MOOD EFFECTS OF CONCRETE VERSUS ABSTRACT DEPRESSIVE RUMINATION

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INTRODUCTION

MDD is one of the most prevalent psychiatric disorders (Kessler, Chiu, Demler, Merikangas, & Walters, 2005) and foremost public health threats of the 21st century (Judd & Kunovac, 1997). As MDD symptoms increase in severity, daily functioning, pleasure gained from daily activities, and satisfaction with interpersonal relationships all decline (Kuehner, 2002). MDD is often a lifelong disorder with future relapse and recurrence being the norm following initial recovery from a major depressive episode (MDE; Judd & Kunovac, 1997). MDD also carries a high economic cost in terms of mental health treatment, greater medical expenditures for physical health problems in individuals with MDD, lower productivity in workers with MDD and indirect costs related to premature mortality (both suicide and health-related deaths) among employees with MDD (Greenberg, Kessler & Birnbaum, 2003).

Researchers have endeavored to identify intrapersonal factors that confer vulnerability to MDD. As MDD is a mood disorder often characterized by prolonged periods of intense and debilitating sadness (American Psychiatric Association, 2000), the manner in which one tends to respond to naturally occurring sad mood may be of particular importance to the onset and maintenance of MDD (e.g., Nolen-Hoeksema, 1991). Researchers have proposed that engaging in repetitive thought in response to sad mood may be more detrimental than engaging in distraction (e.g., Nolen-Hoeksema, 1991).
The Consequences of Repetitive Thought

Repetitive thought, or prolonged, recurrent cognition that focuses on one’s self, one’s experiences, and/or one’s concerns, is a common mental phenomenon (Harvey, Watkins, Mansell, & Shafran, 2004). Repetitive thought has been examined in the context of many different domains of psychological research such as motivation, self-regulation, stress, goal attainment, social cognition, and psychopathology (Watkins, 2008). Forms of repetitive thought include mental stimulation, reflection, problem solving, depressive rumination, and worry (Watkins, 2008). Although repetitive thought always involves recurrent, self-focused cognition, research has shown disparate outcomes produced by different forms of repetitive thought.

In certain circumstances, engaging in repetitive thought can lead to constructive consequences. For instance, engaging in repetitive thought about a stressful or traumatic situation can enhance one’s ability to appreciate life, discover personal strengths, find positive meanings, and/or learn valuable lessons (e.g., Affleck & Tennen, 1996; Calhoun, Cann, Tedeschi, & McMillan, 2000; King & Miner, 2000; Moskowitz, Folkman, Collette, & Vittinghoff, 1996). Self-regulation theory posits that engaging in repetitive thought in response to a goal discrepancy (i.e. realizing that one is removed from where one would like to be in terms of goal progress) can be adaptive when it takes the form of problem solving, which can facilitate progress towards a goal or allow an unreachable goal to be abandoned (see Carver & Scheier, 1998; Martin, Shira, & Startup, 2004; Martin &
Tesser, 1996). By contrast, engaging in repetitive thought about one’s sad mood and/or symptoms of MDD can increase negative affect, increase negative thinking, and impair social problem solving (e.g., Ciesla & Roberts, 2007; Lyubomirsky & Nolen-Hoeksema, 1995).

Research has begun to identify moderating factors, such as the valence of thought content and the level at which the content is construed (i.e., processed; see Watkins, 2008), that may influence whether the consequences of different forms of repetitive thought (e.g., worry, reflection, problem solving) will be maladaptive or adaptive. A specific form of repetitive thought known as depressive rumination involves prolonged, recurrent cognition that is negatively-valenced, evaluative (e.g., “Why do I always react this way?”; Nolen-Hoeksema & Morrow, 1991), and often results in detrimental consequences in terms of mental health and symptoms of MDD (e.g., Nolen-Hoeksema, 2000).

Depressive Rumination and MDD

Depressive rumination has been defined as “passively and repetitively focusing on one’s symptoms of distress and the circumstances surrounding these symptoms” (Nolen-Hoeksema, McBride, & Larson, 1997, pp. 855). Nolen-Hoeksema (1991) argued that depressive rumination prolongs and intensifies naturally occurring sad moods and confers vulnerability to MDD (e.g., Nolen-Hoeksema, 1991; Nolen-Hoeksema & Morrow, 1991). The tendency to engage in depressive rumination is posited to be an important risk factor
in MDD (e.g., Nolen-Hoeksema, 1991; Nolen-Hoeksema & Morrow, 1991; Teasdale & Barnard, 1993). Indeed, the self-reported tendency to engage in depressive rumination longitudinally predicts the onset of MDEs in originally non-depressed college students (Just & Alloy, 1997; Spasojevic & Alloy, 2001) and adults (Nolen-Hoeksema, 2000). The self-reported tendency to engage in depressive rumination also longitudinally predicts MDD symptom severity in originally non-depressed adults (Nolen-Hoeksema, 2000). In addition to influencing the onset of MDD, depressive rumination may be influential in the maintenance of MDD (e.g., Nolen-Hoeksema, 1991; Nolen-Hoeksema & Morrow, 1991; Teasdale & Barnard, 1993). Indeed, research on individuals with MDD found the self-reported tendency to engage in depressive rumination to predict future MDD symptom severity and diagnostic status (e.g., Kuehner & Weber, 1999; Nolen-Hoeksema, 2000). The tendency to engage in depressive rumination in response to sad moods or symptoms of MDD is an influential variable in MDD onset and maintenance.

*Experimental Depressive Rumination*

For depressive rumination to occur, the individual must be focusing on his or her “symptoms of distress”, either naturally occurring due to MDD, or experimentally created through the use of a sad mood induction. Experimental research has found that “dysphoric” individuals (i.e., individuals currently experiencing sad mood and/or symptoms of MDD) who undergo a depressive rumination paradigm experience more negative thinking, negative mood, pessimism, social problem-solving impairments and

For example, dysphoric college students (i.e., students who were currently experiencing symptoms of MDD and sad mood), who underwent a depressive rumination task recalled more negatively biased autobiographical memories and evaluated negative events as occurring more frequently in their lives and positive events as occurring less frequently in their lives, as compared to dysphoric college students who underwent a distraction task (Lyubomirsky et al., 1998). Studies have also demonstrated maladaptive consequences produced by depressive rumination in individuals who focused on experimentally-induced sad mood. For instance, Ciesla and Roberts (2007) instructed college students to either distract or ruminate after watching a sad film clip depicting a woman’s death and her family’s reaction. Individuals who underwent the depressive rumination task experienced more post-rumination negative mood as compared to individuals who underwent the distraction task (Ciesla & Roberts, 2007). Experimental studies involving depressive rumination have consistently found depressive rumination to produce more detrimental consequences than distraction.
Level of Construal Influences the Consequences of Depressive Rumination

Given the clinical significance of depressive rumination as an intrapersonal vulnerability factor (e.g., Nolen-Hoeksema, 2000), and the unconstructive consequences produced by experimentally induced depressive rumination (e.g., Lyubomirsky et al., 1998), it is important to identify the “active ingredients” of depressive rumination. That is, what are the components of depressive rumination that are producing maladaptive consequences? Initially, rumination theorists posited that depressive rumination was harmful due to the allocation of attention towards sad mood and MDD symptoms (e.g., Bower, 1981; Teasdale, 1983). However, researchers have recently suggested that allocating attention towards negative thoughts and/or negative emotions is not necessarily detrimental. Instead, the consequences of focusing on one’s inner world are influenced by the “mode” or form of processing in which an individual engages. (e.g., McFarland & Buehler, 1998; Teasdale, 1999).

Watkins (2008) posited that the level at which repetitive thought, including depressive rumination, is construed (i.e., processed) will influence the extent of maladaptive consequences produced. Watkins (2008) proposed that construing negative material in an abstract, analytical manner (i.e., the “why” of cognition) will lead to greater detrimental consequences than construing negative material in a concrete, experiential manner (i.e., the “what” of cognition). Watkins (2008) argued that abstract depressive rumination, or thinking about the causes, meanings, and consequences of one’s negative feelings, symptoms, and mood, should produce more unconstructive
consequences than concrete depressive rumination, or thinking about the details of one’s negative feelings, symptoms, and mood (Watkins, 2008).

In a series of studies, Watkins and colleagues demonstrated that abstract depressive rumination produced more unconstructive consequences than concrete depressive rumination. To manipulate abstract versus concrete depressive rumination, Watkins and colleagues adapted the Nolen-Hoeksema and Morrow (1993) standard depressive rumination task. The concrete and abstract depressive rumination tasks included all of the original components of the depressive rumination task in terms of focusing on one’s self, one’s symptoms, and one’s mood (e.g., “the way you feel inside;” Watkins & Teasdale, 2004). However, instructions were given promoting abstract-level processing in the abstract depressive rumination task (e.g., “think about the causes, meanings and consequences;” Watkins & Teasdale, 2004) and promoting concrete-level processing in the concrete depressive rumination task (e.g., “focus your mind on each experience;” Watkins & Teasdale, 2004). Individuals with MDD who focused on their inner experiences through abstract depressive rumination experienced greater decreases in social problem solving ability (Watkins & Moulds, 2005) and more negative, overgeneralized autobiographical memory (Watkins & Teasdale, 2001; Watkins & Teasdale, 2004) as compared to individuals with MDD that underwent the concrete depressive rumination task.

Abstract-level processing of negative material may lead to overgeneralization in which an individual makes broad, negative conclusions about themselves (e.g., “I am a failure”) rather than attending to specific facets of the negative situation that may have
influenced the negative event (Hamilton, Greenberg, Pyszczynski, & Cather, 1993).
Concrete-level processing of negative material facilitates appraising negative events as
unlikely to reoccur and as controllable (Showers, 1988) and may therefore prevent
overgeneralization. Indeed, a study by Rimes and Watkins (2005) showed evidence of
overgeneralization as a result of abstract depressive rumination but not concrete
depressive rumination. Individuals with MDD who underwent an abstract depressive
rumination task experienced an increase in global, negative self-judgments (e.g., “I am
worthless) whereas individuals with MDD who underwent a concrete depressive
rumination task experienced no such increase in global, negative self-judgments (Rimes
& Watkins, 2005).

Abstract-level processing of negative material, as opposed to concrete-level
processing, may also lead to worse mood repair as relaying an emotionally-eliciting event
in specific detail (i.e., concrete-level processing) produces less emotional responding than
relaying the event in a general manner (Philippot, Baeyens, & Douilliez, 2006; Philippot,
Schaefer, & Herbette, 2003). Also, analyzing and evaluating negative moods (i.e.,
abstract-level processing) may exacerbate negative moods, while engaging in
mindfulness, or deliberately and non-judgmentally paying attention to inner experiences
(e.g. thoughts and emotions) in the present moment (see Kabat-Zinn, 1990), may be a
more constructive response to negative moods (see Kabat-Zinn, 2003, Teasdale, 1999;
Williams, Teasdale, Segal, & Kabat-Zinn, 2007). Adopting a “mindful experiencing”
mode of processing allows the individual to be aware of their inner experiences and
emotions without judging them (e.g., McFarland & Buehler, 1998; Teasdale, 1999).
Indeed, mindfulness-based cognitive therapy, which teaches individuals with a past history of MDD how to utilize a mindful mode of mind to process emotions, has been shown to prevent depression relapse (Segal, Williams, & Teasdale, 2002; Teasdale et al., 2000).

Concrete versus abstract depressive rumination is a very new area of study and further research is needed to examine what consequences level of construal influences (e.g., self-judgments, mood) and for whom (e.g., clinically depressed individuals, healthy individuals experiencing sad mood). The present study will be examining the mood effects of concrete versus abstract depressive rumination in a non-clinical sample through the use of a sad mood induction.

**Level-of-construal-dysregulation Hypothesis and Self-Esteem**

Watkins (2008) proposed that there is a typical, adaptive tendency to process negative material in a concrete manner and to process positive material in an abstract manner. Studies have demonstrated the tendency of healthy individuals to adopt an abstract mode of processing when dealing with positive material (e.g., Fredrickson & Joiner, 2002; Updegraaff & Suh, 2007) and to switch to a more concrete mode of processing when dealing with negative material (e.g., Beukeboom & Semin, 2005; Gasper & Clore, 2002; Isbell, 2004; Kurman, 2003; Storbeck & Clore, 2005). Watkin’s (2008) level-of-construal-dysregulation hypothesis proposes that intrapersonal factors seen in individuals with MDD, such as low self-esteem, may impede the adaptive
regulation of level-of-construal and make individuals with MDD more likely to process negative material in an abstract manner. Indeed, self-esteem has been found to be related to symptoms of MDD (e.g., Brockner & Guare, 1983), as well as overgeneralized, intropunitive, negative thinking (Kernis, Brockner, & Frankel, 1989).

Self-esteem can be defined as a general judgment regarding the worth or value of oneself (Rosenberg, 1965) or as a person’s evaluation of his or her personality traits and abilities (Crocker & Wolfe, 2001). An individual’s level of self-esteem is determined by how adherent an individuals sees himself or herself as being to his or her important values and goals (Rosenberg & Simmons, 1971). Self-esteem has been identified as an influential factor in MDD as low self-esteem is related to extent of MDD symptoms (e.g., Brockner & Guare, 1983; Kernis, Grannemann, & Mathis, 1991; Murrell, Meeks, & Walker, 1991; Tennen & Herzberger, 1987) and longitudinally predicts a future diagnosis of MDD originally non-depressed women (Brown, Andrews, Bifulco, & Veiel, 1990). Self-esteem has also been found to be a moderator of the effects of depressive rumination on symptoms of MDD. A study by Ciesla, Felton, and Roberts (under review) found the tendency to engage in self-reported depressive rumination to predict extent of MDD symptoms in response to stressors, but only in individuals with lower levels of self-esteem.
The Present Study

The present study examined the effects of abstract versus concrete depressive rumination in a non-clinical sample of individuals who were experiencing sad mood due to a sad mood induction. To date, no studies that we know of have examined abstract versus concrete depressive rumination in relatively healthy individuals (i.e., as opposed to a clinical sample) who are currently experiencing sad mood. Previous studies have examined the effects of abstract versus concrete depressive rumination in individuals with MDD as compared to individuals without MDD (e.g., Rimes & Watkins, 2005). However, if concrete versus abstract depressive rumination is only studied in individuals who already have MDD, the possible role of abstract depressive rumination in contributing to the onset of MDD cannot be investigated.

The present study sought to answer the following question: if an individual is sad, will engaging in abstract depressive rumination produce worse mood repair (i.e., more sad mood and less happy mood) than engaging in concrete depressive rumination? That is, if you want or need to think about your sad mood, are you better off processing this material in an abstract or concrete manner? Happy and sad mood were included as outcome variables as high levels of negative affect and/or low levels of positive affect have been proposed to be important factors contributing to and/or characterizing MDD (see Morris, Bylsma, & Rottenberg, 2009, for a discussion).

Two moderators were included in this study: level of self-esteem and level of MDD symptoms. When investigating the effects of abstract versus concrete depressive rumination, it may be important to evaluate the possible moderating influence of an
individual’s level of MDD symptoms as differential effects of abstract versus concrete depressive rumination have been found in individuals with and without MDD (e.g., Rimes & Watkins, 2005). Also, previous studies have found a relationship between extent of MDD symptoms and the presence of overgeneralized, intropunitive, negative thinking (e.g., Carver & Ganellen, 1983). Self-esteem may be another potential moderator of the effects produced by abstract versus concrete depressive rumination as Watkins (2008) posited low self-esteem to be an intrapersonal variable that could make one more likely to process negative material in an abstract manner.

In the present study our hypotheses were as follows:

1. Rumination task will affect happy mood such that abstract depressive rumination will result in less happy mood than concrete depressive rumination;

2. Rumination task will affect sad mood such that abstract depressive rumination will result in more sad mood than concrete depressive rumination;

3. Self-esteem will moderate the effect of rumination task on happy mood. The difference in the happiness produced by the abstract depressive rumination task, as compared to the concrete depressive rumination task, should be greater in individuals with lower self-esteem;

4. Self-esteem will moderate the effect of rumination task on sad mood. The difference in the sadness produced by the abstract depressive rumination task, as
compared to the concrete depressive rumination task, should be greater in
individuals with lower self-esteem;

5. MDD symptoms will moderate the effect of rumination task on happy mood. The
difference in the happiness produced by the abstract depressive rumination task,
as compared to the concrete depressive rumination task, should be greater in
individuals with higher MDD symptoms; and

6. MDD symptoms will moderate the effect of rumination task on sad mood. The
difference in the sadness produced by the abstract depressive rumination task, as
compared to the concrete depressive rumination task, should be greater in
individuals with higher MDD symptoms.
METHOD

Participants

Participants consisted of 73 college students at a large Midwestern university in the United States who participated in partial fulfillment of course requirements. The original sample consisted of 76 students. However, 2 students were excluded from analysis due to technical malfunctions during study administration and 1 student was excluded from analysis due to insufficient information provided on the measures of interest. The majority of participants were female (78.1%) and 18 or 19 years of age (72.6%). The ethnic composition of this sample was 90.4% Caucasian, 8.2% African American, and 1.4% Hispanic. On average, participants came from a household with a yearly income between 25,000 and 50,000 (20.5%) or between 50,000 and 75,000 (20.5%).

Procedure

Participants completed the study in a quiet room, individually, with a small partition separating the participant form the experimenter. Participants were given computer-administered, self-report questionnaires assessing self-esteem, MDD symptoms and mood. The questionnaires were administered in random order. All participants watched two film clips on a Dell laptop entitled “Return to Me” (3 minutes, 36 seconds)
and “The Champ” (2 minute, 51 seconds). “Return to Me” was shown first, followed by “The Champ.” Both clips have been shown to induce sad mood (Rottenberg, Ray & Gross, 2007).

“Return to me” depicts a man and a woman dancing lovingly, a hospital scene where the distraught man watches the woman being rushed away on a stretcher, and a scene in which the man returns home alone crying and states “She’s never coming home.” “The Champ” depicts a young boy in a locker room after a boxing match watching his father die and then trying to wake his dead father while crying "No. No. He’s not gone, he’s not, he’s not."

After watching the clips, participants engaged in either an abstract or a concrete depressive rumination task, according to random assignment. Of the 73 participants, 39 were randomly assigned to the concrete task and 34 were randomly assigned to the abstract task. The rumination tasks were also computer-administered. The concrete and abstract depressive rumination tasks (see Watkins & Teasdale, 2004) were adapted from the Nolen-Hoeksema and Morrow (1993) depressive rumination task. All individuals were asked to focus on a list of twenty-eight items regarding one’s self, one’s symptoms and one’s mood for eight minutes (see Watkins & Teasdale, 2004). In the present study, the items and instructions were presented via PowerPoint with each item receiving equal presentation time, for a total of eight minutes.

The general instructions for the abstract depressive rumination task were as follows: “For the next few minutes, try your best to think about each of the ideas on the following slides. Read each item slowly and silently to yourself. As you read the items,
use your imagination and concentration to think about the causes, meanings and consequences of the items. Spend a few moments visualizing and concentrating on each item, attempting to make sense of and understand the issues raised by each item (see Watkins & Teasdale, 2004).” Specific instructions were also given for each item in the abstract depressive rumination task (e.g., Abstract item: Think about: the physical sensations in your body; Watkins & Teasdale, 2004).

The general instructions for the concrete depressive rumination task were as follows: “For the next few minutes, try your best to focus your attention on each of the ideas on the following slides. Read each item slowly and silently to yourself. As you read the items, use your imagination and concentration to focus your mind on each experience. Spend a few moments visualizing and concentrating on your experience, attempting to find a phrase, image or set of words that best describes the quality of what you sense (see Watkins & Teasdale, 2004).” Specific instructions were also given for each item in the abstract depressive rumination task (e.g., Concrete item: Focus your attention on your experience of: the physical sensations in your body; Watkins & Teasdale, 2004). The experimenter turned off the lights during the mood induction and the depressive rumination task to prevent glare on the computer screen. A white noise machine was used throughout the study to prevent outside noise from disrupting participants.

Mood was measured via a computer-administered questionnaire at three time points: pre-mood induction (time 1), post-mood induction (time 2), and post-rumination (time 3). After the completion of the post-rumination mood measure, participants were instructed to relax for five minutes. After the relaxation period, the experimenter engaged
the participant in conversation for several minutes before the end of the study.
Participants were then verbally asked whether their mood had returned to pre-study level.
In no cases did participants endorse their mood being noticeably worse than when they entered the study.

**Measures**

Demographic information, including age, ethnicity, and economic background was assessed via a self-report, computer-administered questionnaire.

Self-esteem was assessed by the *Rosenberg Self-Esteem Scale* (RSE; Rosenberg, 1979). The RSE is a widely used, self-report measure composed of 10 statements that address global self-esteem (e.g., “On the whole, I am satisfied with myself”). Participants rate their agreement with these statements using a 7-point, Likert rating scale. The RSE has established convergent validity (e.g., Robins, Hendin, & Trzesniewski, 2001), high test–retest reliability (.85 to .88; Rosenberg, 1979) and high internal consistency (.72 to .88; Gray-Little, Williams & Hancock, 1997; .88 to .90; Robins et al., 2001). Internal consistency in the present study was α = .86.

MDD symptoms were assessed by the *Beck Depression Inventory, Second Edition* (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item self-report measure designed to assess the severity of an individual’s MDD symptoms. Each item is rated on a 0 to 3 scale and participants are instructed to rate the severity of each symptom in the past two weeks. The BDI-II assesses somatic, cognitive, behavioral, and affective symptoms of MDD as well as suicidal ideation. The BDI-II has demonstrated validity in
college students (Beck et al., 1996; Dozois, Dobson, & Ahnberg, 1998) and adult psychiatric outpatients (Beck et al., 1996; Steer, Ball, Ranieri, & Beck, 1999). The BDI-II has established high test-retest reliability (.93; Beck et al., 1996), high internal consistency (.91; Dozois et al., 1998; .93; Beck et al., 1996) and high convergent validity (Beck et al., 1996). Internal consistency in the present study was $\alpha = .83$.

Happy and sad mood were measured by the *Positive and Negative Affect Schedule*-X (PANAS-X; Watson & Clark, 1994). The PANAS-X is a self-report measure of positive and negative affect composed of eleven separate scales. The joviality and sadness scales were used in the present study as the PANAS-X allows scales to be used individually (Watson & Clark, 1994). The joviality scale consists of eight adjectives describing joviality: happy, joyful, delighted, cheerful, excited, enthusiastic, lively, and energetic. The sadness scale consists of five adjectives describing sadness: sad, blue, downhearted, alone, and lonely. The individual rates the extent to which they are currently experiencing each emotion on a 5-point, Likert scale. The PANAS-X has established convergent validity (Watson & Clark, 1994) and high internal consistency in college samples (.83 to .89 sadness; .91 to .94 joviality; Watson & Clark, 1994) and in a mixed inpatient and outpatient sample (.88 sadness; .88 joviality; Watson & Clark, 1994). Internal consistency for the joviality scale in the present study was $\alpha = .94$ (time 1), $\alpha = .96$ (time 2), and $T3 \alpha = .94$ (time 3). Internal consistency for the sadness scale in the present study was $\alpha = .80$ (time 1), $\alpha = .82$ (time 2), and $T3 \alpha = .85$ (time 3).
RESULTS

Manipulation Check

Paired-samples $t$-tests were conducted to examine the effects of the sad mood induction on happy and sad mood. Joviality decreased [$t(71) = -9.599, p < .001; Cohen’s d = -1.139$] and sadness increased [$t(71) = 4.878, p < .001; d = .579$] and from pre-mood induction (time 1) to post-mood induction (time 2). The sad mood induction was effective in increasing sad mood and decreasing happy mood in participants (see table 1).
Table 1.  
Summary of Descriptive Statistics for Variables of Interest

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDD Symptoms</td>
<td>7.55</td>
<td>5.72</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>55.82</td>
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</tr>
<tr>
<td>Sadness time 1</td>
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<td>2.89</td>
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<tr>
<td>Joviality time 1</td>
<td>23.21</td>
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<td>Sadness time 2</td>
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<td>Sadness time 3 Concrete</td>
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<td>Sadness time 3 Abstract</td>
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</tr>
<tr>
<td>Joviality time 3 Concrete</td>
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<td>6.71</td>
</tr>
<tr>
<td>Joviality time 3 Abstract</td>
<td>15.88</td>
<td>6.60</td>
</tr>
</tbody>
</table>

Note. MDD symptoms were measured by a total score on the BDI-II, self-esteem was measured by a total score on the RSE, sadness was measured by a total score on the sadness scale of the PANAS-X and joviality was measured by a total score on the joviality scale of the PANAS-X.

Regression Models

Six hierarchical regression models were conducted to examine the six proposed hypotheses as they relate to post-rumination (time 3) sadness and joviality. In the regression models, the relevant time 2 mood variable (i.e., time 2 joviality or time 2 sadness) was entered into step 1 to control for mood before the rumination task. A
dummy-coded variable representing rumination task was entered into step 2 with post-rumination mood (i.e., time 3 joviality or time 3 sadness) as the dependent variable. For the four models examining the influence of self-esteem and MDD symptoms, the relevant variable (i.e., self-esteem or MDD symptoms) was entered into step 3 and a corresponding interaction term was entered into step 4 (i.e., self-esteem X rumination task or MDD symptoms X rumination task). Regression findings were evaluated with both traditional null hypothesis test indices (e.g., \( p < .05 \)) as well as effect size indices (e.g., Cohen’s \( d, \eta^2 \)). Correlations between variables of interest can be seen in Table 2.

Table 2.
Correlations between MDD Symptoms, Self-esteem, Sadness, and Joviality. 
\( N = 71 \)

<table>
<thead>
<tr>
<th></th>
<th>SE</th>
<th>Dep</th>
<th>T1Jov</th>
<th>T1Sad</th>
<th>T2Jov</th>
<th>T2Sad</th>
<th>T3Jov</th>
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<td>Dep</td>
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<tr>
<td>T1Jov</td>
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<td>-.259*</td>
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<td></td>
</tr>
<tr>
<td>T1Sad</td>
<td>-.464***</td>
<td>.594***</td>
<td>.104</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2Jov</td>
<td>.087</td>
<td>-.003</td>
<td>.503***</td>
<td>.047</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2Sad</td>
<td>-.167</td>
<td>.321**</td>
<td>.159</td>
<td>.589***</td>
<td>-.137</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3Jov</td>
<td>.085</td>
<td>-.083</td>
<td>.582***</td>
<td>-.09</td>
<td>.688***</td>
<td>.016</td>
<td></td>
</tr>
<tr>
<td>T3Sad</td>
<td>-.305*</td>
<td>.478***</td>
<td>-.092</td>
<td>.735***</td>
<td>-.004</td>
<td>.713***</td>
<td>-.021</td>
</tr>
</tbody>
</table>

Note. = Dep = symptoms of MDD, SE = self-esteem, T1 = time 1, T2 = time 2, T3 = time 3, Sad = sadness, and Jov = joviality with *\( p < .05 \), **\( p < .01 \), ***\( p < .001 \) indicating significant relationships.
Rumination Task

Hypothesis 1 posited that rumination task will affect happy mood such that abstract depressive rumination will result in less happy mood than concrete depressive rumination. To address this hypothesis, a hierarchical regression was conducted examining the effect of rumination task on post-rumination joviality after controlling for post-mood induction joviality. The regression model revealed no effect of rumination task on post-rumination joviality \([\text{Cohen’s } f^2 = .00]\). The first hypothesis was not supported. Individuals who underwent the abstract depressive rumination task did not experience less joviality than individuals who underwent the concrete depressive rumination task (see table 3; see figure 1).

Table 3.
Rumination Task as a Predictor of Post-Rumination Joviality

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictors</th>
<th>B</th>
<th>SE_B</th>
<th>pr</th>
<th>t</th>
<th>p</th>
<th>R^2</th>
<th>F</th>
<th>Change</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T2 Happy</td>
<td>.63</td>
<td>.08</td>
<td>.69</td>
<td>8.06</td>
<td>.00</td>
<td>.48</td>
<td>64.97</td>
<td>1,71</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Task</td>
<td>-.09</td>
<td>1.15</td>
<td>-.01</td>
<td>-.08</td>
<td>.94</td>
<td>.48</td>
<td>.01</td>
<td>1,70</td>
<td>.94</td>
<td></td>
</tr>
</tbody>
</table>

Note. T2 Happy = post-mood induction joviality scores from the joviality scale of the PANAS-X and Task = rumination task.
Figure 1.
*Categorical Depiction of Joviality Over Time According to Rumination Task Assignment*

Note. Joviality scores from the joviality scale of the PANAS-X at time 1 (pre-mood induction), time 2 (post-mood induction) and time 3 (post-rumination) are depicted according to the rumination task to which the individuals was assigned (concrete or abstract). Rumination task did not affect post-rumination joviality.

Hypothesis 2 posited that rumination task would affect sad mood such that abstract depressive rumination will result in greater sad mood as compared to concrete depressive rumination. To address this hypothesis, a hierarchical regression was conducted examining the effect of rumination task on post-rumination sadness after controlling for post-mood induction sadness. The regression model, revealed no effect of rumination task on post-rumination sadness \([f^2 = .00]\). The second hypothesis was not supported. Individuals who underwent the abstract depressive rumination task did not experience more sadness than individuals who underwent the concrete depressive rumination task (see table 4; see figure 2).
Table 4.  
*Rumination Task as a Predictor of Post-Rumination Sadness*

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictors</th>
<th>B</th>
<th>SE_B</th>
<th>pr</th>
<th>t</th>
<th>p</th>
<th>R²</th>
<th>F</th>
<th>Change</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T2 Sad</td>
<td>.56</td>
<td>.07</td>
<td>.71</td>
<td>8.50</td>
<td>.00</td>
<td>.51</td>
<td>72.21</td>
<td>1,70</td>
<td>.00</td>
<td></td>
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<tr>
<td>2</td>
<td>Task</td>
<td>.21</td>
<td>.48</td>
<td>.05</td>
<td>.43</td>
<td>.67</td>
<td>.51</td>
<td>.19</td>
<td>1,69</td>
<td>.67</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Time 2 Sad = post-mood induction sadness scores from the sadness scale of the PANAS-X and Task = rumination task.

Figure 2.  
*Categorical Depiction of Sadness Over Time According to Rumination Task Assignment*

*Note.* Sadness scores from the sadness scale of the PANAS-X at time 1 (pre-mood induction), time 2 (post-mood induction) and time 3 (post-rumination) are depicted according to the rumination task to which the individuals was assigned (concrete or abstract). Rumination task did not affect post-rumination sadness.
Self-esteem

Hypothesis 3 posited that self-esteem would moderate the effect of rumination task on happy mood such that the difference in the happiness produced by the abstract depressive rumination task, as compared to the concrete depressive rumination task, should be greater in individuals with lower self-esteem. To address this hypothesis, a hierarchical regression was conducted examining the interaction between rumination task and self-esteem on post-rumination joviality, after controlling for the main effects of post-mood induction joviality, rumination task, and self-esteem. Contrary to hypothesis 3, self-esteem did not moderate the relationship between rumination task and post-rumination joviality \( f^2 = .00 \). Individuals with lower levels of self-esteem were not differentially impacted, in terms of joviality, by assignment to the abstract versus the concrete depressive rumination task than individuals with higher levels of self-esteem (see table 5). The model also displayed no main effect of self-esteem on post-rumination joviality \( f^2 = .00, \text{ ns} \). Individuals with lower levels of self-esteem did not experience less post-rumination joviality than individuals with higher levels of self-esteem.
Hypothesis 4 posited that self-esteem would moderate the effect of rumination task on sad mood such that the difference in the sadness produced by the abstract depressive rumination task, as compared to the concrete depressive rumination task, should be greater in individuals with lower self-esteem. To address this hypothesis, a hierarchical regression was conducted examining the interaction between rumination task and self-esteem on post-rumination sadness, after controlling for post-mood induction sadness, rumination task, and self-esteem. Findings revealed that self-esteem did not moderate the relationship between rumination task and post-rumination sadness \([f^2 = .02]\). The fourth hypothesis was not supported. Individuals with lower levels of self-esteem were not differentially impacted, in terms of sadness, by assignment to the abstract versus the concrete depressive rumination task than individuals with higher levels of self-esteem (see table 6). The model did reveal a main effect of self-esteem as a
predictor of post-rumination sadness \( [f^2 = .08] \). Individuals with lower levels of self-esteem experienced greater post-rumination sadness as compared to individuals with higher levels of self-esteem.

Table 6.

**Self-Esteem and Rumination Task as Predictors of Post-Rumination Sadness**

<table>
<thead>
<tr>
<th>Step Predictors</th>
<th>Regression Coefficients</th>
<th>Regression Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE_B</td>
</tr>
<tr>
<td>1 T2 Sad</td>
<td>.56</td>
<td>.07</td>
</tr>
<tr>
<td>2 Task</td>
<td>.21</td>
<td>.48</td>
</tr>
<tr>
<td>3 Self-est</td>
<td>-.06</td>
<td>.03</td>
</tr>
<tr>
<td>4 Self-estXtask</td>
<td>-.06</td>
<td>.05</td>
</tr>
</tbody>
</table>

*Note.* T2 Sad = post-mood induction sadness scores from the sadness scale of the PANAS-X, Task = rumination task, Self-est = self-esteem scores from the RSE, and Self-estXtask = interaction between self-esteem and rumination task.

**MDD Symptoms**

Hypothesis 5 posited that MDD symptoms would moderate the effect of rumination task on happy mood such that the difference in the happiness produced by the abstract depressive rumination task, as compared to the concrete depressive rumination task, should be greater in individuals with higher levels of MDD symptoms. To address this hypothesis, a hierarchical regression was conducted examining the interaction between rumination task and MDD symptoms on post-rumination joviality, after
controlling for post-mood induction joviality, rumination task, and MDD symptoms.

Contrary to hypothesis 5, MDD symptoms did not moderate the relationship between rumination task and post-rumination joviality \([f^2 = .00]\). Individuals with higher levels of MDD symptoms were not differentially impacted, in terms of joviality, by assignment to the abstract versus the concrete rumination task than individuals with lower levels of MDD symptoms (see table 7). In addition, the model did not display a main effect of MDD symptoms on post-rumination joviality \([f^2 = .00]\). Individuals with higher levels of MDD symptoms did not experience less post-rumination joviality than individuals with lower levels of MDD symptoms.

Table 7.

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictors</th>
<th>(B)</th>
<th>(SE_B)</th>
<th>(pr)</th>
<th>(t)</th>
<th>(p)</th>
<th>(R^2)</th>
<th>(F)</th>
<th>Change</th>
<th>df</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T2 Happy</td>
<td>.63</td>
<td>.08</td>
<td>.69</td>
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<td>.00</td>
<td>.48</td>
<td>64.60</td>
<td>1,70</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Task</td>
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<td>1.17</td>
<td>.00</td>
<td>-.01</td>
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<td>.48</td>
<td>.00</td>
<td>1,69</td>
<td>.99</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MDD</td>
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<td>.10</td>
<td>-.12</td>
<td>-1.03</td>
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<td>.49</td>
<td>1.07</td>
<td>1,68</td>
<td>.31</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>MDDXtask</td>
<td>.16</td>
<td>.22</td>
<td>.09</td>
<td>.71</td>
<td>.48</td>
<td>.49</td>
<td>.50</td>
<td>1,67</td>
<td>.48</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* T2 Happy = post-mood induction joviality scores from the joviality scale of the PANAS-X, Task = rumination task, MDD = MDD symptoms from the BDI-II, and MDDXtask = interaction between MDD symptoms and rumination task.

Hypothesis 6 posited that MDD symptoms would moderate the effects of rumination task on sad mood such that the difference in the sadness produced by the
abstract depressive rumination task, as compared to the concrete depressive rumination
task, should be greater in individuals with higher levels of MDD symptoms. To address
this hypothesis, a hierarchical regression was conducted examining the interaction
between rumination task and MDD symptoms on post-rumination sadness, after
controlling for post-mood induction sadness, rumination task, and MDD symptoms. The
model found a main effect of MDD symptoms on post-rumination sadness \( f^2 = .17 \). Individuals with higher levels of MDD symptoms experienced more post-rumination
sadness as compared to individuals with lower levels of MDD symptoms (see table 8). In
addition, consistent with hypothesis 6, MDD symptoms moderated the effect
rumination task on post-rumination sadness \( f^2 = .06 \). Using the analysis of partial
variance procedure (Cohen & Cohen, 1983), the form of this interaction was plotted at +1
SD and -1 SD of the sample means for MDD symptoms. This plot can be seen in Figure 3.

Finally, to determine the relationship between rumination task and post-
rumination sadness for individuals with higher and lower levels of MDD symptoms,
simple slope analyses were conducted (see Aiken & West, 1991). Simple slope analyses
are used to investigate the relationship between a predictor (i.e., rumination task) and
outcome variable (i.e., post-rumination sadness) at different levels of the moderator (i.e.,
MDD symptoms). Simple slope analyses revealed a trend for rumination task to predict
post-rumination sadness when MDD symptoms were conditioned 1 standard deviation
above the mean \( pr = .23, p = .06 \) but not when MDD symptoms were conditioned 1
standard deviation below the mean \( pr = -.13, p = .29 \). The simple slope analysis found a
trend for rumination task to predict post-rumination sadness only in those individuals with higher levels of MDD symptoms. There was a trend for abstract depressive rumination to produce more sadness than concrete depressive rumination but only in individuals with higher levels of MDD symptoms.

Table 8. 
*MDD Symptoms and Rumination Task as Predictors of Post-Rumination Sadness*

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictors</th>
<th>B</th>
<th>SE</th>
<th>pr</th>
<th>t</th>
<th>p</th>
<th>$R^2$</th>
<th>$F$</th>
<th>Change</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T2 Sad</td>
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<td>1.69</td>
<td>.00</td>
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<tr>
<td>2</td>
<td>Task</td>
<td>.22</td>
<td>.48</td>
<td>.055</td>
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<td>.51</td>
<td>.21</td>
<td>1.68</td>
<td>.65</td>
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</tr>
<tr>
<td>3</td>
<td>MDD</td>
<td>.14</td>
<td>.04</td>
<td>.38</td>
<td>3.35</td>
<td>.00</td>
<td>.58</td>
<td>11.21</td>
<td>1.67</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>MDDXtask</td>
<td>.17</td>
<td>.08</td>
<td>.25</td>
<td>2.06</td>
<td>.04</td>
<td>.61</td>
<td>4.23</td>
<td>1.66</td>
<td>.04</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* T2 Sad = post-mood induction sadness scores from the sadness scale of the PANAS-X, Task = rumination task, MDD = MDD symptom scores from the BDI-II, and MDDXtask = interaction between MDD symptoms and rumination task.
Figure 3.
*Depiction of the Interaction between Rumination Task and MDD Symptoms in Predicting Post-Rumination Sadness*

![Graph showing interaction between rumination task and MDD symptoms](image)

*Note.* This figure depicts the interaction of MDD symptoms and rumination task in predicting post-rumination sadness scores (y axis). High Dep = +1 SD above the mean for MDD symptoms, Low Dep = -1 SD below the mean for MDD symptoms.
DISCUSSION

The present study examined the mood effects of concrete versus abstract depressive rumination with consideration for an individual’s level of self-esteem and MDD symptoms. The first hypotheses concerning the effect of rumination task on happy mood was not supported. Individuals who underwent the abstract depressive rumination task did not experience significantly less happy mood than individuals who underwent the concrete depressive rumination task. Likewise, the second hypothesis concerning the effect of rumination task on sad mood was not supported. The abstract depressive rumination task did not produce significantly more sadness than the concrete depressive rumination task.

Although previous studies have found abstract depressive rumination to produce more unconstructive consequences, such as increases in negative, global self-judgments, when individuals with MDD ruminate on their sad mood (e.g., Rimes & Watkins, 2005), this is the first study to examine the mood effects of abstract versus concrete depressive rumination following a sad mood induction. It is possible that abstract depressive rumination does not produce worse mood repair than concrete depressive rumination or that worse mood repair would only occur in a clinical sample. It is also possible that the sad mood upon which an individual ruminated would have to be substantially worse than the sad mood produced in the current study (e.g., more comparable to the level of sad mood found in individuals with MDD), to see a difference in mood repair between
abstract and concrete depressive rumination. It is also possible that the effects of abstract versus concrete depressive rumination on mood are subtle and the operationalizations of these variables (e.g., the specific and general instructions in each rumination task) were not distinct enough to produce differences in mood.

As the non-significant main effects for rumination task were in the proposed direction, it is also possible that abstract depressive rumination, if applied repeatedly, over longer periods of time, and in response to intense sad mood elicited from negative life events (i.e., as opposed to watching a sad film clip), could affect sad mood in non-clinical individuals. Future research is needed to further delineate the main effects of abstract versus concrete depressive rumination on mood in non-clinical samples.

The third hypothesis, regarding self-esteem moderating the effect of rumination task on happy mood, was not supported. The difference in the happiness produced by the abstract depressive rumination task, as compared to the concrete depressive rumination task, was not greater in individuals with lower self-esteem. The fourth hypothesis, regarding self-esteem moderating the effect of rumination task on sad mood was also not supported. Although Watkins (2008) posited self-esteem to be an influential factor in level-of-construal dysregulation, in the current study self-esteem did not impact the ability of the rumination task to influence mood. Perhaps self-esteem is not an influential factor in determining the mood effects of concrete versus abstract depressive rumination. It could also be that self-esteem is only influential in abstract versus concrete depressive rumination inasmuch as lower levels of self-esteem are associated with higher levels of MDD symptoms ($r = -.618$ in the current study). It is also possible that very low levels of
self-esteem could exacerbate the mood effects of the abstract depressive rumination condition but that such low levels of self-esteem were not typical in the current sample of college students (see table 1 for mean self-esteem in the current sample).

As a main effect for self-esteem to predict post-rumination sadness was found, it could be that individuals with lower levels of self-esteem are prone to worse mood repair than individuals with higher levels of self-esteem. The overgeneralized, intropunitive thinking (see Kernis, et al., 1989) that is seen in individuals with lower self-esteem could contribute to higher levels of post-rumination sadness. A main effect was also found for MDD symptoms to predict post-rumination sadness. Individuals with higher levels of MDD symptoms may be prone to experiencing worse post-rumination mood repair. In this sample, it appears that both MDD symptoms and self-esteem were influential in determining an individual’s level of post-rumination sadness but not an individual’s level of post-rumination happiness. These findings lend support to the negative affect side of the current controversy over whether MDD is characterized and/or influenced by overly negative affect, lack of positive affect, or lack of emotionality altogether (see Morris et al., 2007).

The fifth hypothesis regarding MDD symptoms moderating the effect of rumination task on happy mood was not supported. The difference in the happiness produced by the abstract depressive rumination task, as compared to the concrete depressive rumination task, was not greater in individuals with higher MDD symptoms. It is possible that an individual’s level of MDD symptoms does not affect the ability of rumination task to influence happy mood. Again, it may be that MDD symptoms are
more influential regarding an individual’s level of sad mood. Indeed, hypothesis sixth was partially supported as MDD symptoms moderated the relationship between rumination task and post-rumination sadness. Hypothesis six stated that the difference in the sadness produced by the abstract depressive rumination task, as compared to the concrete depressive rumination task, should be greater in individuals with higher MDD symptoms. Simple slope analysis did find a trend for individuals with higher levels of MDD symptoms to experience more sadness in the abstract depressive rumination task as compared to the concrete depressive rumination task. No such trend was found for individuals with lower levels of MDD symptoms. This finding is in concert with several findings by Watkins and colleagues that demonstrated more unconstructive consequences produced by abstract depressive rumination, as opposed to concrete depressive rumination, in individuals with MDD (e.g., Watkins & Moulds, 2005). However, as the finding that rumination task affected sad mood in individuals with higher levels of MDD symptoms was only a trend, the implications of this finding must be interpreted with caution.

As the current study used a non-clinical sample with relatively low levels of MDD symptoms (see table 1 for mean of MDD symptoms), it could be that an individual does not need to have a current diagnosis of MDD for abstract depressive rumination to be detrimental. Unconstructive consequences could be produced by abstract depressive rumination in non-clinical individuals who are experiencing some symptoms of MDD. Indeed, the majority of individuals in this study did not report substantial MDD symptoms and even high levels of MDD symptoms in this study (i.e., one standard
deviation above the mean) are only indicative of mild MDD symptoms (see Beck et al., 1996).

The results found in this study point to a possible role of abstract depressive rumination in maintaining sad mood in individuals who are already experiencing some symptoms of MDD. Individuals with symptoms of MDD may already be susceptible to intropunitive thinking (see Beck, 1967) and instructing individuals with MDD symptoms to engage in abstract depressive rumination may naturally produce more self-related causality in terms of concluding that the extent of one’s sad mood is due to personal inadequacies, which could impede mood repair. Thinking in an abstract manner about sad mood could also activate negative thoughts and memories in individuals with MDD symptoms whereas thinking about sad mood in a concrete manner may be more akin to mindfulness (see Kabat-Zinn, 1990), than to depressive rumination (see Nolen-Hoeksema, 1991).

As this study represents the first investigation to examine concrete versus abstract depressive rumination in response to a sad mood induction, additional research is needed to further clarify the possible roles of abstract depressive rumination in producing unconstructive consequences in non-clinical individuals currently experiencing sad mood. Future studies should also include a control condition in which individuals undergo a distraction paradigm. Although it has been determined that abstract depressive rumination is more unconstructive that concrete depressive rumination (e.g., Watkins & Moulds, 2005), whether concrete depressive rumination is more detrimental than distraction has still yet to be determined.
LIMITATIONS

The findings of the current study must be interpreted in light of some limitations. First, the majority of the participants in this study were Caucasian and female, which could limit generalizability of results. Also, there was no pre-selection criteria used in the current study and therefore the range of BDI-II scores was rather limited. Future studies should examine the mood effects of concrete versus abstract depressive rumination utilizing individuals with a range of BDI-II scores from very high (i.e., indicating severe MDD symptoms) to very low. The effectiveness of the sad mood induction may have been reduced by the addition of the “Return to Me” clip. Anecdotally, the majority of participants reported that they found “The Champ” to be much sadder than “Return to Me.” Some participants found “Return to Me” to be confusing as they were unsure whether the female character died. Future studies should utilize only “The Champ” as the sad mood induction, rather than presenting both “Return to Me” and “The Champ.” The current study was also the first study to present the abstract versus concrete rumination induction by utilizing Powerpoint rather than paper. It could be that in previous studies, individuals who were viewing the rumination items on paper spent more time on certain items, whereas the Powerpoint dictated even timing for each item. Future studies could examine whether the form of presentation influences the effectiveness of the rumination inductions.
REFERENCES


