THE RELATIONSHIP OF RUMINATION, NEGATIVE MOOD, AND DECENTERING WITHIN A MULTI-LEVEL THEORY OF MIND

A dissertation submitted
to Kent State University in partial
fulfillment of the requirements for the
degree of Doctor of Philosophy

by

Emily A.P Haigh

December 2009
# TABLE OF CONTENTS

ACKNOWLEDGMENTS........................................................................................................iv

INTRODUCTION..................................................................................................................1

- Hypotheses....................................................................................................................23
- Power Analysis...............................................................................................................24

METHOD...........................................................................................................................24

- Participants....................................................................................................................23
- Measures.......................................................................................................................26
- Procedure.....................................................................................................................28

RESULTS..........................................................................................................................30

DISCUSSION......................................................................................................................48

REFERENCES.....................................................................................................................58

APPENDIX..........................................................................................................................65
ACKNOWLEDGMENTS

This document is dedicated to my father, Dennis Patrick Walker Haigh. I cannot possibly articulate the amount of love and respect I have for my father and the innumerable gifts he has given me and my family as a deeply devoted husband, father and educator. His most admirable characteristics are his tenacity, passion and generous spirit. He was given a rotten lot in life. Yet, through his strength of character, he willed himself and his family to a better life. He has battled it all and has never given in or given up and for that he is my hero. I don’t have much, and frankly, this PhD is about the only thing I’ve earned of real value and it belongs entirely to my father.

I would like to acknowledge a number of people who have supported me during my graduate school career. I would like to thank my dear husband, Bryan. He made the day to day running of our lives cozy, safe and full of love. Some of my happiest memories are swimming in Towner’s Woods with him and our dog Louis. Thank you Poo-poo Potato Pants for being my loving loyal companion at the end of your leash and at the end of my bed.

I am blessed to have a loving and supportive family and I am forever grateful to my mom and dad for the endless love and support that they have given me. As parents, they always managed to keep me safe and supported while encouraging me to be brave and take risks. I would like to thank my brother, Jim, and my sister Lisbeth, for leaving me with such big shoes to fill. They always went out the door first and they always went big. Finally, I would like to thank my Grandpa and Grandma Bellerose for passing down their value of scholarship and their sense of adventure.

I would also like to thank my extended family: Spud, Amara and Maggie. Thank you for always rallying when I stormed home to Toronto. The time spent drinking, laughing and crying together (not necessarily in that order, but usually) always replenished me for my return to Kent. Stephanie and Mike: thank you for making Kent my home. I was not surprised that Stephanie and I became fast friends, but I am grateful that we became such dear friends. If I hadn’t met her on interview weekend, I would have turned around and headed back to Canada. Mike was the advisor I never had (I kid, Dave). But seriously, he came to my rescue many times and for much more than just statistical consultation. I am so grateful to have him to count on. Finally, I would like to thank all the friends I made at Kent. I had no idea that Kent, Ohio was a hot bed of cool, fun and interesting people. I look forward to future conferences at the Wingate hotel in Streetsboro.

In terms of my graduate training, I am indebted to my advisor Dave Fresco. He always paid me the highest compliment of expecting the very best from me and had a wonderful knack of keeping the carrot just in front of me. Having moved on from Kent, I realize just how well he prepared me for the rest of my career. In addition, I always felt that Dave was a very loyal advisor, protective and dedicated to his students. I am so thankful that he is in my corner and I look forward to many years of non-linear collaboration.
INTRODUCTION

The relationship of rumination, negative mood, and decentering within a multi-level theory of mind

Major Depressive Disorder (MDD) represents an enormous mental health challenge—with lifetime prevalence estimated at 17% (Kessler, Bergland et al., 2005). Similarly, individuals who suffer from one depressive episode will “experience an average of four lifetime major depressive episodes of 20 weeks duration each” (Judd, 1997; p. 990). According to a recently released World Health Organization study of 245,000 in sixty nations, MDD is more damaging to everyday health than chronic diseases such as angina, arthritis, asthma and diabetes (Moussavi et al., 2007). MDD is estimated to cause the fourth greatest burden of ill health of all diseases worldwide and will move into second place by 2020 (Murray & Lopez, 1998).

According to the fourth revision of the Diagnostic and Statistical Manual (DSM-IV-TR, American Psychiatric Association [APA], 2000), MDD is a mood disorder characterized by one or more major depressive episodes (i.e., at least two weeks of depressed mood or loss of interest or pleasure in nearly all activities) accompanied by at least four additional symptoms such as changes in sleep, appetite, or weight, and psychomotor activity; decreased energy; feelings of worthlessness or guilt; difficulty thinking, concentrating, or making decisions; or recurrent thoughts of death or suicidal ideation, plans, or attempt. Despite successful medication and psychotherapies, fewer than half of patients achieve
remission (Casacalenda, Perry, & Looper, 2002) and relapse is more likely in individuals who do not fully recover (Jarrett et al., 2001; Thase, Entsuah, & Rudolph, 1992). A fruitful avenue for identifying vulnerability factors related to the onset of depression and mechanisms that may reduce the risk of relapse reside in cognitive models that emphasize emotional processing and patterns of cognitive rigidity such as cognitive reactivity and depressive rumination.

Barnard and Teasdale’s multi-level theory of mind (1991, Teasdale, 1999) provides a framework for understanding the relationship between psychopathology and how individuals process their environment. According to Teasdale’s theory, vulnerability to depression is associated with the degree to which an individual relies on a particular mode of mind, to the exclusion of the other modes. Teasdale and colleagues (1999) postulated that risk of recurrence and relapse to depression is related to the ease in which depressogenic, ruminative processing becomes reinstated, rather than presence or absence of particular negative beliefs or assumptions.

**Interacting Cognitive Subsystems**

Barnard and Teasdale’s (1999) multi-level theory of mind, the Interacting Cognitive Subsystems (ICS), identifies three modes of mind available to individuals for processing information. Mindless emoting mode is characterized by purely reactive, sensory-driven reactions without attention to ‘the bigger picture.’ The conceptualizing-doing mode is associated with processing that
involves a focus on conceptual content and analyses, for example going grocery shopping. Finally, mindful-experiencing mode of mind refers to the recognition of thoughts, feelings, internal and external sensations, which culminate in a synthesis of awareness. The ICS theory strives to account for the ways in which humans process information both cognitively and emotionally.

ICS theory differentiates between two types of information that can be encoded. The propositional code incorporates patterns of information that are explicit and associated with specific “lower order” meanings, which are easy to understand. In contrast, the implicational code incorporates patterns of information that reflect, “higher order implicit meanings, or schematic models of experience” (Teasdale, 1999, p. 61). The implicational code represents recurring patterns and themes extracted from experience, which are not easily conveyed. Teasdale (1999) theorizes that patterns of specific meanings derived from the propositional level, contribute to the production of higher order meanings at the implicational level and vice versa.

The second aspect that determines which mode of mind is employed is related to how patterns of information are encoded. Information can be encoded in either direct or buffered mode. In the direct mode, information is encoded in real-time, by sampling incoming information in successive chunks. In the buffered mode, information is allowed to accumulate before being encoded. In this sense, processing that occurs in buffered mode, reflects more information, from a greater period of time and wider context and is theorized to capture the “bigger picture”.
Thus, depending on which type of information is encoded (propositional and implicational) and how the information is encoded (buffered or direct mode), there are three different ways to process emotive material (either propositional or implicational subsystem predominantly in direct mode, propositional subsystem in buffered mode, implicational subsystem in buffered mode). These three different ways to process emotive material correspond, respectively to mindless emoting, conceptualizing-doing, and mindful-experiencing.

The relationship between modes of mind and vulnerability to depression

According to ICS theory, mental health is associated with the ability to disengage from a particular mode of mind or to flexibly switch among the modes of mind. Thus, an optimal state is one in which individuals can deftly switch between the three identified modes of mind based upon conditions in the environment. Still, each of these modes of mind has particular relevance to one’s vulnerability to depression.

Within the ICS framework, the mindful experiencing/being mode is characterized by cognitive-affective inner exploration, use of present feelings as a guide for problem solving and a non-evaluative awareness of present subjective-self-experience. In this mode, feelings, sensations and thoughts are directly sensed as aspects of subjective experience, rather than being objects of conceptual thought. Of the three different processing configurations, this is the only configuration, which is conducive to emotional processing. Emotional processing
involves integrating new elements within the existing schema to create new alternative patterns of schematic meanings. Emotional processing can only occur in the implicational-buffered mode because it is the only mode with a large enough “hard drive” to facilitate the integration of new and existing schema into a new schematic model. Mindful/experiencing mode of mind is thought to relate to emotional well-being (Teasdale. 1999).

By contrast, according to ICS theory, mindless emoting and conceptualizing/doing mode of minds are theorized to confer vulnerability to depression (Teasdale, 1999). Individuals in mindless emoting mode consciously experience their experience as being immersed in, and identified with, their affective reactions, with little self-awareness, internal exploration or reflection. This mode can be contrasted with the awareness of subjective experiences characteristic of the mindful experiencing/being mode. One form of mindless emoting mode is cognitive reactivity, which is defined as a change in one or more cognitive indices in response to an emotion evocation challenge (Fresco, Segal, Buis, and Kennedy, 2007). Cognitive reactivity has been associated with psychological vulnerability and increased risk to depression (Segal, Gemar, and Williams, 1999; Segal, Kennedy, Gemar, Hood, Pederson, et al., 2006).

Thus, Teasdale (1999) postulates that the risk of recurrence and relapse to depression is related to an individual’s capacity to alternate between processing modes in a flexible manner depending on input from the environment. Individuals who vacillate between conceptualizing/doing and mindless emoting processing
modes are vulnerable to the depressive interlock configuration, which fosters depressogenic, ruminative, processing. The capacity to switch to the mindful-experiencing mode of mind where emotional processing can occur is an important factor to overcome the depressive interlock, and in turn, to provide durable protection against recurrence and relapse and relapse of depression. Teasdale defines emotional processing as processing that leads to changes at the implicational level that ultimately interferes with the propagation of the negative, ruminative feedback loop maintaining dysfunctional emotion (Teasdale, 1999). Effective emotional processing results in changes in an individual’s emotional response to internal affective events. A change in the way an individual relates to an internal affective event reduces the ability of triggering cues (seeing a sad movie) to reactivate ruminative processing (thinking about a tragic death in the family) that lead to an escalating and self-fulfilling cycle of depression (Teasdale, 1999). A mindful-experiencing emotional response should reflect a change in one’s relationship to negative affective events to view their occurrence as short-lived, temporary events. By contrast, ineffective emotional processing occurs when cognition is dominated by propositional processing in ways that preclude processing in the mindful-experiencing mode of mind, which is necessary to modify schematic models.

In the conceptualizing/doing mode of mind, one’s awareness is dominated by detached thoughts about the self or emotions, strategies to deal with emotion and the consequences of emotion. ‘Depressive interlock’, which Teasdale (1999)
describes as ruminative thinking about the self, about depression and about its causes and consequences is associated with this mode of mind. Teasdale theorizes that the interaction between the implicational and propositional codes can create a ‘depressive interlock’ or feedback loop of negative, ruminative self-focused processing. Depressive interlock occurs when interactions between the propositional and implicational levels become dominated by processing information with negative, depressive content. Depressogenic schematic models generate negative specific meanings at the propositional level, which in turn, regenerate depressogenic schematic models at the implicational level. This negative feedback loop is hypothesized to maintain depression and reinstate it at the time of relapse and recurrence. Teasdale suggests that the information circulating through the feedback loop, which perpetuates the depressive interlock, is similar to Nolen-Hoeksema’s conceptualization of depressive rumination (1991a).

Nolen-Hoeksema’s Response Styles Theory

Nolen-Hoeksema’s (1987, 1991a) response styles theory (RST) posits that the way in which individuals respond to their depressive symptoms determines both the severity and duration of such symptoms. Response styles theory enumerates three ways in which individuals respond to depressive symptoms: rumination, distraction, and problem-solving. Of these three response styles, a ruminative response to depressed mood is hypothesized to intensify and prolong
depressive symptoms. Depressive rumination is described as focusing passively and repetitively on one’s depressive symptoms, as well as on the causes and implications of these symptoms. Examples of ruminative responses to depression include thinking about the symptoms of one’s depression (e.g. think about a recent situation, wishing it had gone better and reflecting on the possible causes and future consequences. A ruminative response style can be contrasted with a distracting response style, which is defined as “the purposeful turning of one’s attention away from one’s symptoms of depression and its possible causes and consequences to pleasant or neutral activities” (Nolen-Hoeksema, 1991a, p. 570). Examples of distracting responses include activities like spending time with friends or playing sports. Nolen-Hoeksema postulates that there may be other response to depression that work like distraction in the short-run (i.e. engaging in violent or reckless behavior) but may be inherently maladaptive for the individual’s health or functioning in the long run. The response style theory focuses on the many examples of distracting responses that are not inherently dangerous. Nolen-Hoeksema and Morrow (1991) found no correlation between the tendency to use pleasant or neutral activities to distract oneself from depression and the tendency to engage in reckless, dangerous behaviors. Problem solving or the active attempt to resolve one’s problems is the final response style considered by the theory.

Nolen-Hoeksema (1991a) proposes three mechanisms by which rumination serves to increase both the severity and duration of depressive
episodes. First, rumination enhances the negative effects of depressed mood on thinking, increasing the likelihood that individuals will recall memories that are more negative and make more pessimistic inferences for events in their lives. As such, rumination maintains depression by creating a vicious cycle wherein rumination about depressed mood leads to more negative inferences that, in turn, contribute to increased severity of depressed mood (Ciesla & Roberts, 2007).

Second, since rumination both amplifies pessimistic thinking and interferes with attention and concentration, it is likely to hinder effective problem solving. Consequently, when under the influence of depressed mood, ruminators generate fewer and lower quality solutions to their problems as compared to when they are not under the influence of depressed mood. Third, since rumination impairs attention and concentration, it is likely to inhibit people from engaging in instrumental behaviors that could serve to enhance their sense of control and consequently to lift their depressive moods. This passivity may in turn, lead to increased failures and a greater sense of helplessness in controlling one’s environment, thus contributing to depression.

Several longitudinal studies using adult samples have shown that individuals who ruminate have higher levels of depressive symptoms over time even after controlling for baseline levels of depressive symptoms (e.g., Butler & Nolen-Hoeksema, 1994; Just & Alloy, 1997; Katz & Bertelson, 1993; Nolen-Hoeksema, 2000; Nolen-Hoeksema & Davis, 1999; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Nolen-Hoeksema, Parker,
& Larson, 1994; Spasojevic & Alloy, 2001). For example, Nolen-Hoeksema and Morrow (1991) examined the effects of individuals’ response styles on the severity of their depressed moods following the 1989 Loma Prieta earthquake. Measures of depressed mood and response styles had been obtained from 250 Stanford University students 14 days before the earthquake. A reassessment of these students both ten days and seven weeks after the earthquake revealed that those students who, before the earthquake, had elevated levels of depression coupled with a ruminative response style showed significant increases in depressive symptoms both ten days and seven weeks later. This finding suggests that a ruminative response style is not merely a correlate of depression, but rather a potential cause, affecting both the severity and duration of depressive symptoms.

Studies of the RST have typically measured depressive rumination using the Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991), a 22-item self-report measure of rumination. Recently the RRS was criticized because its items might be contaminated by depressogenic item content (Roberts, Gilboa & Gotlib, 1998; Treynor, Gonazalez, & Nolen-Hoeksema, 2003; Kasch, Klein, & Lara, 2001). Specifically, a large proportion of items on this subscale of the RSQ inquire about typical responses to symptoms of dysphoria when one feels sad. Therefore, it is possible that the presence and severity of previous symptoms contaminate the measurement of rumination (Roberts et al., 1998). In response to these criticisms, Treynor and colleagues (2003) revised the ruminative response.
The remaining 10-item scale has a two-factor solution, which has been corrected for items saturated in depressive content. This two-factor solution has been replicated in both college and clinical samples (Armey, Fresco, Mennin, Turk, & Heimberg, 2007; Haigh, Armey, Fresco, Auerbach, & Abela, 2007) and will be employed in the current study.

*Mindful experiencing mode of mind and vulnerability to depression*

Barnard and Teasdale’s (1991) multi-level theory of mind suggests that the mindful experiencing/being mode is the most likely mode of mind to lead to lasting emotional changes and therefore, has implications for prevention of relapse in depression. One such strategy, that is typical of cognitive therapy, involves helping individuals create and encode in memory alternative schematic models that will be triggered by the same patterns of information that would normally trigger depressogenic schematic models. The second strategy, which is of relevance to the current study, is to help the individual learn skills to disengage from fluctuations between the conceptualizing/doing mode and the mindless emoting mode, which supports the depressive interlock, to function in the mindful experiencing/being/mode.

Teasdale (1999) suggests that individuals would likely benefit from learning ‘mind management’ skills to prevent the ‘depressive interlock’ at times of potential relapse. Methods to teach such skills have been in use for at least the past 2500 years in eastern Buddhist traditions. In recent years a number of interventions, composed of mindfulness exercises (e.g., Transcendental
Meditation, Maharishi, [1963]; Mindfulness-Based Stress Reduction, Kabat-Zinn, [1990]; and Mindfulness-Based Cognitive Therapy, Segal, Williams & Teasdale, [2002]) have all emerged as viable, value-added ingredients to standards of medical and psychological practice in Western civilization. Mindfulness has generally been described as a non-judgmental awareness of moment-by-moment experiences (Kabat-Zinn, 1990). One type of ‘mind management’ skill is decentering, which has been described as the capacity to “relate to negative experiences as mental events in a wider context or field of awareness rather than simply being [one’s] emotions, or identifying personally with negative thoughts and feelings” (Teasdale et al., 2002, p. 276). Teasdale and colleagues (1995) propose an account of how cognitive therapy may serve to cultivate a decentered perspective in clients. According to this account, patients, by implementing behavioral and cognitive strategies of cognitive therapy, learn to relate more functionally to depressive symptoms and stressful situations. Learning to relate more functionally to depressive symptoms and stressful situations appears to involve the ability to shift cognitive sets and engage in “decentering”. During cognitive therapy, patients are thought to shift to a decentered perspective through the repeated practice of identifying negative thoughts and examining their accuracy. Teasdale et al. (2002) describes metacognitive awareness as the process of experiencing negative thoughts and feelings within a decentered perspective. Metacognitive awareness refers to the way negative thoughts and feelings are
experienced as they arise or the extent to which thoughts are experienced as thoughts rather than necessarily representing direct reflections of reality.

*Experimental Studies*

Recent research has provided support for the relationship between decentering (or metacognitive awareness) and vulnerability to depression. (Broderick, 2005; Fresco, et al., 2007; Segal, Williams & Teasdale, 2002; Singer & Dobson, 2007; Teasdale, et al., 2002; Watkins & Teasdale, 2003). In one particular series of studies, Teasdale and colleagues (2002) sought to examine the hypothesis that reduced metacognitive awareness is associated with vulnerability to further major depression and that cognitive therapy reduces depressive relapse by increasing metacognitive awareness. The first study examined the hypothesis that patients with residual depression would exhibit lower levels of metacognitive awareness than nondepressed controls. Forty psychiatric outpatients participated in structured clinical interviews and 20 nondepressed participants, as determined by a Beck Depression Inventory score of less than 10, completed a battery of self-report measures and the Measure of Awareness and Coping in Autobiographical Memory (MACAM; Moore, Hayhurst, & Teasdale, 1996). The MACAM was designed to measure metacognitive awareness by presenting participants with eight mildly depressing situations to which participants are asked to recall and briefly describe to an interviewer a specific occasion brought to mind by the feeling elicited by the vignette. The descriptions are tape-recorded and the
interviewer rates the degree of meta-awareness or the extent to which a participant reports being able distance themselves and see their thoughts and feelings from a wider perspective. In line with predictions, compared with age- and gender-matched nondepressed controls, euthymic patients with a history of depression demonstrated significantly less evidence of metacognitive awareness.

In the second study, Teasdale et al. (2002) examined whether the accessibility of metacognitive sets was related to the relapse and recurrence of depression. The second aim of the study was to investigate the hypothesis that in situations where cognitive therapy reduces relapse compared to clinical management (CM) of anti-depressants alone, post-treatment measures of metacognitive awareness should be greater following cognitive therapy than following CM. These predictions were tested in a clinical trial of cognitive therapy in the prevention of relapse and recurrence in patients with major depression. Teasdale et al. (2002) found support for the first hypothesis demonstrating that lower levels of metacognitive awareness accessed five months before baseline assessment predicted earlier relapse. This finding is consistent with the hypothesis that the ability to relate to depressive thoughts and feelings within a wider, decentered, perspective reduces the likelihood of future relapse. Support was also garnered for the second hypothesis, which found that cognitive therapy would also increase accessibility to metacognitive sets with respect to negative thoughts and feelings compared with the comparison treatment. Differences between cognitive therapy and the comparison treatment were
evidenced only on memories encoded during the treatment phase and not on memories encoded before then suggesting that changes in the MACAM as a result of cognitive therapy reflected cognitive therapy’s effects on the encoding of depressing experiences rather than artifactual effects of cognitive therapy on the way depressing experiences were described in recall. Changes in metacognitive awareness are hypothesized to mediate the preventative effects of cognitive therapy. However, the more commonly held view is that while cognitive therapy may lead to changes in metacognitive awareness, such changes are important only to the extent that they facilitate change in belief in negative thoughts and core beliefs. Thus, study three sought to distinguish the two aforementioned possibilities by training patients in increased metacognitive awareness without any explicit attempt to change belief in negative thoughts or underlying dysfunctional attitudes. Mindfulness-based cognitive therapy (MBCT; Segal, et al., 2002) is an intervention designed to teach a decentered relationship directly, without trying to change beliefs. One hundred participants, currently in remission or recovery from major depression, were randomized to receive either treatment-as-usual (TAU) or MBCT. Results showed that MBCT patients, as compared to TAU patients, evidenced increases in metacognitive awareness as well as lower rates of relapse and recurrence of major depression.

Similarly, Fresco, Segal, and colleagues (2007) examined the relationship between decentering and treatment response in a secondary analysis of Segal et al. (2006). Segal et al. (2006) demonstrated that cognitive reactivity (a form of
mindless emoting mode of mind) in conjunction with an emotion evocation challenge predicted relapse in patients treated to remission through either anti-depressant medication (ADM) or cognitive-behavioral therapy (CBT) an 18-month prospective study. In this study, decentering was assessed with an 11-item self-report questionnaire, the Experiences Questionnaire (EQ; Fresco, Moore et al., 2007) that was validated in both college student and depressed patient samples. Fresco, Segal et al. (2007) demonstrated that patients who achieved a positive treatment response following random assignment to CBT evidenced significantly greater gains in decentering as compared to patients with a positive treatment response to ADM. Further, post-treatment levels of decentering in conjunction with low levels of cognitive reactivity were associated with the most durable treatment response.

Singer and Dobson (2007) conducted a study to examine metacognitive processing in the prevention of relapse to depression. In particular, they investigated the effects of laboratory-induced rumination, distraction, and acceptance, as well as no training control following a negative mood induction in formerly depressed participants. Participants were randomly assigned to receive instruction in one of four conditions: rumination, distraction, acceptance training and a no training control group. Following a practice period, participants underwent an autobiographical plus sad music negative mood induction. Participants who met criteria for a successful mood induction were then asked to apply the previously learned training for five minutes while recording mood
ratings on the visual analogue scale (VAS) every 30 seconds. At the end of the experimental manipulation participants completed measures including, VAS, attitudes towards negative experiences and positive beliefs about rumination. In line with hypotheses, experimentally induced rumination maintained the intensity of negative mood, while distraction and acceptance decreased the intensity. The effect of the control condition on the intensity of negative mood was not significantly different from rumination. In contrast with predictions and Teasdale’s information processing theory (1995), acceptance was not significantly different from distraction in reducing the intensity of negative mood. Teasdale posits that individuals who engage in acceptance should be able to remain in the present moment of their sadness, however, be less distressed by it. However, participants who received training in acceptance demonstrated greater reduction in their negative attitudes towards negative experience as compared to those who were trained in the rumination and distraction techniques. In a similar study, Broderick (2005) compared the effects of a rumination, distraction and mindfulness task, following an experimentally induced negative mood in 177 undergraduate participants. In line with expectations, results showed that following the mood induction, participants in the rumination condition demonstrated higher levels of dysphoria than the other two conditions. Participation in the distraction conditions was associated with a decrease in dysphoric mood. Moreover, participants in the meditation condition demonstrated significantly greater decreases in dysphoria than both the rumination and
distraction conditions. One important limitation of the Singer and Dobson (2007) and Broderick (2005) studies, they do not access the degree to which participants in each of the conditions (rumination, distraction, acceptance and no-training control) were actually engaged in the required cognitive activity.

Watkins, Teasdale and Williams (2003) examined whether a decentering task would successfully neutralize the effects of a negative mood brought on by a laboratory induced mood-priming challenge known to activate negative cognitive representations and induce negative mood. Forty-two volunteers with no evidence of current or past Major Depressive Disorder as determined by the Structured Clinical Interview for Diagnosis (SCID; Spitzer, Williams, Gibbon, & First, 1990); and a Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) score less than or equal to 14 consented to participate in a two part mood-priming challenge. Before the experiment and after each part of the laboratory challenge, participants rated their mood and completed a measure of psychomotor speed. The first part of the experimental manipulation, which was identical for all participants, consisted of listening to a piece of music known to make one feel sad while recalling a personally relevant sad event. Following the mood-priming challenge, participants were randomly assigned to either the contextual and control group. In each group, participants were required to unscramble 23 negative self-referent statements. Embedded within the contextual group were nine scrambled sentences designed to increase awareness of a wider context relevant to the participant’s current mood (i.e. “How long does this feeling last?”).
Embedded within the control group were nine control questions, which were matched for structure or length with the contextual questions, but did not refer to mood (i.e. “How long does this weather last?”). Watkins et al. predicted a significantly greater decrease in self-ratings of negative mood in the contextual group compared to the control group. It was predicted that the scrambled Velten sentences would act as a mood-maintaining prime in the control group by prolonging the negative mood elicited by the negative mood induction. By contrast, increasing awareness of temporal context in the contextual group would prevent the scrambled Velten sentences from maintaining negative mood following the negative mood induction. In line with predictions, depressed mood persisted to a lesser degree in the contextual group than in the control group as measured by self-report ratings of mood. No difference was found among the contextual and control group in terms of writing speed. These results support the hypothesis that increased awareness of context relevant to the meaning of negative cues can limit their activation of negative mood.

Study two sought to extend the self-report findings from study one by utilizing electromyographic activity in the corrugator supercilium muscle as an index of a psychophysiological mood measure. A second aim was to test whether increased awareness of the wider context relative to the negative mood primes causes participants to represent these primes in a more discriminating way. Watkins theorized that exposure to contextual questions may result in different representations of the meaning of the Velten primes, which may in turn reduce the
likelihood that subsequent contact with the primes would activate negative constructs. Alternatively, Watkins suggests, it is possible that the contextual questions may have functioned more effectively as distracters as compared to the control questions. This alternative hypothesis suggests that the contextual questions as distracters may have showed greater effects in lifting mood by taking up sufficient processing capacity to block negative thoughts prompted by the Velten statements. Watkins’ addressed this alternative hypothesis by repeating the negative Velten statements in the absence of contextual questions. Watkins’ theorized that if the contextual questions altered how the meaning of the Velten primes were represented, and thus reduced their mood-priming effect, then the contextual questions should reduce the response to negative stimuli repeated in the absence of the contextual questions. In study two, 40 participants participated in the same procedure carried out in study one, except for the addition of the psychophysiological measure, the use of an autobiographical memory voluntary mood induction, and the use of repeated Velten statements. After participants completed the scrambled sentence task, they were given a sheet with six unscrambled negative Velten sentences and were instructed to read each Velten statements for 20 seconds each while the corrugator EMG recorded the participants. Watkins et al. (2003) predicted a greater negative response to repeated Velten statements in the control group as compared to the contextual group. In line with predictions, the contextual group demonstrated a significantly greater reduction in despondency than the control group. Additionally, the results
extend the findings of study one beyond a self-report measure of despondency by demonstrating that the contextual prompts led to reduced corrugator EMG activity in response to subsequently repeated Velten statements. Furthermore, the reduced corrugator EMG activity from the contextual group occurred in the absence of the contextual questions, which suggests that the effect of the contextual questions was not mediated through distraction, but rather the contextual questions may have altered how the meanings of the primes were originally represented.

Summary of the reviewed literature

Evidence from longitudinal studies has solidified the relationship between metacognitive awareness and vulnerability to major depression. First, Teasdale and colleagues (2002) have demonstrated that reduced metacognitive awareness is associated with vulnerability to further major depression. Second, Teasdale and colleagues (2002) have shown that cognitive therapy reduces depressive relapse by increasing metacognitive awareness. Third, Teasdale and colleagues (2002) established that changes in metacognitive awareness, rather than changes in beliefs mediate the preventative effects of cognitive therapy. Fresco, Segal et al., 2007 have shown that gains in decentering are specific to CBT treatment responders as compared to ADM treatment responders. In addition, laboratory experiments have contributed to our understanding of the relationship between metacognitive awareness and vulnerability to negative mood. It has been shown that experimentally induced rumination is related to the intensity of negative
mood, while distraction and acceptance decreased the intensity of negative mood (Broderick, 2005; Singer & Dobson, 2007). Watkins (2003) demonstrated that experimentally induced negative mood persisted to a significantly lesser degree in participants assigned to a decentering task, as compared to participants assigned to a control condition. Further, Watkins (2003) has shown that the effectiveness of contextual questioning in mood repair may reside in how the contextual questions influence the encoding of the negative primes as opposed to being mediated through distraction.

The current study

The findings from Watkins et al. (2003) study indicated that engaging in a decentering task reduces cognitive reactivity following a voluntary mood induction. An important aspect of Teasdale’s (1999) multi-level theory of mind that remains unexplored is how rumination, cognitive reactivity and decentering relate to one another within multi-level theory of mind. Further, although Singer and Dobson (2007) and Broderick (2005) have begun to examine the relationship between mindfulness and depressive rumination within the context of a negative mood induction, it is unclear the extent to which, of any, the participants in each condition were actually engaged in the required condition. To our knowledge, there are no studies in existence, which have experimentally examined the effect of decentering, following a mood induction in individuals who vary on trait rumination. Thus, the current study will examine whether decentering in the
context of a mood-priming challenge remains beneficial for participants selected on the basis of high or low trait rumination. In other words, does a person’s tendency to ruminate interfere with their ability to contextualize or decenter?

Hypothesis # 1

The current study evaluated the effects of a decentering mood-priming task on recovery from an induced depressed mood in individuals selected for high and low brooding, a measure of trait rumination. Individuals who endorse high brooding who complete the decentering task following a mood induction are hypothesized to show less mood repair than individuals who endorse low brooding.

Hypothesis # 2

The current study also examined the relationship of baseline levels of self-report trait decentering, as assessed by the Experiences Questionnaire to recovery from an induced depressed mood with and without a Velten task infused with stimuli designed to increase awareness of a wider context.

Power Analysis
For Hypothesis 1, mean differences in pre to post mood ratings, following completion of either a decentering or control mood-priming task for high and low brooding group participants were compared using a three-way ANOVA. A minimum of 65 participants were needed in order to have sufficient power (.80) to detect a medium effect (Cohen’s [1988] \( d = .50 \)).

For Hypothesis 2, mean differences in residual change scores (based on pre to post priming mood ratings) following completion of a mood-priming task (control vs. decentering) for participants who varied on trait decentering (high vs. low) were compared using a three-way ANOVA. A minimum of 128 participants were needed in order to have sufficient power (.80) to detect a medium effect (Cohen’s [1988] \( d = .50 \)).

METHOD

Participants

The current study was approved by the Kent State University’s Institutional Review Board (#08-127). Participants were recruited from Introduction to Psychology courses and compensated with course credit. Participants were screened with the brooding subscale of the Ruminative Response Scale of the Response Styles Questionnaire (RSQ; Nolen-Hoeksema, 1991b). This measure was administered during the university’s mass testing procedure to approximately 1200 potential participants across four semesters.
Participants with scores in the upper quartile ($M \geq 2.4$) of the RSQ brooding distribution were included in the high brooding group. Participants with scores in the lower quartile ($M \leq 1.4$ or below) were included in the low brooding group.

In sum, 469 participants (265 low brooding group and 288 high brooding group) met inclusion criteria and were invited to participate in exchange for course credit. Approximately 25% of eligible participants (N=126) completed the study. Slightly more than half of the participants formed the low brooding group (N=68) while the remaining 58 participants formed the high brooding group. See Table 1 for a breakdown of recruitment by semester.

Table 1

<table>
<thead>
<tr>
<th>Participants</th>
<th>Screened</th>
<th>Invited</th>
<th>Consented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brooding Group</td>
<td>Brooding Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semester</td>
<td>Low</td>
<td>High</td>
<td>Total</td>
</tr>
<tr>
<td>Fall 2007</td>
<td>265</td>
<td>44</td>
<td>91</td>
</tr>
<tr>
<td>Spring 2008</td>
<td>287</td>
<td>91</td>
<td>70</td>
</tr>
<tr>
<td>Fall 2008</td>
<td>337</td>
<td>55</td>
<td>57</td>
</tr>
<tr>
<td>Spring 2009</td>
<td>405</td>
<td>75</td>
<td>70</td>
</tr>
<tr>
<td>Total</td>
<td>1294</td>
<td>265</td>
<td>288</td>
</tr>
</tbody>
</table>

Measures
**Visual Analogue Scale**

Participants rated the severity of their negative mood using the visual analogue scale (VAS), by placing a slash along a 10cm line. The VAS included the following written instructions: “*We are interested in knowing about your current mood. Please mark an ‘X’ on the dotted line below to indicate how you feeling right now. Use the labels about the line to help you in your judgment.*” Above the dotted line on the left side was the label ‘sad’ and an arrow pointing left. Similarly, above the dotted line on the right side was the label ‘happy’ and an arrow pointing right. A plus sign at the midpoint on the line represented neutral mood and was treated as zero. Ratings to the left of the zero point represented negative numbers and sad mood. Ratings to the right of the zero point represented positive numbers and happy mood. The VAS has been successfully used in previous studies of negative mood inductions (Teasdale, Taylor, & Fogarty, 1980; Watkins et al., 2003).

**Depressive Rumination**

The *Response Styles Questionnaire* (RSQ; Nolen-Hoeksema & Morrow, 1991) is a 71-item self-report questionnaire that assesses four different methods of coping with negative mood. Only the 25-item Ruminative Response Scale (RRS) was utilized in the current investigation; more specifically the Brooding subscale was used. The Brooding subscale is one of two factor-analytically derived subscales (“Brooding” and “Pondering”) that have been developed in response to the fact that the RRS has been shown to be confounded with the presence of
depressive symptoms (Roberts, Gilboa, & Gotlib, 1998). The Brooding and Pondering subscales have been shown to differentially correlate with the presence of depressive symptoms, symptoms of GAD, and deficits in emotion regulation (Fresco, Armey, Turk, Mennin, & Heimberg, 2003; Fresco et al., 2004; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). "Go away by yourself and think about why you feel this way" and "try to understand yourself by focusing on your depressed feelings" are two items used to assess ruminative coping responses. Values range from 1 (almost never) to 4 (almost always). These factors have been shown to have adequate internal consistency (Brooding: $\alpha = .80 - .90$, Pondering: $\alpha = .70 - .90$; Armey et al., 2009; Treynor et al., 2003), as well as adequate test-retest reliability with an undergraduate population (Fairchild & Fresco, 2006: $r = .69$; Treynor, et al., 2003: $r = .67$). A high degree of internal consistency ($\alpha = .88$) was obtained for the brooding subscale in the current investigation.

**Depressive Symptoms**

The *Beck Depression Inventory - Second Edition* (BDI-II; Beck et al., 1996) is a 21-item self-report instrument that broadly assesses the symptoms of depression including the affective, cognitive, behavioral, somatic and motivational components as well as suicidal wishes. Beck, Steer and Brown (1996) reported a high internal consistency in a university population ($\alpha = .93$). In line with Beck, Steer, and Brown (1996), a high degree of internal consistency ($\alpha = .90$) was found for this measure in the current investigation.
Decentering

The Experiences Questionnaire (EQ; Fresco, Moore et al, 2007) is an 11-item unifactorial self-report inventory designed to measure decentering or disidentification with content of negative thinking. Items are rated on a 5-point Likert scale (1 = never, 5 = all the time). Scores on the EQ can range from 11 to 55 with higher scores indicating greater decentering. Fresco, Moore et al. (2007) reported adequate to good internal consistency in both undergraduate and clinical samples (α = 0.83, α = 0.90). Evidence of convergent and discriminant validity with concurrent measures of depressive rumination, experiential avoidance, and emotion regulation in an undergraduate sample and depression in both undergraduate and clinical samples have been demonstrated (Fresco, Moore et al., 2007). The EQ demonstrated a satisfactory degree of internal consistency in the current investigation (α = .82).

Procedure

Participants were required to attend a single assessment period averaging 90 minutes in duration. On arrival, participants were informed about the mood induction and written informed consent was obtained. Participants completed a battery of self-report measures and rated their mood using the visual analogue scale. Participants underwent a negative mood induction (described below) and rated their mood again. Participants then completed the priming phase, a
scrambled sentence task, where they were asked to unscramble 23 negative self-referent sentences. Embedded within these sentences was either a set of nine decentering sentences or nine control (neutral) sentences. Participants were randomly assigned to unscramble the negative self-referent sentences with either the decentering or control sentences. Afterwards, participants rated their mood again.

*Mood Induction*

During the mood-induction phase, participants listened to a piece of music being presented on an audio CD player through headphones. Participants listened to approximately 8 minutes of “Russia under the Mongolian Yoke” (1934) from the film *Alexander Nevsky*, by Prokofiev, recorded at half speed, without changing the pitch. As participants listened to the music, they were instructed to think about a time in their lives when they felt sad or depressed. This type of induction, combining elements of music associated with sad mood and autobiographical recall, has been found to be effective in bringing on transient dysphoric mood states (Martin, 1990; Westermann, Spies, Stahl, & Hesse, 1996). Previous research suggests that the effects of such an induction even in previously depressed patients is short-lived but effective in simulating the effects of a negative mood state.

*Mood-priming Phase*
The mood-priming methodology replicated Watkins (2003) procedure. The priming phase involved a scrambled sentence task incorporating 23 negative self-referent statements (Velten, 1968) scrambled with an extra word. The purpose of the extra word was to give the impression to participants that the experimenters were interested in which version of the sentence they unscramble, rather than the effect of the sentence itself. Participants received instructions to unscramble the sentences and were informed that they would be unable to use all of the words in unscrambling the sentence. After participants unscrambled the sets of words into meaningful sentences, they were instructed to write them down and read them aloud. The Velten statements were graded across the task, with more negative statements occurring later in the task, as recommended for optimizing the mood induction effect (Clark, 1983). Within the scrambled sentence task, nine scrambled questions were incorporated: a contextual set, designed to increase decentering or a control set. The contextual set and the control set of sentences were matched for structure and length (see Appendix 1).

RESULTS

Descriptive Analyses

One hundred and twenty-six participants completed the study in exchange for course credit. The majority of the final sample (N=99) was female (78.6%). The mean age was 19.5 (SD = 2.78) years. Approximately 80.2% of the total
sample was Caucasian, 10.3% were African-American, 2.4% were Asian, 2.4%
were Hispanic, 0.8% were Native American, and 4% identified as “other.”

Of the 126 participants who completed the study, 59 participants exhibited
a successful response to the mood induction as evidenced by at least a 20mm
decrease in mood as measured by the visual analogue scale (Clark & Teasdale,
1982; Watkins et al., 2003), and were included in the final analyses. Sixty-seven
participants did not exhibit a successful mood induction response, and were
excluded from all further analyses. One participant who successfully responded to
the mood induction had missing pre-mood induction VAS scores and was
excluded from analyses leaving 58 participants in the final sample.

The majority of the final sample (N=58) was female (86%); 14% were
male and average age was 19.2 years old (SD = 3.54.) Approximately 79.3% of
the total sample was Caucasian, 6.9% were African-American, 5.2% were Asian,
5.2% were Hispanic, and 3.4% identified as “other.”

Analyses were conducted to assess whether there were any differences
between participants who did and did not successfully respond to the mood
induction. Chi-squared tests revealed that, at baseline, no differences were found
between mood induction responders and non-responders on gender ($\chi^2[1, N =
125] = .83, p = .36$) or ethnicity, specifically for Caucasian and African American
participants ($\chi^2[1, N = 100] = .26, p = .61$). Examination of continuous variables
of interest also revealed no differences between the groups in age ($F[1,125] =
0.07 p = .80$) and self-reported BDI scores ($F[1,116 = 0.50, p = .48]$).
Baseline Group Differences among High and Low Brooding Groups

Chi-squared tests revealed that, at baseline, no differences were found between participants in the high or low brooding groups on gender ($\chi^2[1, N = 56] = .62, p = .43$) or ethnicity ($\chi^2[1, N = 56] = 4.22, p = .38$). Examination of continuous variables of interest also revealed no differences between the groups in age ($F[1,25] = 0.07, p = .80$). Of note, the high and low brooding groups significantly differed on self-reported BDI scores ($F[1,54] = 24.72, p < .001$). The high brooding group had significantly higher BDI scores ($M = 15.24$) as compared to the low brooding group ($M = 6.06$). However, it is unlikely that difference in BDI scores influenced the hypotheses as the high and low brooding groups did not significantly differ from one another in terms of baseline self-report mood as measured by the visual analogue scale ($F[1,56] = 1.48, p = .23$).

Manipulation Check

To assess whether the mood induction had significantly lowered mood, a repeated measures analysis of variance was conducted. The within subjects factor was time (pre and post mood induction mood ratings) and the between subjects factor was whether the participant successfully responded to the mood induction. In line with expectations, there was a main effect for time indicating that participants’ mood ratings significantly differed from pre to post mood induction, $F(1,123) = 349.39, p < 0.001$. The finding for Time exceeded Cohen's (1988)
convention for a large effect (Cohen's $d = 3.37$). A significant interaction between time and mood effect was also found, indicating that participants who successfully responded to the mood induction were significantly different from participants who did not respond to the mood induction ($F[1,123] = 177.94, p < 0.001$). This finding ($d = 2.41$) exceeded Cohen's convention for a large effect. Examination of the means showed that participants who successfully responded to the mood induction exhibited a decrease in mood from pre-mood induction ($M = 22.86, SD = 20.82$) to post-mood induction ($M = -21.71 SD = 22.94$), whereas participants who did not respond to the mood induction exhibited a smaller decrease in mood from pre-mood induction ($M = 5.93, SD = 23.64$) to post-mood induction ($M = -1.52, SD = 22.16$).

**Examination of Mean Differences Between Brooding and Mood Induction Responder Groups**

For illustrative purposes, a one-way ANOVA was conducted to examine the study variables of interest. The independent variable was Group, which was comprised of the following 4 levels: High Brooding/Mood Induction Responder, Low Brooding/Mood Induction Responder, High Brooding/Non Mood Induction Responder, and Low Brooding/Non Mood Induction Responder. The dependent variables were Brooding total score, BDI-II total score, Trait Decentering total score, and mood ratings administered at 4 different points during the course of the
study; baseline, pre-mood induction, post-mood induction, and post-mood priming task.

**Brooding**

The results indicated that group means for the Brooding total score significantly differed from one another, \( F[3,125] = 6.10, p < .001 \) and this finding \( (d = .22) \) exceeded Cohen’s convention for a small effect (see Table 3 for a list of descriptive statistics). Post hoc comparisons, using Tukey’s test of significance difference, revealed that the mean brooding score for the High Brooding/Mood Induction responder group was significantly higher than the other three groups (Low Brooding/Mood Induction Responder group \( M \) Difference = 3.91, \( \text{Standard Error} = .95, p < .001 \); High Brooding/Non Mood Induction Responder group \( M \) Difference = -3.91, \( \text{Standard Error} = .95, p < .001 \); Low Brooding/Non Mood Induction Responder group \( M \) Difference = -3.23, \( \text{Standard Error} = .97, p < .05 \)).

**Depressive Symptoms**

With regard to depressive symptoms as measured by the BDI-II (Beck et al., 1996), the results indicated that the High Brooding/Mood Induction Responder Group and the Low Brooding/Mood Induction Responder Group had significantly different means from the High Brooding/Non Mood Induction Responder Group and the Low Brooding/Non Mood Induction Responder Group \( (F[3,125] = 2.76, p < .05) \) and this finding \( (d = .30) \) exceeded Cohen’s convention for a small effect. Post hoc comparisons indicated that the High Brooding/Mood
Induction Responder Group had significantly higher levels of depression symptoms as compared to the Low Brooding/Mood Induction Responder Group ($M$ Difference = 6.85, $Standard Error = 2.42, p < .05$).

**Trait Decentering**

With regard to trait decentering, as measured by the EQ (Fresco, et. al., 2007), the results indicated that the groups did not have statistically different means ($F[3,125] = 1.73, p <.16$) and this finding corresponded with Cohen’s convention for a small effect ($d = .24$).

**Initial Mood Ratings**

With regard to the initial mood rating, the results indicated that the groups had significantly different means ($F[3,125] = 5.18, p <.05$) and this finding approached Cohen’s convention for a medium effect ($d = .41$). Post hoc comparisons revealed that the High Brooding/Mood Induction Responder group had significantly lower mood ratings than the Low Brooding/Mood Induction Responder Group ($M$ Difference = -18.83, $Standard Error = 4.84, p < .01$).

**Pre-mood Induction Mood Ratings**

The results indicated that the groups had significantly different means for the pre mood induction mood ratings ($F[3,125] = 11.50, p <.01$) and this finding exceeded Cohen’s convention for a medium effect ($d = .61$). Post hoc comparisons revealed that the Low Brooding/Mood Induction Responder Group had significantly higher mood ratings than the High Brooding/Mood Induction Responder group ($Standard Error = 5.84, p < .05$), the High Brooding/ Non Mood
Induction Responder Group ($M$ Difference = 29.34, Standard Error = 5.01, $p < .01$), and the Low Brooding/Non Mood Induction Responder Group ($M$ Difference = 16.05.23, Standard Error = 5.16, $p < .01$).

Post-Mood Induction Mood Ratings

With respect to the mood rating that followed the negative mood induction, the results indicated that the groups had significantly different means ($F[3,124] = 13.18$, $p < .01$) and this finding exceeded Cohen’s convention for a medium effect ($d=.65$). Post hoc comparisons revealed that the High Brooding/Mood Induction Responder Group had significantly lower mood ratings than the Low Brooding/Mood Induction Responder Group ($M$ Difference = -16.96, Standard Error =5.91, $p < .05$), the High Brooding/Non Mood Responder Group ($M$ Difference =25.97, Standard Error =5.93, $p < .01$), and the Low Brooding/Non Mood Responder Group ($M$ Difference =-36.85, Standard Error = 6.11, $p <01$). The Low Brooding/Mood Induction Responder Group had a significantly lower mean than the Low Brooding/Non Mood Induction Responder Group ($M$ Difference = -19.89, Standard Error =5.26, $p < .01$).

Post Mood Prime Mood Ratings

Finally, the results indicated that the groups had significantly different means on the final mood rating, which immediately followed the mood priming challenge ($F[3,125] = 3.18$, $p <.05$). This finding exceeded Cohen’s convention for a medium effect ($d=.65$). Post hoc comparisons revealed that the High Brooding/Non Mood Induction Responder group had significantly lower mood
ratings than the Low Brooding/Mood Induction Responders \((M \text{ Difference} =-14.10, \text{ Standard Error} = 5.25, p < .05)\).
Table 2
Baseline Group Differences between Brooding (High vs. Low) and Mood Induction (Responders vs. Non Responders) Participants

<table>
<thead>
<tr>
<th>Brooding/Mood Induction</th>
<th>High Responder N = 21</th>
<th>Low Responder N = 37</th>
<th>High Non Responder N = 36</th>
<th>Low Non Responder N = 31</th>
<th>Significant Differences (p &lt; .05)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brooding M (SD)</td>
<td>11.86 (3.85)</td>
<td>7.95 (2.63)</td>
<td>9.47 (4.06)</td>
<td>8.68 (3.36)</td>
<td>HM &gt; LM &gt; HN &gt; LN</td>
</tr>
<tr>
<td>Depression Symptoms M (SD)</td>
<td>14.71 (9.68)</td>
<td>7.86 (9.10)</td>
<td>11.06 (9.25)</td>
<td>10.10 (7.51)</td>
<td>HM &gt; LM</td>
</tr>
<tr>
<td>EQ M (SD)</td>
<td>36.81 (6.98)</td>
<td>40.73 (6.76)</td>
<td>37.55 (7.37)</td>
<td>38.13 (8.22)</td>
<td>----</td>
</tr>
<tr>
<td>Baseline Mood Rating M (SD)</td>
<td>25.52 (25.18)</td>
<td>32.89 (20.34)</td>
<td>14.06 (15.38)</td>
<td>23.42 (21.66)</td>
<td>LM &gt; HN</td>
</tr>
<tr>
<td>Pre Induction Mood Rating M (SD)</td>
<td>12.67 (19.39)</td>
<td>28.65 (19.56)</td>
<td>-6.9 (24.07)</td>
<td>13.61 (20.98)</td>
<td>LM &gt; HM = LN = HN</td>
</tr>
<tr>
<td>Post Induction Mood Rating M (SD)</td>
<td>-32.52 (19.88)</td>
<td>-15.57 (22.50)</td>
<td>-6.56 (22.49)</td>
<td>4.32 (20.61)</td>
<td>LN &gt; LM &gt; HM</td>
</tr>
<tr>
<td>Post Prime Mood Rating M (SD)</td>
<td>-3.52 (18.40)</td>
<td>11.35 (20.74)</td>
<td>-2.75 (23.89)</td>
<td>6.68 (23.63)</td>
<td>LM &gt; HN</td>
</tr>
</tbody>
</table>

Note: Brooding = Brooding Total Score; Depression Symptoms = Beck Depression Inventory Second Edition Total Score; EQ = Experiences Questionnaire Total Score (Trait Decentering); Visual Analogue Scale Time 1; Visual Analogue Scale Time 2; Visual Analogue Scale Time 3; Visual Analogue Scale Time 4.

*HM = High Brooding/Mood Induction Responder group; LM = Low Brooding/Mood Induction Responder group; HN = High Brooding/Non Mood Induction Responder group; LN = Low Brooding/Non Mood Induction Responder Group

---- = No significant differences
Hypothesis #1: Comparison of Mood Ratings Between High and Low Brooding Group Participants after completing a Contextual or Control Mood-priming Task

To examine the hypothesis that individuals in the high brooding group who completed the contextual mood-priming task following a mood induction would show less mood repair than individuals in the low brooding group, a 3-way mixed model analysis of variance (ANOVA) was conducted. The within subjects factor was time (pre-, post mood-priming task), whereas the between subject factors were brooding (high vs. low) and mood-priming task (contextual vs. control). The dependent variable was self-report ratings of mood (VAS). The results revealed a main effect for time indicating that participants’ mood ratings significantly differed from post mood induction (formerly referred to as pre mood prime) to post mood prime, $F(1,56) = 107.22, p <0.001$. The finding for Time (Cohen's $d = 2.77$) exceeded Cohen's (1988) convention for a large effect.

Contrary to predictions, the high and low brooding group did not significantly differ from one another in terms of pre and post mood-priming task mood ratings, $F(1,54) = 0.11, p = 0.74$. This finding ($d = 0.09$) fell below Cohen's convention for a small effect. Similarly, the results did not yield a main effect for mood-priming task, $F(1,54) = 0.22, p = 0.64$. This finding fell below Cohen's convention for a small effect ($d = 0.13$). Individuals who completed the contextual or control mood-priming task did not significantly differ from one another in terms of pre and post mood prime mood ratings. Finally, counter to predictions, a 3-way interaction (time x brooding group x mood-priming task) was not found, $F(1,54)$
= .53, \( p = .47 \). This finding met Cohen's convention for a small effect (\( d = 0.20 \)) (see Table 3 for a complete listing of descriptive statistics).

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Total M (SD)</th>
<th>Low Brooding M (SD)</th>
<th>High Brooding M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Contextual</td>
<td>Control</td>
</tr>
<tr>
<td>Post Induction/Pre Prime Mood Rating</td>
<td>-21.71 (22.94)</td>
<td>-10.85 (21.53)</td>
<td>-21.12 (22.98)</td>
</tr>
<tr>
<td>Post Prime Mood Rating</td>
<td>5.97 (21.04)</td>
<td>15.40 (17.36)</td>
<td>6.59 (23.78)</td>
</tr>
</tbody>
</table>

**Hypothesis #2: Relationship of decentering to recovery from an induced depressed mood with and without a mood-priming task infused with contextualizing stimuli**

The second aim of the study was to examine the relationship between decentering to recovery from an induced depressed mood with and without a mood-priming task infused with contextualizing stimuli. For this analysis a 2 (high/low decentering) x 2 (control/contextual mood prime) ANOVA was conducted. The first step in this analysis was to create a high decentering group and a low decentering group. Given that prior research has not been conducted to establish optimal cut points for high and low group membership using the EQ (Fresco, 2007), group membership was determined by using upper and lower tertiles of the decentering distribution. Twenty-one participants had decentering
scores within the range of 11 to 37 and formed the low decentering group. Eighteen participants whose scores ranged from 38 to 42 fell into the middle third of the distribution and were excluded from analyses. The high decentering group was comprised of 19 participants whose scores ranged from 43 to 55 on the EQ. Next, residual change scores based on pre- and post-mood prime mood ratings were computed. For the ANOVA, the decentering group (high vs. low) and mood prime group (contextual vs. control) served as the independent variables and the pre- to post-mood prime residual change score was the dependent variable. A significant interaction was predicted. Specifically, it was predicted that participants in the high decentering group who completed the contextual mood prime exhibit a small increase in positive mood. A small decrease in positive mood was predicted for the participants in the high decentering group who completed the control mood prime. Among individuals in the low decentering group who completed the contextual mood prime, a small increase in mood was predicted. Finally, for individuals in the low decentering group who completed the control mood prime a large decrease in their mood was predicted.

A main effect for decentering group was not found, $F(1,36) = 2.81, p = 0.10$. This finding exceeded Cohen’s conventions for a medium effect ($d = .56$) (see Table 4 for a complete listing of descriptive statistics). These results indicated that the residual change scores did not significantly differ as a function of decentering group membership.
In contrast with predictions, a main effect for sentence group was also not found. Participant’s mood ratings did not differ as a function of whether they completed the control or contextual mood-priming task ($F[1,36] = 0.04, p = 0.84$. This finding fell below Cohen’s convention for a small effect ($d = .07$).

Finally, counter to expectations, a two-way interaction between mood-priming group (control vs. contextual) and decentering group (high vs. low) was not found, $F(1,36) = 0.08, p = 0.79$. This finding fell below Cohen’s convention for a small effect ($d = .09$). Participants’ recovery from induced depressed mood did not differ as a function of decentering group (high vs. low) and mood-priming task (contextual vs. control).

Table 4
*Comparison of self-report decentering to recovery from an induced depressed mood with and without a mood-priming task infused with contextualizing stimuli*

<table>
<thead>
<tr>
<th>Mood Prime Task</th>
<th>Low Decentering $M\ (SD)$</th>
<th>High Decentering $M\ (SD)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>0.90 (0.91)</td>
<td>-0.40 (0.20)</td>
</tr>
<tr>
<td>Contextual</td>
<td>-0.37 (0.99)</td>
<td>-0.34 (0.00)</td>
</tr>
<tr>
<td>Total</td>
<td>0.62 (0.97)</td>
<td>-0.38 (0.15)</td>
</tr>
</tbody>
</table>
**Exploratory Analyses 1a**

One possibility for the lack of relationship among Brooding group, mood-priming task, and mood repair might be related to the criterion for a successful mood induction. Participants were included in the analyses if they exhibited a 20mm shift in negative mood and perhaps this requirement was too strict. To explore the hypothesis that the criterion for a successful mood induction was too conservative, in examining whether decentering remained beneficial for participants in the high brooding group following the negative mood induction, the analyses were repeated using a less stringent criterion. Participants were now included in the analysis if they exhibited at least a 10mm decrease in self reported mood, which was 50% of the original requirement. Seventy-nine participants were included an identical replication of the earlier 3-way ANOVA. As expected, the results revealed a main effect for time, indicating that participants’ mood ratings significantly differed from post mood induction (or pre mood prime) to post mood prime, $F(1,75) = 64.93, p <0.001$. The finding for Time exceeded Cohen's (1988) convention for a large effect (Cohen's $d = 1.86$). In line with the earlier analysis, the high and low brooding group did not significantly differ from one another in terms of mood change, $F(1,75) = 0.25, p = 0.62$. This finding fell below Cohen's convention for a small effect ($d = 0.12$). Similarly, the results did not yield a main effect for mood-priming task, $F(1,75) = 1.89, p = 0.17$. This finding exceeded Cohen's convention for a medium effect ($d = 0.32$). Individuals
who completed the contextual or control mood-priming task did not significantly differ from one another in terms of mood change. Finally, a 3-way interaction (time x brooding group x mood-priming task) was not found, $F(1,75) = .26, p = .61$. This finding met Cohen's convention for a small effect ($d = 0.12$) (see Table 5 for a complete listing of descriptive statistics).

Table 5
Comparison of Mood Ratings Between Brooding Group Participants (High and Low) After Completing a Mood-priming Task (Contextual or Control) in a Sample (N=9) Using More Inclusive Criteria for a Successful Mood Induction

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Low Brooding</th>
<th>High Brooding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M (SD)$</td>
<td>$M (SD)$</td>
<td>$M (SD)$</td>
</tr>
<tr>
<td>Post Induction/Pre Prime Mood Rating</td>
<td>-18.42 (23.27)</td>
<td>-10.52 (21.53)</td>
<td>-13.52 (23.44)</td>
</tr>
<tr>
<td></td>
<td>-30.00 (22.92)</td>
<td>-26.33 (25.06)</td>
<td></td>
</tr>
<tr>
<td>Post Prime Mood</td>
<td>2.64 (23.48)</td>
<td>11.79 (19.67)</td>
<td>4.20 (22.67)</td>
</tr>
<tr>
<td></td>
<td>-2.38 (18.74)</td>
<td>-8.67 (30.01)</td>
<td></td>
</tr>
</tbody>
</table>

Exploratory Analyses 1b

The descriptive analyses revealed that participants in the High Brooding group who exhibited a successful response to the negative mood induction had significantly higher scores on the BDI-II than the High Brooding/Non Mood Induction Responder and the Low Brooding Groups who did and did not respond to the mood induction. This finding prompted an exploratory analysis to examine whether level of self-reported depression and Brooding group (high and low) was related to mood change. For this analysis, the sample was divided into high and low depression symptom groups. Participants with scores of 14 or above on the
BDI-II were included in the Dysphoric group, whereas participants with scores of 13 or below on the BDI-II were included in the Euthymic group. These criteria were used according to research, which illustrated that they maximized both the sensitivity and specificity when compared to diagnoses of depression assessed via structured interview (Beck, et al., 1996). Next residual change scores were calculated with pre and post mood induction ratings. A one-way ANOVA was conducted for each depression symptom group (Euthymic vs. Dysphoric). Brooding group (Low vs. High) served as the independent variable and the dependent variable was pre to post mood induction residual change scores. For the Dysphoric group, the results indicated that the High and Low Brooding groups did not differ in terms of residual change score ($F[1,32] = .00, p = 0.98$) and this finding fell well below Cohen's convention for a small effect ($d = .00$). Likewise, for the Euthymic group, the results indicated that the High and Low Brooding groups did not differ in terms of residual change scores ($F[1,24] = 2.41, p = 0.14$); however, this finding exceeded Cohen’s convention for a medium effect ($d = .63$) (see table 5 for a descriptive statistics).

Table 5

<table>
<thead>
<tr>
<th>Depression Group</th>
<th>Brooding Group</th>
<th>N</th>
<th>Residual Change Score Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euthymic</td>
<td>Low</td>
<td>26</td>
<td>-0.03 (1.57)</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>7</td>
<td>0.11 (8.80)</td>
</tr>
<tr>
<td>Dysphoric</td>
<td>Low</td>
<td>11</td>
<td>4.90 (1.42)</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>14</td>
<td>-3.85 (1.38)</td>
</tr>
</tbody>
</table>
Exploratory Analyses 1c

An additional exploratory analysis was conducted to examine the possibility that Dysphoric and Euthymic groups may differ in mood change as a function of Brooding group, Mood-priming group, or a combination of both Brooding and Mood-priming group. A 2-way ANOVA was conducted for each Depression Symptom Group (Euthymic vs. Dysphoric), Brooding group (Low vs. High) and Mood-priming group (Decenter vs. Control) served as the independent variables. Residual changes scores based on Post Mood Induction and Post Mood-prime was the dependent variable. Results indicated that for the Euthymic group, there was no main effect for brooding group ($F[1,33] = .44, p = 0.14, d = .23$). There was also no main effect for Mood-priming group ($F[1,33] = .01, p = 0.93, d = .04$). Similarly, there was no interaction for Brooding and Mood-priming group ($F[1,32] = .06, p = 0.81, d = .09$).

Results indicated that for the Dysphoric group, there was a main effect for brooding group ($F[1,25] = 6.22, p < 0.05$) and this finding exceeded Cohen's (1988) convention for a large effect ($d = 1.00$). Examination of the means revealed that the High Brooding group became more sad following the mood prime ($M= -8.03$) as compared to the Low Brooding group who demonstrated mood repair following the mood prime ($M= 10.22$).

In contrast a main effect for the Mood-priming group was not found ($F[1,25] = .01, p = 0.94, d = .04$). Similarly, there was no interaction for Brooding and Mood-priming group ($F[1,25] = .89, p = 0.36, d = .09$).
Table 6

*Examination of Depression Group, Brooding Group, Mood Prime Group and Mood Change*

<table>
<thead>
<tr>
<th>Depression Group</th>
<th>Brooding Group</th>
<th>Mood Prime Group</th>
<th>N</th>
<th>Residual Change Score Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Control</td>
<td>12</td>
<td>0.23 (7.62)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decenter</td>
<td>14</td>
<td>-1.88 (2.01)</td>
</tr>
<tr>
<td>Euthymic</td>
<td>High</td>
<td>Control</td>
<td>4</td>
<td>2.95 (1.35)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decenter</td>
<td>3</td>
<td>3.92 (8.07)</td>
</tr>
<tr>
<td>Dysphoric</td>
<td>Low</td>
<td>Control</td>
<td>8</td>
<td>8.34 (1.38)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decenter</td>
<td>3</td>
<td>15.20 (1.25)</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Control</td>
<td>7</td>
<td>-3.95 (2.51)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decenter</td>
<td>7</td>
<td>-1.21 (1.68)</td>
</tr>
</tbody>
</table>

*Exploratory Analysis 2a*

The final exploratory analyses sought to examine whether trait decentering (measured continuously) and mood-priming group (decentering vs. control) were associated with post mood ratings after controlling for pre mood-prime mood ratings. To investigate whether trait decentering group and mood-priming group predicted unique variance in mood change, a multiple regression analysis was conducted. Post mood prime mood ratings served as the dependent variable. Pre mood-prime ratings were entered on the first step and trait decentering and mood-priming task (contextual or control) were entered on the second step. A decentering x mood-priming interaction term was calculated and entered on the third step. Results indicated that pre mood-prime ratings accounted for a significant amount of variance in the criterion ($R^2 = .34, F[1,56] = 29.14, p < .01$)
and served as a significant predictor ($\beta = .59$, $t[57] = -5.64, p < .01$). This finding ($f^2 = 0.52$) exceeded Cohen's (1988) convention for a large effect. In contrast, trait decentering and mood-priming group did not account for a significant proportion of the change after controlling for the effects of pre mood-priming ratings of mood ($R^2$ change = .01, $F[3, 54] = .38$, $p = .69$). Neither the trait decentering predictor ($\beta = .01$, $t[57] = .04$, $p = .97$) nor the mood-prime group predictor ($\beta = -4.01$, $t[57] = -.86$, $p < .39$) served as significant predictors by themselves. Both the results for trait decentering (Cohen's [1988] $f^2 = .00$) and mood-prime group ($f^2 = .01$) fell below Cohen's convention for a small effect. Similarly, the decentering x mood-prime interaction did not account for a unique proportion of the variance in the criterion ($R^2$ change = .01, $F[4, 53] = .67$, $p = .42$) and indicated that the relationship between decentering and mood change was the same for participants in both mood-priming groups ($\beta = .54$, $t[57] = .82$, $p = .42$). This finding fell below Cohen's convention for a small effect ($f^2 = .01$).

**DISCUSSION**

*Summary of results*

The primary goal of the study was to extend prior research on decentering (Watkins et al., 2003) by examining whether completion of a decentering task would enhance mood repair for individuals who vary on trait rumination. It was hypothesized that individuals in the high brooding group who completed the
decentering task following a mood induction would show less mood repair as compared to the low brooding group. In contrast with predictions, there were no differences among individuals in either the high and low brooding groups in terms of reported mood ratings after completing a negative mood induction and prime infused with or without a decentering task.

The secondary aim of the study was to examine whether individuals who varied on trait decentering would differentially respond to a mood induction and mood-priming task infused with or without a decentering task. Participants who possessed high trait decentering and completed the decentering task were predicted to exhibit greater mood repair. Counter to predictions, the degree of trait decentering group was not related to experimentally induced mood change nor was completion of the decentering mood-priming task. Finally, mood change was unrelated to an interaction of trait decentering and completion of the decentering mood-priming task.

In response to the largely null findings a number of exploratory analyses were conducted for each of the stated hypothesis. Regarding Hypothesis # 1, the relationship between brooding group, mood-priming task, and mood change was re-examined using a less stringent criterion for a successful mood induction. Despite this modification, the results remained insignificant.

Given the well-established relationship between rumination and depression, it seemed prudent to run several exploratory analyses to investigate whether there was a relationship among rumination, depressive symptoms and
decentering. Surprisingly, systematic variation of depressive symptoms and Brooding scores was not associated with differential mood change following the mood-priming challenge. One interesting finding did emerge when the sample was stratified according to high and low Dysphoric and Brooding groups. Individuals in the Dysphoric/High Brooding group reported significantly more sad mood following the mood-priming task compared to individuals in the Dysphoric/Low Brooding group. In other words, persistent negative mood was associated with the presence of both dysphoric mood and trait rumination.

A final exploratory analysis was conducted in relation to Hypothesis #2 which originally sought to examine the relationship of trait decentering and mood change following experimentally induced negative mood. This analysis did not find support for the hypothesis that trait decentering group (measured continuously) and mood-priming task (Decenter vs. Control) would account for a significant amount of the variability in mood ratings.

Limitations

A number of factors likely contributed to the failure of the current investigation to unsuccessfully replicate and extend Watkins’ findings regarding decentering task and mood repair. One possible explanation for the null findings might be related to the sampling strategy that selected participants for high and low levels of trait rumination. Watkins’ sample was comprised of 42 participants who denied a current or past history of major depression or dysthymia as assessed
by a structured clinical interview. It is possible that the mixed results are a function of the current sample’s stratification on trait rumination. However, it is unlikely that sampling strategy explains the whole picture. Insofar as Watkins’ sample was comprised of individuals who denied a current or past history of depression, it seems reasonable to assume that his sample would have scored low on a measure of trait rumination. Therefore, at the very minimum, the current study had the potential to replicate Watkins’ results for the low brooding group.

A related reason why the current study yielded equivocal findings may be due to sample characteristics. The current study relied on a convenience sample of undergraduate students who were largely female (82.8%), young (M =19.61), and Caucasian (75.9%) which not only calls the generalizability of the findings into question but also raises the possibility that demographic differences between the samples may account for the equivocal findings. It is difficult to speculate about any potential demographic differences between the samples because Watkins did not provide any detailed demographic information, beyond stating that his sample ranged in age from 18 to 65 years old. Another factor that may have contributed to the null findings is the fact that a convenience sample was used in the current sample, while Watkins’ participants were recruited by “advertisements in the press.” It is possible that the different incentives offered by the studies (course credit versus money) influenced the participants’ response or level of engagement in the study.
An unlikely interpretation of the null findings is that individuals who are on the extreme end of the trait rumination continuum do not benefit from decentering. This hypothesis could be addressed by including a sample that was representative of the entire trait rumination continuum.

Another possible explanation for the association, or lack thereof, among trait decentering and mood repair is related to the composition of the high and low decentering groups. The first issue refers to the fact that the measure selected to assess trait decentering, the EQ (Fresco et. al., 2007) is a relatively new measure and has never been used to classify individuals according to decentering degree prior to the current study. The decision to use tertiles to determine high and low group membership was somewhat arbitrary. In addition, analyses that relied on the EQ were likely compromised by the fact that the sample was originally selected for high and low trait brooding. The requirement that participants exhibit high or low on trait brooding likely affected the distribution of decentering scores. It is possible that individuals who tend to score high on a measure of trait brooding would also score low on a measure of decentering. However, at least one study has shown that brooding is not significantly correlated with decentering ($r = .14$, Fresco et. al., 2007). What remains unclear is whether the lack of relationship holds for individuals who do not score on either extreme of the trait brooding continuum.
Methodological Issues

The experimental design of this study hinged in large part on the effectiveness of the mood induction in eliciting a ruminative response style. Although the study employed a manipulation check to determine effectiveness of the mood induction, it might have been helpful to assess whether the High Brooding group ruminated in response to the induced negative mood. Despite the fact that the final sample consisted of participants who reported decreases in mood, it is possible that the mood induction was not potent enough to elicit a ruminative response in participants selected for high trait rumination. If the participants in the High Brooding group did not ruminate during the mood induction, this may account for the equivocal findings. Unfortunately, a manipulation check, which would have allowed for detection of participants who did not ruminate in response to the mood induction, was not included. Identification of these participants would have allowed for their responses to be removed from analyses. Alternatively, it might have been informative to examine why this subset of the sample did not exhibit a ruminative response style. Future research attempting to examine the role trait rumination following an experimentally induced depressed mood would benefit from including a manipulation check to ensure that the induction activated a ruminative response or state. The Perseverative Thinking Questionnaire-State Version (PTQ-S: Ehring, 2007), a recently developed 20-item self-report measure of state rumination, was effectively used for this purpose in a recent experimental paradigm (Zetsche, Ehring, & Ehlers, in press). However, even if the individuals
in the high brooding group did not ruminate in response to the mood induction, based on the findings of Watkins and colleagues, greater mood repair, regardless of brooding status, among participants who completed the decentering mood-priming task would still be expected.

According to the response styles theory a ruminative response style is detrimental in the context of depressed mood. Research has yet to explore whether it is necessary for one to be depressed to ruminate and how a ruminative response style is experienced in the absence of depressed mood (Robinson & Alloy, 2003). An interesting line of research that may shed light on these questions is Borkovec’s avoidance theory of worry (Borkovec, Alcaine, & Behar, 2004). In line with Borkovec’s treatment of worry, rumination has been proposed to function as a cognitive avoidance strategy designed to dampen the emotional impact of the material (Watkins & Moulds, 2005). Indeed, preliminary support has been found for the relationship among rumination and indices of cognitive, behavioral and experiential avoidance (Moulds, Kandris, Starr, & Wong, 2007; Haigh, Rytinski, Moore, & Fresco, 2007). The current findings might be partially explained by the possibility that a ruminative response style functioned in a way that blunted the negative affect associated with the mood induction. In this sense, it is possible that decentering and rumination were equally effective mood management strategies in the context of the mood induction and mood prime. Perhaps rumination only becomes problematic within the context of current depressed mood. This possibility is supported by the current results, which
found that individuals in the Dysphoric/High Brooding group reported significantly more sad mood following the mood-priming task compared to individuals in the Dysphoric/Low Brooding group.

An additional factor that may have influenced the equivocal findings is related to the fact that the mood induction was not consistently effective in eliciting negative mood. More than half of the participants (67%) who completed the study compared to 25% in Watkins et. al., (2003) were eliminated from the final analyses because they did not report a significant decrease in mood following the mood induction procedures. Because a large percentage of the sample did not respond to the mood induction, it is reasonable to speculate that the mood induction wasn’t a particularly effective manipulation for anyone.

Finally, a potential procedural flaw that may have contributed to the equivocal outcomes across groups is participant fatigue. After informed consent was obtained, participants completed a number of questionnaires, which took approximately 45 minutes. Next participants completed the negative mood induction, and then the mood-priming task, which required another 45 minutes. Perhaps participant fatigue overrode any subtle changes in mood. Unfortunately, examination of any potential order effects cannot be conducted as questionnaires and mood induction/priming tasks were not counterbalanced.

Clinical Implications
The current study sought to extend Watkins’ et al., (2003) research, which demonstrated the beneficial effects of a decentering task on mood repair, by examining whether a person’s tendency to ruminate interfered with their ability to benefit from a decentering task. Trait rumination has been identified as an important cognitive vulnerability factor related to the onset, maintenance, severity, and relapse to depression and may influence the effectiveness of interventions such as decentering. Thus, examination of the relationship between trait rumination and decentering has important clinical implications for treatment development. In particular, a new generation of psychological interventions, such as MBSR (Kabat-Zinn, 1990) and MBCT (Segal et. al., 2002), have highlighted the importance of changing one’s relationship to one’s thoughts rather than changing the actual content of one’s thoughts as is done in more traditional cognitive therapy. Decentering is theorized to interrupt the ruminative cycle that confers vulnerability to relapse to depression.

Future Directions

The aforementioned limitations of the current study suggest a number of important considerations for future investigations. Research examining the relationship between depressive rumination, negative mood and a decentering task would benefit from a sampling strategy that included participants along the full continuum of trait rumination. It is also recommended that forthcoming projects include a manipulation check to establish whether the mood induction has
activated a ruminative response or state. Unlike the RSQ (Nolen-Hoeksema, 1991b), which measures trait rumination, the PTQ-S (Ehring, 2007) has promise as a measure capable of capturing changes in state rumination following an experimental manipulation (Zetsche, in press).

With regard to the exploratory hypothesis, future research with the EQ (Fresco, 2007) is needed to establish whether this measure should be used to classify individuals along a trait decentering continuum. The EQ is a recently developed measure and it is possible that this measure actually functions better as a state rather than trait measure of decentering.

Finally, a fruitful avenue for future research might involve an examination of the timing and content of rumination in non-depressed individuals and how this relates to decentering.
REFERENCES


Rumination with Confirmatory Factor Analysis in an Adult Clinical Sample.

Manuscript in preparation.


Appendix 1

Contextual and control prompts

<table>
<thead>
<tr>
<th>Contextual prompts</th>
<th>Control prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td>What different views do I have of myself?</td>
<td>What different photos do I have of myself?</td>
</tr>
<tr>
<td>How long does this feeling last?</td>
<td>How long does this weather last?</td>
</tr>
<tr>
<td>What will I think about this in ten years time?</td>
<td>What will I buy with this ten dollars?</td>
</tr>
<tr>
<td>How long does any mood last?</td>
<td>How long does any weather last?</td>
</tr>
<tr>
<td>How does this one moment fit into my whole life?</td>
<td>How does this one sofa fit into my whole house?</td>
</tr>
<tr>
<td>Have all my past feelings changed with time?</td>
<td>Have all my skills improved with practice?</td>
</tr>
<tr>
<td>Don’t I have both good and bad times?</td>
<td>Don’t businesses have both good and bad times?</td>
</tr>
<tr>
<td>How important will this moment appear from my deathbed?</td>
<td>How good will this view look from my window?</td>
</tr>
<tr>
<td>What fraction of me is how I feel now?</td>
<td>What fraction of my life do I spend asleep?</td>
</tr>
</tbody>
</table>