresco et al., 2002; Harrington & Blakenship, 2002). Furthermore, individuals who suffer from anxiety disorders often report greater rumination (Abbott & Rapee, 2004). For example, individuals with social phobia will engage in negative rumination about a performance one week later whereas non-clinical controls do not. (Abbott & Rapee, 2004).

The vast majority of rumination research has been focused on mood and depression symptoms. Research demonstrates that rumination is concurrently associated with depression, that rumination predicts the onset and severity of depression, and that when experimentally induced, rumination exacerbates sad mood (e.g., Harrington & Blankenship, 2002; Butler & Nolen-Hoeksema, 1994; Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema & Morrow, 1993; Watkins & Teasdale, 2001). In addition, due to the high comorbidity of depression with other Axis I disorders (Brown, Campbell, Lehman, Grisham, & Mancill, 2001), it is difficult to discern the unique role that rumination may have in disorders beyond the connection to

depression. Because rumination has been central in mood and depression research, the relationship warrants a closer examination. Most research into depression and rumination can be discussed as fitting into one of three designs: cross-sectional, longitudinal, or experimental.

Numerous cross-sectional studies have examined the relationship between rumination, depression, and negative affect. Cross-sectional research can be further divided into three main designs: (1) correlations between rumination and depressive symptoms (e.g., Abela, Vanderbilt, & Rochon, 2004; Harrington & Blankenship, 2002), (2) cross-sectional studies comparing the level of rumination in non-depressed controls and depressed individuals or the level of depression in ruminators and non-ruminators (e.g., Riso et al., 2003), or (3) studies that conduct both correlation and group difference designs (e.g., Lam, Smith, Checkley, Rijdsdijk, & Sham, 2003). In a review of over a 100 studies, Thomsen (2006) argued that cross-sectional research points to a positive association between depressive symptoms and rumination when sampling from non-depressed groups. Thomsen's review suggested that a positive yet weaker association exists for clinical samples. Additionally, cross-sectional studies found an association between rumination and depressive symptoms exists in children (Abela, Vanderbilt, & Rochon, 2004) and adolescents (Kuyken, Watkins, Holden, & Cook, 2006). Another important finding from the rumination literature is that rumination may partially explain greater occurrence of depression in women; several cross-sectional studies found that rumination accounts for part of the association between gender and depression (Grant et al., 2004; Nolen-Hoeksema, Larson, & Grayson, 1999).

Longitudinal studies suggest that rumination also predicts symptoms of dysphoria and depression. After accounting for baseline symptoms, several studies found that a tendency toward Nolen-Hoeksema's depressive rumination in non-depressed groups predicted depressive symptoms at later times (Abela, Brozina, & Haigh, 2002; Butler & Nolen-Hoeksema, 1994;

Hong, 2007; Nolen-Hoeksema, Stice, Wade, & Bohon, 2007; Verstraeten, Vasey, Raes, & Bijttebier, 2009; Nolen-Hoeksema, 2000). Utilizing a broader definition of rumination, repetitive thinking about negative subject matter, also predicted future depression (Rector & Roger, 1996; Ito, Takenaka, Tomita, & Agari, 2006; Ito, Takenaka, & Agari, 2005). Furthermore, the ability of rumination to predict depressive symptoms was also demonstrated in clinical samples (Raes et al., 2006; Nolen-Hoeksema, 2000; Kuehner & Weber, 1999; Rohan, Sigmon, & Dorhofer, 2003).

Experimental studies that have induced rumination-like thinking have shown several negative consequences. Often experiments compare a rumination group (e.g. “Think about the level of motivation you feel right now”) with a distraction group that is directed to think about non-emotional content (e.g., “Think about a fan slowly rotating back and forth” Nolen-Hoeksema and Morrow, 1993). Several studies involving clinical populations found that rumination groups reported increased negative mood compared to distraction groups (Lavender & Watkins, 2004; Lyubomirsky & Nolen-Hoeksema, 1995; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993; Watkins & Teasdale, 2001). In fact, Thomsen’s (2006) review of experimental studies concludes that inducing rumination worsened sad mood compared to distraction. Moreover, experimental studies demonstrate that individuals who ruminate have poor problem-solving skills (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky et al., 1999) and may have reduced motivation. For instance, experimentally induced depressive rumination can reduce engagement in pleasant activities in dysphoric patients. (Lyubomirsky & Nolen-Hoeksema, 1993).

#### *Rumination and Negative Events*

Rumination may worsen the detrimental consequences brought on by a single negative event. For example, a ruminative response style predicts future depressive symptoms for events

such as a natural disaster or the death of a loved one (Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Parker, & Larson, 1994). In addition, the interaction of rumination and negative cognitive styles following a negative life event has been shown to predict the lifetime rate of Major Depressive Disorder (Alloy et al., 2000). Whereas trait-like, stable tendencies to ruminate seem to have a role in depressive reactions, negative events also may increase state-like, transient rumination. Increases in rumination have been linked to interpersonal interactions (Rude et al. 2009; Abbot & Rapee, 2004; Rachman, Grüter-Andrew, & Shafran, 2000) and failure experiences (Watkins, 2004). Moberly and Watkins (2008) recently conducted a study to attempt to understand the relationship between rumination, negative life events, and negative affect. In an effort to get unbiased information, they utilized experience-sampling methodology -- participants reported their thoughts and experiences when an alarm on wrist-worn device sounded. The findings indicated that the more individuals ruminate about everyday stressful events, the more likely they are to experience distress (Moberly & Watkins, 2008). In addition, McIntosh and Martins (1992) have theorized that when single negative events are taken to be an indication of a more global failure, they can increase rumination and negative affect.

### *Theories of Rumination*

Smith and Alloy (2009), in their review of major research, point to at least ten theories of rumination. Some of these theories limit the definition of rumination to repetitive thoughts on a particular content area. For example, several theories focus specifically on rumination regarding depressive symptoms, sadness, or reactions to stressful events (Ruminative Response Styles Theory, Nolen-Hoeksema, 1991; Rumination on Sadness, Conway, Csank, Holm, & Blake, 2000; Stress-Reactive Model of Rumination, Alloy et al., 2000). In addition, rumination theories may be limited in scope to explaining a specific construct, such as research on level of construal

(Watkins, 2008). Other theories attempt to be comprehensive by creating models that can explain broader definitions of rumination, focusing on achievement of life goals or self-regulation (Goal Progress Theory & Martin, 2006; Self Regulatory Executive Functioning, Wells & Matthews, 1996). Smith and Alloy (2009) argue that there is a great deal of overlap, and for the most part, theories can be used to augment each other. As the central topic of the proposed study is the level of construal adopted during processing, the discussion will be mainly restricted to the two most pertinent theoretical models: Watkins' Level of Construal theory and Goal Progress Theory. However, because many other theories have built on the work of Nolen-Hoeksema's Response Styles Theory (RST, Nolen-Hoeksema, 1991), a basic understanding of RST's assumptions is useful.

### *Response Styles Theory*

The most widely used theory of rumination is Nolen-Hoeksema's Response Styles Theory (Nolen-Hoeksema, 1991). RST defines rumination as repetitive thinking that focuses on the symptoms, causes, and consequences of negative mood. This theory holds that a ruminative coping style is learned in childhood. Nolen-Hoeksema and colleagues suggest that this learning occurs through modeling by parents (Nolen-Hoeksema, 1991; Nolen-Hoeksema, Mumme, Wolfson, & Guskin, 1995) or because parents act overcritical and controlling (Nolen-Hoeksema et al., 1995). In this conceptualization, rumination becomes a consistent style of responding to depressed mood or to trauma (Nolen-Hoeksema et al., 1993; Nolen-Hoeksema & Davis, 1999). RST suggests that a cyclic effect exists between rumination and depression. According to this hypothesis, negative mood maintains or increases negative thinking, and in turn, negative thinking maintains or increases negative mood. Thus, a vicious cycle exists that sustains depressive symptoms (Nolen-Hoeksema, Stice, Wade, & Bohon, 2007). While there has been a

great deal of empirical support for many aspects of RST (Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993; Nolen-Hoeksema et al., 1993;), several researchers have suggested that RST may be too restrictive in its definition to encompass all aspects of rumination.

The major criticisms of RST theory are that it does not address content other than symptoms and causes of negative mood nor does it explain findings pertaining to level of construal (Watkins, 2008; Martin & Tesser, 2006). Martin and Tesser (1996) suggest problems with limiting the possible topic of rumination to depressive symptoms or mood; they argue that if rumination is a style of thinking, it should not be restricted to specific content areas (i.e. symptoms and mood). For example, individuals may ruminate on the end of a relationship, but not necessarily the fact they are depressed. Other researches have also suggested that the content of rumination may not result from depressed mood but rather from negative events (Brinker & Dozois, 2009; Alloy et al., 2000). A final criticism that is relevant to this proposed study is that RST is not a broad enough theory to provide a full explanation of research involving levels of construal (Watkins, 2008). For instance, research has shown that the consequences of rumination may differ based on whether the content of the rumination is specific or general (Rimes & Watkins, 2005; Watkins & Moulds, 2005; Watkins & Teasdale, 2001, 2004; Moberly & Watkins, 2006; Watkins, 2004; Watkins & Baracaia, 2002). It is this last point that has been the subject of recent research and interventions.

### *Goal Progress Theory*

Martin & Tesser (1989, 1996, 2006) proposed Goal Progress Theory to explain rumination within the Control Theory paradigm. Control Theory holds that people alter their behavior and mental activity to reduce discrepancies between their current state and desired

goals or outcomes (Carver & Scheier, 1981, 1990). Within these theories, goals or outcomes fall along a hierarchy. Higher-level goals are more abstract and occur across situations (e.g. being honest, Carver & Scheier, 1990). Lower-level goals may be connected to higher-level goals and represent specific actions or behaviors (e.g. telling the truth in a given situation). At any one time, individuals will be engaged in achieving multiple goals (Martin & Tesser, 2006). Lower-level goals provide a map of how to carry out higher-level goals. On the other hand, higher-level goals are advantageous in that they direct behavior in a consistent way, increase motivation, and reduce impulsivity. (Carver & Scheier, 1998; Vallacher & Wegner, 1987, 1989). However, problems may arise when progress toward higher-level goals is not achieved.

Within the Goal Progress Theory literature, rumination is defined as “a class of conscious thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thoughts” (Martin & Tesser, 1996, p. 7). Rumination arises when people are repeatedly thwarted or fail to progress toward important higher-level goals. To escape from the ruminative cycle individuals must disengage from the goal, find a substitute means of achieving it, or resume progress toward it (Martin & Tesser, 2006).

Evidence suggests that when a goal is thwarted, information pertaining to that goal becomes highly accessible. Early support for this phenomenon comes from the work of Zeigarnik who hypothesized that needs cause tensions. Zeigarnik had subjects complete some tasks and leave others incomplete. She found that information pertaining to a task left incomplete was more likely to remain active in memory (Zeigarnik, 1938). More recently, in an experiment designed to test whether this tendency to remain active was automatic, Rothermund (2003) asked participants to complete two tasks. First, participants chose words in a synonym-matching task,

and received both positive and negative feedback on trials regardless of performance. In the second part of the experiment, participants had to name a word surrounded by two distracter words. The distracter words were selected from the earlier synonym task. When the distracters were from trials where the participant had previously received negative feedback, the reaction time of the participant was reduced. Thus, Rothermund concluded that participants were more vigilant to failures, because the failure words captured the attention even when the task required attention elsewhere. Martin and Tesser (2006) argue that this is directly related to the rumination that occurs following failure in goal progress. In fact, Goal Progress Theory proposes that the more important the goal, the more likely rumination is to occur (Martin & Tesser, 2006). For example, Lavalley and Campbell (1995) had participants keep a diary for two weeks, recording the most bothersome event each day. When the events were goal relevant and personally important, they were associated with higher levels of rumination.

According to Goal Progress Theory, disengaging from a frustrated goal is an effective but difficult means to lowering rumination (Martin & Tesser 2006; Wrosch, Miller, Scheier, & de Pontet, 2007). Certain goals may be personally important but unlikely or impossible to fulfill (e.g. the desire to be a star quarterback after tearing both ACLs). In situations like this, disengaging from the goal is essential. Research has shown that individuals who were able to disengage from goals that they were not actively progressing toward and who adopted new goals had lower rumination (Wrosch, Scheier, Miller, Schulz, & Carver, 2003; Wrosch, Scheier, Carver, & Schulz, 2003). This process may be more effective in individuals with greater well-being (Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Martin and Tesser (2006) argue that the multiple goals that an individual is pursuing at one time are in balance. Although the current configuration of goals may not be the ideal state, disengaging from a goal requires initially

unbalancing the current mix of goals; therefore, the individual may temporarily feel purposeless. Thus, disengaging from a goal is difficult. Martin and Tesser (2006) suggest that disengagement from old goals and reengagement in other goals may result more easily during trauma and/or brushes with death. In summation, research seems to demonstrate that disengaging from thwarted goals leads to a reduction in rumination. However, the procedure by which individuals accomplish disengagement is still unknown and is most likely a difficult process.

Perhaps, an easier way to end a ruminative cycle would be to find alternate low-level goals that accomplish a higher-level goal. For example, imagine an individual who had a goal of helping other people by joining the Peace Corps. If the application to the Peace Corps is denied, the individual might be able to find an alternate means of fulfilling the higher-level goal of helping other people. For instance, the individual could spend a year working in soup kitchens, and rumination could be prevented. One study asked college freshmen to identify the person they were closest to before coming to college and list activities that they engaged in together. The freshmen then listed the activities that they found substitutes for at college. Findings indicated that freshmen who were able to find substitute activities ruminated less about the person they had left behind (K. Millar, Tesser, & M. Millar, 1988). In a separate study, Koole et al. (1999) were interested in the various ways participants fulfilled the higher-level goal of self-worth. The study provided participants with failure feedback on a bogus intelligence test. Following the feedback, participants reported increased levels of rumination. The researchers hypothesized that this rumination was connected to the thwarting of the higher-level goal of self-worth. To test this hypothesis, they allowed some participants to affirm values important to their self-worth. The results indicated that participants who were allowed to affirm their self-worth had content pertaining to intelligence tests less accessible. In other words, when a substitute means of

fulfilling the higher goal of self-worth was found, rumination about the failure experience was reduced.

This begs the questions, what hinders the discovery of alternative lower-level goals that fulfill the higher-order goal? One possible answer is that individuals may fixate on a certain lower-level goal as the only way of achieving a higher goal. Building on this basic premise, McIntosh and Martin (1992) proposed the goal linkage model, which holds people who link specific lower-level goals to the higher-level goal of happiness will have an increased rate of rumination. In their research, McIntosh and Martin compared linkers, individuals who believe happiness is contingent on fulfillment of certain goals, to non-linkers, individuals who do not see goal completion as necessary for happiness (McIntosh, Martin, & Jones, 2001). Findings indicated that linkers generally have higher rates of unhappiness (McIntosh and Martin, 1992) and depression (McIntosh, Harlow, & Martin, 1995). Additionally, these higher rates of negative affect are largely accounted for by the increase in rumination of individuals who linked lower and higher goals (McIntosh, Martin, & Jones, 2001; McIntosh and Martin, 1992; McIntosh, Harlow, & Martin, 1995; Martin & Tesser, 1996). Brothers and Maddux (2003) applied the linkage model in an attempt to understand why certain infertile women experience more distress than others. Using survey methods, Brothers and Maddux asked participants who had attempted unsuccessfully to have a child for the last year to complete measures on linking (“e.g. “Having a biological child is essential to my happiness”), emotional distress, and rumination. Results indicated that linking predicted rumination. Furthermore, rumination predicted emotional distress. Rumination mediated the connection between linking and emotional distress. Moreover, McIntosh and Martins’ research on linking is in line with Goal Progress Theory’s conception of rumination.

In summary, Goal Progress Theory explains several important aspects of rumination. Within this theory, rumination results when individuals cannot make progress toward reducing the discrepancy between their current state and their goals. Research has demonstrated that thwarting goals increases the accessibility of information pertaining to that goal. In addition, the more important the goal, the more likely rumination is to occur. One effective but difficult way to halt rumination is to disengage from a goal. Finding an alternative way to satisfy the goal can also reduce rumination. However, this may be problematic if the individual only sees specific ways of fulfilling a goal.

#### *Watkins' Level of Construal Theory*

The Level of Construal Theory proposes that key in the development and formation of rumination is the degree of abstraction present when perceiving negative events. Watkins makes a distinction between two ways of perceiving events during processing: high-level, abstract construals and low-level, concrete construals. Though his definitions have gone through several iterations, recently, Watkins described abstract construals as “general, superordinate, and decontextualized mental representations that convey the essential gist and meaning of events and actions, such as inferences of global traits that are invariant across different situations” or “representations of ‘why’ an action is performed and of its ends and consequences.” Concrete construals are “lower-level mental representations that include subordinate, contextual, and incidental details of events and actions, such as inferences of situation-specific states” or “representations of the specific ‘how’ details of an action and of the means to an end” (Watkins, Baeyens, & Read, 2009, p. 56). Building on RTS theorization that rumination focuses on the causes, consequences, and means of symptoms of depression, Watkins has proposed that thinking that is made up of abstract construals is related to rumination (Watkins, 2008).

Furthermore, Watkins has suggested that helping individuals to think and process information in a concrete way will reduce rumination and alleviate depressed mood (Watkins, 2008). On these premises, Watkins and colleagues developed an extensive research program.

Watkins' work grew out of the research of Teasdale (1999) who found that mindful, experiential self-focus on emotional material facilitates processing. As a next step in researching these phenomena, several studies compared a conceptual-evaluative mode of self-focus with an experiential mode of processing (Watkins & Teasdale, 2004; Watkins, 2004). These studies attempted to experimentally manipulate self-focus and examine the effect on rumination and depression. For example, one study, induced a failure experience and, subsequently, asked participants either a conceptual-evaluative question (i.e., "Why did you feel this way?") or an experiential question (i.e., "How did you feel moment-by-moment?"). Results indicated that participants in the conceptual evaluative condition had more intrusive thoughts than the experiential group (Watkins, 2004). Watkins and colleagues have connected these findings to a parallel string of research, which examines processing negative content at different construal levels (Watkins & Teasdale, 2001; Rimes & Watkins, 2005; Watkins & Moulds, 2005; Raes, Watkins, Williams, & Hermans, 2008; Watkins, Moberly, & Moulds, 2008; Moberly & Watkins, 2006).

Several studies have examined whether level of construal influences rumination and affect. In one such study, Moberly and Watkins (2006) asked student volunteers to write about positive or negative scenarios from either a low-level, concrete construal mode (e.g., "Imagine the details of what is happening in each scenario") or a high-level, abstract construal mode (e.g., "Think about the causes, meanings, and implications of each situation"). When this expressive writing task was followed by a failure task, construal level moderated the relationship between

rumination and negative affect. The results showed that high-trait ruminators had a reduced positive affect, but only in the abstract, construal mode group (Moberly & Watkins, 2006). In a separate study, a mixed student and community sample had less emotional reactivity to a failure task after adopting a concrete construal mode (Watkins, Moberly, & Moulds, 2008). Additionally, Rimes and Watkins (2005) found that inducing participants to think from a highly analytic perspective increases ratings of self-worthlessness. Based on these studies, Watkins has argued that high-level analytic processing is a key component of rumination and depression (Watkins, 2008).

Watkins theorized that if high-level, abstract processing is related to rumination, low-level, concrete processing may break the ruminative cycle (Watkins, 2008). Based on this theory, Watkins implemented a concreteness training program with a dysphoric, clinical population (Watkins, Baeyens, & Read, 2009). Participants were divided into either a concreteness group, bogus concreteness group, or a waiting list control. The concreteness training group received an initial 70 to 90 minute training session that via questioning, mental imagery, and other mechanisms encouraged concrete thinking. In this condition, participants were asked to notice specific details and context, attend to how events unfolded, and develop detailed plans for the future. Participants practiced independently what they learned in the initial training for 30 minutes daily during the next week. Individuals in the bogus concreteness training condition received a similar amount of face to face interaction and practice but were not encouraged to think concretely. Results were mixed, with the concreteness training reducing overgeneral thinking more than the other conditions. However, in examining depressive symptoms, the concreteness group only fared better than the bogus concreteness training in terms of a structured interview and not other measures of depression, such as the Beck Depressive

Inventory (Beck, 1996) and Nolen-Hoeksema's Ruminative Styles Questionnaire (Nolen-Hoeksema & Morrow, 1991). However, the concreteness training group demonstrated greater improvement than the waiting list control group on both measures of depressive symptoms and rumination (Watkins et al., 2009).

Recently, Watkins (2008) attempted to integrate the previous literature on rumination. He identified three factors that might determine whether repetitive thought leads to helpful or harmful consequences: (1) valence of the thought content (i.e. negative or positive), (2) intrapersonal context (e.g. self-esteem), and (3) the level of construal. Subsequently, Watkins examined several theories that could explain these factors. Ruminative Styles Theory (Nolen-Hoeksema, 1991) and Cognitive Theories (e.g., Greenberg, 1995; Horowitz, 1985; Janoff-Bulman, 1992; Teasdale & Barnard, 1993) did a fairly good job of accounting for valence and context but could not completely address for his recent work on level of construal. Watkins (2008) contends that Control Theory (Carver & Scheier, 1981, 1990), particularly the work of Martin and Tesser (1989), provides the fullest explanation of all three variables. In an attempt at integration, Watkins proposed that a level of construal maps directly onto a position in the goal hierarchy (Watkins, 2008).

#### *Disagreement within the Field*

It is important to note that not all researchers are convinced that abstract, higher-level processing of negative content is always akin to rumination. Whereas Watkins' Level of Construal Theory holds that repetitively adopting higher-level construals in reference to negative content maintains a ruminative cycle, several researchers have found that abstract processing is not always detrimental (Kross & Ayduk, 2008; Rude, Mazzetti, Pal, & Stauble, 2009). In fact,

experimental studies have demonstrated that abstract thought about negative consequences does not always increase rumination, and may, in fact reduce it.

Early evidence that abstract processing might not always be akin to rumination comes from the work of Hunt. Hunt (1998) was interested in emotional processing and how to cope with dysphoria following a negative life event. For that reason, she conducted a study which asked participants to write from one of three perspectives following negative feedback on an IQ test: emotional processing (e.g., "...focus on how you feel" p. 365), disputation (e.g., "...question whether these test results have any relevance..." p. 365), or distraction (e.g., "...write...about your favorite television show..." p. 366). Of note, the emotional processing condition asked participants to think about the implications of the test results and the causes of the poor performance, which resembles Watkins analytic induction (e.g., Moberly and Watkins, 2006) and Nolen-Hoeksema's conception of rumination (e.g., Nolen-Hoeksema, 1991). Yet the following day, those in the emotional processing condition reported improved mood. The implication of this study indicates that focusing on negative content from at least a partial higher-level perspective does not always lead to rumination and depression.

More recently, Kross, Ayduk, and Mischel (2005) investigated the level of construal (abstract "why" vs. concrete "what") and the type of self-perspective adopted (self-immersed vs. self-distanced). They conducted a study that asked participants to recall an interpersonal event about which they still felt angry and, subsequently, adopt a perspective based on the four possible combinations of the two dimensions: self-immersed and "why", self-immersed and "what", self-distanced and "why", and self-distanced and "what." Whereas the self-immersed perspectives encouraged participants to relive the experience (e.g., "go back to the time and place of the experience and relive the situation as if it were happening to you all over again . . .")

p. 711), the self-distanced perspectives asked participants to “take a few steps back and move away from your experience... watch the conflict unfold as if it were happening all over again to the distant you...” (p. 711). For the second factor, level of construal, participants either thought about the feeling and sensations in the “what” condition or the reasons underlying their feeling in the “why” condition. Using negative affect as an outcome, the findings indicated that a distanced, abstract “why” perspective was more beneficial than the other groups. As the initial results for both the self-immersed and the self-distanced concrete “what” condition showed no improvement in affect, Kross and Ayduk argued for only including the two “why” conditions in the second part of the study examining emotional reactivity. In terms of emotional reactivity for the “why” groups, again the self-distanced perspective outperformed the self-immersed perspective (Kross & Ayduk, 2005). While this study examined anger provoking experiences, the findings provided support for the beneficial aspect of analytic processing.

As a next step in their research, Kross and Ayduk (2008) examined the two versions of the analytic thinking condition (immersed vs. distanced) in terms of a depression experience. In addition to the distancing (e.g., “...watch the experience unfold as if it were happening all over again to the distant you” p. 926) and self-immersed instructions (e.g., “relive the situation as if it were happening to you all over again...” p. 926), a distraction group was included that thought about unrelated topics (e.g., “pencils are made of graphite” p. 927). The results found that the self-distanced perspective outperformed the self-immersed and was marginally better than the distraction conditions one week after the manipulation. Therefore, in contrast to the work of Watkins and colleagues, Kross and Ayduk argue that in response to negative events, adoption of a self-distanced analytic perspective is helpful.

Further support for possible benefits of some types of higher-level, abstract processing comes from the work of Rude, Mazzetti, Pal and Stauble (2009). Rude and colleagues have suggested that a key component to the harmful effects of rumination is evaluation (Rude, Maestas, & Neff, 2007). Building on this premise, Rude et al. (2009) examined the conditions in the Watkins experiments and concluded that the abstract condition may be confounded with self-judgment and evaluation. They suggested that in some of Watkins experiments this has been explicit, such as examining a romantic break up and asking participants to think (“At that moment, you stare at the table and contemplate your empty...”) from either a concrete-experiential (“glass”) or an abstract-evaluative way (“life”) (Watkins, Moberly, and Moulds, 2008, p. 371). At other times, the evaluation may have been implicit, such as asking participants to “write about what reasons might have caused you to perform as you did” following a failure task (Watkins, 2004, p. 1043).

To test their hypothesis that the harmful effects of abstract thinking may result from evaluation, Rude et al. (2009) attempted to experimentally separate the level of construal and evaluative dimensions. The study asked participants to recall a rejection experience and then write from one of three perspectives: abstract-evaluative (e.g. “Why do you think this happened?”), abstract-contextual (e.g. “How do you think you will view this event in 1 to 2 years?”), concrete-experiential (e.g. “As you recall the event, what physical sensations do you experience in your body?”). Additionally, the study included a control condition which did not write. The findings indicated that the abstract-contextual conditions showed a reduction in rumination over the no writing control and the abstract-evaluative condition. The abstract-evaluative condition did not show a significant difference from the control conditions. The findings also indicated that the concrete-experiential condition experienced less rumination than

the no writing control. Therefore, the results from this study corroborated Watkins' contention that concrete processing decreases rumination, but also differ from Watkins in that the results suggested that abstract processing also decreases rumination.

In summary, Watkins theorized that rumination is akin to abstract thinking about negative content and situations (Watkins, 2008). He has demonstrated in an impressive body of work that thinking from a concrete perspective can improve rumination and reduce depression (e.g. Watkins, 2009). However, several researchers have found examples where abstract, higher-level construals do not worsen rumination, and can in some cases reduce rumination and improve overall mood (Kross & Ayduk, 2008; Rude, Mazzetti, Pal, & Stauble, 2009).

#### *Limitations of Current Research*

A major problem with the current research is that it treats level of construal as either being only abstract or concrete. Though researchers in the field discuss the levels of construal as existing within a hierarchy that connects from low-level goals/construals to high-level goals/construals (e.g. Martin & Tesser, 2006; Watkins, 2008), studies to date have not included an experimental condition that traverses between the high and low. For example, Watkins' research only uses two conditions, some variation on abstract or analytic processing and concrete or experiential processing (Watkins & Teasdale, 2001; Rimes & Watkins, 2005; Watkins & Moulds, 2005; Raes, Watkins, Williams, & Hermans, 2008; Watkins, Moberly, & Moulds, 2008; Moberly & Watkins, 2006). This is also true for the research that argues for the benefits of abstract processing (Kross & Ayduk, 2005, 2008; Rude et al., 2009). It is possible that, by attempting to force thinking to be either abstract or concrete, researchers may be getting only a partial picture of the role that different levels of construal play in influencing subsequent rumination.

### *Possible Benefits of Mixing Abstract and Concrete Processing*

There are several reasons to believe that adopting a mixture of abstract/high-level and concrete/low-level processing may be helpful in reducing rumination. Goal Progress Theory provides a framework for understanding these possible benefits. If rumination results from an individual perceiving a situation as demonstrating the thwarting of an important higher-level goal, then the higher-level goal may become highly accessible in the individual's consciousness. However, because this higher-level goal is so accessible, lower-goals that provide situation specific information of how to resume progress are blocked. Therefore, the individual becomes stuck in a repetitive focus on a single higher-level goal. Watkins (2009) has suggested that low-level, concrete processing can be helpful by focusing individuals on the present situation or situational factors of past negative events. Thus, concrete processing moves the individual away from a strict focus on the problematic higher-level goals. Still, there are several reasons to believe that moving back and forth between lower-level and higher-level goals may be beneficial. Thinking abstractly may provide greater context and alternative lower-level examples of progress toward high-level goals. In addition, if the link between a negative event and a higher-level goal is made explicit, then concrete future planning may become easier and more organized.

One possible benefit of using abstract, higher-level construals in combination with concrete construals is that abstract construals provide context. For example, Control Theory posits that higher-level goals are consistent across situations, encourage personal meaning, and ensure that lower-level goals remain directed toward achieving higher-level goals (Carver & Scheier, 1998). If an individual is ruminating on a negative event, the event may be connected to a higher-order goal (McIntosh and Martin, 1992). In addition, the individual may think of this

negative event as the only evidence of movement regarding the higher-level goal. However, it is possible that thinking more directly about the higher-level goal may increase context and lead to alternative examples of progress. For instance, if a friendship ends, a person might connect this event with the higher-order goal of maintaining good relationships. Furthermore, the individual might enter a ruminative cycle where thoughts such as “this friendship ended; I am no good with people” continually arise. Once stuck in this cycle, alternative examples of progress toward this goal within his/her life might not be activated. For example, the individual might currently have other good friendships or may have had other good friendships in the past. By concentrating on the higher-level, the discovery of alternative lower-level examples of progress toward the higher-level goal may be facilitated. On the other hand, if individuals move directly to lower-level processing, such as reliving the event, they may add greater context to the event itself which could minimize the perceived impact of this single event on the higher-order goal. Still, concrete processing alone might not allow benefits gained from finding alternative examples of goal progress. Theoretically, having abstract thoughts guide the lower-level processing could do more to move the individual out of the ruminative cycle. Evidence suggests that finding alternative means to satisfy higher-level goals reduces rumination. (e.g., K. Millar, Tesser, & M. Millar, 1988). More support comes from research into self-worth. When individuals were allowed to affirm their values connected to the higher-order goal of self-worth, rumination about failures was reduced (Koole et al., 1999). Therefore, it is at least reasonable to hypothesize that moving to a higher level of thought might provide greater context and more alternative examples of progress. In fact, this might account for the success of the abstract contextual condition in the Rude et al. (2009) study.

Another way abstract processing may augment concrete processing is by allowing individuals to plan for the future. Goal Progress Theory hypothesizes that one way to end a ruminative cycle is to resume progress toward a higher-level goal (Martin & Tesser, 2006). Watkins suggested that concrete processing does this by allowing small steps forward (Watkins, 2009). He has argued that when an event is novel or stressful, higher-level thinking will not have the elaboration to direct people down the hierarchy and have them move forward (Watkins, 2008). However, research findings from Action Identification Theory indicate that individuals who think about the larger meaning of their actions are more organized, whereas concrete processing has been associated with more impulsivity (Vallacher & Wegner, 1989). Therefore, a purely concrete focus may be more disorganized and a purely abstract focus may not allow for concrete plans for the future. Consequently, perhaps the best solution is to use a combination of the two. By moving back and forth between multiple levels of the hierarchy, the individual can resume progress through organized specific steps toward longer term goals.

Is there a benefit to higher-level construal processing in the absence of lower-level construals? It seems logical that during rumination, higher-level construals in isolation, such as thinking about the meaning of events or one's happiness, would not provide concrete examples of past progress toward goals or specific ways to move forward. Therefore, rumination seems to follow from isolated higher-level thinking. Yet, the findings from several independent research labs suggest that higher-level, abstract manipulations have benefits for reducing rumination. Still, the Kross and Ayduk (2008) manipulation involving taking the perspective of the "distanced you" and the Rude et al. (2009) manipulation involving viewing events from a future perspective or as an outside observer seem to direct participants in a similar way. In addition to removing evaluation, it could be argued that these manipulations in essence combine higher-level and

lower-level goals; they pull for first moving to a general, higher-level perspective and then, though not explicitly stated, suggest movement to concrete examples. For instance, by viewing events from a “distanced” self-perspective (Kross & Ayduk, 2008) or the self “1-2 years” in the future (Rude et al., 2009), the individual can weigh the repercussions of the single negative event in the context of imagined, future examples of progress toward the higher-level goal. Similarly, when viewing an event “as an outside observer,” an individual can imagine alternative examples of progress taken from the outside observer’s life. On the other hand, Watkins and colleagues’ higher-level manipulations do not pull for moving back down the goal hierarchy. These manipulations simply ask, “Why do you feel this way?” (Watkins, 2004). As such, it could be argued that abstract manipulations that do not move back down the hierarchy seem harmful, whereas abstract manipulations that ask, even implicitly, for alternate concrete examples are helpful.

Recent work has demonstrated that the level of construal adopted when faced with negative events influences the severity of rumination. Watkins and colleagues have argued that abstract processing is related to rumination and that concrete processing can break the ruminative cycle. Other theorists have found that abstract processing decreases the levels of rumination. A problem with both types of research is that they treat processing as either abstract or concrete. The effect of traversing the goal hierarchy to both abstract and concrete construals has not been studied. Because rumination has been shown to be associated with, to predict, and perhaps, to be key in the maintenance of depression, more research is needed to fully understand which types of processing are most useful in reducing rumination.

## Chapter 3: Proposed Research Study

### *Statement of Purpose*

The aim of this study is to explore whether adopting certain levels of construal can reduce rumination when processing a negative social interaction. Several theories propose that events can be perceived with different levels of abstraction and that the levels form a construal hierarchy (Martin & Tesser, 2006; Watkins, 2008). Lower levels within the construal hierarchy are referred to as concrete and are made up of specific details of events and the procedures to carry out immediate tasks. Higher levels within the construal hierarchy are referred to as abstract and are made up of general meanings of events and long-term goals. For the purposes of this study, *level of processing* will refer to the particular perspective within the construal hierarchy adopted by an individual.

This study will attempt to fill a void in current research by not only including concrete and abstract processing conditions, but also a condition that asks participants to process events at both levels. The study will have a repeated measures design comparing a concrete, an abstract, a mixed and a control condition at a pretest, a posttest one day later, and a posttest one week later on three measures of rumination and one measure of negative affect. The usefulness of a particular level of processing will be determined by the levels of rumination and negative affect compared to a control both one day and one week following the manipulation. Negative affect was included as a separate dependent variable because studies have demonstrated that reductions in rumination often occur with lower levels of negative affect and depressive symptoms (Watkins, 2009; Rude et al., 2009; Moberly & Watkins, 2008). Therefore, the purpose is twofold; the study will attempt to (1) replicate the findings of Rude et al. (2009) regarding the benefits of abstract processing in reducing rumination and negative affect and (2) determine if a

combined abstract and concrete processing condition will be more beneficial than concrete processing or abstract processing alone.

### *Research Questions*

The proposed study seeks to understand the following questions as they pertain to individuals who recently experienced a negative social interaction:

1. Will individuals guided to adopt a concrete level of processing have significantly lower levels of rumination and/or negative affect compared to individuals in a control condition when measured both one day and one week later?
2. Will individuals guided to adopt an abstract level of processing have significantly lower levels of rumination and/or negative affect compared to individuals in a control condition when measured both one day and one week later?
3. Will individuals guided to adopt a mixed level of processing have significantly lower levels of rumination and/or negative affect compared to individuals in a control condition when measured both one day and one week later?
4. Will individuals guided to adopt a mixed level of processing differ significantly in the level of rumination and/or negative affect from individuals guided to adopt an abstract or a concrete level of processing when measured both one day and one week later?

### *Method*

#### *Approval by Human Subject Committee*

The proposed study will be in compliance with the guidelines set forth by the Institutional Review Board for the Protection of Human Subjects at the University of Texas at Austin.

#### *Participants*

Participants will be 220 undergraduate students recruited through the Department of Educational Psychology's subject pool at the University of Texas at Austin. Similar studies found significant results with medium effect sizes (e.g., Kross & Ayduk, 2008; Watkins, 2009). For the proposed statistical methods, power level of .95, an alpha of .05 and an  $f$  of .25, a G\*Power (Erdfelder, Faul, & Buchner, 1996) analysis suggested a sample size of 188. The requested sample size of 220 participants attempts to compensate for attrition and non-compliance. Eligibility to participate in the study will be based on a "yes" answer to the prescreening question, "In the past two months have you experienced an interaction with another person lasting no more than a day that continually bothers you (e.g., an argument with a friend, an end of a relationship, or a disagreement with a parent)?" Participants will receive course credit in return for participation in the study.

### *Measures*

The *Rumination about an Interpersonal Offense Scale* (RIO, Wade et al., 2008) is a 6-item scale designed to assess rumination about a specific situation. Because most scales measure disposition to ruminate, Wade and colleagues designed the RIO to fill the need for an instrument focussed on rumination about a specific event. The six items were selected to represent a single construct. Individuals are asked to rate specific statements (e.g., I can't stop thinking about how I was wronged by this person.) on a Likert scale with scores ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Though the RIO is a relatively new measure, Wade et al. tested it on three separate samples, two undergraduate and one clinical. Reliability using Cronbach's Alpha was found to be above .90 for all three samples. Confirmatory factor analysis revealed that the RIO does measure a separate construct other than dispositional rumination. However, the RIO was correlated to several other rumination variables. Principle factor analysis resulted in a single

factor solution, thus, suggesting unidimensionality. Whereas the original RIO asks participants to refer to the past 7 days, the version used here only references the last day.

*The Ruminative Response Scale* (RRS; Hoeksema & Nolan 1991) is one of the most frequently used instruments that measures tendency to ruminate when focused on the self (e.g., “think ‘Why am I the only person with these problems?’”), symptoms (“Think about your feelings of fatigue and achiness”), or consequences of the depressive mood (e.g., “think ‘I won’t be able to do my job/work because I feel so badly’”). The items were scored 1 (Never), 2 (Sometimes), 3 (Often) or 4 (Almost Always). Nolen-Hoeksema and Morrow (1991) reported good internal consistency ( $\alpha = .89$ ) and predicative validity in terms of depression. Because the RRS is the most widely used measure, it will be included in the proposed study. In addition, the RRS provides a measure of dispositional rumination in contrast to situational. The RRS will be modified to reference the past day. Using the same modification, Rude et al. (2009) found an alpha of .91.

*The Internet Based Word Recognition Task* will display a word with some of the letters omitted and ask participants to click on the screen as soon as they recognize the word. The omitted letters within the word will appear as asterisks. For example, a participant might see “c\*f\*e\*,” which could be solved as “coffee.” Participants will go through 20 such trials. The computer will record the reaction time taken to make a decision. Within the groups of words, there will be 10 words dealing with social interaction. These words will be chosen based on a pilot study, which will be conducted to determine the most frequent words used when asked to describe negative social interactions. The ratio of the latency on the social interaction words compared to the neutral words will be used as the outcome measure. As participants will complete this task three times, the words will be randomly selected without replacement for each

subject. Therefore, each participant will see all 30 social interaction words, but the particular set and order will differ. Faster reaction times on social interaction words will indicate greater rumination as it is indicative of these words having greater mental accessibility. Similar tasks have been used by Koole et al. (1999) and Rothermund (2003).

The *Positive and Negative Affect Scales* (PANAS; Watson, Clark, & Tellegen, 1988) is a brief self-report measure of affect. It consists of a 10-item scale that measures positive affect and a 10-item scale that measures negative affect. The proposed study will use only the negative affect scale. The PANAS will present adjectives that describe mood states (e.g., distressed, upset, scared, irritable). Participants will be asked to rate how much they felt a mood state during the past day on a five-point scale, extending from: 1 = “not at all,” to 5 = “very much.” An overall score on the negative affect scale is obtained by adding the scores on the individual items. The PANAS is a widely used measure of affect and has been shown to have good reliability and validity (Watson, Clark, & Tellegen, 1988).

### *Procedure*

*Overview.* The proposed study utilizes a repeated measures design with a single between subjects factor made up of four processing conditions. The within factor is composed of three measurement sessions. In Session 1, participants will complete pre-measures (RIO, RSS, the word completion task, and the PANAS) and will complete one of four randomly assigned processing conditions. Session 2 involves completing the RIO, RSS, the word completion task and the PANAS, 24 hours after the initial session. Finally, during Session 3, the same measures will be completed one week later. All sessions will be accomplished via a web-based data collection tool. Twenty-four hours prior to completing each session, participants will receive a reminder that they will be taking part in a study about a social interaction that still bothers them.

*Session 1.* Participants who reported having recently experienced a social interaction that still bothers them will be asked to complete online surveys. After providing consent, participants will select a five-digit code based on their mothers' first name and their birthday. This code will allow the data from the three sessions to be linked while, at the same time, removing identifiable information. Subsequently, demographic information will be collected. Participants will then be asked to call to mind the social interaction that still bothers them and describe it. Additionally, they will be prompted to rate how much the experience still bothers them. In order to obtain pre-manipulation levels, participants will complete the RRS, RIO, the word recognition task, and the PANAS. Random assignment will be used to place participants into concrete, abstract, mixed, or control processing conditions.

*Session 2 and Session 3.* Session 2 will occur twenty-four hours after finishing the manipulation. Participants will login using the five-digit code selected earlier. They will then once again be asked to remember the social interaction that had initially bothered them and write about it for a few minutes. Subsequently, they will complete the measures for the second time. The final part of Session 2 will ask participants to rate how honestly and accurately they answered the questions on a 5-point Likert scale (1 "not honest or accurate" to 5 "completely honest and accurate"). This rating will be used to exclude participants who were not honest from the analyses. Session 3 will follow the exact same procedure as Session 2 but will include a debriefing at the end of the session.

### *Conditions*

The three active conditions will attempt to elicit thinking about the negative social interaction that varies in terms of the level within the goal hierarchy at which participants are focused. The abstract and concrete conditions will encourage participants to focus attention at

relatively high (abstract) and low (concrete) levels of their goal hierarchies, respectively. The mixed condition is a combination of both abstract and concrete goals and will ask participants to move both up and down the hierarchy. There will also be a control condition that will not attempt to alter the level in the goal hierarchy. All participants will be asked to write in response to a series of prompts and all conditions will begin with the prompt, “Think of a social interaction lasting no more than a day that still bothers you.” Subsequent prompts will be specific to the particular condition.

*The Concrete Condition.* The concrete condition will be based on a slightly modified version of Watkins’ concreteness training (Watkins, Baeyens, & Read, 2009; Moberly & Watkins, 2006). Similar to the Watkins, Baeyens, and Read (2008) study, there will be four areas that the instructions address: (a) sensory details of the moment, (b) noticing the situation surrounding the event, (c) noticing the process of how events and behaviors unfold, and (d) generating detailed step-by-step plans of how to proceed. The actual concrete condition will proceed as follows:

- Go back to the interaction and focus on the sensory details in the moment. Write down four sensory sensations. For example, one sensation might be what you are able to see. Another might be what you hear or feel.
- Remembering the context, environment, and situation within which the social interaction took place, write down two things that you noticed or that are notable to you now about the situation.
- Notice the process of your thinking and feeling behaviors as events unfolded. Describe these in writing (filling the box below).

- Considering the upcoming week, think about small but detailed steps that you could take this upcoming week to move past this experience. Write these steps in the box below.

*The Abstract Condition.* The abstract is designed to stimulate abstract thought and consideration of higher-level goals. Abstract thinking is often experimentally manipulated by asking participants “why” questions or by having them evaluate the causes, meaning, and implication of scenarios (e.g. Watkins, 2004; Moberly & Watkins, 2006). As discussed in the integrative analysis, Rude et al. (2009) argue that many of the previous experimental manipulations were confounded by an implicit or explicit pull for negative self-judgment. Following the example from their study, the wording of this condition did not include any explicit statements that would increase judgment. Avoiding implicit judgment is more complicated to implement. However, one way that previous research has implicitly pulled for judgment is by focusing on causes or why someone performed actions that led to a negative event. Therefore, the abstract conditions will ask participants to focus on the event as a whole and then move up the hierarchy by focusing on what is generally important to them. The abstract conditions will proceed as follows:

- Think what about it bothers you. List four reasons that this interaction bothers you.
- Look at these four reasons. What do these reasons say about what is important to you (i.e. what values, goals, or “desired states” are affected by the interaction). Write down two of these important goals that are affected by the interaction.
- Look at your two goals. Choose one of these goals and write about it. Describe why this is important to you (filling the box below).
- Think about general changes you could make based on this goal to move past this experience. Write these changes in the box below

*The Mixed Condition.* The mixed condition is a combination of the two previous conditions. The condition will begin with higher level processing and then move to a lower level. This decision was made because, in theory, moving to a higher-level might allow the individual to organize the search better by listing a higher-level goal, and then, proceed down to alternate examples of how that higher-level goal could be reached. The mixed condition will proceed as follows:

- Think what about it bothers you. List four reasons that this interaction bothers you.
- Look at these four reasons. What do these reasons say about what is important to you (i.e. what values, goals, or “desired states” are affected by the interaction). Write down two of these important goals that are affected by the interaction.
- Look at your two goals. Choose one of these goals and write about it. Describe why this is important to you (filling the box below).
- Go back to the interaction and focus on the sensory details in the moment. Write down four sensory sensations. For example, one sensation might be what you are able to see. Another might be what you hear or feel.
- Remembering the context, environment, and situation within which the social interaction took place, write down two things that you noticed or that are notable to you now about the situation.
- Notice the process of your thinking and feeling behaviors as events unfolded. Describe these in writing (filling the box below).
- Think about the important goal you listed. With this goal in mind, think about small but detailed steps that you could take this upcoming week to move past this experience.

Write these steps in the box below.

*The Control Condition.* The objective of this condition is to have participants think about the experience to the same extent as the other conditions and to negate any effect that simply writing about the experience will have, but at the same time, not influence their current level in the goal hierarchy:

- Write about the experience (filling the box below).
- Write about how you will move past this experience.

*Manipulation Check.* Two independent judges, blind to the conditions, will be trained to evaluate the responses for the level of construal portrayed. Judges will rate responses as falling into five categories: (1) Mostly concrete, (2) mixed with more concrete elements, (3) a generally even mix of both concrete and abstract elements, (4) mixed with more abstract elements, and (5) mostly abstract. Judges will be graduate or undergraduate research assistants. If good inter-judge reliability exists, results will be averaged across the two judges.

### *Results*

Four separate 3 (Session) X 4 (Condition) repeated measures ANOVAS, one for each dependent measure (i.e. RIO, RRS, the word completion task, and the PANAS) will be conducted to answer the five research questions. Session will be a within subject factor and will consist of three points: pre-manipulation (Session 1), 24 hours after the manipulation (Session 2), and one week after the manipulation (Session 3). Condition will be a between subjects factor and consist of the abstract, concrete, mixed, and the control conditions. Because the RIO is a new instrument and it is unclear whether it is highly correlated with the RRS, separate ANOVAs were selected rather than a single MANOVA. Furthermore, the RIO and the RRS may measure separate constructs; conceptually, the RRS measures trait or dispositional rumination, whereas the RIO was specifically designed to measure state rumination (Wade et al., 2008). This provides

additional support to the decision to use ANOVAs over a single MANOVA. Because the relation of all time periods could be examined at once, repeated measures ANOVAs were used rather than separate ANCOVAs. An alpha value of .05 will be used for all statistical tests.

Before the overall analyses are conducted, the assumptions for a repeated measures ANOVA will be tested. Sphericity, normality for the repeated measures, and homogeneity of variance for the between-subjects factor will be examined. Preliminary analyses will check random assignment and test for group differences based on Sex or Race. Once checks on the assumptions have been made and preliminary analyses conducted, analyses will be performed based on the research questions.

#### *Overall Analysis*

Sessions X Condition interaction will be examined for significance for each dependent measure. The Main effect will be examined for the within subjects factor to determine if rumination and negative affect were reduced from Session 1. Furthermore, a test will be performed to check for group differences at Session 1 on each dependent measure. Should the interaction prove significant and no significant differences exist at Session 1, the interaction will be decomposed using t-tests. According to Stevens (2007), so long as unequal group sizes and unequal covariance matrices do not both exist, the Bonferroni correction keeps the overall alpha below .05. Therefore, this procedure will be used with the comparisons below.

#### *Specific Analyses*

*Hypothesis 1.* It is hypothesized that participants in the concrete conditions will have significantly lower levels of rumination, as measured by the RIO, RRS, and the word completion task, and a significantly lower negative affect, as measured by the PANAS, when compared to the participants in the control condition.

*Analysis 1.* Planned comparison will be made between the concrete and control conditions at Session 2 and Session 3 for each dependent measure.

*Rationale 1.* A large body of research points to the benefits of adopting a concrete perspective when processing a negative event (e.g. Moberly and Watkins, 2006; Watkins & Teasdale, 2004; Watkins, 2004). Studies demonstrate both a reduction in rumination and negative affect following concrete manipulations (Rude et al., 2009; Moberly & Watkins, 2006). Furthermore, a recent study that utilized concreteness training reduced participant's level of rumination and depressive symptoms compared to a control (Watkins, Baeyens, & Read, 2009). As the concrete condition proposed here is based on that study's condition, a similar reduction in rumination is expected here. Previous research has demonstrated that manipulating the level of processing can have an immediate effect on rumination (e.g., Rimes & Watkins, 2005; Watkins and Moulds, 2005). In addition, several studies found effects have lasted from twelve hours to one week (Watkins, 2004; Kross & Ayduk, 2009). Consequently, in the present study, similar results are expected for both Session 2 and Session 3.

*Hypothesis 2.* It is hypothesized that participants in the abstract conditions will have a significantly lower level rumination as measured by the RIO, RRS, and the word completion task, and a significantly lower negative affect, as measured by the PANAS, when compared to the participants in the control condition at Session 2 and Session 3.

*Analysis 2.* Planned comparisons will be made between the abstract and control conditions at Session 2 and Session 3 for each dependent measure.

*Rationale 2.* Whereas Watkins (2008) argued that abstract processing increases rumination, Rude et al. (2009) found that it is was beneficial compared to a control condition. In fact, abstract conditions used in other experiments have lead to reduction in rumination and

depressed affect (Kross and Ayduk, 2008; Rude et al., 2009). In addition, Rude et al. (2009) proposed that the reason for the disparate finding is that their research, unlike previous research, included abstract conditions that removed evaluation. The abstract condition in the present study was designed to neither pull for negative judgment nor self-evaluation. Therefore, it is believed that this experiment should replicate the findings of Rude et al.

*Hypothesis 3.* Participants in the mixed condition will each have a significantly lower level of rumination, as measured by the RIO, RRS, and the word completion task, and significantly lower negative affect, as measured by the PANAS, compared to the control condition at Session 2 and Session 3.

*Analysis 3.* Planned paired comparisons will be utilized to determine if the mixed condition is significantly lower than the control condition at Session 2 and Session 3 for each dependent measure.

*Rationale 3.* As discussed in the integrative analysis, there are several reasons to believe that the mixed condition will lower rumination and reduce negative affect. The previous hypotheses suggest that concrete and abstract conditions will each be individually beneficial. And while combining the two conditions would appear beneficial, due to the possibility of an unknown interaction, that outcome is not guaranteed. However, several theoretical reasons suggest that the mixed condition would be useful in reducing rumination and negative affect. A combination of both abstract and concrete processing may reduce rumination by guiding the discovery of alternative specific examples of progress toward a goal or add greater context to how to proceed forward in the future. Several studies that have demonstrated reduction in rumination after manipulating the level of processing have also demonstrated reductions in negative affect or depressive symptoms (Kross and Ayduk, 2008; Rude et al., 2009; Watkins,

2009). Therefore, it may be that the mixed level of processing will also reduce negative affect. The mixed condition has not been examined before. Therefore, although effects of the conditions at Session 3 are predicted to be similar to the effects at Session 2, it is important to examine the possibility of a time interaction

*Hypothesis 4.* It is hypothesized that the mixed condition will have significantly lower levels of rumination, as measured by the RIO, RSS, and the word completion task, and significantly lower negative affect, as measured by the PANAS, than the abstract or concrete conditions at Session 2 and Session 3.

*Analysis 4.* Planned comparisons will be made between the mixed and the concrete conditions and between the mixed and abstract conditions at Session 2 and Session 3 for each dependent variable.

*Rationale 4.* Goal Progress Theory hypothesizes that abstract processing provides organization, direction, and continuity across situations. On the other hand, concrete processing supplies the specific details and steps needed to reach higher goals (Martin & Tesser, 2006). Watkins argues that concrete processing can move an individual out of rumination by allowing the individual to take specific steps to move forward and redirect individuals away from general questions about meanings and consequences (Watkins, 2008). However, a strict focus on the concrete level has also been shown to increase impulsivity (Vallacher & Wegner, 1989). In addition, Rude et al. (2009) hypothesized that abstract processing can be beneficial in giving individuals context beyond focusing on the connection between higher-level goals and a specific event. Consequently, the marriage of abstract processing and guided concrete processing could not only provide context and direction, but also the specific means to move forward and examine the details of the present situation. Furthermore, whereas the abstract condition may implicitly

pull for finding alternate concrete examples of ways to proceed forward, the mixed condition explicitly guarantees such a search. In these ways, the mixed condition may be more effective than the abstract or concrete conditions alone. The mixed condition has not been examined before. Therefore, although effects of the conditions at Session 3 are predicted to be similar to the effects at Session 2, it is important to examine the possibility of a time interaction.

## Chapter 4: Discussion

### *Summary and Implication*

Rumination is an important construct to study due to its association with and ability to predict depression and other psychopathologies. Negative life events can increase rumination and its harmful effects. Because of the role of rumination in psychopathology, researchers seek to understand the mechanisms that can end a cycle of perseverative thought. Watkins proposes that engaging in a concrete mode of processing may break the ruminative cycle and that abstract processing maintains rumination (Watkins, 2008). In contrast, other researchers have found benefits to abstract processing (Kross & Ayduk, 2008; Rude et al., 2009). Framed within Goal Progress Theory, which holds that rumination occurs when individuals do not make progress toward higher-level, abstract goals (Martin & Tesser, 2006), the present study seeks to understand what types of processing are most effective in reducing rumination.

The current study proposes that if an individual is ruminating about a particular event, then a mixture of abstract and concrete processing may be effective in reducing rumination. In theory, this is accomplished by encouraging the individual to explore alternate examples of goal fulfillment and take practical steps forward to achieve higher-level goals. Should the hypotheses be upheld, the results would suggest that engaging in either abstract or concrete processing could reduce rumination and negative affect. However, the results would also suggest that while either a concrete or abstract mode of processing could be beneficial, a mixed mode that makes use of multiple levels within the hierarchy would be most effective at reducing rumination and negative affect. Furthermore, as the reduction in rumination will have been sustained over a period of a week, the results might suggest lasting effects.

In addition, findings could be discussed with respect to the individual rumination measures. Should the proposed hypotheses hold for the RIO, it might indicate that guiding the level of processing could reduce rumination about the specific event. On the other hand, should the hypotheses hold for the word completion task, it might indicate that guiding the level of processing could reduce rumination about interpersonal interactions in general. Finally, should the hypotheses hold for the RRS, results might indicate that engaging in a particular mode of processing could reduce rumination pertaining to general problems and symptoms. Although the proposed study would be a first step, it could eventually lead to possible interventions for individuals experiencing rumination.

#### *Limitations and Future Directions*

The study has some limitations worth mentioning. First, the study utilizes student volunteers. Therefore, a selection bias may exist that may make generalization to other populations difficult. In addition, many of the participants would come from the same classes. Though the study would ask participants to refrain from discussing the experiment with anyone else, there is a danger that students might talk about the experiment during the week between Session 2 and Session 3. Furthermore, as the participants will be college students, as opposed to clinical populations, it is possible that the initial rumination levels could be low. This might leave little room for a reduction.

By including the word stem task, an attempt was made to avoid sole reliance on self-report measures. Still, the online format would give participants the opportunity to avoid taking the experiment seriously. To counter this possibility, participants would be asked at the end of each session if they answered honestly and accurately. It is hoped that students who did not give

their full attention to the task could then be filtered out. However, there is still the possibility of inaccuracy due to the self-report nature of these checks.

Several important questions exist that the study does not answer. If the abstract condition does in fact reduce rumination, it is unclear whether this could be the result of an implicit shift to the concrete level. Whereas the manipulation check will provide some insight, it is difficult to know what level of processing is really being engaged. Additionally, the proposed study would not answer what aspect of abstract processing is detrimental. Instead, the study would determine whether abstract processing could be beneficial and whether combining abstract and concrete processing could have a greater impact on the reduction of rumination than concrete processing alone. Although more research would be needed to decipher the specific influences of each level of processing, the study would be an important first step in understanding the types of processing that can reduce rumination following negative events.

Appendices

Appendix A.1

Demographic Page

1. What is your sex?

Male

Female

2. What is your age?

—

3. What is your race?

Asian

Black

Latino/Hispanic

Native American

White

Bi or Multi-Racial

Other:

4. Please enter the first 3 letters of your mother's first name followed by the 2-digit month and 2-digit day of your birthday. For example, if your mother's name is Elizabeth and your birthday is June 5th, your code would be: "ELI0605". Please use all CAPITAL letters.

This code will allow us to match up the different parts of your data. We will not be attempting to identify you using this information.

\_\_\_\_\_

## Appendix A.2

### RIO

Recall the social interaction experience you selected for this study (An interaction with another person lasting no more than a day that continually bothers you). Think back over your experiences in the last day and indicate your agreement or disagreement with the following statements with regard to the social interaction.

Strongly Disagree	Somewhat Agree	Neutral	Somewhat Agree	Strongly Agree
1	2	3	4	5

1. I can't stop thinking about how I was wronged by this person.
2. Memories about this person's wrongful actions have limited my enjoyment of life.
3. I have a hard time getting thoughts of how I was mistreated out of my head.
4. I try to figure out the reasons why this person hurt me.
5. The wrong I suffered is never far from my mind.
6. I find myself replaying the events over and over in my mind.

### Appendix A.3

#### RRS

Please read each of the items below and indicate how often, within the PAST DAY, you have thought or done each one. Please indicate what you generally have done, not what you think you should do.

Never 1	Sometimes 2	Often 3	Almost Always 4
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- 1 Think about how alone you feel
- 2 Think “I won’t be able to do my job if I don’t snap out of this.”
- 3 Think about your feelings of fatigue and achiness
- 4 Think about how hard it is to concentrate
- 5 Think “What am I doing to deserve this?”
- 6 Think about how passive and unmotivated you feel
- 7 Analyze recent events to try to understand why you are depressed
- 8 Think about how you don’t seem to feel anything anymore
- 9 Think “Why can’t I get going?”
- 10 Think “Why do I always react this way?”
- 11 Go away by yourself and think about why you feel this way
- 12 Write down what you are thinking and analyze it
- 13 Think about a recent situation, wishing it had gone better
- 14 Think “I won’t be able to concentrate if I keep feeling this way.”
- 15 Think “Why do I have problems other people don’t have?”
- 16 Think “Why can’t I handle things better?”
- 17 Think about how sad you feel
- 18 Think about all your shortcomings, failings, faults, mistakes
- 19 Think about how you don’t feel up to doing anything
- 20 Analyze your personality to try to understand why you are depressed
- 21 Go someplace alone to think about your feelings
- 22 Think about how angry you are with yourself

appendix A.4

PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today. Use the following scale to record your answers.

Very Slightly 1	A Little 2	Moderately 3	Quite a Bit 4	Extremely 5
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- \_ irritable
- \_ alert
- \_ ashamed
- \_ inspired
- \_ nervous
- \_ determined
- \_ attentive
- \_ jittery
- \_ active
- \_ afraid

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