The effects of rumination on social problem-solving in depressed and anxious mood

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THE EFFECTS OF RUMINATION ON SOCIAL PROBLEM-SOLVING IN DEPRESSED AND ANXIOUS MOOD

by
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A Thesis
Submitted in partial fulfillment of the requirements of the
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of
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The purpose of this study was to determine if the relationship between rumination and social problem-solving changes based on symptom level, rumination status, type of social problem-solving measure used, or type of problem being solved. Specifically, this study examined if rumination impairs social problem-solving by negatively distorting interpretations of problematic situations, promotes an avoidance problem-solving style, and/or impairs rational problem-solving. In the current study, measures of depressive and anxious symptoms, rumination, and social problem-solving were administered to 129 undergraduate students. Three multivariate analysis of variances revealed that the relationship between rumination and social problem-solving was unique to ruminators with mixed symptom states. Specifically, ruminators with mixed symptoms were more likely to report negative interpretations of their problematic situations and avoidance of their problems. However, there were no significant between group differences on rational problem-solving. Implications of the results in relation to problem-solving theory and treatment were discussed.
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CHAPTER I
Statement of the Problem

There are many types of unipolar mood disorders. One of those is major depressive disorder. Two of the key indicators of major depressive disorder are depressed mood and a loss of interest in pleasure (American Psychiatric Association, 1994). Additional major depressive disorder symptoms include significant change in sleeping and eating pattern, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness or excessive and inappropriate guilt, diminished ability to think or concentrate, and recurrent thoughts of death. Estimates regarding the prevalence of major depressive disorder suggest that it is a relatively common disorder. For example, results of the last National Co-morbidity Survey found the 12-month prevalence of major depressive disorder to be 6.6% in their national sample (Kessler, Burgland, Demler, Jin, Koretz, Merikangas, Rush, Walters, & Wang, 2003). Additionally, an epidemiological study (conducted in 2004 in California and New York) found the 1-month prevalence of major depressive disorder to be 5.2% (Ohayon, 2007). Taken together, these two studies indicated that major depressive disorder affects a significant portion of the American population.

In addition to its high prevalence, major depression also has many debilitating effects on those who experience its symptoms. For example, major depressive disorder has been found to have a positive relationship with deficits in job performance (Adler, Mclaughlin, Rogers, Chang, Lapitsky, & Lerner, 2006) health problems such as cardiac
risks (Dawood, Lambert, Barton, & Lambert, 2008) and diabetes (Lin & Van Korff, 2008), and suicide risk (Vuorilehto Melartin, & Isometsa, 2006). The prevalence of major depressive disorder and the impact of this disorder has on people’s lives suggest that it is important to study the etiological factors related to its development in order to promote better understanding of whom may be at risk and why.

Two etiological factors that have received considerable study in relation to unipolar depression are rumination and social problem-solving. Evidence suggests that both of these variables, in isolation, significantly and regularly predict the presence of depressed symptoms in clinical and non-clinical samples. In addition, recent evidence suggests that rumination might have its impact on depression by influencing one’s active problem solving efforts in the environment. However, our understanding of the relationship between these two constructs is limited at this point. The purpose of this study is to replicate some of the initial work examining the relationship between rumination and social problem as it relates to depressive disorders and to expand upon this knowledge by introducing some key methodological changes.

In the following sections, a review of the literature examining the relationship between rumination and social problem-solving in regards to depressive and anxious symptoms will be conducted, and the rationale for the current study will be presented. More specifically, the social problem-solving and response style theories and their relation to depression and anxiety will be explained in Chapters 2 and 3, respectively. In Chapter 4, the theoretical relationship between rumination and social problem-solving will be introduced, and literature examining this relationship as it pertains to depression
will be reviewed. Finally, a summary and rationale for the current study will be reported in Chapter 5.

Following the review of the literature and rationale for the current study, the methods used to explore the hypotheses at question will be presented, and the results of the current study will be reported in Chapters 6 and 7, respectively. Finally, the manuscript will conclude with a discussion of how the results might be integrated with the existing literature, the limitations of the current study, and some possible avenues for future research in this area. This discussion will be presented in Chapter 8.
CHAPTER II

Overview of Social Problem-Solving Theory

Social problem-solving is when an individual problem-solves in the natural environment (D'Zurilla & Nezu, 1982). It is a self-directed cognitive-behavioral process where an individual generates a variety of potentially effective alternative solutions to a problematic situation in order to increase the probability of selecting the most effective solution (D'Zurilla & Goldfried, 1971). The goal of social problem-solving is to obtain an effective solution that achieves the goal of problem-solving while it maximizes positive consequences and minimizes negative consequences.

The social problem-solving process is a complex process that consists of a variety of cognitive and behavioral processes (D'Zurilla, Nezu, & Maydeu-Olivares, 2002). The social problem-solving process is characterized by two dimensions: problem orientation, and problem-solving style. Problem orientation refers to the cognitive-emotional reaction to a problem an individual is confronted with in the social environment. It reflects the problem-solver's beliefs, appraisals, and feelings about the problem and their ability to solve the problem. According to D'Zurilla & Chang (1995), problem-orientation is a motivational process because the cognitive-emotional reaction to a problem motivates individuals to react to a problem in a certain style.

There are two types of problem-orientation: (a) positive problem orientation and (b) negative problem orientation. Positive problem orientation is associated with constructive problem-solving. According to D'Zurilla & Goldfried (1971), a positive
problem orientation includes a set of attitude that appraises a problem as a challenge and views their problem as a normal part of life. Individuals with positive problem orientation believe their problem is solvable and that they possess the skills to solve the problem successfully (D'Zurilla et al., 2002). However, negative problem orientation is characterized by perceptions of problems as threats, beliefs that they are inefficient in solving their problems, and expectations of negative outcome (Chang & D'Zurilla, 1996, D'Zurilla & Nezu, 1999). Therefore, individuals who report higher negative problem-orientation are less inclined to actively problem-solve due to the beliefs that their attempts to problem-solve will be fruitless.

The second dimension of the social problem-solving process is problem-solving style. Problem-solving style is the cognitive and behavioral activities that problem-solvers use to understand problems and attempt to find effective solutions. There are three different problem-solving styles: (a) rational problem-solving style, (b) avoidance problem-solving style, and (c) impulsive/careless problem-solving style. Rational problem-solving style is associated with adaptive problem-solving, while avoidance and impulsive/careless problem-solving style are associated with maladaptive problem-solving.

The rational problem-solving style is a systematic approach to effectively problem-solve. According to D'Zurilla and Goldfried (1971), the rational problem-solving style involves four steps: (a) problem definition, (b) generation of alternative solutions, (c) decision making, and (d) solution implementation and verification. The first step requires individuals to define all aspects of the problem, gather as many specific and concrete facts about the problem, identify all obstacles, differentiate relevant facts from
irrelevant facts, and set realistic goals. Once the problem is defined, problem-solvers will focus on their goals while generating as many creative and conventional alternative solutions as possible. Problem-solvers will then examine all consequences of each alternative solution and decide which alternative solution they will choose to implement. Once a solution is chosen, problem-solvers will implement the chosen situation, while monitoring and evaluating the outcome of the solution to determine if the desired goal is obtained. If the goal is accomplished, the problem-solving process ends. However, if the goal is not obtained, the four steps will be repeated until their goal is achieved.

According to D’Zurilla et al. (2002), the avoidance problem-solving style and the impulsive/carelessness problem-solving style are associated with maladaptive problem-solving. The avoidance problem-solving style is characterized by procrastination, passivity, and dependency. Individuals avoid the confronting problem, put off problem-solving as long as possible, wait to see if their problem will be resolved on its own, and/or shift their responsibility onto others. The impulsive/carelessness problem-solving style is characterized by active attempts to resolve the problematic situation. However, these techniques are impulsive, careless, hurried, and incomplete. Individuals will tend to go with the first idea that comes to their mind. Both avoidance and impulsive/careless problem-solving styles are considered as maladaptive problem-solving styles.

Social problem-solving has been associated with different pathologies such as family problems, school performance, depression, and anxiety (Baker, 2003; Goodman, Barfoot, Frye, & Belli, 1999; Nezu & Ronan, 1988; Marx, et al., 1992). However, for the purpose of this study, depression and anxiety will be the focus of attention. Studies have found that ineffective social problem-solving is associated with depressed mood. For
example, Nezu and Ronan (1988) examined if there are differences between the amount of depressed mood experienced by either ineffective or effective problem-solving under similar stress levels. Results indicated that when ineffective problem-solvers were induced with similar levels of stress as effective problem-solvers, ineffective problem-solvers reported more depressed mood. This suggests that ineffective social problem-solvers are more susceptible to depressed mood than effective problem-solvers. Results from Kant, et al., (1997) indicated similar results in a sample of middle-aged and elderly groups, which suggest that ineffective social problem-solving is associated with depressed mood between different age groups.

Deficits in social problem-solving have also been associated with anxious symptoms. For example, Marx, et al., (1992) conducted a study to examine the relationship between social problem-solving and depressive symptoms. In addition, anxiety was included in the study. Results indicated that social problem-solving was associated with both anxious and depressed individuals. Haaga, et al., (1995) also found that social problem-solving was associated with both anxious and depressive symptoms. Therefore, research suggests that ineffective social problem-solving is a possible etiological factor for anxious and depressive symptoms.

Research has attempted to understand the relationship between depressed mood and ineffective social problem-solving. Haugh (2006) suggest that negative problem orientation may be the link between depression and social problem-solving. This study examined if there is a relationship between the five dimensions of social problem-solving and the affect states of anxiety and depression. Results indicated that negative problem-orientation had a significant relationship with both anxious and depressed mood. These
results are interesting because Chang and D'Zurilla (1996) found that poor problem-solvers reported higher negative problem-orientation, suggesting that negative problem orientation is a key component to poor problem-solving. Therefore, depressed mood is associated with poor problem-solving because of its relationship with negative problem orientation.
CHAPTER III
Overview of Depressive Rumination

Research suggests that depressive rumination is a core feature of depression. Depressive rumination is defined as “behaviors and thoughts that focus one’s attention on one’s depressive symptoms and on the implications of these symptoms (Nolen-Hoeksema, 1991, p. 569).” Rumination is used to cope with depressed mood by focusing an individual’s attention to his or her depressive symptoms and the causes of these symptoms (Lyubomirsky & Nolen-Hoeksema, 1993). However, the Response Styles Theory (Nolen-Hoeksema, 1991) suggests that rumination may be counterproductive because it increases the severity and duration of depressed mood.

The Response Styles Theory outlines several different styles of responding to one’s emotional experience. However, for the purpose of this study, the focus will be on the ruminative response style and the distraction response style. The ruminative response style is a cognitive process involving repetitive and passive worrying about the symptoms of depression and the possible causes and consequences of these symptoms (Nolen-Hoeksema, 1991). It involves a pattern of behaviors and thoughts that focuses on the depressed mood which inhibits an active response. The passive response has been suggested to increase the severity and duration of depressed mood (Papageorgiou & Wells, 2004). The distraction response style is a cognitive process where an individual will respond to depressed mood with distraction. Studies have found that distracting the focus of attention away from their depressed mood will decrease depressed mood.
(Lyubormisky & Nolen-Hoeksema, 1993; Schmaling, Dimidjian, katon, & Sullivan, 2002). Therefore, the different response style that an individual engages has a significant relationship to the severity and the duration of depressed mood.

The Response Styles Theory attempts to explain the relationship between rumination and depressed mood. It suggests that depressed individuals ruminate in order to gain an understanding of their depressive symptoms and the possible causes and consequences of their symptoms. While ruminating, depressed individuals focus their attention on the cause and the meaning of their symptoms to generate solutions that will alleviate their distress. However, a ruminative response is a passive approach where depressed individuals only focus on their depressed mood versus actively problem-solving. As a result, the problem is left unresolved. The failed attempt to problem-solve will theoretically increase depressed mood which reactivates rumination. Therefore, depressed mood continues to increase because this vicious cycle is repeated over and over again.

Recent studies have explored the relationship between rumination and depressed mood. Nolen-Hoeksema, Morrow, and Fedrickson (1993) asked students to record their responses to depressed mood using a daily checklist which assessed the strategies used when depressed mood is experienced over a 30 day period. Results indicated that a ruminative response was positively correlated with the duration of depressed mood. In addition, Kasch, et al., (2001) conducted a study that examined the relationship between depressed mood and rumination. Results indicated that rumination was positively related to depressed mood.
The relationship between rumination and depression which has been established in the literature begs the question regarding why these processes are related. The Response Styles Theory suggests that there are three different processes that occur during a ruminative response that increases the severity and duration of depressed mood and facilitate the vicious cycle: (a) biases in recalling negative memories, (b) deficit with instrumental behaviors, attention, and concentration, and (c) interference in effective social problem-solving. These three processes have been found to facilitate the effects rumination has on depressed mood.

The first explanation regarding how these two constructs are related is that rumination causes depressed individuals to recall negative biased memories. When depressed individuals ruminate, they focus their attention inward to find an explanation to the cause of their depressed mood. In doing so, depressed individuals sift through their memories which provides an opportunity for them to retrieve negative biased memories. As a result, depressed individuals will likely make negatively biased conclusions about the source of their depressive symptoms. For an example, when depressed individuals ruminate, they will focus on their memories to find an explanation. In doing so, they might retrieve memories of past failures or inadequate qualities about themselves to explain why they are feeling depressed. However, positive memories might be neglected because these memories will not provide an explanation why they are feeling depressed. Due to the fact that only negative memories are being retrieved, it will increase the likelihood that depressed individuals will have pessimistic thoughts about themselves (Bower, 1981). The increase in pessimistic thoughts will likely increase depressed mood.
The second reason why rumination increases depressed mood is because rumination might cause deficits in attention, concentration, and instrumental behaviors. When depressed individuals ruminate, they focus their attention inward toward themselves. The inward focus of attention makes it difficult for them to concentrate and attend to specific tasks. Coyne, Metalsky, and Lavelle, (1980) found that the inability to concentrate and focus on specific tasks are associated with deficits in instrumental behaviors. This suggests that depressed individuals are more likely to experience deficits in instrumental behaviors and deficits in instrumental behaviors will increase depressive symptoms (Carver, Scheier, & Weintraub, 1989; Miller, 1975). Therefore, rumination increases depressed mood because it impairs the instrumental behaviors of depressed individuals by impairing their concentration and attention towards specific tasks.

The final reason is ineffective social problem-solving have been found to increase the effects of rumination on depressed mood. Marx, et al. (1992) conducted two studies that examined the effects rumination had on social problems-solving. Study 1 assessed depressed ruminators ability to solve hypothetical problems using the Means-Ends Problem-Solving Test (MEPS; Platt & Spivack, 1975), while study 2 assessed their ability to solve real problems. Results of both studies indicated that rumination impaired the depressed individual’s ability to solve hypothetical and real problems.
CHAPTER IV

The Interplay between Social Problem-Solving and Depressive Rumination

Research suggests that both rumination and ineffective social problem-solving are related to depressed mood. Additionally, some suggests that the two constructs are related to one another. Specifically, rumination impairs an individual’s ability to successfully solve their problems when depressed mood is present. For example, an individual who ruminates might make negative predictions about the outcomes of their attempt to problem-solve. Therefore, the individual will fail to engage in problem-solving because they think their efforts will not be successful. Theoretically, the individual will then experience increased depressed mood as a result of their problem not being resolved successfully.

A number of studies have attempted to examine this theoretical relationship between rumination and ineffective social problem-solving. Lyubomirsky and Nolen-Hoeksema (1995) conducted three studies that examined how rumination and social problem-solving are related. They hypothesized that rumination in the presence of dysphoria would negatively distort these individuals interpretations of their problems. Thus, these negative interpretations would impair dysphoric ruminators’ ability to generate effective solutions. In each of these three studies, individuals were placed into a dysphoric and a non-dysphoric group based on their depression score and individuals in each group were then induced with either a ruminative task or a distracting task.
Study 1 assessed if rumination in the presence of dysphoria has an effect on the interpretation of problematic situations. The interpretations were assessed using the Cognitive Biased Questionnaire (CBQ, Krantz & Hammen, 1979). Results indicated that dysphoric ruminators demonstrated more negative-biased interpretations of problematic situations than the other three groups. For example, a question on the CBQ asked the participants to imagine that they were encouraged by a friend to run for the presidency of an organization, and that they eventually lost the election. Dysphoric ruminators responded to this situation with negative affect and imagined that they had lost by a landslide. In addition, they tended to interpret problematic situations as more distorted and sad, and offered more pessimistic attributions than the other three groups. This tendency to negatively interpret problematic situations was unique to dysphoric ruminators because results indicated that the other three groups did not report negative interpretations to their problems.

Study 2 examined if rumination when experiencing dysphoria, had an effect on an individual’s expectations about their future. Participants were asked to list events and situations they expect to experience once they have graduated from college, and rate how happy they would be if these events really happened and how likely these events will occur. Results indicated that dysphoric ruminators listed as many happy events as the three other groups, but had lower expectations of happy events occurring when these they graduated from college. The lower expectations of future happy events was also unique to dysphoric ruminators since the other three groups equally expected that future happy events would occur after graduating from college.
The goal of study 3 was to examine whether rumination in the presence of dysphoria would impair social problem-solving. Social problem-solving was assessed with an adapted form of the MEPS where participants were given the beginning and end of a problematic situation and were asked to generate the steps leading up to the provided outcome. Two variables were assessed with the modified MEPS: (a) a global rating of problem-solving effectiveness and (b) how much percentage of the participants’ solutions matched the model solutions for each problem. Results indicated that global ratings of problem-solving effectiveness for dysphoric ruminators were lower than the other three groups. In addition, dysphoric ruminators offered fewer solutions that matched the model solutions than the other three groups. The results from both variables suggest that rumination only in the presence of dysphoria impairs the ability to generate effective solutions for hypothetical problems.

A limitation of the Lyubomirsky and Nolen-Hoeksema (1995) study was that social problem-solving was measured with hypothetical problems and not real problems. This might be a problem because people may interpret real versus imagined problems differently and might use different problem-solving approaches when confronted with different types of problems. In a follow-up study, Lyubomirsky, et al. (1999) addresses this limitation by including both hypothetical and real problems. In addition to including real problems, this study also assessed how likely participants would implement their solutions to their problems suggesting that their willingness to actively problem solve may be influenced by rumination. Hypothetical problems were measured using the MEPS and real problems were measured by a problem-solving task. The problem-solving task asked participants to list the three largest problems they were currently facing and rate
how likely they would be able to solve or alleviate the problem and how severe the problem was. Participants were then instructed to list three alternative solutions for each problem and rate (a) how confident they believed the solution was effective, (b) how likely they believed the solution would work if carried out, and (c) how likely they would implement the solution to solve the problem. Two independent raters rated how severe and solvable each problem was and how effective, realistic, and difficult it would be to carry out each solution.

The problem-solving task was used in study 1 to assess the participants’ interpretations of their own personal problems and their ability to generate effective solutions to real problems. Results indicated that dysphoric ruminators rated their problems as more severe and less solvable than the other three groups. However, independent judges rated the problems of dysphoric ruminators as equally severe and solvable as other three groups, suggesting that dysphoric ruminators have negative-biased interpretations of their problems. When participants were asked to generate solutions for their problems, the independent raters rated the solutions generated by dysphoric ruminators as equally effective, realistic, and easy to implement as the solutions generated by the other three groups. However, dysphoric ruminators indicated that they were unwilling to implement their solutions to solve the problem. Even though dysphoric ruminators generated equally effective solutions to their problem, they opt to avoid the problem altogether.

Study 2 examined the natural thoughts of dysphoric ruminators to determine what thoughts might contribute to the negative-biased interpretations of their problems. Participants were asked to think their thoughts out loud into a microphone in response to
a ruminative or distracting task. Two independent judges evaluated the responses in regards to negativity of tone, problem-focus, self-criticism, self-blame, self-confidence, optimism, and general perceived control. Results indicated that the thoughts of dysphoric ruminators were more negative and negative in tone than the other three groups. The thoughts of dysphoric ruminators were more problem-focused, more self-critical, and blame themselves for the source of their problems than the other three groups. In addition, dysphoric ruminators demonstrated lower levels of confidence, optimism, and general sense of control of their problems than the other three groups. In general, the thoughts of dysphoric ruminators were more negatively biased, self-critical, and pessimistic than the other three groups.

The purpose of study 3 was to examine if rumination in the presence of dysphoria will impair an individual’s ability to social problem-solve hypothetical problems using the MEPS. Similar to the results found in previous studies, the effectiveness of the solutions generated by dyphoric ruminators were rated lower and a smaller percentage of their solutions matched the model solutions than the other three groups. Therefore, results provide further support that rumination in the presences of dsyphoria impairs an individual’s ability to generate effective solutions to hypothetical problems.

Results from Lyubomirsky and Nolen Hoeksema (1995), and Lyubomirsky, et al. (1999) indicated that rumination in the presence of dysphoria impairs social problem-solving in two ways. First, rumination will negatively distort a dysphoric individual’s interpretations about their problems. Dysphoric ruminators perceived problematic situations as unsolvable, too severe, had more negative biased interpretations, and had more pessimistic attributions towards their problems. In addition, they had lower
expectations for happy events to occur in their future. Second, in response to these negative interpretations of problematic situations, dysphoric ruminators reported that they would be unwilling to implement their solutions to the problem rather than actively problem-solving. Because they believe their problems to be too severe, unsolvable, and expect negative outcomes, dysphoric ruminators would rather avoid their problems. Thus, their problem is left unresolved which indicates a fail attempt at problem-solving.

In addition to the negative interpretations of their problems and their avoidance problem-solving style, Lyubomirsky and Nolen Hoeksema (1995), and Lyubomirsky, et al. (1999) also examined the effectiveness of the solutions generated by the participants on both hypothetical and real problems. Results from these studies indicated that the solutions generated by dysphoric ruminators were rated as less effective and had smaller percentage of solutions that match the models solutions than the other three groups on hypothetical problems measured by the MEPS. Donaldson and Lam (2004) also found similar results. However, instead of using dysphoric individuals, this study examined a sample of individuals with major depression. Therefore, ruminators with dysphoria and major depression generate more ineffective solutions to hypothetical problems which suggest that rumination effects how well an individual generates solutions.

Although several studies have found that dysphoric ruminators generated more ineffective solutions to hypothetical problems than the other three groups, it is inconclusive if rumination actually impairs individuals with dysphoria or major depression ability to generate effective solutions. This is because in study 1 of Lyubomirsky et al. (1999), independent raters rated the solutions of dypshoric ruminators as equally effective as the other three groups on real problems. Due to the variability
between hypothetical and real problems, it is unclear if rumination impairs an individuals’ ability to generate effective solutions in a state of dysphoria or major depression. Therefore, the only conclusion that can be made on the relationship between rumination and social problem-solving is that rumination negatively distorts a dysphoric individual’s interpretation of their problems which influences them to avoid the problem versus actively problem-solving. Therefore, the avoidance of the problem exemplifies a fail attempt to problem-solve because their problem is left unresolved.

Recent studies suggest that there are other cognitive and behavioral processes that may also explain the relationship between rumination and social problem-solving. Some theorists suggest that the type of information gathered from rumination impairs social problem-solving. D’Zurilla and Goldfried (1971) suggest that in order to successfully implement the steps of rational problem-solving, there is a need for specific and concrete information. However, depressed and dysphoric ruminators utilize less specific and more ambiguous information when problem-solving because dysphoric and individuals with major depression who rumination has the tendency to retrieve over-general autobiographical memory and think abstractly (Kao, Dritschel, & Astell, 2006; Raes, Hermans, Williams, Demyttenaere, Sabbe, Pieters, & Eelen, 2005; Watkins & Moulds, 2005). These two cognitive processes are associated with less specific, less detailed, vague, and ambiguous information. As a result, problem-solving is impaired because important aspects of the problem might be neglected providing an incomplete definition of the problem. An incomplete definition of the problem might inhibit the generation of alternative solutions which decreases the probability to decide on an effective solution. As a result, dysphoric and individuals with major depression who ruminate are
ineffective problem-solvers because they cannot implement the steps of rational problem-solving effectively.

Theorists also suggest that rumination in the presences of dysphoria impairs social problem-solving because it induces a passive approach from a state oriented rumination (Watkins & Baracaia, 2002). A state orientation is a ruminative process where individuals are preoccupied with simulating alternative plans by analyzing and evaluating past success and failures making it difficult to initiate new actions (Kuhl, 1981). In other words, state-orientated ruminators are repeatedly ruminating on past experiences to help them generate a solution to solve their problem, but these ruminative thoughts inhibit an active behavioral response. In an attempt to gain insight to solve their problem with rumination, depressed individuals adopt a passive approach leaving the problem unresolved. Therefore, depressed ruminators endorse a passive approach which impairs their ability to problem-solve successfully.
CHAPTER V

Summary and Rationale for the Current Study

Research suggests that rumination might be etiologically related to depression via its impact on social problem-solving. Specifically, studies suggest that rumination impairs social problem-solving which then leads to increased depressed mood as a result of their problem not being resolved successfully. However, these studies have failed to address several limitations that may have a significant impact on the results found. The purpose of the study is to identify and address the limitations of the studies to provide more specific and accurate information about the etiological factors related to depressive symptoms.

The first limitation of these studies is that they used insufficient means to measure social problem-solving. Previous studies only used a performance task to measure social problem-solving (Donaldson & Lam, 2004; Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky et al., 1999). However, a performance task is not sufficient to assess an individual’s ability to problem-solve. According to Chang, D’Zurilla, and Sanna (2004), there are two types of measures that needs to be accounted for when measuring social problem-solving: (a) process measures and (b) outcome measures. Process measures assess the general cognitive and behavioral processes that facilitate or inhibit effective social problem-solving. Outcome measures, on the other hand, assess the quality of specific solutions when applied to specific problems. However, these previous studies have only used outcome measures to measure social problem-solve.
It is important that both process and outcome measures are assessed when measuring social problem-solving. According to Nezu and D’Zurilla (1989), there are several disadvantages of only accounting for one type of measure. Process measures do not measure the quality of their ability to apply their skills to a specific problem. An individual may possess adaptive problem-solving skills, but may not be able to implement these skills effectively to a problem. On the contrary, outcome measures may determine the quality of the outcome from problem-solving, but it does not assess if problem-solvers used adaptive or maladaptive means to solve the problem. For example, a problem-solver may not possess adaptive problem-solving skills but might still obtain a favorable outcome due to chance. Therefore, this study will address this limitation by assessing for both process and outcome measures. Process measures will be assessed with the self-report questionnaire measuring the dimensions of social problem-solving and outcome measures will be assessed with a social problem-solving performance task that measures an individual’s ability to apply the steps of rational problem-solving to a real problem.

In addition, these previous studies measured social problem-solving with the MEPS, a problem-solving task that measure an individual’s ability to generate solutions to hypothetical problems. The use of hypothetical problems can provide inaccurate measurements of social problem-solving because they do not reflect the natural ability to problem-solve real problems. Lyubomirsky et al. (1999) attempted to address this problem by constructing a problem-solving task that asks participants to generate solutions to real problems. As indicated by the results, there were differences on the quality of the solutions generated by dyphoric ruminations between hypothetical and real
problems. Ruminators with dysphoria and major depression generated more ineffective solutions to hypothetical problems, while ruminators with dysphoria generated equally effective solutions to real problems as dyphoric individuals induced with distraction and both no symptom groups. Since there are no studies that specifically examined the differences in social problem-solving ability between hypothetical problems and real problems, this current study will only assess problem-solving on real problems to have a more accurate understanding how individuals naturally problem-solve.

However, there are limitations within the problem-solving task of Lyubomirsky et al. (1999). The performance task measured the effectiveness of the solutions that participants generated to real problems. However, the criteria used to measure the effectiveness of the solutions generated were not based on a widely used theory of social problem-solving such as D’Zurilla and Goldfried’s (1971) rational problem-solving process. It questions what criteria were used to measure the effectiveness of the solutions generated. This current study will attempt to address this limitation by developing a social problem-solving performance task was similar to Lyubomirsky et al.’s (1999) problem-solving task. However, the current social problem-solving performance task was adjusted in order to measure how participants applied the specific steps of D’Zurilla and Goldfried’s (1971) rational problem-solving to real problems. In addition, participants were instructed to define and solve one interpersonal and one intrapersonal problem to account for any possible differences these problems may have.

Finally, it is unclear if the relationship between rumination and social problem-solving are etiological factors for depression because these studies did not include or controll for anxiety. As stated earlier, there is a high co-morbidity between anxious and
depressive symptoms (Clark & Watson, 1991; Zimmerman et al., 2000). For example, Fava et al. (2000) found that in a sample of outpatient clients who were diagnosed with major depressive disorder, 50.6% of those clients experienced co-morbid anxiety disorder diagnosis. Even though anxiety and depression have high co-morbidity, they do not share similar relationships with social problem-solving. Results from Haugh (2006) indicated that the relationship between social problem-solving and depression changed when anxiety was controlled for. When anxiety was controlled for, the relationship between rational problem-solving and depression increased and reached statistical significance. This suggests that anxiety may have an influence on the relationship between depression and social problem-solving. Specifically, anxiety has an influence on how well depression individuals would rationally problem-solve. Therefore, the primary purpose of this current study is to determine if there are differences in social problem-solving ability between groups characterized rumination status and symptom level.

One of the hypotheses is ruminators with pure depression and mixed symptoms of anxiety and depression will be more ineffective problem-solvers than non-ruminators with similar affect states and both no symptoms groups regardless of their rumination status. Specifically, this current study will attempt to replicate the results of Lyubomirsky and Nolen-Hoeksema (1995), and Lyubomirsky et al. (1999) with the use of both process and outcome measure. The results of these studies indicated that rumination impaired social problem-solving in two different ways. First, rumination negatively distorted dysphoric individuals’ interpretations of their problematic situations. They believed that their problems were unsolvable, more severe, and provided more pessimistic attributions. Second, as a consequence to these negative interpretations, dysphoric ruminators were
more likely to avoid their problems than to actively problem-solve. Therefore, this
current study hypothesize that ruminators with pure depression and mixed symptoms will
have more negative interpretations about their problems and are more likely to avoid their
problems than non-ruminators with similar affect states and no symptom groups.

This current study will also examine if rumination impairs rational problem-solving. The literature attempted to examine the ability to generate effective solutions explains the relationship between rumination and social problem-solving for individuals with dysphoria and major depression (Donaldson & Lam 2004; Lyubomirsky & Nolen-Hoeksema, 1995; Lyubormisky et al., 1999). Ruminators with dysphoria and major depression generated more ineffective solutions when attempting to solve hypothetical problems. However, in study 1 of Lyubomirsky et al. (1999), dysphoric ruminators were able to generate equally effective solutions to real problems as dysphoric individual induced to distraction and no symptom groups. Therefore, it is hypothesized that ruminator with pure depression and mixed symptoms will be equally effective in rational problem-solving as non-ruminator with similar affect states and both no symptom groups because only problem-solving for real problems will be assessed.
CHAPTER VI

Method

Participants

Participants were 129 undergraduates students enrolled in Introductory to Psychology courses at a university in the northeast. Participants received course credit for their participants. Participants’ age ranged from 18 to 30 ($M = 19$). Sixty-nine percent of the participants were male and 31% were females. The majority of the population was Caucasian which accounted for 75% of the population. The rest of the ethnic groups were relatively evenly distributed (10% African American, 8% Hispanic, 3% Asian American, and 4% Multiracial/Other).

Measures

Demographics Questionnaire

A questionnaire was developed which asked participants to indicate demographic information such as gender, age, year in college, and race/ethnicity.

Social Problem-Solving Performance Task

The problem-solving task was adopted from the task used by Lyubomirsky et al. (1999); however, there were several changes made in an attempt to more accurately measure the rational problem solving process as outlined by D’Zurilla and Goldfried (1971). Participants were first provided with a definition of interpersonal and intrapersonal problems. An interpersonal problem was defined as problem that exists or occurs between people, while an intrapersonal problem was defined as a problem that
occurs within the individual. After reading the definition of the two types of problems, participants were asked to define one problem of each type that they were currently experiencing. In addition, they were asked to define each problem as specifically and comprehensively as they could.

Once the participants had defined each problem, they were asked to rate how solvable they thought each problem was, and how severe each problem was. Each of these ratings was done using a 7-point Likert scale ranging from 1 (not at all) to 7 (extremely). After completing these ratings, participants were then asked to list as many alternative solutions as they could generate for each of problems. Participants were then instructed to report which alternative solution they thought was the most effective solution and explain why they thought their chosen solution was the most effective potential solution to the problem. Finally, participants were asked to rate (a) how confident they were that the chosen solution would solve the problem, and (b) their willingness to actually implement the solution they chose to solve the problem.

Two independent raters, who are blind to participants’ affect and ruminative states, independently rated each participant’s responses to the performance task. Specifically, independent raters rated (a) how well the participant defined the problem, (b) how well the participants decided on a solution, and (c) how effective the solution chosen would be at solving the participants’ problem. Independent raters were trained to rate each question. Each rating was done using a 7-point Likert scale ranging from 1 (not at all) to 7 (extremely). Reliability between the two raters for the three ratings on the interpersonal problem were .84, .86, and .88, respectively. Reliability between the two raters for the three ratings on the intrapersonal problem were .84, .91, and .83,
respectively. There was moderately highly inter-rater reliability of at least \( r = 0.83 \) on each question.

The final problem solving variable measured in the performance task was the number of solutions generated for each problem. This variable was calculated simply by counting the number of alternative solutions generated for each problem.

*Social Problem-Solving Inventory – Revised* (SPSI-R; D’Zurilla et al., 2002)

The SPSI-R is a 52 item self-report inventory that measures how an individual would engage in social problem-solving. It is a revision of the original Social Problem-Solving Inventory (D’Zurilla & Nezu 1990). It consists of five different scales grouped into two major dimensions. The first dimension measures problem orientation, which consists of two different scales: (a) positive problem orientation (5 items) and (b) negative problem orientation (10 items). The positive problem orientation scale assesses for the presence of a constructive cognitive-emotional set used when problem-solving. Participants who score high on this scale view their problem as a challenge, are more confident in their ability to overcome this problem, and believe that the problem is solvable. On the contrary, the negative problem orientation scale measures the presence of maladaptive cognitive-emotional set used when problem-solving. Individuals who score high on this scale will have a negative attitude towards their problem, is not confident in their ability to solve the problem, and do not feel their problem is easily solvable.

The second dimension assessed by the SPSI-R is problem-solving style. Three types of problem-solving styles are measured by the SPSI-R, including (a) rational problem-solving style (20 items), (b) avoidance style (7 items), and (c)
impulsive/carelessness style (10 items). The rational problem-solving style scale assesses for an individual's ability to engage in a constructive problem-solving style that is systematic and rational. The rational problem-solving style scale is comprised of 4 different subscales each containing 5 items. Each subscale corresponds to the 4 steps of the rational problem-solving style: (a) problem definition, (b) generating alternative solutions, (c) decision making, and (d) solution implementation/verification. Scores on each subscale are added up to determine the general score for the rational problem-solving scale. Individuals who score high on the rational problem-solving style scale will indicate effective problem-solving skills. The avoidance style scale measures a maladaptive problem-solving style consisting of procrastination, inactivity, passivity, and dependency. Individuals who score high on this scale will have the tendency to avoid or push off the problem as long as possible. The impulsive/carelessness problem-solving style scale measures a maladaptive problem-solving style consisting of impulsive, careless, hurried, and incomplete attempts in problem solving. Individuals who demonstrate a high score on this subscale will have the tendency to respond to a problem with the first solution that comes to their mind. Participants will respond to each item on a 5-point Likert scale (0="Not at all true of me", 4="Extremely true of me").

The SPSI-R demonstrated high internal consistency which ranges from 0.73 to 0.92. The SPSI-R demonstrated high test-retest reliability with a test-retest coefficient which ranges from 0.74 to 0.84. There was evidence supporting the validity of the SPSI-R (D’Zurilla et al., 2002).

*Ruminative Response Scale-Short Form (RRS-SF; Nolen-Hoeksema & Morrow, 1991)*
The RRS-SF is a 10 item self report questionnaire that measures an individual’s tendency to respond to feelings of sadness and depression with rumination. The RRS-SF is a subscale of the Response Styles Questionnaire (RSQ; Nolen-Hokesema & Morrow, 1991) which assesses an individual’s general response style when experiencing feelings of sadness or depression. Participants are asked to rate each item on a 4-point scale ranging from 1 (Never) to 4 (Always). Items were summed to obtain a total score that ranges from 10 to 40. Higher scores indicate higher use of a ruminative response to feelings of sadness and depression. Participants will be placed into groups according to scores on the RRS-SF. The two groups included (a) a non-ruminative group and (b) a ruminative group. The cutoff score between the two groups were determined by the median score of all RRS-SF scores. RRS-SF scores that were higher than or equal to the median score were placed into the ruminative group, while RRS-SF scores that are lower than the median score were placed in the non-ruminative group.

The RRS had an internal consistency of 0.89 demonstrating a high internal consistency (Nolen-Hoeksema & Morrow 1991). The RRS-SF demonstrated good test-retest reliability where subject responses to the RRS significantly correlated (r=0.62) over a 30-day period (Nolen-Hoeksema et al., 1993). Evidence supports that the RRS-SF has construct validity. It has been found that the RRS-SF was highly correlated with negative temperament and self-criticism, and was moderately correlated with emotion-focused coping (Kasch, Klein, & Lara, 2001). Evidence supports convergent validity. When the RRS-SF was compared to the Rumination Sadness Scale there were no differences on mean rumination scores between the two scales (Roelof, Muris, Huibers, Peeter, & Arntz, 2006). Evidence also supports discriminant validity of the RRS when it was compared to
the Penn State Worry Questionnaire (Rewston, Clarke, Moniz-Cook, & Waddington, 2007).


The BDI-II is a 21-item self-report questionnaire that measures acute depression. The BDI-II is used to assess the severity of depressive symptoms that the participants have been experiencing over the past week. Participants are instructed to rate how much each symptom bothers them on a 4-point scale where a score of 0 indicates no symptoms and a score of 3 indicates severe symptoms. Scores on all items were added to obtain a total score that ranges from 0 to 63, with higher scores indicating an increase in depressive symptoms. The cutoff score of 10 (Beck, Steer, & Garbin, 1988) on the BDI-II was used to determine their depressive state, with score of 10 and above indicating a depressed state and scores lower than a 10 indicating a no-symptom state.

The BDI-II had an internal consistency of 0.92 demonstrating a high internal consistency. The BDI-II demonstrated high test-retest reliability with a test-retest coefficient of 0.75 that lasts for a period of one-week (Beck et al., 1996). BDI-II scores had a correlation of 0.93 with BDI scores supporting the BDI-II’s convergent validity (Dozois, Dobson, & Ahnberg, 1998). The BDI-II had evidence of discriminant validity when compared to the Inventory to Diagnose Depression, The Center for Epidemiologic Studies Depression Scale, the Coolidge Axis II Inventory, The Perceived Stress Scale, the Short Psychological Well-Being Scale, and other measures (Haaga, McDermut, & Ahrens, 1993; Pace & Trapp, 1995; Segel, Coolidge, Cahill, & O’Riley, 2008, Steer & Clark, 1997).

*Beck Anxiety Inventory* (BAI; Beck, Epstein, Brown, & Steer, 1988)
The BAI is a 21 item self-report questionnaire that measures acute anxiety. The BAI is used to assess the severity of anxious symptoms that the participants have been experiencing over the past week. Participants were asked to rate how much each symptom bothered them during the previous week on a 4-point scale ranging from 0 (Not at all) to 3 (Severely). Score on all items were added to obtain a total score that ranges from 0 to 63, with higher scores indicating an increase in depressive symptoms. The cutoff score of 10 (Beck et al. 1988) on the BAI was used determined their anxious state, with scores of 10 and above indicating an anxious state and scores lower than a 10 indicating a no symptom state.

The BAI had a high internal consistency of 0.92. The BAI also demonstrated high test-retest reliability with a test-retest coefficient of 0.75 for a one-week period. The BAI demonstrated good discriminant validity. It was able to discriminate between homogeneous and heterogeneous anxious diagnostic groups from other psychiatric groups. In addition, the BAI demonstrated good convergent validity (Beck, et al. 1988). The correlations between the BAI and other related measures (HARS-R and CCL-A) were generally positive and high, while measures with unrelated measures were low. However, even though the BAI was distinct from that of the BDI, the correlation of BAI and BDI scores was 0.48 (Beck, et al. 1988).

**Design**

The current study utilized a 2 x 4 between groups design. The first factor being studied was rumination level. This factor had two levels. Participants with scores at or above 22 were placed in the “Rumination” group whereas participants with scores below 22 were placed in the “Non-Rumination” group. The score of 22 was obtained from the
median score of all RRS-SF scores. The second factor being studied was symptom level. This factor had four levels. These levels were defined based on the participants responses to the BDI-II and BAI. Specifically, the groups were a purely depressed group (BDI-II scores at or above 10 and BAI scores below 10), a mixed symptom group (BDI-II scores at or above 10 and BAI scores at or above 10), a no symptom group (BDI-II scores below 10 and BAI scores below 10), and a pure anxious group (BDI-II scores below 10 and BAI scores at or above 10).

The combination of the symptom and rumination scores yielded a total of eight different groups, specifically ruminators with (a) pure depression, (b) mixed symptoms, (c) no symptoms, and (d) pure anxiety, and non-ruminators with (e) pure depression, (f) mixed symptoms, (g) no symptoms, and (h) pure anxiety.

Procedure

The problem-solving performance task and the set of questionnaires were administered in groups of 1-10 people and took approximately one hour to complete. The participants were first instructed to complete the problem-solving performance task on a computer. They were asked to identify two problems, one interpersonal and one intrapersonal. For each problem, they were provided fifteen minutes to solve the problem. Thus, the entire problem solving task accounted for thirty minutes.

Following the problem-solving performance task, questionnaire packets were distributed. The questionnaires were distributed in a fixed order, including the SPSI-R, RRS, BDI, BAI, and the demographic questionnaire. The completed questionnaire packets and consent forms were collected separately and all responses were anonymous.
CHAPTER VII

Results

Preliminary Analysis

A series of initial analysis were conducted to explore if gender, age, and ethnicity were related to the ruminate, problem-solving, and affect variables. A total of 24 t-tests were conducted to explore gender differences among these variables. Results indicate that there were no statistically significant differences between males and females on any of the rumination, problem-solving, or affect variables. There were no statistically significant differences on between males ($M=21.45$) and females ($M=22.64$) for rumination, $t(128)=1.75, p > .05$. In addition, a correlational analysis was conducted to determine if there was a relationship between age and the affect, rumination, or problem-solving variables. Results indicated that age was not significantly related to any of the affect, rumination, or problem-solving variables. Finally, 24 one-way ANOVAs were conducted to explore the differences between ethnicity on the affect, ruminateive, and problem-solving variables. Results indicated that there were no significant differences between ethnic groups on these variables. Because none of the preliminary analyses indicated that the constructs under study varied significantly by gender, age, and ethnicity, these variables were not included in any of the following analyses.

Group Composition

A total of 129 participants were included in this study. The participants were separated into groups depending on their rumination status and symptom level. For
individuals who considered as ruminators, 14 participants were purely depression, 36 participants experienced mixed symptoms, 11 participants had no symptoms, and only 3 participants were purely anxious. For individuals who did not rumination, 12 participants were purely depressed, 4 participants experienced mixed symptoms, 28 participants had no symptoms, and 6 participants were purely anxious.

Correlations

A first set of correlations were computed between the five problem-solving scales on the SPSI-R, the BDI-II, the BAI, and the RRS-SF. The results of these analyses are presented in Table 1. Results indicated that rumination was positively and significantly related to both affect measures, negative problem orientation, and both maladaptive problem solving styles. In addition, rumination was negatively and significantly correlated with positive problem orientation. The only correlation for rumination which did not reach statistical significance was the correlation with rational problem solving.

For the problem solving variables, negative problem orientation and the maladaptive problem solving styles were positively and significantly correlated with both affect measures and rumination, with one exception. Specifically, the correlation between impulsive-careless problem solving and anxiety was not statistically significant. In contrast, the positive problem orientation and rational problem solving style were not significantly related to either of the affect variables, and only positive problem orientation was significantly related to rumination.

A second set of correlations were computed in order to examine the relationship between the participant’s ratings on the social problem-solving performance task, the BDI-II, the BAI, the RRS-SF, and the problem orientations. The results are presented in
Table 2. The participants’ ratings of how solvable their intrapersonal problems are were negatively and significantly related to the BDI-II, RRS, and negative problem orientation, and they were positively and significantly related to positive problem orientation. In addition, participants’ confidence that their solutions would solve their intrapersonal problems was negatively and significantly correlated with the BDI-II and negative problem orientation and positively and significantly related to positive problem orientation. Finally, ratings of how stressful the participants’ interpersonal problems were positively and significantly related to rumination scores.

A third set of correlations were computed in order to examine the relationships between the independent raters ratings on the social problem solving performance task, the BDI-II, the BAI, the RRS-SF, and the two problem orientations. Results indicated that there were no significant correlations between the independent raters’ ratings on the social problem-solving performance task, the BDI-II, the BAI, the RRS, and the two problem orientations.

Multivariate of Analysis (MANOVA): Group Differences between Problem-Solving Variables

A total of three MANOVAs were conducted to examine if there are differences on social problem-solving variables between groups characterized by affect and ruminative state. The first MANOVA was a 2 x 4 between groups analysis. Symptom level and rumination level served as the between groups variables. The dependent variables were negative problem orientation, positive problem orientation, rational problem-solving style, avoidance problem-solving style, and the impulsive/carelessness problem-solving style. Results of this analysis are presented in Table 3.
Results from the first MANOVA indicated that there were significant between groups differences found on the negative problem orientation scale, $F(7,122) = 6.71, p = 0.000$, and the avoidance problem-solving style scale, $F(7,122) = 4.13, p = 0.000$. A post-hoc analysis was conducted to determine which groups were significantly different from each other. Results indicate that ruminators with mixed symptoms reported significantly higher negative problem orientation ($M = 22.2$) than non-ruminators with pure depression ($M = 9.9$) and non-ruminators with no symptoms ($M = 11.7$).

In regards to avoidance problem-solving style, results indicated that ruminators with mixed symptoms ($M = 15.6$) reported that they would avoid their problems significantly more than non-ruminators with pure depression ($M = 7.5$).

The second and third MANOVAs were both $2 \times 4$ between groups analyses. Symptom level and rumination level served as the between groups variables. The dependent variables were the participants’ ratings of (a) how solvable their problem was, (b) how stressful the problem was, (c) how much confidence they had in their most effective solution, and (d) how likely they would be to implement their solution to the problem on both interpersonal and intrapersonal problems. The second analysis was conducted for the interpersonal problems and the third analysis was conducted for the intrapersonal problems. Results of these analyses are presented in Table 4. Results indicated that there were no significant differences between groups on any of the dependent variables. This was true for both the intrapersonal problem and the intrapersonal problems. Thus, these results indicated that the interpersonal/intrapersonal manipulation we used was not effective.
The fourth and fifth MANOVAs were both 2 x 4 between groups analyses. Symptom level and rumination level served as the between groups variables. The dependent variables were the independent raters’ ratings of (a) how well the participant defined the problem, (b) how well the participant decided on which solution is the most effective solution, and (c) how effective the chosen solution was. The final dependent variable was how many alternative solutions were generated. The fourth analysis was conducted for the interpersonal problems and the fifth analysis was conducted for the intrapersonal problems. Results of these analyses are presented in Table 5.

Results indicate that there were no significant differences between groups on any of the dependent variables. This was true for both the interpersonal problem and the intrapersonal problem. Thus, these results indicated that the interpersonal/intrapersonal manipulation we used was not effective.
CHAPTER VIII

Discussion

The first purpose of the current study was to examine the relationship between rumination and social problem-solving and to examine whether this relationship changes based on the symptom level, rumination status, type of social problem solving measure used, or type of problem being solved. The results of the current study failed to support the importance of problem type. Results indicated that regardless of whether ratings were done by the participant or independent raters, there were no significant differences on the relevant problem solving variables by problem type.

The results of the current study do indicate that both rumination status and symptom level are significant. This was especially true when examining mean scores on the self-report measure of social problem solving. Specifically, ruminators with mixed symptoms reported significantly higher negative problem orientation and avoidance problem-solving than non-ruminators with pure depression and no symptoms. These results are consistent with those of Lyubomirsky and Nolen-Hoeksema (1995), and Lyubomirsky et al. (1999) which suggest that rumination impairs social problem-solving because the dysphoric ruminator is more likely to negatively interpret their problems and their ability to solve their problems. In addition, rumination impacts social problem-solving because it promotes avoidance rather than approach to problems. The fact that these findings were only found in the mixed symptom group might indicate that these deficits are unique to mixed symptom groups versus pure depressed or anxious groups.
As such, they indicate the need for further study of this phenomenon in these symptom groups.

The second purpose of the current study was to examine whether rumination impairs rational problem-solving based on the symptom level, rumination status, type of social problem solving measure used, or type of problem being solved. The results of the current study failed to support the importance of problem type. Results indicated that regardless of whether ratings were done by the participant or independent raters, there were no significant differences on the relevant rational problem-solving variables by problem type.

The results of the current study indicate that rumination status and symptom level are not significant when examining means scores on the relevant variables of rational problem-solving style. These results are consistent with those of Lyubomirsky et al. (1999) which suggest that rumination does not impair rational problem-solving on real problems. Therefore, these results suggest rational problem-solving do not influence the relationship that rumination has with social problem-solving.

The results of the current study highlight the importance of accounting for the importance of controlling for anxiety when understanding the relationship between rumination and social problem-solving. Even though literature suggests there is high comorbidity between anxiety and depression (Fava et al., 2000) and that social problem-solving has a different relationship with depression as it does with anxiety (Haugh 2006), anxiety has yet to be included in any of the previous studies within this area of social problem-solving. The results of the current study are consistent with those of previous literature suggesting that rumination impairs social problem-solving. Specifically,
rumination increases the likelihood that individuals experiencing depressed mood would negatively interpret the problem and avoid their problems. However, the results also suggest that this relationship is unique to ruminators with mixed symptoms rather than a pure depressed state as previous literature suggested. In addition, the results of the current study were consistent with previous literature that suggests that rational problem-solving does not influence the relationship between rumination and social problem-solving.

The findings of the current research highlight the potential importance of addressing problem-solving orientation in the treatment of a co-morbid state of anxiety and depression. Instead of focusing on teaching individuals with mixed symptoms how to solve their problems using a rational problem solving style, a clinician might want to focus on the thoughts and beliefs about the problem. By refuting the negatively distorted interpretations of the problem, individuals with mixed symptoms may be able to view the problem as more manageable and solvable. This new and objective interpretation of the problem might motivate individuals with mixed symptoms to more actively engaged in problem-solving, thus allowing these individuals to potentially resolve their problems effectively.

Although results suggests that the relationship between rumination and social problem-solving are promising, a number of limitations should be considered and addressed in future research. First, the current sample was limited by a relatively small sample size, homogeneity, and its non-clinical status. The main goal of research is to be able to generalize its findings to a specific population. Because the current sample is limited, our ability to generalize these findings is also limited. For example, the severity of one’s symptoms might influence how individuals solve problems, and a clinical
sample is likely to have individuals in it who are experiencing more severe symptoms. Thus, the results of the current study might not be replicated in that sample. This suggests the need to replicate this study in more divergent and varied samples.

A final limitation of the current study is the assumption of homogeneity among interpersonal and intrapersonal problem types. A review of the problems that participants generated indicated that there was a tremendous amount of variability in the problems that they developed. For example, when participants were asked to identify an intrapersonal problem, problems regarding motivation, performance in school, financial problems, and low self-esteem issues were provided. The differences between these problems might have an impact on how an individual might attempt to solve the problems. For example, there might be certain variables found in one type of problem that may not exist for another type of problem, and these variables might change how an individual might problem-solve. Therefore, future researchers might focus on examining the relationship between social problem-solving and rumination with just one specific type of problem, such as poor school performance, or to control for the variability between different types of problems.
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depressive episodes. *Journal of Abnormal Psychology*, 100, 569-582.


APPENDIX A

Table 1. Correlations between Anxious and Depressive Symptoms, Rumination, and the Five Dimensions of Social Problem-Solving

<table>
<thead>
<tr>
<th></th>
<th>BDI</th>
<th>BAI</th>
<th>RRS</th>
<th>NPO</th>
<th>PPO</th>
<th>RPS</th>
<th>APS</th>
<th>IPS</th>
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<td>-.01</td>
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<td>.25**</td>
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<td>.44**</td>
<td>-.08</td>
<td>.10</td>
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<td>.15</td>
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<td></td>
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<td>.12</td>
<td>.47**</td>
<td>.25**</td>
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<tr>
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<td></td>
<td></td>
<td>.12</td>
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<td>-.36**</td>
<td>-.09</td>
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Note. BDI = Beck Depression Inventory - Second Edition; BAI = Beck Anxiety Inventory; RRS = Ruminative Response Scale - Short Form; NPO = Negative Problem Orientation; PPO = Positive Problem Orientation; RPS = Rational Problem-Solving Style; APS = Avoidance Problem-Solving Style; IPS = Impulsive/Carelessness Problem-Solving Style. * p<0.05, ** p<0.01
Table 2. Correlation between Anxious and Depressive Symptoms, Rumination and Participant’s Ratings of Social Problem-Solving

<table>
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<th>RRS</th>
<th>NPO</th>
<th>PPO</th>
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<td>.00</td>
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<td>.05</td>
<td>-.01</td>
<td>.01</td>
<td>-.03</td>
</tr>
<tr>
<td>Willingness to Implement Solution</td>
<td>-.01</td>
<td>-.04</td>
<td>-.01</td>
<td>.10</td>
<td>.20</td>
</tr>
<tr>
<td><strong>Intrapersonal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solvability</td>
<td>-.30**</td>
<td>-.13</td>
<td>-.27**</td>
<td>-.21*</td>
<td>.24**</td>
</tr>
<tr>
<td>Stressful</td>
<td>.13</td>
<td>.14</td>
<td>.07</td>
<td>.22*</td>
<td>-.03</td>
</tr>
<tr>
<td>Confidence in Solution</td>
<td>-.18*</td>
<td>-.09</td>
<td>-.16</td>
<td>-.20*</td>
<td>.18*</td>
</tr>
<tr>
<td>Willingness to Implement Solution</td>
<td>-.16</td>
<td>-.00</td>
<td>.01</td>
<td>.05</td>
<td>.14</td>
</tr>
</tbody>
</table>

*Note. BDI = Beck Depression Inventory – Second Edition; BAI = Beck Anxiety Inventory; RRS = Ruminative Response Scale – Short Form; NPO = Negative Problem Orientation; PPO = Positive Problem Orientation. * p<0.05, ** p<0.01*
APPENDIX C

Table 3. Mean Social-Problem Solving Scores by Rumination and Symptom Groups

<table>
<thead>
<tr>
<th>Rumination</th>
<th>Purely Depressed</th>
<th>Mixed Symptom</th>
<th>No Symptom</th>
<th>Purely Anxious</th>
<th>No Rumination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purely Depressed</td>
<td>20.1</td>
<td>22.2&lt;sub&gt;ab&lt;/sub&gt;</td>
<td>16.3</td>
<td>14.7</td>
<td>9.9&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Mixed Symptom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14.1</td>
</tr>
<tr>
<td>No Symptom</td>
<td></td>
<td></td>
<td>12.1</td>
<td>14</td>
<td>41.8</td>
</tr>
<tr>
<td>Purely Anxious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.5</td>
</tr>
<tr>
<td>Purely Depressed</td>
<td>15.6</td>
<td>15.6&lt;sub&gt;c&lt;/sub&gt;</td>
<td>11.6</td>
<td>7.7</td>
<td>17.3</td>
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<tr>
<td>Mixed Symptom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19.1</td>
</tr>
<tr>
<td>No Symptom</td>
<td></td>
<td></td>
<td>14.7</td>
<td>11.7</td>
<td>14.8</td>
</tr>
</tbody>
</table>

Note. NPO = Negative Problem Orientation; PPO = Positive Problem Orientation; RPS = Rational Problem-Solving Style; APS = Avoidance Problem-Solving Style; IPS = Impulsive/Carelessness Problem-Solving Style. Means with shared subscripts indicate a significant difference between the two groups at p < .01 on Post Hoc Test.
### APPENDIX D

Table 4. Mean Ratings of Social Problem-Solving by Participants by Rumination and Symptom groups

<table>
<thead>
<tr>
<th></th>
<th>Rumination</th>
<th>No Rumination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Purely Depressed</td>
<td>Mixed Symptom</td>
</tr>
<tr>
<td><strong>Interpersonal</strong></td>
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<td></td>
</tr>
<tr>
<td>Solvable</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Stressful</td>
<td>5.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Confidence in Solution</td>
<td>4.9</td>
<td>5.5</td>
</tr>
<tr>
<td>Willingness to Implement Solution</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>Intrapersonal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solvable</td>
<td>4.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Stressful</td>
<td>5.7</td>
<td>5.8</td>
</tr>
<tr>
<td>Confidence in Solution</td>
<td>5.4</td>
<td>5.5</td>
</tr>
<tr>
<td>Willingness to Implement Solution</td>
<td>5.4</td>
<td>4.8</td>
</tr>
</tbody>
</table>
APPENDIX E

Table 5. Mean Ratings of Social Problem-Solving by Independent Raters by Rumination and Symptom Groups

<table>
<thead>
<tr>
<th></th>
<th>Rumination</th>
<th>No Rumination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Purely Depressed</td>
<td>Mixed Symptom</td>
</tr>
<tr>
<td><strong>Interpersonal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Definition</td>
<td>3.3</td>
<td>3.5</td>
</tr>
<tr>
<td>Generation of</td>
<td>2.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Alternative Solutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision Making</td>
<td>3.6</td>
<td>2.9</td>
</tr>
<tr>
<td>Effectiveness of</td>
<td>3.8</td>
<td>3.4</td>
</tr>
<tr>
<td>Solution</td>
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<td></td>
</tr>
<tr>
<td><strong>Intrapersonal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Definition</td>
<td>3.6</td>
<td>3.5</td>
</tr>
<tr>
<td>Generation of</td>
<td>3.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Alternative Solution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision Making</td>
<td>3.4</td>
<td>3.1</td>
</tr>
<tr>
<td>Effectiveness of</td>
<td>4.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Solution</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX F

Social Problem-Solving Performance Task

Instructions:

You will be asked to define and solve two types of problems. The problems you choose should not be ordinary hassles and pressures that you handle successfully every day. A problem is something important in your life that bothers you a lot, but you don’t immediately know how to make it better or stop it from bothering you so much. You will be asked to solve two types of problems: (a) an interpersonal problem, and (b) an intrapersonal problem. An interpersonal problem is a problem that exists between you and another person or persons (with friends, family, etc). An intrapersonal problem is a problem that exists within yourself or your mind (your concerns with job performance, disappointment due to poor grades, lack of motivation, etc). Be as comprehensive as you can in your responses. You are welcomed to write down anything you can think of in regards to the problem. You will be provided 15 minutes to define and solve the problem the first problem. Once the 15 minutes is up, the proctor will instruct you to begin the second problem. Please identify the given ID# on the top right corner of both problem tasks. Your responses will be rated by independent raters. Thank you in advance for your participation.
1. Identify the most stressful interpersonal problem you are currently facing (with family, friends, etc.). An interpersonal problem is a problem that occurs between you and another person or persons. Be as comprehensive in describing the problem and your desired outcome.

   a. How likely do you believe you will be able to solve the problem?

   Not at all                  Extremely
   1      2      3      4      5      6      7

   b. How stressful is the problem?

   Not at all                  Extremely
   1      2      3      4      5      6      7

   Please indicate your responses below
   A =
   B =

2. List as many alternative solutions to the problem listed.
3. Indicate which of your solution would be the most effective solution. Please list all the reasons why this solution would be the most effective solution. Be as comprehensive as possible.

a. How likely would this solution solve this problem?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Extremely</th>
</tr>
</thead>
</table>

b. How likely would you go ahead and use this solution to solve your problem?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Extremely</th>
</tr>
</thead>
</table>

Please indicate your responses below.
A =
B =
4. Identify the most stressful intrapersonal problem you are currently facing (your concerns with job performance, disappointment due to poor grades, lack of motivation, etc). An intrapersonal problem is a problem that occurs within yourself and your mind. Be as comprehensive in describing the problem and your desired outcome.

c. How likely do you believe you will be able to solve the problem?

Not at all | 1 | 2 | 3 | 4 | 5 | 6 | Extremely | 7

d. How stressful is the problem?

Not at all | 1 | 2 | 3 | 4 | 5 | 6 | Extremely | 7

Please indicate your responses below
A =
B =

5. List as many alternative solutions to the problem listed.
1. Indicate which of your solution would be the most effective solution. Please list all the reasons why this solution would be the most effective solution. Be as comprehensive as possible.

a. How likely would this solution solve this problem?

Not at all

Extremely

1 2 3 4 5 6 7

b. How likely would you go ahead and use this solution to solve your problem?

Not at all

Extremely

1 2 3 4 5 6 7

Please indicate your responses below.

A =
B =
APPENDIX G

Demographics Questionnaire

Demographics:

1. What is your sex?
   M F

2. What is your age?
   _____ years old

3. What is your race/ethnicity?
   a. Caucasian/ White
   b. African-American/ Black
   c. Hispanic/Latino/Mexican American
   d. American Indian
   e. Asian American/Pacific Islander
   f. Bi-racial: ________________________________
   g. Other: ________________________________

4. What year in college are you?
   a. Freshman
   b. Sophomore
   c. Junior
   d. Senior
   e. Other: __________