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The Effects of Rumination on Problem-Solving Self-Efficacy and Self-Efficacy for Controlling Upsetting Thoughts in the Context of Depressive Symptoms

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The Effects of Rumination on Problem-Solving Self-Efficacy
and Self-Efficacy for Controlling Upsetting Thoughts
in the Context of Depressive Symptoms

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in partial fulfillment of the requirements for the degree
Doctor of Philosophy in Psychology.

November 28, 2005

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Abstract

Two cognitive variables that are of interest in their role in depression are self-efficacy and rumination. Self-efficacy refers to individuals' own appraisal of their ability to successfully accomplish a domain of tasks (Bandura, 1977). Rumination, as defined by Response Styles Theory (Nolen-Hoeksema, 1991), refers to the process of repetitively and passively thinking about negative emotions, consequences, and symptoms of distress. Although the relationship between these two constructs and depression has been examined in both experimental and correlational studies, there has been minimal research on the relationship between self-efficacy and rumination among depressed individuals. The present study was intended to replicate and extend Lyubomirsky et al.'s (1999) study on rumination and perception of the severity and solvability of self-identified personal problems among college students with and without depressive symptoms. The goal of the study was to add a careful assessment of self-efficacy to the original procedures from Lyubomirsky et al.'s (1999) study in order to examine the relationship between rumination and self-efficacy in the context of depressive symptoms. Undergraduate students (N = 78) enrolled in a variety of psychology courses were randomly assigned to engage in an experimentally induced rumination or distraction task. Upon completing this manipulation task, participants completed various self-report measures, including measures of self-efficacy and depressive symptoms. Two types of self-efficacy, self-efficacy for controlling upsetting thoughts and problem-solving self-efficacy were assessed. As hypothesized, participants reporting higher levels of depressive symptoms who were instructed to ruminate reported significantly lower levels of self-efficacy than other participants (those reporting higher depressive symptoms instructed to distract, and

those not reporting depressive symptoms). Self-efficacy demonstrated a stronger relationship with rumination among participants with higher BDI-II scores in comparison to the original variables from the Lyubomirsky et al. (1999) study (e.g. perception of solvability). Among participants with depressive symptoms, there was a stronger relationship between rumination and self-efficacy for controlling upsetting thoughts in comparison to the relationship between rumination and problem-solving self-efficacy.

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The Effects of Rumination on Problem-Solving Self-Efficacy and Self-Efficacy for
Controlling Upsetting Thoughts in the Context of Depressed Mood

Depression is oftentimes termed the “common cold” of mental disorders. Estimated lifetime prevalence rate for major depressive disorder range from 6% to 25% (Kessler, 2002), with most studies finding that women are approximately twice as likely to have major depression than men (Nolen-Hoeksema, 2002). The consequences of depression to the individual as well as to society at large can be severe, and depression has been rated as one of the most disabling disorders in the world (Murray & Lopez, 1996). Not only does depression affect the individual himself/herself, it affects the quality and functioning of marital and family relationships, decreases work productivity, and increases healthcare costs (Kessler, 2002). Although depression is not a life-long, chronic illness for most, a significant proportion of people who experience an episode of depression have a recurrent episode at some time in the future, with the risk of recurrence increasing with each episode (Boland & Keller, 2002). Even with empirically supported pharmacological and psychosocial treatments for depression, relapse following termination of treatment continues to be a concern. In addition, some people do not respond fully or experience clinically significant relief of their symptoms; this is referred to as “treatment resistant depression” (Gitlin, 2002; Hollon, Haman, & Brown, 2002).

Two cognitive variables that are particularly promising in understanding the development and maintenance of depression are self-efficacy (Bandura, 1977) and rumination (Nolen-Hoeksema, 1991). Self-efficacy, as defined by Bandura (1977) is individuals’ appraisal of their own ability to successfully accomplish a domain of tasks. According to Social Cognitive Theory (Bandura, 1977), individuals are vulnerable to

becoming depressed when they possess low self-efficacy for performing a highly desired behavior, independent of actual skills or aptitude. Rumination, as defined by Response Styles Theory (Nolen-Hoeksema, 1991), is concerned with the process of responding to depressed mood, rather than the content of cognitions. Rumination refers to the process of repetitively and passively thinking about negative emotions, focusing on the symptoms of the distress, and worrying about the meaning and consequences of the distress. In sum, both self-efficacy and rumination offer a unique understanding of cognitive vulnerability to depression that may contribute to improving interventions for the treatment of depression, particularly in the area of relapse prevention.

Although there has been extensive research on depression and self-efficacy, and depression and rumination, there is limited research examining the relationship between self-efficacy, rumination, and depression. Whereas researchers and studies have hinted at a possible mediating relationship with self-efficacy, rumination, and depression, there have been few studies explicitly examining the associations among these three constructs. This study attempts to at least partially address the gap in the literature between depression, self-efficacy, and rumination by examining the effects of rumination on self-efficacy for individuals who are reporting and not reporting elevated levels of depressive symptoms. Specifically, this paper will replicate and extend a previous study by Lyubomirsky, Tucker, Caldwell, and Berg (1999), in which participants with and without elevated depressive symptoms engaged in a distraction or rumination task were asked to identify, solve and rate different aspects of their problems and solutions (solvability, severity, effectiveness of solutions, etc.). Adding to this study will be a careful assessment of self-efficacy following Bandura's (1997) guidelines for measuring self-

efficacy. By replicating Lyubomirsky et al.'s (1999) study and including a thorough assessment of self-efficacy, it is hoped that this study will address a gap in the existing literature on cognitive vulnerabilities to depression. Before describing the goals and methods of the present study, an overview of the current literature and its limitations on rumination and self-efficacy, and areas of overlap between rumination and self-efficacy will be provided.

Self-Efficacy and Depression

Definition of Self-Efficacy

Self-efficacy (also called perceived self-efficacy) is an individual's assessment of his or her ability to successfully master a specific task (Bandura, 1977). These efficacy beliefs are an individual's estimates of her or his own ability to "mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Bandura & Wood, 1989, p. 408). Self-efficacy is by definition concerned with individuals' assessment of their ability to perform a specific task, and differs from a more general assessment of abilities, such as self-mastery. One can have high self-efficacy in a certain domain but not another (Bandura, 1997). Unlike self-mastery, which is a relatively stable construct, self-efficacy can change within the same individual over time (Bandura, 1997).

People's abilities obviously differ, and self-efficacy may simply be an accurate assessment of one's own abilities. However, many studies have found that self-efficacy accounts for more than past performances; self-efficacy was able to predict an individual's future performances even after variance in past performance was controlled (Hackett, Betz, O'Halloran, & Romac, 1990; Silver, Mitchell, & Gist, 1995). Two

individuals with equal abilities and who equally succeed in a task may have different self-efficacies. These two individuals with the same abilities but different self-efficacies, according to Bandura, will perform differently on related tasks in the future. Those with higher self-efficacy will approach difficult tasks as challenges to be mastered, whereas those with low self-efficacy will avoid difficult tasks (Bandura, 1997).

Self-efficacy also affects performance by determining the individual's interest, goals, and level of persistence. Those with high self-efficacy show greater interest, set higher goals, and are more persistent in completing a task than those with low self-efficacy. A discrepancy between one's goals or expectations for oneself, and one's performance creates a feeling of dissatisfaction that can motivate one to change their behavior or action (Bandura, 1977). Similarly, as an individual achieves a desired outcome, he or she may become less satisfied, and may make further, more challenging standards for future performance or behavior.

The relationship between self-efficacy, goals, persistence, and interest has been found in academic domains such as mathematics, as well as in career choices (Campbell & Hackett, 1986; Hackett & Campbell, 1987; Hackett et al., 1990; Lent, Brown, & Larkin, 1984). In order to understand self-efficacy and its effect on performance, one must understand the three dimensions of self-efficacy: magnitude, generality, and strength. An individual's self-efficacy may differ in response to the difficulty of the task; by assessing self-efficacy on a task at different levels of difficulty, one can assess the magnitude of self-efficacy. Generality refers to the extent to which self-efficacy regarding a specific task also applies to other similar tasks. Strength refers to the degree of confidence the individual has regarding his or her self-efficacy. A strong self-efficacy

will not be diminished by experiences of failure whereas weak self-efficacy will be more vulnerable to experiences of failure (Bandura, 1977; 1997).

According to Bandura, efficacy beliefs are distinct from outcome expectancies and global measures of mastery. Outcome expectancies are people's expectations that a certain behavior will lead to a desired outcome. Efficacy beliefs are the strength or level of confidence that individuals believe that they can successfully perform the necessary behavior to lead to the desired outcome. Individuals will perceive situations that exceed their efficacy beliefs as threatening and avoid them (Bandura, 1977). A key feature that distinguishes self-efficacy from more global constructs, such as self-esteem and self-mastery, is self-efficacy's domain specificity. By definition, self-efficacy is domain specific. It is also more amenable to change over time, influenced by mastery experiences, verbal persuasion, vicarious experiences, and physiological arousal.

General or global measures of mastery or personal control are problematic, in view of social cognitive theory, for two primary reasons. First, in global measures of mastery, the construct under investigation is unclear. When asked to make global judgments of their abilities, people are forced to guess at the unspecified situation. Second, the predictive ability of global measures of mastery is weaker. Measures that assess particular and specific efficacy beliefs are most predictive because they assess the type of beliefs that actually guide the behavior or action to be performed (Bandura, 1997).

Role of Self-Efficacy in Depression

Bandura conceptualizes low self-efficacy as a risk factor and high self-efficacy as a protective factor in the development and maintenance of depression. According to social cognitive theory, low self-efficacy for a highly desired outcome can be a risk factor

for depression (Bandura, 1997). Those with a low sense of self-efficacy for a highly desired outcome are more vulnerable to the demands and stressors associated with various stressful life events and its negative consequences, especially depression. In the face of challenges, these individuals are more likely to focus on their inability, past failures, and doubt their ability to successfully master the demands of challenging life situations (Bandura, 1997). For example, low academic self-efficacy may place an individual who greatly values academic achievements at greater risk for developing depression. On the other hand, low academic self-efficacy may not influence the relationship between academic performance and depression for those who do not value such achievements. A discrepancy between a desired outcome and reality often leads to feelings of dissatisfaction. For an individual with high self-efficacy to facilitate the desired outcome, the discrepancy and ensuing dissatisfaction may motivate the person to take action to correct the discrepancy. For an individual with low self-efficacy for the desired outcome, the discrepancy may lead to feelings of helplessness, depression, or anxiety.

Conversely, a strong sense of self-efficacy can act as a protective factor against depression, particularly among individuals experiencing stressful life events, such as divorce, illness, or unemployment. An individual's reaction to stressful or challenging life experiences depends upon the individual's strength of self-efficacy for the desired outcome or state of affairs. For example, those with a high sense of self-efficacy for managing a chronic illness, such as diabetes, may be protected from the negative consequences of having this illness, by focusing on what they are capable of accomplishing, rather than on their failures. Rather than viewing the demands of diabetes

management as tasks to be avoided, those with a high sense of self-efficacy for diabetes management may view these demands as challenges to be mastered. In short, “a resilient sense of self-efficacy enables people to endure hardships and persevere against great odds” (Bandura, 1997, p. 22). Now that the construct of self-efficacy as defined by Bandura (1997) has been explained, it is important to examine the empirical support for this theory.

Empirical Evidence for the Relationship Between Self-Efficacy and Depression

Numerous correlational studies have found a negative relationship between self-efficacy and depression across sample populations presenting with a wide range of psychological, medical, and social problems. Self-efficacy for managing chronic medical illnesses, such as chronic pain, heart disease, and arthritis, has been found in numerous studies to be correlated with concurrent and future levels of depressive symptoms, as well as treatment adherence and recovery/management of the illness (i.e. Currie, Wilson, & Curran, 2002; Kurlowicz, 1998; Smarr et. al, 1997). Self-efficacy has been found to play an important role in caregiver depression among caregivers of family members with dementia (Gignac & Gottlieb, 1996; Zeiss, Gallagher-Thompson, Lovett, Rose, & McKibbin, 1999), as well as among mothers of toddlers with difficult temperament (Porter & Hsu, 2003). The quantity of the studies across a wide range of domains examining the role of self-efficacy in depression makes it beyond the scope of this paper to review or even cite all.

Although numerous studies have found a relationship between self-efficacy and depression, as mentioned above, even longitudinal studies are not sufficient to demonstrate that self-efficacy is indeed a causal or mediating factor in depression. Some

experimental studies have attempted to demonstrate the causal link between self-efficacy and depression. Stanley and Maddux (1986), for example, examined the causal relationship between self-efficacy for interpersonal skills and depressed mood. First, they attempted to manipulate the participants' (N=30) self-efficacy by providing random feedback regarding their social skills after completing a questionnaire (strong or poor social skills). Participants who were informed that they have strong social skills (high self-efficacy group) reported less depressed mood on a self-report questionnaire than those who were informed that they have poor social skills (low self-efficacy group). There were no differences between the two groups on self-reported anxiety or hostility.

Developing interventions directly aimed to increase self-efficacy, however, may be challenging in itself, as self-efficacy is not always readily manipulated as intended. Schwartz and Fish (1989), for example, attempted to demonstrate a causal relationship between mastery experiences, self-efficacy, and depressed mood. Seventy-nine college students categorized as "dysphoric" and "non-dysphoric" were randomly assigned to receive false feedback regarding the difficulty of anagram tasks during a training session. The investigators hypothesized that providing feedback that most college students failed to solve the anagrams would increase self-efficacy, whereas providing feedback that most college student successfully solved the anagrams would decrease self-efficacy. The training period in addition to the feedback that the anagrams are difficult were hypothesized to serve as mastery experiences that increase the participants' self-efficacy. The results surprisingly indicated that the manipulation was not successful in influencing the participants' self-efficacy. Instead, the actual number of anagrams successfully solved, irrespective of feedback regarding the level of difficulty, appeared to influence

self-efficacy (Schwartz & Fish, 1989). The results suggest that actual mastery experiences are more powerful than providing inaccurate feedback. Among the dysphoric participants, increases in self-efficacy following the training period were related with improvement in depressive mood. Without successful manipulation of self-efficacy, this study was unable to demonstrate a causal relationship between self-efficacy and depressed mood.

Some investigators have also suggested that increasing self-efficacy is a primary mechanism in improving depression in cognitive therapy (Bandura, 1997; Kavanagh & Wilson, 1989). In fact, Bandura (1997) suggests that lack of differential treatment effects can be understood by conceptualizing self-efficacy as a mediating variable between the different types of treatment and treatment outcomes, such as improvements in depressive symptoms. Psychosocial interventions for depression often involve developing new skills to ameliorate symptoms; the interventions provide opportunities (i.e. mastery experiences) to strengthen self-efficacy. For example, techniques such as identifying and modifying cognitive distortions may increase a depressed client's self-efficacy for managing negative affect and thinking. Indeed, there is some correlational evidence to support this hypothesis.

In their treatment study of moderately depressed outpatient participants engaging in group cognitive therapy, Usaf and Kavanagh (1990) (N=40) found that improvements in depressive symptoms and self-efficacy (pre and post treatment, and pre and follow-up) significantly correlated for the participants who engaged in group CBT, but not for the wait-list control group participants. Although improvements in four out of five measured self-efficacy domains (control of enjoyability, control of mood, and social competence)

significantly correlated with improvements in depressive symptoms, improvements in self-efficacy for controlling negative thoughts were identified as having the strongest relationship with improvements in depression. This study is one of the few studies examining the role of self-efficacy in the impact of CBT for depression. More specifically, the authors attempted to examine self-efficacy as an important mechanism of treatment effect, as suggested by social cognitive theorists. The authors appeared to have carefully measured self-efficacy, and identified self-efficacy for controlling negative thoughts as a key domain of self-efficacy for depressed individuals seeking treatment.

In more recent studies, other investigators have also attempted to examine self-efficacy as a mediator of treatment impact for depression. Tucker, Brust, and Richardson (2002) found that improvements in self-efficacy for coping with depression were significantly correlated with improvements in self-reported levels of depressive symptoms, observer-rated psychiatric symptomatology, and observer-rated functional status among inpatients and partially hospitalized patients receiving a variety of structured treatments. For individuals with other conditions, other types of self-efficacy beyond managing depressive symptoms or negative thoughts appear to play similar roles in improving depression with treatment. Improvements in self-efficacy for managing chronic illnesses, such as rheumatoid arthritis, for example, significantly correlated with improvements in depressive symptoms, health status, pain, and disease activity, following a stress management program (Smarr et al., 2002).

Limitations in the Self-Efficacy and Depression Literature

Research on self-efficacy has significantly contributed to our understanding and treatment of depression. Limitations in the research literature, however, are evident, such

as limited experimental studies to support the hypothesis that self-efficacy is a causal or mediating variable in the development, maintenance, and improvement of depressive symptoms. One area that needs further examination is the role of self-efficacy in psychosocial interventions for depression. Interventions that focus on skill building are examples of treatments for depression that utilize the application of self-efficacy. These types of interventions, according to self-efficacy theory, improve depressive symptoms by strengthening self-efficacy through assisting the clients to experience one of the four principal sources of self-efficacy development, such as mastery experiences. Not all clients, however, experience significant improvement in depression after completing a skills-based intervention program. The limited number of experimental studies attempting to manipulate self-efficacy in the context of depression, and the failure of some of these few studies to successfully manipulate levels of self-efficacy suggest that providing opportunities to develop strong self-efficacy (such as mastery experiences) alone may not be sufficient to successfully increase self-efficacy for some individuals, particularly those who are depressed. When given opportunities to develop a stronger sense of self-efficacy (i.e. mastery experiences), what keeps some individuals from successfully increasing their self-efficacy, and therefore, improving their depressive symptoms? One possibility in such cases may be that the domain of self-efficacy chosen is not important to the individual. Another possibility may be that there are other cognitive processes that interfere with the effective development/strengthening of self-efficacy in the presence of self-efficacy enhancing sources (i.e. mastery experiences). One cognitive process that has been found to play an important role in depression is

rumination, or a “ruminative response style.” Rumination may be an important factor that needs to be examined in relation with self-efficacy among depressed individuals.

Rumination and Depression

“Response Styles”

Response Styles Theory is a cognitive theory of depression that emphasizes an individual’s reaction to depressed mood (Nolen-Hoeksema, 1991). According to Response Styles Theory, an individual can respond to depressed mood in two primary ways: by engaging in active affective management using a variety of means, or by focusing passively on the thoughts, feelings, and consequences of the depressed mood. For example, when feeling depressed or distressed, an individual can choose to problem-solve or change the situation causing the distress, engage in a pleasant activity to distract from the distress, or obtain social support. Rumination, on the other hand, is defined as repetitively and passively thinking about negative emotions, focusing on the symptoms of the distress, and worrying about the meaning and consequences of the distress. Response Styles Theory posits that the reaction to depressed mood or distress determines the severity and duration of the depressed mood (Nolen-Hoeksema, 1991).

Although previously believed to be a state characteristic, the tendency to ruminate in response to depressed mood appears to be a stable, individual characteristic (Nolen-Hoeksema & Davis, 1999; Nolen-Hoeksema, Morrow, Frederickson, 1993; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Studies of community samples assessing ruminative response styles longitudinally, as long as eighteen months apart, found that participants categorized as ruminators on a self-report questionnaire tended to remain ruminators across time (Nolen-Hoeksema & Davis, 1999; Nolen-Hoeksema & Morrow,

1991; Nolen-Hoeksema et. al, 1993; Treynor et al., 2003). Ruminative response style remained consistent even after the occurrence of stressful life events, such as the death of a loved one or experiencing an earthquake (Nolen-Hoeksema & Davis, 1999; Nolen Hoeksema & Morrow, 1991). Such findings suggest that responses styles remain relatively consistent even in the face of traumatic experiences. Those who have a ruminative response style are more likely to engage in rumination when a distressing event occurs, leaving them vulnerable to the consequences of rumination.

Although numerous studies have provided support for the relationship between rumination and depression, other cognitive theories have also found evidence in support of a relationship between depression and other cognitive factors, such as negative automatic thoughts, “neuroticism,” and pessimism. In order to contribute further to the understanding and research advances in depression, empirical evidence for construct validity, including discriminate validity, is necessary to assert that rumination or ruminative response styles is a valid cognitive theory of depression that provides a unique contribution to our understanding of depression. The major distinction between rumination and other cognitive factors associated with depression is that rumination refers to the process of focusing on one’s feelings, thoughts, and consequences, whereas other types of cognitive factors are concerned with the content of the cognitions (Nolen-Hoeksema, in press). In other words, rumination may not always lead to depressogenic or negative thoughts. Experimental studies that induced participants into rumination found that among participants who were mildly or moderately depressed, or who were induced into a depressed mood, the content of the rumination was negative, depressogenic, or pessimistic. For participants who were neither depressed nor induced

into a depressed mood, rumination was not associated with negative or depressogenic content (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky, Tucker, Caldwell, & Berg, 1999). Such findings suggest that rumination itself does not necessarily lead to depressogenic thoughts, but that ruminating when one is feeling depressed or distressed may encourage the activation of negative thoughts.

Worrying is a similar cognitive process that is common in anxiety disorders as well as depression (Fresco, Frankel, Mennin, Turk, & Heimberg, 2002). Conversely, rumination has also been found to be an important cognitive process in anxiety, particularly mixed anxiety-depression (Nolen-Hoeksema, 2000). Both rumination and worry involve repetitively focusing on the negative. However, whereas rumination involves repetitive focusing on depressed mood, symptoms, its meaning, and consequences, worrying involves repetitive focusing on the possibility of future threatening or negative life events (Nolen-Hoeksema, 1991; Roemer & Brokovec, 1993). Examples of rumination items in a commonly used measure, the Response Styles Questionnaire (Nolen-Hoeksema, 1991), include “I think, I won’t be able to do my job if I don’t snap out of this,” “I think about how hard it is to concentrate,” and “I think, why do I react this way?”.

Role of Rumination in Depression

Response Styles Theory suggests that rumination contributes to the development, maintenance, and severity of depressed mood as well as depressive episodes through four main mechanisms: activation of negative thoughts and biographical memories, interference of effective problem-solving, interference of instrumental behavior, and loss of social support. When depressed individuals engage in rumination, they are more likely

to recall personal memories that are more negative than non-depressed individuals; they are also likely to report that more negative events, and less positive events, had occurred in their lives, in comparison to non-depressed individuals (Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998). When depressed individuals engage in rumination, they report negative, self-critical, and depressogenic thinking (Lyubomirsky et al., 1999).

Rumination thus appears to focus the depressed individual's attention on the negative thoughts and memories that are activated by the depressed mood, and allows the mood to influence the interpretation or judgments about the present and past events. In turn, the negative interpretation of current and past events further worsen depressed mood, resulting in a vicious cycle of negative mood, activation of negative thoughts and memories, and rumination (Lyubomirsky & Nolen-Hoeksema, 1995).

Response Styles Theory posits that rumination interferes with effective problem solving. In comparison to non-ruminators, ruminators have greater difficulty changing their problem-solving strategy in response to their changing environment. Davis and Nolen-Hoeksema (2000) (N=62) found that cognitive inflexibility and a tendency to perseverate and commit perseverative errors occurred more frequently among ruminators than non-ruminators on the Wisconsin Card Sorting Task. Participants who endorsed a ruminative response style on a self-report measure were more likely to continue utilizing a non-adaptive approach to problem solving despite receiving feedback regarding their errors; they also had difficulty maintaining adaptive approaches. These differences in approach to problem solving among ruminators and non-ruminators could not be accounted for by differences in cognitive ability (IQ), depressive symptoms, working memory, reasoning ability, or task switching ability.

The relationship between rumination and problem solving may play a detrimental role in interpersonal relationships. Ruminating when feeling depressed may impede effective problem solving for social situations. College students categorized as “dysphoric” (N=69) who were induced to ruminate generated less effective solutions to interpersonal problems, as assessed by blind raters, than “dysphoric” students who were instructed to engage in a distraction task. (Lyubomirsky & Nolen-Hoeksema, 1995). “Dysphoric” students who were instructed to engage in a distraction task, however, tended to generate solutions to problematic social situations that were considered by blind raters as equally effective as those generated by non-depressed individuals. The authors concluded that rumination might interfere with effective problem solving by increasing the appearance of difficulty of a particular problem. Indeed, experimental studies found that depressed participants induced to ruminate rated problems presented to them as more severe and difficult to solve than those instructed to distract (Lyubomirsky et al., 1999). Studies also suggest that depressed ruminators are attempting to engage in problem solving while they are ruminating (Lyubomirsky et al., 1999). As ruminators report self-blame, pessimism, self-criticism, insecurity, and diminished feelings of control, attempting to engage in problem solving while ruminating leads to poor problem solving.

Rumination appears to interfere with instrumental behavior (Ward, Lyubomirsky, & Nolen-Hoeksema, 2003). When asked to generate a plan to solve a problem regarding on-campus housing, college students (N=70) who had endorsed a ruminative response style on the Response Styles Questionnaire (RSQ; Nolen-Hoeksema, 1991) tended to report less satisfaction, confidence, and willingness to commit to a particular solution that they generated themselves in comparison to non-ruminators. This finding was maintained

after controlling for depressed and anxious moods. In a second study, (N=69), ruminators (as identified by their responses on the RSQ) reported needing more time to generate a solution to a problem, and to dwell on their solutions even after they had committed to them in comparison to non-ruminators (Ward et al., 2003). Thus, it appears as though rumination is associated with feelings of uncertainty regarding one's own solutions to problems, both during and after the generation and decision making process, making it difficult for ruminators to commit and implement instrumental behaviors.

Rumination may also contribute to loss of social support. When ruminators experience a traumatic or stressful life event, such as bereavement, they may be more likely to seek social support than non-ruminators (Nolen-Hoeksema & Davis, 1999). Among family members (N=347) who had recently experienced the death of a loved one, ruminators reported seeking out more social support than non-ruminators, even after controlling for level of distress (Nolen-Hoeksema & Davis, 1999). When the social network of the ruminators was supportive, ruminators were likely to experience a decrease in distress after some time. When the social network was unsupportive, or even hostile and critical, ruminators had significant difficulty adjusting and recovering from the family member's death. In comparison, social support, whether positive or negative, appeared to have smaller effects for non-ruminators. In addition, ruminators were more likely to perceive the amount and quality of social support that they were receiving more negatively in comparison to non-ruminators. Results from this study suggest that when ruminators experience a stressful life event, they may be more vulnerable to loss of actual or perceived social support.

If rumination worsens and prolongs depressed mood, activates negative thoughts and memories, interferes with effective problem solving and instrumental behavior, and sometimes leads to the loss of actual or perceived social support, then why do some people continue to engage in rumination? Papageorgiou and Wells (1999; 2001a; 2001b; 2003) suggest that people continue to ruminate despite being aware of some of the negative consequences of rumination due to certain metacognitive beliefs held by ruminators. In terms of positive beliefs, Papageorgiou & Wells (2001) and Lyubomirsky & Nolen-Hoeksema (1993) found that some people view rumination as a coping strategy for solving problems, identifying potential causes of their distress, preventing future mistakes, prioritizing important tasks, and gaining insight. Indeed, depressed individuals are more likely to believe that they have limited insight into their own behavior, thoughts, and feelings in comparison to non-depressed individuals (Lyubomirsky & Nolen-Hoeksema, 1993). This may simply be a function of depressed people rating themselves more negatively than non-depressed people, or that depressed people are more likely to be experiencing a discrepancy between their desired and current states. An appraisal of limited insightfulness in combination with the belief that rumination can lead to gaining insight, in turn, may encourage distressed people to ruminate with the hopes of gaining insight into what is wrong with their current situation. Those with positive beliefs about ruminating, therefore, may avoid engaging in any distraction task when in distress because they may believe that it will interfere with gaining important insight that may help them to rectify the problematic situation. Instead of assisting them to effectively problem solve their dissatisfying situation, however, rumination worsens depressed

mood, and decreases effective problem solving (Davis & Nolen-Hoeksema, 2000; Lyubomirsky & Nolen-Hoeksema, 1995).

Not all researchers, however, view rumination as response that leads to negative consequences, even when one is in distress. Martin and Tesser (1996), for example, suggest that rumination is goal-driven and may lead to positive consequences. They propose that people engage in rumination when there is an unattained goal, and that rumination initiates and maintains goal-related thoughts. Rumination, therefore, may be an adaptive step toward problem-solving when in an undesirable situation. They also argue that distraction is not an appropriate remedy to rumination. In fact, they assert that rumination can be stopped by attaining the desired but unattained goal. Indeed, there is some recent evidence to suggest that some types of rumination do not always lead to maintenance and worsening of depressive symptoms. A recent study examining the contents of the Response Styles Questionnaire, a self-report measure of rumination, found that the items loaded onto one of two factors they termed Reflection and Brooding (Treynor, et al., 2003). They define the Reflection factor as “purposely turning inward to engage in cognitive problem solving to alleviate one’s depressive symptoms” (Treynor, et al., 2003, p. 256). Although the Reflecting factor was associated with concurrent depressive symptoms, it was associated with fewer depressive symptoms one year later. The Brooding factor, defined as “a passive comparison of one’s current situation with some unachieved standard,” was associated with both concurrent and prospective depressive symptoms (Treynor, et al., 2003, p. 256). The authors speculated that while reflection may lead to or be associated with current depressed mood, it may eventually lead to effective problem-solving in the long run.

Empirical Support for the Relationship between Rumination and Depression

Several longitudinal studies of community samples have found that those with a ruminative response style are more likely to be/become depressed, continue to be depressed, and have more severe episodes of depression than non-ruminators. In a daily log study over thirty consecutive days, Nolen-Hoeksema and colleagues (1993) found that the amount of rumination in response to depressed mood on a particular day predicted the duration of the depressed mood that day among seventy-nine college students. Similarly, the amount a person ruminated in response to depressed mood on the first day predicted the duration of the depressed mood for the next few days. There was also a weak ($r = .24$) but statistically significant correlation between initial levels of depressed mood and subsequent rumination. After controlling for initial levels of depressed mood, however, there remained a significant relationship between rumination and the length of depressed mood afterwards. The results of this naturalistic study suggest that the relationship between rumination and depressed mood may be a two-way street; whereas rumination may increase and prolong depressed mood, depressed mood may also initiate the tendency to ruminate. Another possibility is that rumination, as defined currently by Response Styles researchers, shares some overlapping features with depressive symptoms.

Rumination not only predicts short-term maintenance of subclinical depressive symptoms, but also predicts future onset of depressive episodes. In a large-scale longitudinal study assessing depression and rumination one year apart, Nolen-Hoeksema (2000) (N=1132) found that ruminative response style predicted onset of a new depressive episode after controlling for initial symptoms of depression. Ruminative

response style did not, however, predict chronicity of a depressive episode after accounting for initial levels of depressive symptoms; the author cited poor effect size as a limitation that may have accounted for this null finding. Given the large sample size (N=1132), however, the ability of rumination to predict the length of depressive episodes may be weaker than hypothesized by Response Styles researchers.

Response style has been found to play an important role in maintenance of depressive symptoms among moderately to severely depressed treatment seeking individuals. Kuehner and Weber (1999) assessed response style and depression of fifty depressed inpatients during their inpatient stay, four weeks, and then four months after discharge. Ruminative response style assessed during their stay predicted post-discharge depressive symptoms after controlling for initial levels of depressive symptoms. Similarly, rumination at one-month discharge predicted presence of depressive episode at four-month post-discharge. Thus, it appears as though the relationship between rumination and depression holds true not only for community samples and individuals with subclinical levels of depression, but also for those who have moderate to severe levels of depression, seek treatment, and are similar to the general population of depressed clients/patients receiving mental healthcare. In addition, this study found a relationship between rumination and chronicity of depressive episodes, which Nolen-Hoeksema's (2002) study did not find. Among the participants who continued to meet diagnostic criteria for a depressive episode at discharge, those who were also high ruminators were more likely to continue to meet criteria for a depressive episode at the four-month follow-up. Participant characteristics between the two studies (community dwellers vs. depressed inpatients) may be responsible for the different findings between

these two studies. Rumination may be a stronger predictor of episode chronicity for more severely depressed individuals.

Experimental studies inducing participants to either engage in a rumination task or a distraction task also provide evidence in support of Response Styles Theory. One of the first experimental studies to examine Response Styles Theory involved random assignment of mild to moderately depressed (N=24) and non-depressed (N=24) college students to either focus their attention on their current feelings or personal characteristics (rumination group) or to focus on descriptions of geographic locations and objects (distraction group) (Nolen-Hoeksema & Morrow, 1993). Depressed participants who were instructed to ruminate reported a significant worsening of their mood. Conversely, depressed participants who were instructed to distract reported significant relief from negative mood; in fact, after the distraction task, their reported mood levels were similar to non-depressed participants. Ruminating or distracting had no effect on mood states for non-depressed participants. Such findings not only suggest that rumination tends to worsen depressed mood among already-depressed people, but that distraction decreases or relieves distress or depressed mood to normal levels. Thus, rumination may only be detrimental when one is in a depressed mood, or having a depressive episode. Future research is necessary, however, to determine whether the findings would be similar for clinically depressed participants. In this study, students were identified as “depressed” if they scored a seven or higher on the BDI Short Form (Beck & Beck, 1972). It is possible that distraction would not have as great of an impact on depressed mood for clinically and more severely depressed individuals.

Limitations in the Rumination and Depression Literature

One of the most noticeable limitations in the research on depression and rumination, as least as defined by Response Styles Theory (Nolen-Hoeksema, 1991), has been that nearly all of the experimental and prospective studies have been conducted by the original investigator of the Response Styles Theory or her colleagues in her lab. Replication of key studies by other researchers is therefore needed to strengthen the research on rumination and depression. By replicating and extending Lyubomirsky et al.'s (1999 study one) study, this study aims to contribute to the rumination and depression literature. In addition, by incorporating self-efficacy as defined by Bandura (1997), the results of the study may make a unique contribution to the understanding of cognitive vulnerabilities to depression in general.

Rumination, Self-Efficacy, and Depression

Self-efficacy and rumination offer compelling explanations of the role of cognitive factors in depression. Both constructs have been applied to explain the mechanism of treatment effects as well as suggest ways to enhance or strengthen interventions for depression. Despite a growing body of research on Response Styles Theory and Self-Efficacy Theory for depression, there is limited research on the relationship between these two cognitive vulnerabilities for depression.

The Relationship between Rumination and Self-Efficacy

Although there have been several studies examining the relationship between rumination and constructs similar to self-efficacy, such as global self-mastery, these studies did not explicitly focus on self-efficacy, and thus, did not assess for self-efficacy in the optimal way (Lyubomirsky & Nolen-Hoeksema, 1993; Lyubomirsky et al., 1999;

Nolen-Hoeksema & Jackson, 2001; Nolen-Hoeksema et al., 1999; Ward et al., 2003).

Nolen-Hoeksema and colleagues (1999), for example, found that rumination and self-mastery influenced each other as well as depressive symptoms among women.

Specifically, they found that low mastery had a stronger association with depressive symptoms among those with a ruminative response style than those who did not have a ruminative tendency. Further, having low mastery was associated with greater tendency to ruminate in the future, even after controlling for concurrent ruminative tendencies.

Nolen-Hoeksema and Jackson (2001) later found that self-mastery is the strongest mediator in the gender difference between rumination and depression.

As mentioned previously, this study will replicate and extend an original study by Lyubomirsky et al. (1999; study one). In this study, students categorized as “dysphoric” and “non-dysphoric” (N=90) were asked to identify three current personal problems after engaging in a rumination or distraction task. Upon identifying these problems, the participants generated possible solutions to their problems, and were asked to rate perceptions of their problems and solutions. There were no significant differences between participants in their perception of the effectiveness of their solutions; “dysphoric” participants instructed to ruminate, however, rated themselves as less likely to actually implement their solutions in comparison to other participants (“non-dysphorics,” and “dysphorics” instructed to distract). In addition, “dysphoric” ruminators rated their problems as more severe and less likely to be solved than the other three groups of participants. The authors interpreted this discrepancy between perception of the effectiveness of generated solutions, and estimates of implementing the solutions among the “dysphoric” ruminators as reflecting the distinction between outcome

expectancy and self-efficacy. Although the results of this study are intriguing and contribute to our understanding of the effect of rumination among depressed individuals, a replication of this study with a careful assessment of self-efficacy would strengthen the conclusions that rumination negatively affects self-efficacy in the presence of depressed mood.

Other studies have provided some additional support that rumination may negatively influence self-efficacy among depressed individuals. Two studies by Lyubomirsky and colleagues (Lyubomirsky & Nolen-Hoeksema, 1993; Ward et al., 2003) found similar results to those found in the Lyubomirsky et al. study (1999). For example, depressed ruminators did not differ in their evaluation of the effectiveness of engaging in a pleasant, distracting activity to bring enjoyment; however, they reported being less likely to actually engage in such activities. In contrast, depressed participants who engaged in distraction did not differ in their outcome expectancy or willingness to engage in a pleasant activity. Willingness or likelihood to engage in an activity, however, may differ from efficacy beliefs regarding an individual's ability to initiate and maintain even pleasant activities. Similar findings were found in a study requiring participants to generate their own solutions to their current idiosyncratic problems. When ruminators are asked to generate solutions for a complex problem, they report greater uncertainty, less confidence, and less satisfaction with their own plans, regardless of their mood (Ward et al., 2003). Ruminators reported needing more time to research and generate a solution, and reported more dwelling on their plans.

Self-efficacy for controlling rumination.

Self-efficacy can be systematized into three broad categories: self-efficacy for solving interpersonal problems, for solving non-interpersonal problems, and for controlling or managing negative cognitions and affect. Self-efficacy for controlling cognitions and affect appear to have been neglected by most researchers, and is an area in need of more careful examination, particularly in the context of depression and rumination. Few researchers have focused on self-efficacy for managing negative or intrusive cognitions in the context of depression. Steffen and colleagues (2002), for example, refined and validated a scale for measuring self-efficacy of family caregivers of dementia patients, which consisted of three domains of caregiving self-efficacy, including one for controlling upsetting thoughts associated with caregiving. In their studies, they found that self-efficacy for controlling upsetting thoughts related to caregiving were associated with caregiver depression and anxiety. This concept of controlling or managing negative, intrusive thoughts are consistent with the aim of cognitive therapy or mindfulness therapy for depression. Researchers have now begun to focus on an individual's "metacognitive awareness" or "metacognitive monitoring" following cognitive therapy for depression as an important skill to prevent relapse, rather than on decreasing negative cognitions themselves (Teasdale et al., 2002). In other words, the ability to recognize and detach oneself from negative automatic thoughts may be more important to recovering from depression and remaining depression-free than the sheer presence or frequency of negative thoughts. This notion is consistent with self-efficacy for controlling or managing negative, intrusive thoughts. In the Revised Scale for Caregiving Self-Efficacy, caregivers are asked to estimate their level of confidence of

being able to control upsetting thoughts related to caregiving, and are explicitly told not to pay attention to how often these thoughts occur (Steffen et al., 2002).

Goals of the Present Study

The aim of this study is to clarify the relationship between rumination and self-efficacy in the context of depressive symptoms. The study will be a replication and extension of Lyubomirsky et al.'s (1999; study 1) study on rumination and perception of the severity and solvability of idiosyncratic personal problems among individuals with and without "dysphoria." Similar to Lyubomirsky et al.'s (1999) study, this study asked participants to identify their personal problems and engage in a rumination or distraction task, to generate potential solutions to their problems, and to answer questions regarding their problems and solutions. This study assessed the participants' ratings of the "Severity" of their problems ("How severe is this problem?"), the "Solvability" of their problems ("How likely would you be able to solve or alleviate this problem?"), the "Confidence in Effectiveness" of their self-generated solutions ("How confident are you that this solution would be effective?"), and the perceived "Likelihood to implement" their self-generated solutions (How likely do you think you would actually go ahead and use this solution to solve this problem?"), as they were assessed in Lyubomirsky et al.'s (1999) study. There are three major distinctions between the present study and Lyubomirsky et al.'s (1999) study: the assessment of self-efficacy, the measurement of depressive symptoms with the BDI-II at the time of participation in a counterbalancing order, and the exclusion of an elaborate cover story and filler items.

In accordance with Lyubomirsky et al.'s (1999) study, this study asked participants to identify three main dilemmas or problems they are currently facing

(personal, social, academic, financial, or occupational). This approach of asking participants to generate idiosyncratic personal problems, rather than providing them with a list of problems for which to rate their self-efficacy was chosen, due to the hypothesized relationship between depression and self-efficacy. According to Bandura (1997), the relationship between self-efficacy and depressed mood applies only when individuals have low self-efficacy for an important domain in their life, or for a highly desired outcome. By asking people to identify their main problems, it is hypothesized that the participants will select problems that are central and most important to them. Ratings of self-efficacy for solving such problems, and for controlling upsetting thoughts related to such problems, are more relevant than ratings of self-efficacy for problems that may not be important or even applicable to the participants.

Some of the studies examining rumination and depression have distinguished ruminators and non-ruminators through their reports on a self-report measure (Response Styles Questionnaire, Nolen-Hoeksema, 1991). Ward et al. (2003), for example, conducted a similar study as Lyubomirsky et al. (1999) by comparing “ruminators” and “non-ruminators” on their evaluations of a solution they generated to a hypothetical problem. The participants were categorized as “ruminator” or “non-ruminator” based on their reports on the Response Styles Questionnaire. For the present study, use of a rumination and distraction induction was chosen instead of identifying “ruminators” and “non-ruminators” with the Response Styles Questionnaire (Nolen-Hoeksema, 1991) for two main reasons. First, by using an experimental manipulation and random assignment to the manipulation, stronger inferences can be drawn from the results than if a self-report measure was used to examine the effects of rumination. Second, though used in several

different studies on rumination and depression, there are some psychometric concerns with the Response Styles Questionnaire, most notably, some overlap between rumination items and symptoms of depression (Treyner, Gonzalez, & Nolen-Hoeksema, 2003).

Although this study is a replication of Lyubomirsky et al.'s (1999) study, there were additional goals that required some changes to the original study. The primary goals of this study is to examine the relationship between rumination and self-efficacy and to compare this to the relationship between rumination and the ratings of solvability, effectiveness, and likelihood of implementing self-identified solutions, as were assessed in the original Lyubomirsky et al.'s (1999) study. Although the ratings of solvability, effectiveness, and likelihood of implementing solutions used in the Lyubomirsky et al.'s (1999) study are in some ways similar to the construct of self-efficacy, the ratings did not directly measure the participants' self-efficacy for solving their self-identified personal problems or controlling upsetting thoughts related to the problems. Further, the variables (ratings of) solvability, effectiveness, and likelihood of implementing solutions were each assessed by one item (one question for each problem) and lacked the three dimensions of magnitude, generality, and strength, which is necessary for the assessment of self-efficacy. Therefore, the present study included a careful assessment of problem-solving self-efficacy and self-efficacy for controlling upsetting thoughts following Bandura's (1997) recommendations for measuring self-efficacy by considering the importance of domain specificity, distinction from outcome expectancy, and intermediate level of specificity. In addition to examining the relationship between rumination and the two self-efficacy variables, the self-efficacy variables and the liker-type variables (ratings of

solvability, effectiveness, and likelihood of implementing solutions) were compared in its relation to rumination among participants with “high” and “low” depressive symptoms.

In previous studies on rumination and depression (Lyubomirsky et al., 1998; Lyubomirsky & Nolen-Hoeksema, 1993; 1995; Nolen-Hoeksema & Morrow, 1993), including the original study by Lyubomirsky et al. (1999), an elaborate cover story was provided to the participants to minimize the effects of potential demand characteristics. Participants were informed that they were participating in a series of unrelated studies examining “imagination, dreaming, levels of consciousness, and cognition in general” (Lyubomirsky et al., 1999, p. 1044), and were given “neutral filler items” to increase believability in the cover story. Instead of using a measure of depression, such as the BDI-II, Lyubomirsky et al. (1999) used Likert-type scales assessing mood states, including sadness and depression. In order to identify students as “dysphoric” or “nondysphoric,” Lyubomirsky and colleagues used the BDI-II scores from a screening process that took place within one month before participation in the study. All of these procedures were implemented to reduce the likelihood that participants would associate mood with the purpose of the study, thus reducing the effects of potential demand characteristics.

For this study, the use of deception and measurement of depressive symptoms through Likert-type mood measures were excluded. Instead, the BDI-II was administered in a counterbalancing order to examine any effects of completing the BDI-II on other variables, as well as the potential effects of the rumination/manipulation task on BDI-II scores. This counterbalancing procedure was chosen in order to examine the potential effects of completing the BDI-II on the rumination/distraction task and ratings of self-

efficacy, as well as the potential effects of the rumination/distraction task on participants' responses to the BDI-II. For example, it is possible that completing the BDI-II would serve as a mood induction. A previous study found that mood inductions, particularly inducing negative mood, can enhance the effects of rumination (Morrow & Nolen-Hoeksema, 1990). Additionally, studies have also found that engaging in a rumination or distraction task influences participants' responses on self-report measures of mood (Lyubomirsky & Nolen-Hoeksema, 1993; Nolen-Hoeksema & Morrow, 1993).

Participants who completed the BDI-II at the end of the study should not be affected by any demand characteristics associated with completing the BDI-II until after they have completed all other study measures. For participants who completed the BDI-II at the beginning of the study, their assessment of their own depressive symptoms should not be affected by rumination or distraction.

The above procedure was chosen instead of utilizing the BDI-II scores from the screening procedure due to the instability of depressive symptoms. As data collection took place during a three-month period after students completed the prescreening BDI-II, participants' level of depressive symptoms may have changed significantly from the time they completed the BDI-II during the screening process. Therefore, a re-assessment of the BDI-II at the time of participation was warranted in order to identify and categorize participants into the two groups (reporting or not reporting elevated depressive symptoms). Although the majority of experimental studies inducing rumination/distraction used a cover story and covertly assessed for depressive symptoms due to concerns of demand characteristics, the issue of whether participants' awareness of the measurement of mood or depression significantly influences the

rumination/distraction effects does not appear to have been directly answered. By assessing for depressive symptoms in a counterbalancing order, this study may be able to shed some light on this issue. Participants were also asked on a debriefing questionnaire what they believed was the true intent of the study.

Another minor deviation was the ordering of the problem identification task. In Lyubomirsky et al's (1999) study, participants were asked to identify problems immediately following the rumination/distraction task. In this study, participants were asked to identify problems prior to the rumination/induction task. This method was selected because of the goal of the study to examine how rumination affects self-efficacy; having participants engage in the rumination/distraction task prior to identifying problems may influence the quality and perceived severity of problems selected, which is not of interest in the current study.

Hypotheses

1. It is hypothesized that participants with depressive symptoms who are instructed to ruminate (High BDI participants instructed to rumination) will have lower levels of self-efficacy for solving self-identified personal problems and for controlling upsetting thoughts in comparison to other participants (High BDI participants instructed to distract, and Low BDI participants).
2. It is hypothesized that, among participants with depressive symptoms (High BDI participants), there will be a stronger, negative relationship between rumination and self-efficacy (both problem-solving self-efficacy and self-efficacy for controlling upsetting thoughts) in comparison to the relationship between

rumination and the ratings of Solvability, Confidence in Effectiveness of Solutions, and Likelihood of implementing solutions.

3. It is hypothesized that, among participants with depressive symptoms (High BDI participants), there will be a stronger, negative relationship between rumination and self-efficacy for controlling upsetting thoughts in comparison to the relationship between rumination and problem-solving self-efficacy.

Methods

Participants

Male and female adults (age 18 and above) were recruited from the University of Missouri – St. Louis Psychology Department subject pool. Undergraduate students enrolled in introductory and advanced undergraduate psychology courses in the Spring 2005 semester were offered an opportunity to participate in various studies for extra credit. Students who were interested in participating in this study signed up for a specific time to participate in the study. They were given the option of receiving extra credit towards their psychology course, or entering to win a gift certificate of \$50 to a local retail store.

Although all individuals who indicated interest in participating in the study were welcomed to participate, the principal investigator also contacted prospective participants from the introductory psychology course based on their BDI-II scores from the voluntary pre-screen at the beginning of the semester. The BDI-II was administered to students in the General Psychology course at the beginning of the semester, along with other screening measures for other studies in the department. An attempt was made to contact via electronic mail, followed by telephone calls, to recruit students who scored a ten or

above on the BDI-II during the pre-screening session. Fourteen participants were recruited thru prior telephone call or email.

The participants' (N = 78) age ranged from eighteen to fifty-four, with an average age of twenty-three and a standard deviation of 6.44. As shown in Table 1, approximately 30% of the participants identified themselves as American Indian, Asian American, African American, Latino/a, "other."

Measures

Beck Depression Inventory – Second Edition.

Depressive symptoms were measured by the Beck Depression Inventory-Second Edition (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II consists of 21 items designed to measure the degree of depressive symptoms in adults and adolescents age 13 and older. The 21 items measure different symptoms of depression. For each item, the participant was asked to choose one of four statements, with the statement associated with 0 indicating no symptoms, and the statement associated with 3 indicating severe symptoms. Participants were asked to pick the statement that best described the way that they had been feeling in the last two weeks, including the day of the study (Beck, Steer, & Brown, 1996). The BDI-II has good reliability and validity. It has strong internal consistency, with a coefficient alpha of .92, and good one week test-retest reliability ($r = .93, p < .001$).

In the present study, the items demonstrated adequate internal consistency (Cronbach's alpha = .86). The distribution was positively skewed (skew/ SE of skew = 4.89) with a mean score of 10.06, and a median score of 9.00. Participants' responses on the BDI-II were used to group them into separate groups of participants reporting

elevated depressive symptoms, or those not reporting elevated depressive symptoms. Participants who scored at or below the median score of 9.00 were categorized as not reporting elevated depressive symptoms. Those who scored ten or higher were categorized as reporting elevated depressive symptoms.

Rumination/distraction tasks.

The rumination and distraction task each consists of 45 statements intended to either encourage rumination or distraction. The 45 statements for both tasks are identical to the ones used in Lyubomirsky et al.'s (1999) study. These statements have been used as a rumination/distraction manipulation in at least five different experimental studies (Lyubomirsky & Nolen-Hoeksema, 1993; Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky et al., 1998; Lyubomirsky et al., 1999; Nolen-Hoeksema & Morrow, 1991). These statements were adapted from one of the very first studies that attempted to "induce" rumination (Morrow & Nolen-Hoeksema, 1990). The 45 statements for both the rumination and distraction tasks have been rated as being equally "neutral" by "nondysphoric judges" (Lyubomirsky et al., 1999). Despite its neutral content, however, engaging in the rumination task resulted in increased negative mood (sadness, depressed mood) in comparison to those who engaged in the distraction task among participants who were categorized as "dysphoric" based on their scores on the BDI-II (Lyubomirsky & Nolen-Hoeksema, 1993; Nolen-Hoeksema & Morrow, 1993).

Likert-type ratings.

The likert-type variables used in Lyubomirsky et al.'s (1999) study were also used in the present study. For each variable, the participants were asked to rate, on a seven point Likert type scale (1 = not at all; 4 = somewhat; 7 = extremely), their perception of

the “Severity” of the problem (“How severe is this problem?”), the “Solvability” of the problem (“How likely would you be able to solve or alleviate this problem?”), the “Confidence in Effectiveness of Solutions” (“How confident are you that this solution would be effective?”), and the “Likelihood to implement” their self-generated solution (How likely do you think you would actually go ahead and use this solution to solve this problem?”). The wording of these questions and method of rating the participants’ response were identical to those of Lyubomirsky et al.’s (1999) study.

Self-efficacy questions.

The self-efficacy questions consist of nine items assessing the participants’ self-efficacy for solving their self-identified problems and controlling negative thoughts related to the problems. Four of the items measuring problem-solving self-efficacy were adapted from Zeiss et al.’s (1999) scale for measuring caregiving self-efficacy. The items were re-worded to be applicable to non-caregivers. In a study to develop and test psychometric properties of caregiving self-efficacy, Zeiss et al. (1999) found adequate psychometric properties for the four-items measuring problem-solving self-efficacy. It demonstrated adequate internal consistency (Cronbach’s alpha of .83), and eleven week test-retest reliability ($r = .68$; $p < .001$). In addition, an item to measure the participants’ self-efficacy for carrying out the steps to implement their self-identified solutions to problems was included as part of problem-solving self-efficacy. Problem-Solving Self-Efficacy, as measured by the five items, demonstrated adequate internal consistency (Cronbach’s alpha = .81) for this study.

The four items intended to measure self-efficacy for controlling upsetting thoughts related to the participant’s self-identified problem were adapted from the Scale

for Caregiving Self-Efficacy (Steffen et al., 2002), and a self-efficacy item related to benefiting from a cognitive-behavioral treatment program for depression (Usaf & Kavanagh, 1990). Three of the four items were taken from a subscale aimed to assess a caregiver's ability to control upsetting thoughts activated by caregiving activities; one item from this subscale was not included in this study, as it did not seem to apply to non-caregivers (Steffen et al., 2002). The other three items from this subscale were reworded to be applicable to non-caregivers. In a study to examine the reliability and validity of the Revised Scale for Caregiving Self-Efficacy, the subscale measuring self-efficacy for controlling upsetting thoughts demonstrated good reliability and internal consistency (Cronbach's alpha = .86). Two-week test retest reliability was moderate and in the acceptable range ($r = .76$). The scale correlated significantly with depression, as measured by the Beck Depression Inventory ($r = -.44, p < .01$) (Steffen et al., 2002).

The one item aimed to measure self-efficacy regarding control of negative thoughts from Usaf and Kavanagh's (1990) study was also included. This item was used to predict treatment response to a group cognitive behavioral intervention for depression (Usaf & Kavanagh; 1990). In this study, scores on this self-efficacy for controlling negative thoughts item significantly correlated with improvements in depressive symptoms in the treatment group at follow-up ($r = -.55; p < .05$). There was also a significant correlation between changes in self-efficacy scores and depression scores from pre to post treatment ($r = .55; p < .05$). The four items measuring Self-Efficacy for Controlling Upsetting Thoughts demonstrated good internal consistency (Cronbach's alpha = .87).

Demographic and Debriefing questionnaire.

Participants were asked to complete a brief demographic questionnaire to provide descriptive information, such as age, ethnicity, and level of education. Participants also completed a debriefing questionnaire in order to assess each participants' understanding and compliance with various study directions, as well as their opinions about the purpose and intent of the study.

Procedures

Students from several undergraduate psychology courses were given the option of participating in studies in the Psychology Department for extra credit. As part of a larger screening process for various studies in the Psychology Department, students enrolled in an introductory psychology course were asked to complete the Beck Depression Inventory - Second Edition (BDI-II; Beck, Steer, & Brown, 1996). Approximately a month into data collection and after the initial pre-screening, an effort was made to selectively recruit participants with higher BDI-II scores based on their pre-screening BDI-II scores. A total of fourteen participants were recruited in this manner; these participants took part in the study approximately four to eleven weeks after completing the pre-screening BDI-II. The remaining participants signed up to participate in this study without any contact from the principal investigator.

Each participant completed the study individually. During the verbal and written review of the consent form, participants were informed that they were being asked to participate in a study on typical problems faced by undergraduate students, and how people coped with problems.

For each section of the study (e.g., problem identification, rumination/manipulation task, ratings of self-efficacy, etc), the experimenter left the room after providing instructions and ensuring comprehension of directions. For all measures and the manipulation, all instructions were provided both orally and in writing. Prior to beginning the study and entering their individual room, participants were asked to leave all belongings outside, including cellular telephones. These procedures were intended to minimize distractions, increase sense of privacy, and reduce the risk of a socially desirable response style. The participants were instructed to open the door when they completed a section in order to notify the experimenter that they were ready for the next section.

Participants were also randomly assigned to complete the BDI-II either at the beginning of the study, or at the end of the study. After completing the BDI-II or reviewing the consent procedures (depending on their randomized BDI-II status), the participants were instructed to identify three main dilemmas or problems they were facing in their life (personal, social, academic, or financial), and to rate the severity of the problems on a Likert type scale (1 = not at all; 4 = somewhat; 7 = extremely).

Upon identification of three problems and ratings of severity, the participants were then asked to read and focus their attention to a series (45 items) of statements. Half of the participants were asked to read statements intended to distract them, while the other half read statements intended to induce rumination. The rumination/distraction instructions were identical to that used in the Lyubomirsky et al. (1999) study. Rumination instructions asked participants to focus on self-focused thoughts, such as emotion or symptom-focused thoughts. The rumination instructions were worded

neutrally, so that they do not imply negative or depressogenic thoughts. For example, rumination instructions asked participants to think about “you current level of energy,” “what your feelings might mean,” and “the character you strive to be.” The distraction instructions asked participants to focus on thoughts unrelated to the self, emotions, or symptoms. Examples of distraction instructions are to think about: “a boat slowly crossing the Atlantic,” “the expression on the face of a Mona Lisa,” and “a truckload of watermelons.” (Nolen-Hoeksema & Morrow, 1993). In previous studies, both rumination and distraction instruction items were rated as equally neutral by “non-dysphoric” judges (Nolen-Hoeksema & Morrow, 1993).

The participant was left alone in the room for eight minutes to engage in either the distraction or rumination task. After the eight-minute timeframe, the experimenter returned to the room and removed the packet of task instruction and statements. A generic practice item to ensure comprehension of completing the self-efficacy items was provided and reviewed with the experimenter. Three copies of the self-efficacy items and items measuring ratings of solvability and perception of severity was provided to be completed for each of the three problems identified. Finally, the participants were asked to generate solutions to the problems, and rate their level of self-efficacy for being able to carry out this solution, their perception of the problems’ solvability, and likelihood of carrying out the solution for each problem. Participation in the study concluded with a debriefing questionnaire, and a thorough debriefing. Participants were asked to place the debriefing questionnaire in a sealed enveloped upon completion with the hope that such anonymous responding would encourage reports of any deviations from the provided instructions. A separate debriefing statement was provided to participants reporting and

not reporting elevated depressive symptoms, with referrals to the student counseling center made when appropriate or requested.

Results

Manipulation Check and Data Screening

Of the eighty-one participants who had completed the study, three participants were excluded from the analyses. Data from one participant were excluded, as the participant had participated in a similar study using rumination and distraction tasks within a month prior to participation in this study. Data from two participants were excluded, as they reported not engaging in the manipulation task (rumination or distraction) as instructed. On the debriefing questionnaire, 91% of the participants reported that all of the instructions for the study were clear and easy to follow; the remaining 9% reported that most of the instructions were clear and easy to follow. Thus, all participants whose data remained in the analyses appear to have understood and followed the directions for the study adequately.

In terms of participants' perception of the true intent of the study upon completion of the experiment, the majority of the participants continued to believe that the study was similar or identical to the purpose explained to them at the beginning of the study. Forty-seven (60%) participants identified coping with problems, identifying problems or identifying solutions as the purpose of the study on the debriefing questionnaire. Other common responses included self-esteem or confidence, and self-awareness or perception. Four (5%) of the participants believed that study was about depression, and three (4%) participants responded in a manner that suggested they had guessed part of the intent of the study (e.g. manipulation task intending to influence their responses).

Descriptive Information

Four groups of participants were created based on a combination of their BDI scores and their assigned manipulation task (High BDI/Rumination, High BDI/Distraction, Low BDI/Rumination, Low BDI/Distraction). Table 4 illustrates the cell size of each of the four groups and corresponding descriptive information of BDI-II scores for the four groups. Participants who were categorized as reporting higher depressive symptoms had a mean score of 15.3, which corresponds to mild depressive symptoms. Participants who were categorized as not reporting depressive symptoms had a mean score of 5.05, which corresponds to minimal to no depressive symptoms.

Each participant's self-identified personal problems were coded into one of eleven categories by two raters. Discrepancies between the raters were discussed and negotiated by the raters and the principal investigator. It is estimated that the discrepancy rate between the two raters was less than 5%. Among the first self-identified problems, approximately 26% of the participants reported financial difficulties, followed by academic difficulties (15%), and difficulties with romantic or platonic relationships (14%). Table 2 shows the types of problems reported for the first problem identified by participants.

In addition to averaging the participants' Problem-Solving Self-Efficacy and Self-Efficacy for Controlling Upsetting Thoughts for all three self-identified problems, self-efficacies for the problem rated as being most "severe" by the participant were also selected to be included in the analyses. This created four self-efficacy variables: Problem-Solving Self-Efficacy (mean), Problem-Solving Self-Efficacy for highest

severity problem, Self-efficacy for Controlling Upsetting Thoughts (mean), and Self-Efficacy for Controlling Upsetting Thoughts for highest severity problem.

As can be seen in Table 5, all dependent variables were negatively skewed, indicating that participants tended to feel relatively confident about their ability to problem-solve and control upsetting thoughts related to their problems. Five of the dependent variables whose ratio of skew over the standard error of skew was greater than two (Problem-Solving Self-Efficacy mean of three problems, Problem-Solving Self-Efficacy for highest severity problem, Confidence in Effectiveness of Solutions, Likelihood that Solutions would work, and Likelihood of Implementing Solutions) were transformed to minimize negative skew in order to satisfy the assumptions of normality necessary for the statistical analyses. Table 6 demonstrates intercorrelations among the study variables.

Randomization Check

Participants' ratings of perceived severity of their problems were compared to verify that there were no significant differences between those assigned to ruminate or distract prior to the manipulation. A one-way analysis of variance was conducted with the participants' perceived severity ratings of their problems prior to the manipulation task (rumination or distraction). There were no significant differences between the two groups in the severity ratings, $F(1, 76) = .88, p = .35$.

First/Last BDI Comparison

To examine any potential impacts of completing the BDI-II on participants' responses to subsequent measures, mean scores of all dependent variables were compared between participants who completed the BDI-II at the beginning of the study, and those

who completed the BDI-II at the end of the study. Table 7 demonstrates no mean differences greater than .5 standard deviations between the two groups among any of the dependent variables. Similarly, the difference in BDI-II scores between the two groups was also minimal (.29 SD), suggesting that the order in which the participants had completed the BDI-II had little to no impact upon their responses to the study measures, including the BDI-II itself.

Recruited/Non-Recruited Participants

Fourteen of the participants were selectively recruited via email or telephone contact by the principal investigator. Table 8 shows the mean scores of the dependent variables for participants who were selectively recruited (N = 14), and those who signed up to participate in the study without contact from the principal investigator (N = 64). A multivariate analysis of variance found no significant differences between those who were recruited and non-recruited among the dependent variables, $F(8, 69) = 1.48$, $p = .18$, $\eta^2 = .15$. However, when mean differences of the primary variables between the two groups (recruited vs. non-recruited) were compared, there was a difference of greater than 0.5 standard deviations for total BDI-II score (difference of .60 standard deviation) and the variable Likelihood to Implement Solutions (difference of .63 standard deviation). Participants who were selectively recruited scored higher on the BDI-II and lower on the variable Likelihood to Implement Solutions in comparison to those who were not selectively recruited.

Replication of Analyses From Lyubomirsky et al. (1999)

A multivariate analysis of variance with the dependent variables Solvability (“How likely would you be able to solve or alleviate this problem?”), Severity (“How

severe is this problem?”), “Confidence in Effectiveness of Solutions” (“How confident are you that this solution would be effective?”), Likelihood that Solution would work (“How likely do you think this solution would work if carried out?”), and Likelihood of Implementing Solutions (“How likely do you think you would actually go ahead and use this solution to solve this problem?”) was conducted to replicate the analysis from Lyubomirsky et al.’s (1999) study. Significant differences were found among the four groups (High BDI/Rumination, High BDI/Distraction, Low BDI/Rumination, Low BDI/Distraction), Pillai’s Trace = .42, $F(3, 216) = 2.35$, $p = .004$, $\eta^2 = .14$.

Consistent with the findings from Lyubomirsky et al.’s (1999) study, planned contrasts on each of the dependent variables found significant differences between the four groups for Likelihood of Implementing Solutions, $F(3, 74) = 3.52$, $p = .02$, $\eta^2 = .13$, and Severity of Problems, $F(3, 74) = 3.53$, $p = .02$, $\eta^2 = .13$. Unlike the original Lyubomirsky et al. (1999) study, however, significant differences between the groups were also found for Confidence in Effectiveness of Solutions, $F(3, 74) = 2.80$, $p < .05$, $\eta^2 = .10$. Perceived Solvability of Problems, which was found to be significantly different among the four groups in the Lyubomirsky et al. (1999) study, did not differ significantly among the groups in this study, $F(3, 74) = 2.01$, $p = .12$, $\eta^2 = .08$. No significant differences were found among the groups for Likelihood that solution would work, $F(3, 74) = 1.76$, $p = .16$, $\eta^2 = .07$.

Scheffé analyses revealed that significant differences in Likelihood of Implementing Solutions occurred between the Low BDI/Distraction ($M = 5.77$) and High BDI/Distraction ($M = 4.60$) groups and between the Low BDI/Rumination ($M = 4.03$) and High BDI/Rumination ($M = 5.22$) groups. These results are slightly different than

those from the Lyubomirsky et al.'s (1999) study, in which significant differences were found between the High BDI/Rumination group and all other groups for Likelihood of Implementing Solutions. For perceived severity of problems, significant differences were found between the Low BDI/Distraction group ($M = 4.59$) and High BDI/Rumination ($M = 5.22$) group. No significant differences were found between any of the four groups for the other variables, Solvability, Confidence in Effectiveness of Solutions, or Likelihood that Solutions would work. In the Lyubomirsky et al. (1999) study, significant differences were found not only between the High BDI/Rumination group and the Low BDI/Distraction group for perceived severity, but between High BDI/Rumination and all other groups for both perceived severity and solvability.

Hypothesis One

A multivariate analysis of variance was conducted to examine the effects of rumination and distraction on Problem-Solving Self-Efficacy and Self-Efficacy for Controlling Upsetting Thoughts. Problem-Solving Self-Efficacy (mean), Problem-Solving Self-Efficacy for highest severity problem, Self-efficacy for Controlling Upsetting Thoughts (mean), and Self-Efficacy for Controlling Upsetting Thoughts for highest severity problem were compared between the target group (High BDI/Rumination) and the other three groups (High BDI/Distraction, Low BDI/Rumination, and Low BDI/Distraction). There were significant differences between the target group and the other three groups among the four self-efficacy variables, Pillai's Trace = .18, $F(1, 73) = 4.09$, $p = .005$, $\eta^2 = .18$. Specifically, the significant differences were found for Problem-Solving Self-Efficacy (mean), $F(1, 76) = 5.10$, $p = .03$, $\eta^2 =$

.06, and for Self-Efficacy for Controlling Upsetting Thoughts for highest severity problem, $F(1, 76) = 7.63$, $p = .01$, $\eta^2 = .10$.

The High BDI/Rumination group reported lower scores for both variables than the other three groups, with the High BDI/Rumination group reporting a mean of 48.26% for Self-Efficacy for Controlling Upsetting Thoughts for highest severity problem in comparison to a mean of 63.86% among the other groups. For Problem-Solving Self-Efficacy (mean), the High BDI/Rumination group reported a mean of 71%, in comparison to 76.50% among the other three groups. Interestingly, no significant differences were found between the High BDI/Rumination and the other three groups for Self-Efficacy for Controlling Upsetting Thoughts (mean), $F(1,76) = 1.87$, $p = .18$, $\eta^2 = .02$, and for Problem-Solving Self-Efficacy for highest severity problem, $F(1,76) = 1.62$, $p = .21$, $\eta^2 = .02$.

Hypothesis One – Selected Participants

The analysis to test Hypothesis One was replicated with participants scoring between seven and twelve on the BDI-II being excluded. This left a total of forty-two participants who scored in the lower ($N = 23$) and upper extremes ($N = 19$) on the BDI-II within the study's sample. Similar results were found in the new analysis to the original analysis with all participants; significant differences were found between the target group (High BDI/Rumination) and the other three groups among the four self-efficacy variables, $F(4, 37) = 3.80$, $p = .01$, $\eta^2 = .29$, with the significant differences occurring for Problem-Solving Self-Efficacy (mean), $F(1, 40) = 5.29$, $p = .03$, $\eta^2 = .12$, and for Self-Efficacy for Controlling Upsetting Thoughts for highest severity problem, $F(1, 40) = 10.07$, $p = .01$, $\eta^2 = .29$, but not for Problem-Solving Self-Efficacy for highest

severity problem, $F(1, 40) = 2.70$, $p = .11$, $\eta^2 = .06$. Unlike the analysis with all participants included, however, significant differences were also found for Self-Efficacy for Controlling Upsetting Thoughts (mean) $F(1, 40) = 5.64$, $p = .02$, $\eta^2 = .12$.

Hypotheses Two and Three

To test hypotheses two and three, a multivariate analysis of variance with the four self-efficacy variables (Problem-Solving – mean and highest severity problem, Controlling Thoughts – mean and highest severity problem), as well as the three Likert-type variables from the Lyubomirsky et al. (1999) study (Solvability, Confidence in Effectiveness of Solutions, and Likelihood of Implementing Solutions) as the dependent variables was performed. According to Pillai's criterion, significant differences were found between the High BDI/Rumination groups and the other three groups among the variables, $F(1, 70) = 2.77$, $p = .01$, $\eta^2 = .22$. Further, planned contrasts found significant differences between the High BDI/Rumination group and the other three groups for Self-Efficacy for Controlling Upsetting Thoughts for highest severity problem, $F(1, 76) = 7.63$, $p < .01$, $\eta^2 = .09$, and Problem Solving Self-Efficacy (mean), $F(1, 76) = 5.10$, $p = .03$, $\eta^2 = .06$. No significant differences between the High BDI/Rumination and the other three groups were found for Problem-Solving Self-Efficacy for highest severity problem), $F(1,76) = 1.62$, $p = .21$, $\eta^2 = .02$, and Self-Efficacy for Controlling Upsetting Thoughts (mean), $F(1,76) = 1.87$, $p = .18$, $\eta^2 = .02$, as well as the Likert-type variables Solvability, $F(1,76) = .81$, $p = .37$, $\eta^2 = .01$, Confidence in Effectiveness of Solutions, $F(1,76) = 1.09$, $p = .30$, $\eta^2 = .01$, and Likelihood of Implementing Solutions, $F(1,76) = 1.18$, $p = .28$, $\eta^2 = .02$.

Hypothesis Two and Three – Selected Participants

As with Hypothesis One, the analysis to test Hypothesis Two and Three were replicated with only participants scoring in the upper and lower extremes on the BDI-II within the sample (BDI less than 7 or greater than 12). As expected, significant differences were found between the High BDI/Rumination groups and the other three groups among the variables, $F(7, 34) = 2.67, p = .03, \eta^2 = .36$. As was found in the original analysis for Hypotheses One and Two, the significant differences were found between the groups for Self-Efficacy for Controlling Upsetting Thoughts for highest severity problem, $F(1, 40) = 10.1, p < .01, \eta^2 = .20$, and Problem Solving Self-Efficacy (mean), $F(1, 40) = 5.29, p = .03, \eta^2 = .06$. In addition, significant differences were also found for Self-Efficacy for Controlling Upsetting Thoughts (mean), which was not found in the original analysis, $F(1, 40) = 5.64, p = .02, \eta^2 = .12$. Similar to the original analysis for Hypotheses Two and Three, no significant differences were found between the groups for Problem Solving Self-Efficacy for highest severity problem, or the three likert-type variables, Solvability, Confidence in Effectiveness of Solutions, and Likelihood to Implement Solutions.

Secondary Analyses

To more closely examine any differential impact of the manipulation task (rumination/distraction) on the self-efficacy variables, a multivariate analysis of variance was performed on the four self-efficacy variables. Significant differences were found between the groups (High BDI/Rumination, Low BDI/Rumination, High BDI/Distractioin, and Low BDI/Distractioin) among the dependent variables, Pillai's Trace = .41, $F(3, 219) = 2.91, p < .01, \eta^2 = .14$. The differences between the groups

occurred among all four self-efficacy variables, Problem-Solving Self-Efficacy for highest severity problem, $F(3, 74) = 4.12, p < .01, \eta^2 = .14$, Problem-Solving Self-Efficacy (mean), $F(3, 74) = 5.34, p < .01, \eta^2 = .18$, Self-Efficacy for Controlling Upsetting Thoughts (mean), $F(3, 74) = 3.43, p = .02, \eta^2 = .12$, and Self-Efficacy for Controlling Upsetting Thoughts for highest severity problem, $F(3, 74) = 4.24, p < .01, \eta^2 = .15$.

Post-hoc Scheffé contrasts found significant differences between the High BDI/Distraction group ($M = 61.20$) and the Low BDI/Distraction group ($M = 78.23; SD = 19.42$) for Problem-Solving Self-Efficacy (for most severe problem) and between Low BDI/Distraction ($M = 80.87$) and High BDI/Rumination ($M = 71.00$) and High BDI/Distraction ($M = 68.28; SD = 13.61$) for Problem-Solving Self-Efficacy (mean). For Self-Efficacy for Controlling Upsetting Thoughts (for highest severity problem), significant differences occurred between the High BDI/Rumination ($M = 48.26$) and the Low BDI/Distraction groups ($M = 71.25; SD = 23.71$). Table 9 displays means and standard deviations of all dependent variables of the four groups.

In order to distinguish the effects of the level of depressive symptoms, the manipulation task, and the interaction of the two on the self-efficacy variables, a two-way multivariate analysis of variance was conducted. There were significant main effects for BDI (Low or Hi) among the four groups, $F(4, 71) = 4.05, p < .01, \text{partial } \eta^2 = .19$, as well as significant main effects for the manipulation task (Rumination or Distraction) among the groups, $F(4, 71) = 2.68, p = .04, \text{partial } \eta^2 = .13$. There was, however, no significant interaction effect (BDI x Manipulation task) on the self-efficacy variables, $F(4, 71) = 1.86, p = .13, \text{partial } \eta^2 = .10$. Significant main effects for BDI (Low/High

BDI group) were found among the groups for all four self-efficacy variables, Self-Efficacy for Controlling Upsetting Thoughts for highest severity problem, $F(1, 74) = 6.41, p = .01, \eta^2 = .08$, Self-Efficacy for Controlling Upsetting Thoughts (mean), $F(1, 74) = 5.17, p = .026, \eta^2 = .07$, Problem-Solving Self-Efficacy (mean), $F(1, 74) = 15.59, p < .01, \eta^2 = .17$, and Problem-Solving Self-Efficacy for highest severity problem, $F(1, 74) = 11.87, p < .01, \eta^2 = .14$.

Discussion

Consistent with the results from Lyubomirsky et al.'s (1999) study, participants who had higher depressive symptoms and ruminated reported perceiving their problems as more severe and believing that they were less likely to use self-generated solutions to solve their problems. In this study, the high BDI/Rumination participants also reported feeling less confident about the effectiveness of their self-generated solutions, which was not found in the original study. Sample characteristics as well as some differences in the study procedures may account for the different findings.

Main Hypotheses

As hypothesized, high BDI/Rumination participants reported lower levels of self-efficacy for solving their problems as well as for controlling upsetting thoughts related to their problems in comparison to other participants. These differences, however, were found only among the mean Problem-Solving Self-Efficacy score across the three different problems, and for Self-Efficacy for Controlling Upsetting Thoughts pertaining to the problem rated as being most severe by the participants. In other words, no significant differences were found between high depressive symptom ruminators and other participants for Problem-Solving Self-Efficacy for solving the most severe problem,

and for Self-Efficacy for Controlling Upsetting Thoughts when averaged across the three problems.

Self-Efficacy for Controlling Upsetting Thoughts related to the most severe problem accounted for slightly more variance (10%) between the high BDI/Rumination participants and the other participants than the average of Problem-Solving Self-Efficacy across the three problems (6% of variance). Such findings suggest that, among those who are experiencing at least mild depressive symptoms, ruminating may negatively impact the perception of their ability to solve, manage and control upsetting thoughts. The relationship between rumination and self-efficacy for controlling upsetting thoughts, however, may be significant only for problems that are highly salient to the individual. The effects of rumination on self-efficacy for controlling upsetting thoughts within the context of depressive symptoms appears to be consistent with Social Cognitive Theory (Bandura, 1977) in that self-efficacy plays a critical role in depressive symptoms when it relates to a highly desired behavior (in this case, controlling/managing thoughts).

When the self-efficacy variables were compared with the Likert-type variables from the Lyubomirsky et al. (1999) study, significant differences between the high BDI/Rumination group and the rest of the participants were found only for Problem-Solving Self-Efficacy (average across three problems) and for Self-Efficacy for Controlling Upsetting Thoughts pertaining to the highest severity problem. This supports Hypothesis Two that the relationship between rumination and self-efficacy is stronger than that of the perception of solvability and the likelihood of implementing solutions. The variable “Confidence in Effectiveness of Solutions” appears to be similar to the construct of Problem-Solving Self-Efficacy; however, the one item variable did not

assess participants' perceived efficacy at solving their problems as carefully as Problem-Solving Self-Efficacy, which may explain the differential results. Further, when Problem-Solving Self-Efficacy (average across three problems), and Self-Efficacy for Controlling Upsetting Thoughts for the highest severity problem were examined, Self-Efficacy for Controlling Upsetting Thoughts accounted for slightly more of the variance (10% versus 7%) than Problem-Solving Self-Efficacy, supporting Hypothesis Three that there is a stronger relationship between rumination self-efficacy regarding management of upsetting thoughts related to problems than problem-solving self-efficacy among individuals with depressive symptoms.

It is unclear as to why significant differences for Problem Solving Self-Efficacy were found for the mean score across the three problems, rather than among the highest severity problem, as was found for Self-Efficacy for Controlling Upsetting Thoughts. One interpretation is that these differences further support the distinction between self-efficacy for controlling or managing upsetting thoughts and self-efficacy for solving problems. Psychometric properties of these two variables for this study, however, may also be responsible for these differences. Prior to analyzing the data, the two Problem-Solving Self-Efficacy variables were transformed to satisfy assumptions of normality, whereas the two variables for Self-Efficacy for Controlling Upsetting Thoughts were not transformed for the analyses. Transformation of some of the variables may have affected the results.

Re-Examination of Main Hypotheses with Selected Participants

When only participants who scored in the upper and lower extreme on the BDI-II were included in the analyses (N = 42), however, significant differences also emerged for

Self-Efficacy for Controlling Upsetting Thoughts (mean) between the High BDI/Rumination group and the other three groups. The likert-type variables, Solvability, Confidence in Effectiveness of Solutions, and Likelihood to Implement Solutions, however, did not differ between the two groups among these selected participants. Further, the self-efficacy variables accounted for greater variance between the groups (High BDI/Rumination and the other three groups) when only participants with extreme scores were included in the analyses. Self-Efficacy for Controlling Upsetting Thoughts related to the most severe problem accounted for twenty percent rather than ten percent (original analysis with all participants) and Problem-Solving Self-Efficacy (mean) accounted for eighteen percent rather than six percent. Thus, it appears as though creating a greater discrepancy between those reporting and not reporting depressive symptoms strengthened the relationship between rumination and self-efficacy while it made no impact on the relationship between rumination and the likert-type variables (Solvability, Confidence in Effectiveness of Solutions, and Likelihood to Implement Solutions). With this selected sample, both the Self-Efficacy for Controlling Upsetting Thoughts variables (mean and for highest severity problem) were significantly different across the two groups, whereas only Problem Solving Self-Efficacy (mean) was significantly different across the two groups. This further supports Hypothesis Three that there is a stronger relationship between rumination self-efficacy regarding management of upsetting thoughts related to problems than problem-solving self-efficacy among individuals with depressive symptoms.

Secondary Analyses

Surprisingly, when post-hoc analyses were used to pinpoint the presence of significant differences between the four groups among the self-efficacy variables, the differences were not always between the high BDI/Rumination group and one of the other four groups as expected. For Self-Efficacy for Controlling Upsetting Thoughts for the highest severity problem, there were no statistically significant differences between any of the different groups. The Self-Efficacy scores, however, were lowest among the high BDI/Rumination group, and highest among the low BDI/Distraction group, as would be expected, with the high BDI/Distraction and low BDI/Rumination group falling in between. For Problem-Solving Self-Efficacy for the highest severity problem, the significant difference occurred between the high BDI/Distraction group and the low BDI Distraction group. In fact, the high BDI/Rumination group had a higher self-efficacy score than the high BDI/Distraction group. This finding appears to contradict the hypothesis that engaging in a distraction task minimizes the detrimental effects of rumination (Nolen-Hoeksema & Morrow, 1993) as well as the hypothesis that rumination or distraction has minimal effects as long as an individual is not experiencing depressed mood or depressive symptoms (Nolen-Hoeksema, 2005). Similar patterns of differences occurred for Problem-Solving Self-Efficacy (mean across three problems), with the significant differences found between the low BDI/Rumination group, and the high BDI/Rumination and high BDI/Distraction groups.

Response Styles Theory (Nolen-Hoeksema, 1991) proposes that rumination can be harmful by maintaining or worsening depressive symptoms and impairing effective problem-solving. Among those who are not experiencing significant depressive

symptoms or depressed mood, however, Response Styles Theory suggests that rumination has minimal effects on mood or problem-solving skills. In other words, rumination and the presence of depressive symptoms or depressed mood interact to further enhance them and impair effective problem-solving skills. In this study, it was hypothesized that rumination negatively impacts self-efficacy only among those reporting depressive symptoms. Among those who have little to no depressive symptoms, it can be expected that rumination would have minimal effects. Examination of a potential interaction effect between depressive symptoms and rumination, however, did not support this finding. Depressive symptoms as well as rumination and distraction themselves demonstrated a main effect on self-efficacy. The significant, negative relationship between depressive symptoms and self-efficacy is consistent with the literature on depression and self-efficacy (Bandura, 1977; Bandura, 1997). Poor power may account for null findings for any interaction between depressive symptoms and rumination/distraction.

Limitations and Directions for Future Research

One limitation already mentioned is small sample size or low power. Dissimilar cell size between the four groups was another statistical weakness. In addition to weaknesses in cell and sample size, there were few participants reporting clinically significant levels of depressive symptoms in this study. Due to the distribution of the participants' BDI scores, those reporting a BDI-II score of ten (which is considered below the threshold of "mild depressive symptoms") and above were categorized as reporting "higher depressive symptoms." Minimal discrepancy between the "high" and "low" BDI groups likely reduced the ability to detect differences between the groups

even further. Indeed, when a larger discrepancy was created by selecting participants who scored in the upper and lower extremes on the BDI-II, greater differences in self-efficacy emerged between the High BDI/Rumination group and the rest of the participants (High BDI Distraction, Low BDI participants). Better overall power and greater distinction between participants categorized as reporting “high” and “low” depressive symptoms may shed more light on the interacting effect of depressive symptoms and rumination on self-efficacy. A future study utilizing participants who are reporting at least moderate levels of depressive symptoms to represent the “high BDI group” may be able to further clarify the relationship between rumination, depression, and self-efficacy. Another possibility is to focus on depressed mood, rather than on depressive symptoms, which can be confounded by somatic symptoms not necessarily associated with depression.

An obvious limitation is the use of an undergraduate subject pool to recruit participants. There have been criticisms against the over-reliance on undergraduate psychology students as study participants (Kazdin, 2003). The majority of the experimental studies on rumination, however, have utilized undergraduate students as participants (Butler & Nolen-Hoeksema, 1994; Lyubomirsky et al., 1998; Lyubomirsky & Nolen-Hoeksema, 1993). The participants in this study were relatively diverse, especially in comparison to most college students, both ethnically and in age. Using an undergraduate subject pool, however, likely contributed to the few number of participants reporting clinically significant levels of depressive symptoms. In an effort to increase the number of participants reporting higher levels of depressive symptoms, fourteen of the seventy-eight participants were selectively recruited by telephone or email based on their

higher BDI-II scores. As expected, these selectively recruited participants scored higher on the BDI-II in comparison to those who were not actively recruited. They also reported that they were less likely to implement their self-identified solutions in comparison to those who were not selectively recruited. It seems unlikely, however, that these expected differences introduced bias that necessitates any changes in the interpretation of the results.

In addition to adding a careful assessment of self-efficacy, this study differed from the original Lyubomirsky et al. (1999) study in the exclusion of a cover story and filler items. Although avoiding a cover story and filler items and directly measuring depressive symptoms in a face valid fashion does not appear to have affected the participants' responses to the actual measures, they may have affected the participants' approach to the manipulation task. The participants were informed at the beginning of the study that the purpose of the experiment was to understand typical problems among students. On the debriefing questionnaire, some students reported confusion about the rationale for the manipulation task, as it did not appear related to the purpose of the study. Although participants' responses were reviewed to exclude those who reported not engaging in the manipulation task, it is possible that some of the participants, while still engaging in the task, did not take the manipulation task very seriously. Therefore, it is possible that the lack of a rationale for the manipulation tasks may have weakened the potential effects of rumination and distraction on self-efficacy. Thus, use of a cover story or some type of rationale for the manipulation task may be warranted in future studies, as was used in the Lyubomirsky et al. (1999) study.

Despite these limitations, this study provides some evidence that rumination negatively impacts self-efficacy, at least among those reporting depressive symptoms. Rumination appeared to be negatively associated with both self-efficacy for solving problems and for controlling upsetting thoughts. In particular, self-efficacy for controlling or managing upsetting thoughts for a highly salient problem demonstrated a stronger relationship with the effects of rumination than self-efficacy for solving problems, the likelihood of implementing self-generated solutions, or the likelihood that the self-generated solutions would work.

The results of this study suggest that self-efficacy for controlling upsetting thoughts may be a promising focus for treatment research. If there is an important link between rumination and depression, and self-efficacy and depression, enhancing a depressed person's self-efficacy for controlling rumination (repetitive and passive thoughts about one's own feelings, thoughts, and consequences of their own distress) may be a viable target of treatment. Wells and his colleagues propose in their Self-Regulatory Executive Function (S-REF) model (Wells & Matthews, 1994; Papageorgiou & Wells, 2003) that people's beliefs about the uncontrollability of rumination plays a role in worsening or maintaining depressive symptoms. Techniques such as identifying and modifying cognitive distortions can be interpreted as increasing a depressed client's self-efficacy for managing negative affect and cognition and for controlling rumination. Indeed, this concept of controlling or managing negative, intrusive thoughts is consistent with the aim of cognitive therapy or mindfulness therapy for depression. Researchers have now begun to focus on an individual's "metacognitive awareness" or "metacognitive monitoring" following cognitive therapy for depression as an important

skill to prevent relapse, rather than on decreasing negative cognitions themselves (Teasdale et al., 2002). In other words, the ability to recognize and detach oneself from negative automatic thoughts may be more important to recovering from depression and remaining depression-free than the sheer presence or frequency of negative thoughts.

Although there are at least two studies examining and finding some support for the role of self-efficacy for controlling negative cognition in the treatment of depression, (Kavanagh & Wilson, 1989; Usaf & Kavanagh, 1990) future studies are needed to determine the role of self-efficacy and rumination in the improvement of depressive symptoms. One possibility may be that measurement of self-efficacy be used as a tool to identify appropriate time for treatment termination. Usaf and Kavanagh (1990) suggest that utilizing a strong sense of self-efficacy as a marker of readiness for treatment termination may be more appropriate than simply symptom reduction, and produce stronger protection from relapse. Given the evidence in support of a relationship between rumination and depression, self-efficacy for controlling rumination may be a particularly useful area for assessment in understanding and enhancing the treatment of depression.

References

- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman and Company.
- Bandura, A., & Wood, R. E. (1989). Effect of perceived controllability and performance standards on self-regulation of complex decision making. *Journal of Personality and Social Psychology*, 56, 805-814.
- Beck, A. T., Steer, R. A., Brown, G. K. (1996). *The Beck Depression Inventory Second Edition Manual*. San Antonio: Psychological Corporation.
- Boland, R. J., & Keller, M. B. (2002). Course and outcome of depression. In I. Gotlib & C. Hammen (Eds.), *Handbook of depression*. (pp. 43-60). New York: Guilford Press.
- Butler, L.D., & Nolen-Hoeksema, S. (1994). Gender differences in response to depressed mood in a college sample. *Sex Roles*, 30, 331-346.
- Campbell, N. K., & Hackett, G. (1986). The effects of mathematics task performance on math self-efficacy and task interest. *Journal of Vocational Behavior*, 28, 149-162.
- Currie, S. R., Wilson, K. G., & Curran, D. (2002). Clinical significance and predictors of treatment response to cognitive-behavior therapy for insomnia secondary to chronic pain. *Journal of Behavioral Medicine*, 25, 135-153.
- Davis, R. N., & Nolen-Hoeksema, S. (2000). Cognitive inflexibility among ruminators and nonruminators. *Cognitive Therapy and Research*, 24, 669-711.

Fresco, D. M., Frankel, A. N., Mennin, D. S., Turk, C. L., & Heimberg, R. G. (2002).

Distinct and overlapping features of rumination and worry: The relationship of cognitive production to negative affective states. *Cognitive Therapy and Research*, 26, 179-188.

Gignac, M. A. M., & Gottlieb, B. H. (1996). Caregiver's appraisals of efficacy in coping with dementia. *Psychology and Aging*, 11, 214-225.

Gitlin, M. J. (2002). Pharmacological treatment of depression. In I. H. Gotlib & C. L. Hammen (Eds.), *Handbook of depression*. (pp.383-403). New York: Guilford Press.

Gotlib, I. H., & Hammen, C. L. (2002). *The Handbook of Depression*. New York: Guilford Press.

Hackett, G., Betz, N., O'Halloran, M. S., & Romac, D. S. (1990). Effects of verbal and mathematics task performance on task and career self-efficacy and interest. *Journal of Counseling Psychology*, 37, 169-177.

Hackett, G., & Campbell, N. K. (1987). Task self-efficacy and task interest as a function of performance on a gender-neutral task. *Journal of Vocational Behavior*, 30, 203-215.

Hollon, S. D., Haman, K. L., & Brown, L. L. (2002). Cognitive-behavioral treatments for depression. In I. H. Gotlib & C. L. Hammen (Eds.), *Handbook of depression*. (pp.383-403). New York: Guilford Press.

Ingram, R., Miranda, J., & Segal, Z. (1998). *Cognitive vulnerability to depression*. New York: Guilford Press.

- Kavanagh, D. J., & Wilson, P. H. (1989). Prediction of outcome with group cognitive therapy for depression. *Behavior Research and Therapy*, 27, 333-343.
- Kazdin, A. E. (2003). *Research Design in Clinical Psychology*. Boston, MA: Allan & Bacon.
- Kessler, R. C. (2002). Epidemiology of depression. In I. H. Gotlib & C. L. Hammen (Eds.), *Handbook of depression*. (pp.23-42). New York: Guilford Press.
- Kuehner, C., & Weber, I. (1999). Responses to depression in unipolar depressed patients: An investigation of Nolen-Hoeksema's Response Styles Theory. *Psychological Medicine*, 29, 1323-1333.
- Kurlowicz, L. H. (1998). Perceived self-efficacy, functional ability, and depressive symptoms in older elective surgery patients. *Nursing Research*, 47, 219-226.
- Lent, R. W., Brown, S. D., & Larkin, K. C. (1984). Relation of self-efficacy expectations to academic achievement and persistence. *Journal of Counseling Psychology*, 31, 356-362.
- Lyubomirsky, S., Caldwell, N.D., & Nolen-Hoeksema, S. (1998). Effects of ruminative and distracting responses to depressed mood on retrieval of autobiographical memories. *Journal of Personality and Social Psychology*, 75, 166-177.
- Lyubomirsky, S., & Nolen-Hoeksema, S. (1993). Self-perpetuating properties of dysphoric rumination. *Journal of Personality and Social Psychology*, 65, 339-349.
- Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. *Journal of Personality and Social Psychology*, 69, 176-190.

- Lyubomirsky, S., Tucker, K., Caldwell, N.D., & Berg, K. (1999). Why ruminators are poor problem solvers: Clues from the phenomenology of dysphoric rumination. *Journal of Personality and Social Psychology*, 77, 1041-1060.
- Martin, L. L., & Tesser, A. Clarifying our thoughts. (1996). In R. S. Wyer Jr. (Ed.), *Ruminative thoughts: Advances in social cognition, Vol. 9. (pp. 189-208)*. Mahawah, New Jersey: Lawrence Erlbaum Associates.
- Morrow, J., & Nolen-Hoeksema, S. (1990). Effects of responses to depression on the remediation of depressive affect. *Journal of Personality and Social Psychology*, 58, 519-527.
- Murray, C. J. L., & Lopez, A.D. (Eds.). (1996). *The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected-assessment to 2020*. Cambridge, M.A.: Harvard University Press.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, 100, 569-582.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorder and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology*, 109, 504-511.
- Nolen-Hoeksema, S. (2002). Gender differences in depression. In I. Gotlib & C. Hammen (Eds.), *Handbook of depression*. (pp. 492-509). New York: Guilford Press.
- Nolen-Hoeksema, S. (in press). The Response Styles Theory. In C. Papageorgiou & A. Wells (Eds.), *Rumination: Natures, Theory, Treatment, and Negative Thinking in Depression*. New York: Wiley.

- Nolen-Hoeksema, S., & Davis, C. G. (1999). "Thanks for sharing that": Ruminators and their social support networks. *Journal of Personality and Social Psychology*, 77, 801-814.
- Nolen-Hoeksema, S., & Jackson, B. (2001). Mediators of the gender differences in rumination. *Psychology of Women Quarterly*, 25, 37-47.
- Nolen-Hoeksema, S., Larson, J., & Grayson, C. (1999). Explaining the gender difference in depressive symptoms. *Journal of Personality and Social Psychology*, 77, 1061-1072.
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. . *Journal of Personality and Social Psychology*, 61, 115-121.
- Nolen-Hoeksema, S., & Morrow, J. (1993). Effects of rumination and distraction on naturally occurring depressed mood. *Cognition and Emotion*, 7, 561-570.
- Nolen-Hoeksema, S., Morrow, J., & Fredrickson, B. L. (1993). Response styles and the duration of episodes and depressed mood. *Journal of Abnormal Psychology*, 102, 20-28.
- Nolen-Hoeksema, S., Parker, L. E., & Larson, J. (1994). Ruminative coping with depressed mood following loss. *Journal of Personality and Social Psychology*, 67, 92-104.
- Papageorgiou, C., & Wells, A. (2000). Treatment of recurrent major depression with attention training. *Cognitive and Behavioral Practice*, 7, 407-413.
- Papageorgiou, C., & Wells, A. (2001a). Metacognitive beliefs about rumination in recurrent major depression. *Cognitive and Behavioral Practice*, 8, 160-164.

- Papageorgiou, C., & Wells, A. (2001b). Positive beliefs about depressive rumination: Development and preliminary validation of a self-report scale. *Behavior Therapy*, 32, 13-26.
- Papageorgiou, C., & Wells, A. (2003). An empirical test of a clinical metacognitive model of rumination and depression. *Cognitive Therapy and Research*, 27, 261-273.
- Porter, C. L., & Hsu, H. (2003). First-time mothers' perceptions of efficacy during the transition to motherhood: Links to infant temperament. *Journal of Family Psychology*, 17, 54-64.
- Pyszczynski, T., Greenberg, J., & Holt, K. (1987). Depression, self-focused attention, and expectancies for positive and negative future events for self and others. *Journal of Personality and Social Psychology*, 52, 994-1001.
- Roemer, L., & Borkovec, T. D. (1993). Worry: Unwanted cognitive activity that controls unwanted somatic experience. In D. M. Wegner & J. Pennebaker (Eds.), *Handbook of mental control*. (pp. 220-238). Englewood Cliffs, New Jersey: Prentice-Hall.
- Sanna, L. J., & Pusecker, P. A. (1994). Self-efficacy, valence of self-evaluation, and performance. *Personality & Social Psychology Bulletin*, 20, 82-92.
- Schwartz, J., & Fish, J. M. (1989). Self-efficacy and depressive affect in college students. *Journal of Rational-Emotive and Cognitive-Behavioral Therapy*, 7, 219-236.

- Silver, W., Mitchell, T. R. , & Gist, M. E. (1995). The moderating effects of self-efficacy on the relationship between performance and attributions. *Organizational Behavior and Human Decision Processes*, 62, 286-299.
- Smarr, K. L., Parker, J. C., Wright, G. E., Stucky-Ropp, R. C., Buckelew, S. P., & Hoffman, R. W., et al. (1997). The importance of enhancing self-efficacy in rheumatoid arthritis. *Arthritis Care & Research*, 10, 18-26.
- Stanley, M. A., & Maddux, J. E. (1986). Self-efficacy expectancy and depressed mood: An investigation of causal relationships. *Journal of Social Behavior and Personality*, 1, 575-586.
- Steffen, A. M. , McKibbin, C. , Zeiss, A. M. , Gallagher-Thompson, D. , & Bandura, A. (2002). The revised scale for caregiving self-efficacy: Reliability and validity studies. *Journals of Gerontology Series B: Psychological Sciences & Social Sciences*, 57B, 74-86.
- Teasdale, J. D., Moore, R. G., Hayhurst, H., Pope, M., Williams, S., & Segal, Z. V. (2002). Metacognitive awareness and prevention of relapse in depression: Empirical evidence. *Journal of Consulting and Clinical Psychology*, 70, 275-287.
- Tillema, J. L., Cervone, D., & Scott, W. (2001). Negative mood, perceived self-efficacy, and personal standards in dysphoria: The effects of contextual cues on self-defeating patterns of cognition. *Cognitive Therapy and Research*, 25, 535-549.
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, 27, 247-259.
- Tucker, S., Brust, S., & Richardson, B. (2002). Validity of the Depression Coping Self-Efficacy Scale. *Archives of Psychiatric Nursing*, 16, 124-133.

Usaf, S. O., & Kavanagh, D. J. (1990). Mechanisms of improvement in treatment of depression: Test of a self-efficacy and performance model.

Ward, Lyubomirsky, Sousa, & Nolen-Hoeksema, (2003). Can't quite commit: Rumination and uncertainty. *Personality and Social Psychology Bulletin*, 29, 96-107.

Wells, A., & Matthews, G. (1994). *Attention and emotion: A clinical perspective*. Hove, United Kingdom: Erlbaum.

Zeiss, A. M., Gallagher-Thompson, D., Lovett, S. , Rose, J. , & McKibbin, C. (1999). Self-efficacy as a mediator of caregiver coping: Development and testing of an assessment model. *Journal of Clinical Geropsychology*, 5, 221-230.

Table 1

Demographic Characteristics of Participants (N = 78)

Participant Characteristics	Means/Percentages	<u>n</u>	Range
Age	22.77 (6.44 SD)	78	18-54
Gender			
Male	45.45%	35	
Female	54.55%	42	
Ethnic Background			
Caucasian	70.13%	54	
African American	18.18%	14	
Other	10.26%	8	
Education			
Freshmen	27.27%	21	
Sophomore	15.58%	12	
Junior	25.27%	21	
Senior	18.18%	14	
Post-Bachelor's	5.19%	4	

Table 2

Types of Problems Reported by Participants for First Problem Identified (N = 78)

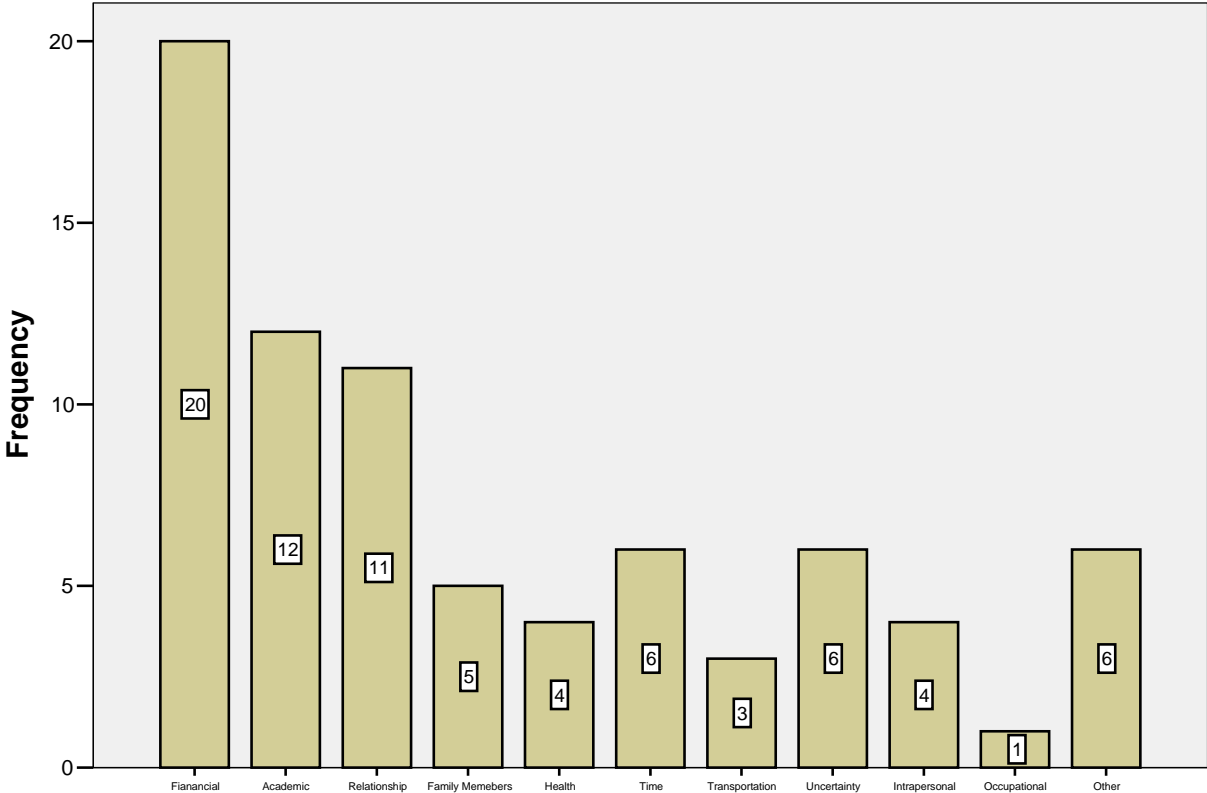


Table 3

BDI – II Scores (N = 78)

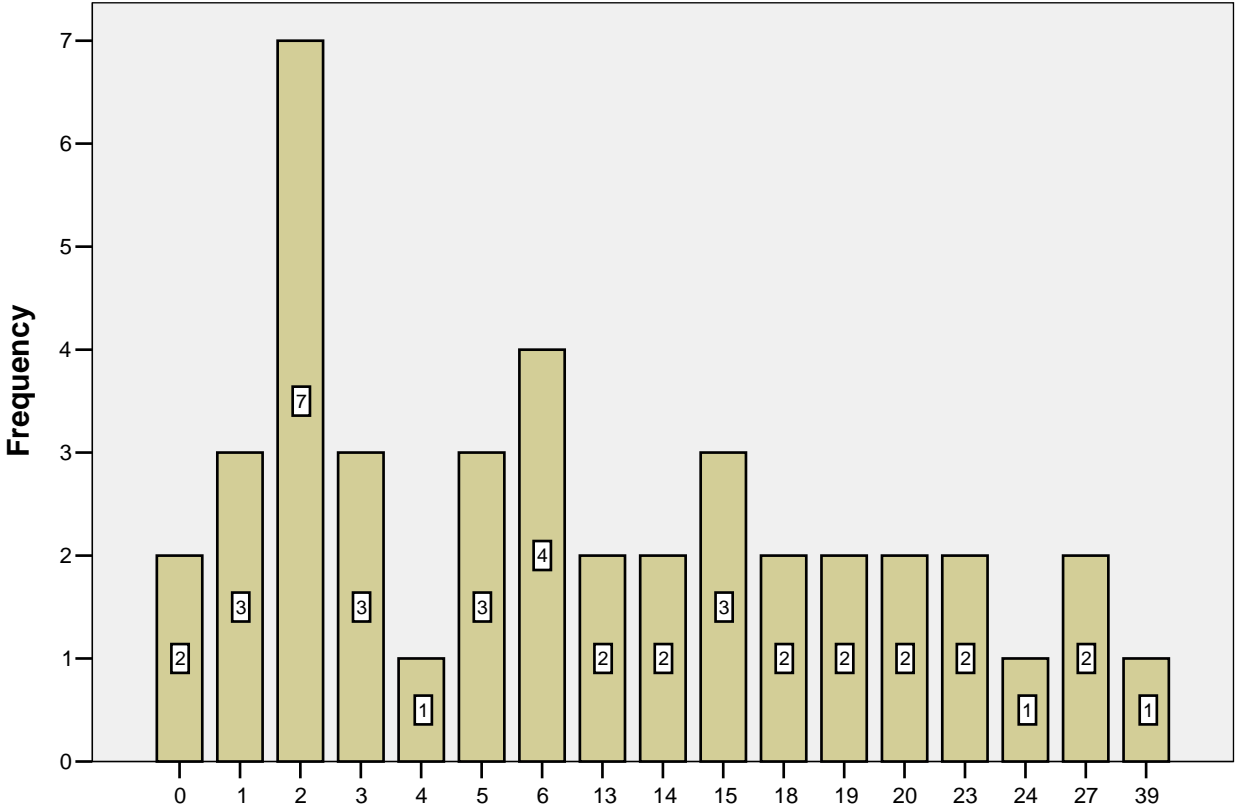


Table 4

BDI Scores by Group (N = 78)

<u>Group</u>	<u>Mean</u>	<u>N</u>	<u>SD</u>	<u>Range</u>
High BDI Rumination	15.35	23	6.44	10.00-39.00
High BDI Distraction	15.33	15	6.55	10.00-27.00
Low BDI Rumination	5.44	16	2.94	0-9.00
Low BDI Distraction	4.79	24	2.87	0-9.00
Total	10.06	78	7.12	0-39.00

Table 5

Psychometric Properties of Dependent Variables (N = 78)

	Mean (SD)	Skew (SE of Skew)	Kurtosis (SE of Kurtosis)	Range
Self-Efficacy for Controlling Thoughts (highest severity)	59.26 (23.71)	-.39 (.27)	-.49 (.54)	0-100.00
Self-Efficacy for Controlling Thoughts (Mean for 3 Problems)	63.76 (18.55)	-.62 (.27)	.76 (.54)	.83-100.00
**Problem-Solving Self-Efficacy (highest severity)	72.99 (19.42)	-.86 (.27)	.126 (.54)	18.00-100.00
**Problem-Solving Self-Efficacy (mean for 3 problems)	75.43 (13.61)	-.72 (.27)	.93 (.54)	30.00-100.00
**Confidence in Effectiveness	5.47 (.95)	-.47 (.27)	-.37 (.54)	3.00-7.00
**Likelihood that solutions would work	5.65 (.86)	-.76 (.27)	.57 (.54)	3.33-7.00
**Likelihood of Implementing Solutions	5.29 (1.24)	-.58 (.27)	-.35 (.54)	2.00-7.00
Severity	4.66 (1.20)	-.40 (.27)	.09 (.54)	1.33-7.00
Solvability	4.84 (1.19)	-.66 (.27)	.67 (.54)	1.00-7.00

**These variables were transformed, as Skew/SE of Skew > 2, to satisfy assumptions of normality

Table 6

Correlation Matrix of Dependent Variables (N = 78)

	1	2	3	4	5	6	7	8	9	10
1. Self-Efficacy for Controlling Thoughts related to Most "Severe" Problem	—									
2. Self-Efficacy for Controlling Upsetting Thoughts (Mean of 3 Problems)	.82**	—								
3. Self-Efficacy for Solving Most "Severe" Problem	-.53**	-.37**	—							
4. Self-Efficacy for Solving Problems (Mean of Three Problems)	-.47**	-.43**	.80**	—						
5. Confidence in Effectiveness of Solutions	-.26**	-.32**	.36**	.52**	—					
6. Likelihood that Solutions would Work	-.25*	-.32**	.43**	.53**	.86**	—				
7. Likelihood of Implementing Solutions	-.26*	-.27*	.51**	.64**	.31**	.37**	—			
8. Severity	-.16	-.19	.04	.09	.01	-.07	.06	—		
9. Solvability	.51**	.51**	-.54	-.69**	-.62**	-.57**	-.57**	-.10	—	
10. BDI-II	-.40**	-.40**	.40**	.51**	.11	.20	.35**	.28**	-.31	—

* = significant at the .05 level; ** = significant at the .01 level; DV's 3, 4, 5, 6, 7, were transformed for analyses.

Table 7

Primary Variables compared by First/Last BDI (N = 78)

Mean Across 3 Problems	First		Last		Total	
	Mean	SD	Mean	SD	Mean	SD
Problem Solving Self-Efficacy	75.82	13.73	75.0	13.65	75.43	13.61
Self-Efficacy for Controlling thoughts	64.21	17.60	63.28	19.78	63.77	18.55
Confidence in Effectiveness	5.41	.94	5.52	.97	5.47	.95
Likelihood that Solutions would work	5.59	.92	5.72	.80	5.65	.86
Likelihood of Implementing Solutions	5.27	1.37	5.31	1.10	5.29	1.24
Severity	4.52	1.19	4.80	1.22	4.66	1.20
Solvability	4.82	1.15	4.86	1.25	4.84	1.19
BDI total	9.10	6.02	11.14	8.11	10.06	7.12

Table 8

Primary Variables compared by Recruited (N = 14) and Non-Recruited (N = 64)

Mean Across 3 Problems	Recruited		Non-Recruited		Total	
	Mean	SD	Mean	SD	Mean	SD
Problem Solving Self-Efficacy	72.19	9.98	76.14	14.25	75.43	13.61
Self-Efficacy for Controlling thoughts	62.47	17.10	64.05	18.97	63.77	18.55
Confidence in Effectiveness	5.26	1.08	5.51	.92	5.47	.95
Likelihood that Solutions would work	5.58	1.02	5.66	.83	5.65	.86
Likelihood of Implementing Solutions	4.65	1.34	5.43	1.18	5.29	1.24
Severity	5.01	1.05	4.58	1.23	4.66	1.20
Solvability	4.56	.96	4.90	1.23	4.84	1.19
BDI total	13.57	4.62	9.30	7.36	10.06	7.12

Table 9

Means and Standard Deviations of Primary Variables of the Four Groups (N=78)

Participants' Ratings	High BDI/Rumination (N=23)		High BDI/Distraction (N=15)		Low BDI/Rumination (N=16)		Low BDI/Distraction (N=24)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Confidence in Effectiveness of Solutions	5.49	1.04	5.00	.94	5.71	.89	5.57	.86
Likelihood that Solutions would Work	5.49	.89	5.22	.84	5.81	.92	5.95	.70
Likelihood of Implementing Solutions	5.07	1.23	4.60	1.40	5.54	1.00	5.77	1.10
Perceived Solvability of Problems	4.65	.714	4.38	1.25	5.06	1.26	5.16	1.39
Self-Efficacy for Solving Problems (Mean of Three Problems)	71.00	10.81	68.27	13.81	80.37	11.05	80.87	14.54
Self-Efficacy for Controlling Upsetting Thoughts (Mean of 3 Problems)	59.35	13.34	57.28	16.29	62.14	28.14	73.14	12.77
Self-Efficacy for Solving Most "Severe" Problem	69.91	18.33	61.20	19.80	80.63	14.10	78.23	20.09
Self-Efficacy for Controlling Thoughts related to Most "Severe" Problem	48.26	21.41	56.50	19.52	59.69	30.22	71.25	18.43