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Evaluating the response styles theory of depression using descriptive experience sampling

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EVALUATING THE RESPONSE STYLES THEORY OF DEPRESSION USING
DESCRIPTIVE EXPERIENCE SAMPLING

by

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ABSTRACT

Exploring the Response Styles Theory of Depression Using Descriptive Experience Sampling

by

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The Response Styles Theory of Depression states that there are two main responses to depression: distraction and rumination. Though it is believed distraction helps to alleviate feelings of dysphoria, the theory suggests rumination actually prolongs and intensifies episodes of depression (Nolen-Hoeksema, 1990, 1991). Rumination is also believed to play a role in the higher rates of depression seen in women (Nolen-Hoeksema, 1990, 1991). In 1987, Nolen-Hoeksema created the Response Styles Questionnaire (RSQ) as a measure to identify those who tend to use distraction or rumination as a psychological response to feelings of sadness or depression. The goal of this study was to examine the inner experience of participants who endorsed engaging in rumination as a response to dysphoric feelings to determine if the construct of rumination could be observed within their inner experiences. We recruited four participants who scored 2 standard deviations above the mean on the rumination subscale of the RSQ (High Rumination Group) and two participants who scored at or near the mean on the rumination subscale of the RSQ (Average Rumination Group; Nolen-Hoeksema, 1987). Using Descriptive Experience Sampling over a period of three to

four days, we examined a total of 107 moments of inner experience from the six participants. Using three raters not otherwise involved in the study, the extent to which each moment contained rumination was rated. The overall valence of each moment of experience was also rated. We also examined the inner experience of each individual to determine the extent to which there were any salient characteristics. Rumination was rated as present to some extent in just under half of the samples. Rumination and valence were found to be highly correlated, which could indicate of lack of specificity in the two constructs. The two groups did differ in terms of the salient characteristics of their inner experiences: those in the High Rumination Group were found to have higher frequencies of feelings and unsymbolized thinking. Finally, there was a very strong correlation between the rumination subscale of the RSQ and a measure of global psychological distress, suggesting further investigation of the construct of rumination may be worthwhile. Overall, there appears to be some differences within the inner experiences of those who report ruminating when feeling dysphoric or depressed. Further investigation with a larger number of participants could enlighten psychological practices.

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CHAPTER ONE

INTRODUCTION

For more than 100 years it has been recognized that there are dramatic gender differences in the rate of depression, with women suffering from depression at about twice the rate of men (APA, 2000; Culbertson, 1997; Nolen-Hoeksema, 1987, 1990). This is seen not only in the United States but internationally as well (Culbertson, 1997).

In the early twentieth century, Freud speculated about women's higher rates of depression being due to hysteria, but some 70 years later Nolen-Hoeksema asserted that at least part of the discrepancy was due to gender differences in the extent to which men and women respond to sadness or depression with rumination. Ruminative responses to depression include thoughts that repetitively focus on one's symptoms of depression, the reasons why one is depressed, and the consequences of the depression (Nolen-Hoeksema, 1991). Nolen-Hoeksema proposed in her Response Styles Theory that those who use rumination as a response to dysphoria tend to have longer and more intense episodes of depression (Nolen-Hoeksema 1990; Morrow & Nolen-Hoeksema, 1990). Just and Alloy (1997) found that those who endorsed using ruminative response styles did, in fact, have more severe episodes of depression. Rumination is not believed to be a

factor in becoming depressed; it does not make one vulnerable to depression, rather, it affects the outcome of a depressive episode. Ruminative responses to depression are contrasted with distracting or active, structured problem-solving approaches to depression which are believed to help reduce depressive feelings.

Nolen-Hoeksema asserted that women tend to ruminate more than men, which partially explains the higher rates of depression among women than men. She performed a series of studies to examine this theory and found that women did report ruminating more than their male counterparts and she further discovered that those who ruminated more had longer, more severe episodes of depression (Nolen-Hoeksema, Morrow, and Fredrickson, 1993; Nolen-Hoeksema and Morrow, 1990; Nolen-Hoeksema, Larson, and Grayson, 1999).

Nolen-Hoeksema created a widely accepted measure of responses to dysphoria called the Response Styles Questionnaire (RSQ, Nolen-Hoeksema, 1987). The RSQ asks individuals a series of questions about the extent to which they engage in rumination or distraction – distraction being the other construct of her Response Styles Theory of Depression – when they are feeling sad or depressed. One concern regarding the RSQ, however, is whether or not it measures what it purports to measure.

Depression has been shown to create cognitive deficits in its victims (Marx, Claridge, and Williams, 1992; Lyubomirsky, Nolen-Hoeksema, 1995; Geva, 2002). Furthermore, retrospective self-report has been shown to be problematic within the general population. Numerous studies have shown retrospective self-report to be filled with inaccuracies. Individuals have been found to have difficulty accurately reporting past behaviors and thoughts, and this has been found to be especially true for emotional

states such as depression (Brand, Jolles, & Gispen-de Wied, 1992; Thomas & Diener, 1990; Joormann, LeMoult, Hertel, & Gotlib, 2009).

Individuals who are in a depressed, negative, emotional state and who are more ruminative tend to naturally be more pessimistic in their thoughts and behaviors (Nolen-Hoeksema, 1991; Joorman, LeMoult, Hertel, & Gotlib, 2009). This tendency may affect how one endorses a self-report questionnaire. For example, Thomas and Diener (1990) found that individuals tend to underestimate the frequency of their positive affects and overestimate the frequency of their negative affects, that is, that people tend to remember the bad times more readily than the good.

Other problems with recall data include distorting memories due to self-schemas (Stone et al., 1998). Also, knowing how a situation turned out may lead an individual to alter his or her memory of the events that led up to the end result (Stone et al., 1998; Zimbardo & Weber, 1994), thus skewing how one might answer a questionnaire. Furthermore, because the questions on a questionnaire are set in advance, the individuals are limited as to what behaviors or thoughts they can report.

Descriptive Experience Sampling (DES) is a method developed by Hurlburt that attempts to capture and describe an individual's inner experience (Hurlburt, 1990). It is an introspective method which asks its participants to recall what is in their inner experience at the moment of a randomly occurring signal. At the outset of the study, each participant is given a pocket-sized electronic device that has been programmed to randomly generate beeps, a pocket-sized notebook, and instructions on how to use these items.

When the participant uses the beeper, he or she is then asked to write notes about the characteristics of what was in his or her inner experience *just prior to* the beep.

Participants are asked to do this for a set number of moments within a sampling day, most often six moments. Within 24 hours of sampling participants are interviewed with the goal of developing faithful descriptions of each moment of inner experience. The interviewer uses open-beginning questions (Hurlburt, 1990) so as to decrease chances of shaping participant's reports of what occurred. After the interview, a brief description of each sample is written. This procedure is repeated for a number of days, typically about four. After all the samples have been collected, the samples are examined to determine if there are any salient characteristics within the participant's inner experiences. This procedure is designed to reduce problems related to retrospective reports by having participants write down notes about what was in their inner experience shortly after the beep occurs.

Given Nolen-Hoeksema's assertion that rumination is a trait-like behavior, it would be reasonable to expect to see evidence of rumination within the inner experience of individuals who endorse using rumination on the RSQ. This study used DES to examine the inner experience of six individuals: four of whom endorsed ruminating relatively frequently when depressed and two others who were more average in this regard. It also attempted to examine the extent to which rumination existed within the inner experience of these individuals and, if so, the extent to which there was a corresponding relationship between rumination in inner experience and the RSQ's Ruminative Response Scale. The study also examined the extent to which rumination reported on the RSQ corresponded with average valence of the sampled moments of inner experience.

CHAPTER TWO

LITERATURE REVIEW

Depression is a debilitating disorder that affects as many as 20% of those in the U.S. at some point during their lives (Clark & Beck, 1999; APA, 2000). It strikes without regard to social class, status, ethnicity, or level of education. Though the typical age of onset is somewhere in the mid 20's, depression can hit at any age. Depression is known to exist in all cultures (Tsai & Chentsova-Dutton, 2002) and to be associated with a wide range of other health, psychological, and interpersonal difficulties.

Although the term depression is often used to denote feeling down or blue, its more technical usage is defined by The Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DMS-IV-TR; APA, 2000). According to the DSM-IV-TR, a person can be diagnosed as suffering from Major Depressive Disorder (MDD) if at least five of nine listed symptoms are present:

- 1) depressed mood most of the day, nearly every day, as indicated by either subjective report or observation made by others;
- 2) markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day;
- 3) significant weight loss when not dieting or weight gain (a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day;
- 4) insomnia or hypersomnia nearly every day;
- 5) psychomotor agitation or retardation nearly every day;
- 6) fatigue or loss of energy nearly every day;
- 7)

delusional) nearly every day (not merely self-reproach or guilt about being sick);
8) diminished ability to think or concentrate, or indecisiveness, nearly every day;
9) recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide (APA, 2000, p. 356).

These symptoms must be present for at least a two-week period of time, and one of the five symptoms must be either 1) depressed mood or 2) loss of interest or pleasure. The individual's depressed mood must also markedly impair his or her daily life's functioning abilities, symptoms must persist for at least two months, and the symptoms must not be better accounted for by bereavement, direct effect of general medical treatment, or substance use (APA, 2000).

A major depressive episode, when left untreated, will typically last four or more months, regardless of age at onset (APA, 2000). Although many of these individuals will go on to regain their premorbid level of functioning, there are others who continue to have depressive symptoms throughout their life.

Many individuals who do not meet diagnostic criteria for major depression may still suffer from a sub-syndromal type of depression, such as Dysthymic Disorder (APA, 2000). The DSM-IV-TR criteria for Dysthymia is a depressed mood for most of the day, for more days than not, and ongoing for at least two years. During this time, there must be two or more of the following symptoms: under or over eating, sleep difficulties, fatigue, low self-esteem, difficulty with concentration or decision making, or feelings of hopelessness. There also cannot be a diagnosis of Major Depressive Disorder within the last two years or an experience of a manic or hypomanic episode (APA, 2000).

Children also experience depression, though the symptoms are expressed

differently than in adults (Harrington, 2004; Garber & Horowitz, 2002). This difference in symptomatology lasts until about the time the child reaches adolescence. It is because depression is revealed differently in children that it often goes undiagnosed. Also, the younger the age of onset, the greater the likelihood of having recurring or persisting episodes of Major Depression or Dysthymia throughout one's life (Harrington, 2004). Generally, the duration of a depressive episode in children is about the same as in adults, with a mean duration of eight months.

Other Difficulties Associated With Depression

In addition to the direct negative effects, depression is also associated with many other negative life events and outcomes (Stefanis & Stefanis, 1999). For example, depression is often a common factor among individuals who attempt or complete suicide (Wetzel, 1994; Yip & Lee, 1999; Power, 2001). Although there are no definitive figures, estimates show that between one-half and three-quarters of individuals who attempt suicide are clinically depressed, and between one-third and one-half of those individuals who complete suicide are clinically depressed at the time of the suicide (Power, 2001).

Individuals with depression have been found to have poor problem-solving skills (Beck, 1988; Dixon, et al, 1993; Marx, Williams, & Claridge, 1992). Marx, Williams, and Claridge (1992) compared the problem-solving abilities of patients suffering from Major Depression to a non-diagnosable control group and a group suffering from psychological disorders other than depression. Individuals with depression had poorer problem solving skills than the other two groups in both hypothetical as well as personal problem situations. The individuals with depression were also less likely than the two other groups to come up with alternative solutions to presented problems, or to identify

possible obstacles that may arise that would prevent their given solution. Also, individuals with depression showed a more negative attitude to solving problems and a lower likelihood of implementing alternative solutions.

Another difficulty that has been associated with depression is marital distress. For example, Fincham, Beach, Harold, and Osborne (1997) identified a relationship between depression and marital distress and examined the directionality of this relationship. They found that men tend to become depressed, which then leads to marital discord, whereas women tend to experience marital discord, which then leads to depression. However, they also found that husbands' satisfaction with their marriage could additionally be affected by the onset and extent of their wives' depression. That is, the more depressed their wives were, the more marital discord husbands experienced.

Health problems and economics suffer from the affects of depression, as well. In Kendell's (1999) literature review of the implications of depression, he referenced the Global Burden of Disease Study (1997) that reported depression exceeds most illnesses worldwide in its affects on individuals and society as a whole. One specific finding discussed was that unipolar depression was the fourth most common cause of premature death and disabilities. Henry (1999) published a literature review in which depression was described as imposing economic burdens on individuals and societies. This review addressed how depression fuels absenteeism and poor job performance in the workplace, hence cutting down on production and posing a greater economic and fiscal burden to countries such as the U.S. and Great Britain. Thus, there can be no doubt that depression is a serious disorder that is found worldwide and that it inflicts a great cost on its victims as well as society at large.

Gender Differences in Depression

A significant puzzle related to the occurrence of depression is that women are typically twice as likely to experience depression as men (Wetzel, 1994; APA, 2000; Nolen-Hoeksema, 2001; Gotlib & Hammen, 2002). Culbertson (1997) conducted a literature review on cross-cultural gender differences in rates of depression. Findings suggest there is a common ratio between women and men with depression of 2:1 in developed countries, whereas the ratio between women and men is approximately 1:1 in developing countries. Other reviews have drawn similar conclusions (NIMH, 2000; Nolen-Hoeksema, 1990; Orley, Blitt, and Wing, 1979). Unlike adults, however, there do not appear to be differences between genders during childhood. It is not until the onset of adolescence that the adult ratio of 2:1 for females to males begins to emerge (Garber & Horowitz, 2002; Nolen-Hoeksema, 1990).

The difference in prevalence of depression among women and men is a topic studied and theorized about by many (Beck, 1988; Nolen-Hoeksema, 2001, 2002; Nolen-Hoeksema, Larson, & Grayson, 1999; Kendler, Gardner, Prescott, 2002). Nolen-Hoeksema (2001) reviewed current research on gender differences in depression and summarized the various theories that have been developed to account for the difference. She cited two popular themes being researched to explain these differences. The first is that women have less power in society and therefore begin to develop a sense of worthlessness or helplessness in their lives. The second is that although men and women may experience the same stressors, women may become depressed more often than men due to biological and psychological factors.

The perceived lack of power experienced by women is oftentimes the result of women's higher rate of sexual assault and sexual harassment compared to their male

counterparts, leading to a number of potential consequences, such as the feelings of powerlessness and helplessness (Nolen-Hoeksema, 2001). Women also tend to have a lower social status in the workplace, society, and at home. They are paid less, more likely to live in poverty, and though many work fulltime, they feel a sense of responsibility to perform a majority of the household work and childcare duties in the home. Nolen-Hoeksema posited that experiences of and reactivity to stress might feed on each other and create what she refers to as a “hyper-responsive reaction” in women, both psychologically and biologically. The more women are faced with stress, the more hyper-responsive they may become. That is, it will begin to take less stress to invoke a reaction to stressors, which may undermine women’s capacity to cope effectively and control their environment, thus creating a vicious cycle of increasing sensitivity to stress and decreasing ability to cope (Nolen-Hoeksema, 2001).

Response Styles Theory

The Response Styles Theory of depression suggests that rumination as a response to depression is a psychological factor that may play a role in women’s higher rates of depression. Rumination is believed to influence the severity and duration of a depressive episode. Further, women appear to engage in rumination as a response to depressed mood more often than men (Nolen-Hoeksema, 1990; 1991; Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Nolen-Hoeksema, Parker, & Larson, 1994; Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema & Jackson, 2001). Rumination, as defined by Nolen-Hoeksema, is the occurrence of thoughts and behaviors that focus attention on symptoms of depression and possible causes and consequences of those symptoms. Ruminative responses are different from active, structured problem solving.

Individuals who ruminate tend to spend much of their time thinking about how badly they feel, are self-focused during their depressed mood, and repetitively focus on the fact that they are depressed. Rumination can also involve focusing on the causes of why one is depressed, the meaning of their depression, and the consequences of their depressive symptoms (“I will be unable to work, therefore, unable to pay my bills,” etc...).

Rumination is believed to prolong episodes of depression as well as contribute to the severity of the episode. Nolen-Hoeksema has examined two types of ruminative response styles: thoughts and behaviors. In her Response Styles Questionnaire (1990), some examples of ruminative thoughts are

Think[ing] about how alone you feel; Think[ing] about feelings of fatigue and achiness; Think[ing] “Why do I always react this way?”; Think[ing] about a recent situation, wishing it would have gone better; Think[ing] about all your shortcomings, failings, faults, mistakes; Think[ing] about how angry you are with yourself; Think[ing] about how you don’t feel up to doing anything.

In the same questionnaire, some examples of the ruminative behaviors are

Analyz[ing] recent events to try to understand why you are depressed; Writ[ing] down what you are thinking about and analyze it; Listen[ing] to sad music; Try[ing] to understand yourself by focusing on your depressed feelings; Go[ing] away by yourself and think[ing] about why you feel this way; Analyz[ing] your personality to try to understand why you are depressed (see Appendix A).

It is not only depression that appears to be more common in females than in males; rumination also appears to be more common in women than in men. Nolen-Hoeksema theorizes that the difference in levels of rumination between genders is related to the difference in the rates of depression; thus was born the Response Styles Theory (Nolen-

Hoeksema & Morrow, 1993).

Evaluations of the Response Styles Theory

Nolen-Hoeksema and colleagues have conducted a programmatic series of studies to evaluate the Response Styles Theory. Morrow and Nolen-Hoeksema (1990) examined whether different types of responses to depression would increase or decrease depressive affect. They hypothesized that distracting responses would decrease depressive affect more so than ruminating responses and that active responses would remediate depressive affect more so than passive responses. In this study, 79 participants completed questionnaires assessing current level of sadness, hostility, and anxiety prior to mood induction, immediately following mood induction, and again after response task. Depressed moods were induced via reading a sad story while listening to sad music in the background. Participants were pre-assigned to be in one of four experimental groups: Distracting-Active; Distracting-Passive; Ruminating-Active; Ruminating-Passive. Both active groups completed Q-Sorts, with the Distracting-Active group's cards focusing on sorting countries in rank of industrialization and the Distracting-Ruminative group's cards focusing on sorting emotions on how the participant felt at that moment. Both Passive groups had participants read and then think about sentences that were printed on note cards. The Ruminative-Passive group's sentences focused on self- and emotion-centered statements (e.g., "I often wonder why I feel the way I do"; "Sometimes I just sit and think") whereas the Distracting-Passive group's sentences focused on external statements (e.g., "Canada's biggest industry is lumber"; "It would be interesting to visit other countries"; Morrow and Nolen-Hoeksema, 1990, p. 521). Individuals in the Distracting-Active group showed the highest level in remediation of depressive affect, followed by the Distracting-Passive,

then the Ruminating-Active, and finally the Ruminating-Passive group. Thus, engaging in distracting and active activities when feeling depressed alleviated the depressed mood more than engaging in ruminating and passive activities.

Nolen-Hoeksema and Morrow (1991) studied the effects of the 1989 Loma Prieta earthquake on students in an introductory psychology course. They were initially researching whether or not individuals with more ruminative response styles would demonstrate a longer and more severe episode of depression than would individuals with more distracting response styles. It just so happened that fourteen days before the earthquake hit, 137 students completed the Interview to Diagnose Depression and the Response Styles Questionnaire. Ten days following the earthquake, and then again seven weeks thereafter, participants completed the same two questionnaires assessing depression and response styles. There were no differences found between genders; however, individuals who endorsed a more ruminative style of coping with depression and who had higher levels of depression before the earthquake were more likely to be depressed ten days, as well as seven weeks, after the earthquake. Notably, it was also found that levels of depression significantly decreased for many participants, which Nolen-Hoeksema and Morrow claimed could be attributed to the fact that many participants engaged in active, distracting responses, such as donating time and helping with relief work.

Another study was conducted by Nolen-Hoeksema and Morrow (1993) to determine whether rumination would prolong depressive symptoms in individuals who were naturally depressed as well as whether rumination and distraction, in response to depression, would have the same effects on depressed mood between genders.

Participants were 24 depressed and 24 non-depressed individuals who were given mood

questionnaires before a response task to obtain a baseline score, then again immediately following the response task. The response tasks involved participants focusing their attention on thoughts that were symptom, self, or emotion focused (ruminative group) or on external thoughts that were not emotion or symptom focused (distracting group) for a total of eight minutes. The participants were divided into four groups: Depressed-Ruminative; Non-depressed-Ruminative; Depressed-Distracting; Non-depressed-Distracting. No gender differences found; however, participants in the Depressed-Ruminative group showed an increase in their depressed moods, whereas participants in the Depressed-Distracting group showed a decrease in depressed mood. Neither rumination nor distraction had any effects on the non-depressed groups. This study supports Nolen-Hoeksema's claim that rumination itself does not generate depression. Rather, rumination versus distraction may influence the severity or duration of a depressive episode.

Nolen-Hoeksema, Morrow, and Fredrickson (1993) investigated whether individuals had a consistent style of responding to sad moods, the extent to which men and women reported engaging in rumination, and whether those who engaged more in ruminative thoughts and behaviors also tended to experience a longer episode of their depressed mood. Nolen-Hoeksema et al. also explored whether women engage in rumination more than do men, therefore accounting for the gender differences in depression. Using a Daily Emotion Report created for this study, 79 participants reported whether or not they had been sad or depressed within the past 24 hours. Participants then rated on an 11-point Likert scale the severity of the sad or depressed mood and completed a questionnaire composed of 16 ruminative and 16 distracting responses and endorsed which statement best fit their reaction to their reported mood.

Participants completed these measures every day for 30 days. There was consistency in how participants responded to sad or depressed moods. Though women showed a significantly higher rate of endorsing ruminative responses than did men, there were no significant differences in distracting response styles between genders. There were also no significant differences found in the severity or duration of depressed moods between genders. As predicted, the degree to which an individual ruminated on the first day of a depressed mood or episode predicted how long that mood or episode would last (Nolen-Hoeksema, Morrow, & Fredrickson, 1993). Thus, the assumption that women ruminate more than men was supported; the position that men engage in distracting behaviors more than women was not.

Nolen-Hoeksema, Parker, and Larson (1994) investigated whether bereaved women tend to demonstrate more ruminative coping styles than do bereaved men; whether individuals facing more life stressors, in addition to the death of their loved one, would report more ruminative coping styles than do those with fewer or no stressors; whether individuals with poor social support systems would report more ruminative coping styles than do individuals with strong social support systems; and whether individuals who experienced a more severe, depressed reaction to their initial loss would report more ruminative coping styles than those who did not. The participants were 253 bereaved individuals who participated in both one-month and six-month interviews following the death of a close family member. Various measures of determining depression and coping were used, including the RSQ. Women were found to show higher levels of depression and rumination at both one-month and six-month interviews. Those who endorsed a more ruminative coping style also reported more social isolation and friction in their social networks, a greater number of additional life stressors, and

less optimism.

An exploratory study conducted by Nolen-Hoeksema, Larson, and Grayson (1999) asked how social conditions and personality characteristics affect each other and relate to the gender differences in depressive symptoms. Participants included 1,132 individuals who were interviewed twice, with one year between interviews. Various measures were administered to assess depression, chronic strain, perceived mastery, and ruminative coping. Nolen-Hoeksema et al. found that chronic strain, rumination, and level of mastery mediated the relationship between gender and depression. They concluded that women carry a “triad of vulnerabilities to depressive symptoms” when compared to men. That is, they tend to have more chronic strain, a greater propensity to ruminate when distressed, and lower sense of mastery over their lives. Nolen-Hoeksema argued earlier that it could be women’s lack of social power that contributes to this triad (1990). Unfortunately, rumination may lead to more stress over time, thus contributing to a sense of lack of control over one’s situation, leading to a further decline in mastery.

Nolen-Hoeksema and Jackson (2001) studied whether or not individuals would be more likely to develop a maladaptive, ruminative response to distress looking at the following three factors: if an individual 1) believes that emotions are beyond control and an appropriate response to emotion is self-focusing, 2) has a low mastery perception with regards to changing his or her own environment, and 3) holds responsibility for the affective tone in his or her relationship. Significant differences were found between genders on each of these factors. Women tended to believe that fear, anger, and sadness were less controllable than did their male counterparts; women had lower perceived mastery expectations than did men; and women scored higher on the scale measuring responsibility for relationship tone. These three factors correlated highly with

rumination in the expected direction.

Lyubomirsky, Caldwell, and Nolen-Hoeksema (1998) examined whether individuals who are depressed and use a ruminative coping style tend to recall memories that are more negatively biased than individuals who are depressed and do not use a ruminative coping style. They conducted four studies on the retrieval of autobiographical memories from participants who either primarily ruminated or primarily distracted.

In Study One, a series of mood questionnaires were administered, which included the Beck Depression Inventory (Beck, 1967; Lyubomirsky, et al, 1998). The BDI was used to categorize 72 participants into two groups: dysphoric and nondysphoric. The purpose of the study was to determine whether individuals in the dysphoric group who were randomly assigned to the ruminative manipulation task would be more likely to retrieve negatively biased autobiographical memories than would the dysphoric individuals randomly assigned to the distracting manipulation task, or the nondysphoric individuals randomly assigned to the ruminative or distracting manipulation tasks. A BDI criterion score of 16 or higher was used to create the dysphoric group – composed of 38 participants – and a BDI criteria score of 5 or lower was used to create the nondysphoric group – composed of 34 participants. After the administration of the mood questionnaires, a baseline measure for depressed mood was taken for each participant who was then randomly assigned to the ruminative or distracting manipulation group. Each group was then asked to focus for eight minutes on thoughts that were emotion, symptom, and self-focused (ruminative group) or on thoughts that were not emotion, symptom, or self-focused (distracting group).

The rumination and distracting tasks were based on statements from Nolen-

Hoeksema's Response Styles Questionnaire (RSQ; adapted from Nolen-Hoeksema et al., 1990). Examples from the ruminative group were: "think about 'your current level of energy,' 'why your body feels this way,' 'your character and who you strive to be,' ...and 'why you turned out this way'" (p. 168). Examples from the distracting group were: "Think about 'clouds forming in the sky,' 'The expression on the face of the *Mona Lisa*,' and 'The shiny surface of a trumpet'" (p. 168). After focusing on ruminative or distracting thoughts, the participants were then instructed to recall and list memories of their life for five minutes. These were to be actual events that happened in their lives and there was no limit as to the number of events that could be recalled. Once the five minutes were up, the participants were then asked to rate whether each memory on their list was positive/happy or negative/unhappy.

The results from the baseline measure compared with the post-task measure showed that dysphoric individuals in the ruminative group became more depressed and that dysphoric individuals in the distracting group became less depressed as a result of the response manipulation task; the dysphoric-ruminative group showed significantly higher levels of depressed mood than the other three groups. The autobiographical memories that were recalled from the dysphoric-ruminative group were self-rated as more negative and unhappy in content than the recalled autobiographical memories that were self-rated by the other three groups. However, it should be mentioned that the memories generated from the dysphoric-ruminative group were almost equal in number of negative/unhappy to positive/happy memories actually recalled while the other three groups recalled more positive/happy memories than they did negative/unhappy memories.

In Lyubomirsky et al.'s (1998) second study, they again used dysphoric (n = 25)

and nondysphoric (n = 24) participants randomly divided between the ruminative or distracting manipulation task groups. The BDI was administered and the cutoff score for the dysphoric group was 16 or higher on the BDI whereas those with a score of 5 or lower were put in the nondysphoric group. The same response manipulation task used in Study One was used in Study Two. After completion of the eight-minute response manipulation task, the participants were then given a cued memory task via computer, which prompted the participants to think of two positive or happy memories and two negative or unhappy memories. After the participants wrote their memories, two blind judges then coded each memory for how negative or positive they were, using a Likert scale (1 = *Not at All*; 4 = *Neutral*; 7 = *Extremely*).

As in Study One, the dysphoric individuals in the ruminative task group became more depressed and the dysphoric individuals in the distracting task group became less depressed. There were no significant differences in mood between the two nondysphoric groups. The negative memories recalled from dysphoric individuals in the ruminative group were rated as more negative in content than the negative memories recalled from those in the other three groups; and the positive memories recalled by dysphoric individuals in the ruminative group were rated as less positive (or more negative) in content than the positive memories recalled by the other three groups.

Study Three examined whether those in a dysphoric-ruminating group would report having had a lower frequency of positive events happen in their life. The same methods were employed as those in Studies One and Two, along with the same BDI criterion scores. There were 39 dysphoric and 33 nondysphoric participants again split into a total of four groups and instructed to engage in ruminating or distracting thoughts.

After the eight-minute response manipulation task was completed, each

participant was instructed to read a list of 20 events – ten positive and ten negative – and then to rate on a 7-point Likert scale how frequently these events happen in their lives (1 = *Never or Hardly ever*, to 7 = *All the time*). Examples of these statements would be: “You have an argument with a friend,” “Your parent(s) shows you love,” “You receive unfair treatment” (p. 172).

The results of Study Three showed that, when compared to the baseline measure, the dysphoric individuals in the ruminative task group reported being more depressed and the dysphoric individuals in the distracting task group reported being less depressed after completing the response manipulation task. The dysphoric-ruminative group reported a lower frequency of positive events and a higher frequency of negative events than did the other three groups. The findings suggest that those who tend to ruminate when depressed may inaccurately recall more negative and less positive life events to have occurred.

Lyubomirsky et al. (1998) conducted Study Four to determine if dysphoric individuals who ruminate would voice thoughts out loud into a microphone following a set of ruminative instructions in a tone rated more negative than individuals who distract. The researchers believed that dysphoric individuals who tended to ruminate would generate more spontaneous negative memories than the other three groups in the study. This study had 20 dysphoric and 20 nondysphoric individuals; due to a lack of dysphoric participants, the researchers made the BDI criterion score 12 or higher to be considered dysphoric, and the BDI criterion score 4 or lower to be considered nondysphoric. Each participant was given a response style measurement and divided into two more groups, for a total of four groups: dysphoric-ruminating, dysphoric-distracting, nondysphoric-ruminating, nondysphoric-distracting.

The response manipulation task used in the above three studies was modified to a “think aloud” version, where the participants were instructed to speak their thoughts aloud – for eight minutes – into a microphone in response to items given to the appropriate ruminative or distracting groups. The first six memories reported by each participant in each group were used to determine the results. In the dysphoric-ruminative group, the memories expressed were rated as being more negative in tone than those memories expressed by the other three groups. Also, the dysphoric-distracting group and the nondysphoric-ruminating were rated as being less negative in tone as compared to the dysphoric-ruminating group. This suggests that dysphoric individuals who engage in rumination are more likely to think negatively than dysphoric individuals who engage in distracting activities or nondysphoric individuals who engage in rumination. Put another way, the combination of dysphoria and rumination appears to lead to more negative affect and more negative memories than either one alone.

In summary, there is experimental evidence that shows prompting individuals who are experiencing depressed affect to ruminate prolongs negative affect. Self-reported rumination appears to be relatively stable over time and has also been shown to be predictive of duration and intensity of depressed affect. Rumination may combine with other risk factors for depression – such as chronic strain and lack of perceived mastery – to create a vicious cycle that increases the risk for depression and accentuates rumination. Also, there are observed gender differences in response styles, with women reporting more ruminative responses to depression than men. Though the Response Styles Theory goes on to suggest that men will engage in distraction as a response to depression more than women, this has not yet been demonstrated.

Other Studies Examining Response Styles Theory

Other researchers have also examined the Response Styles Theory and the Response Styles Questionnaire (RSQ). For example, Bagby, Rector, Bacchiochi, and McBride (2004) conducted a study on the RSQ, dividing the ruminative responses into two categories: Self-Focused and Symptom-Focused, in an attempt to determine if current mood plays a part in how one endorses the ruminative statements. They also examined whether the RSQ measures have absolute or relative stability. Here, relative stability indicates the predictability of an individual's difference on test scores over time. If a test-retest correlation is significant, then there is relative stability. Participants were 110 outpatients diagnosed with depression. They were administered that portion of the RSQ that assesses the ruminative response styles (21 items). The responses were categorized by either self-focused rumination (e.g., "I think, 'Why do I react this way'") or symptom-focused rumination (e.g., "Think about how hard it is to concentrate"). Each participant was treated for depression with psychotropic medication, and assessed for depression after eight, fourteen, twenty, and twenty-six weeks to determine if the depression was in remission. They found relative stability in both symptom- and self-focused ruminative responses for remitted patients. As the severity of depressive symptoms decreased, so did the overall scores on the ruminative responses of the RSQ. However, it should be noted that the symptom-focused responses were more dependent on the level of depression, and decreased more with the decrease in depressed mood as compared to the self-focused responses, which remained relatively more stable regardless of level of depression.

Trask and Sigmon (1999) conducted two studies on engaging in ruminating or distracting behaviors immediately after being exposed to a negative mood induction

exercise would affect one's mood. In Study One, 43 adult Caucasian participants were given an inventory that cued them to imagine the implied mood given in the statements (i.e., "I have too many bad things in my life") while listening to Barber's *Adagio for Strings*, a method that has been proven to induce depressed mood (Clark, 1983, as cited in Trask and Sigmon). Participants were split into two groups: Rumination-Distraction and Distraction-Rumination. After completing the mood induction task, each group was then given a second task in which they would either engage in ruminative or distracting behaviors for five minutes. After the five minutes were completed, the Depression Adjective Checklist (Lubin, 1981, as cited by Trask and Sigmon) was given to each individual in both groups to attain a post-induction depression score. Both groups then engaged in the opposite task of rumination or distraction for five minutes. In this study, it was found that the group who engaged in the ruminative tasks first scored significantly higher on the Depression Adjective Checklist than did the group who participated in the distraction tasks first. After completing the distracting tasks, however, there were no significant differences between the groups' scores. These results indicate that engaging in rumination directly after experiencing a negative mood can prolong the affects of the negative mood, whereas distracting will help to alleviate the negative affect.

To ensure that passage of time was not a factor in reduction of depressive moods in Study One, Sigmon and Trask (1999) did a follow-up study with 67 college students where two more groups were added: Rumination-Rumination and Distraction-Distraction, for a total of four groups. It was found that the Rumination-Rumination and the Rumination-Distraction groups scored higher on the Depression Adjective Checklist after the first task was completed; however, the Rumination-Rumination groups scored significantly higher than the other three groups after the second task was completed,

showing time was not a factor in the reduction of depressive symptoms. Taken together, these studies indicate that rumination plays a significant role in the duration of a negative mood. Both studies indicate that engaging in distracting behavior will help to alleviate the effects of negative moods, whereas rumination will serve to prolong the negative mood.

Just and Alloy (1997) conducted an 18-month longitudinal study on the Response Styles Questionnaire using a test-retest method on both depressed and non-depressed participants. Criteria for this study required each participant be free of any current mood disorder or other psychiatric impairment when the study began. The researchers wanted to determine if individuals who were non-depressed at the initial screening, and who scored high on the Response Styles Questionnaire – Trait (RSQ-T) rumination statements, would also demonstrate a longer duration and more severe episode of depression if they were to become depressed during this study; alternately, they also wanted to determine if individuals who scored high on the distraction statements would demonstrate a shorter duration and less severe episode of depression. They also wanted to ascertain if the responses non-depressed subjects endorsed would be the same statements endorsed if the subjects were to become depressed during the study as well as if the way in which an individual endorsed his or her response style would be indicative of whether or not he or she would experience an episode of depression.

Participants were 189 university freshmen that were also participating in the Temple-Wisconsin Cognitive Vulnerability to Depression Project. A screening was done to disqualify from the study any participant who could be diagnosed with any current mood disorder as indicated by the DSM-III-R, or if the student had a serious

medical problem that could interfere with the longitudinal manner of the study. The various measures used in the initial screening of the study included the Beck Depression Inventory (BDI); the Dysfunctional Attitudes Scale; the Cognitive Style Questionnaire; the Response Styles Questionnaire-Trait (RSQ-T); the Response Styles Questionnaire-State (RSQ-S). The Modified Schedule for Affective Disorders and Schizophrenia-Lifetime (Mod-SADS-L) was administered during the second screening phase.

The Dysfunctional Attitudes Scale was designed to measure individuals' maladaptive attitudes toward being evaluated, perfectionism in performance, pessimism, causal attributions, and their expectations of control. It is a 40-item self-report questionnaire and was used in conjunction with the Cognitive Style Questionnaire to determine if a participant was categorically in a cognitively High Risk or Low Risk group for the concurrent Cognitive Vulnerability to Depression Project. The Cognitive Style Questionnaire, an extended version of the Attribution Style Questionnaire designed to measure how an individual makes internal, stable, and global attributions, was administered to each participant as well. This questionnaire asked the participants how they would react to 12 positive and 12 negative given situations, all regarding "achievement and interpersonal events" (p. 226). The RSQ-T was administered at the outset of the study to determine a baseline score for each participant. The RSQ-T was administered with both the Ruminative Response Styles (RRS) and the Distracting Responses Styles (DRS). The BDI was given to each participant every two weeks to determine if the participant had developed an onset of depression and to measure the severity of the depression. If an individual's score on the BDI was ten or higher, the RSQ-S was then administered to compare alongside the scores of the RSQ-T. The RSQ-S is almost identical to the RSQ-T in terms of wording and question order, however,

instead of asking the individual what he or she would do when depressed, the RSQ-S asked the individual what they did do during the last six weeks when they were feeling depressed. Also, unlike the RSQ-T which asks individuals to endorse statements on a 5-point Likert scale, the RSQ-S asks the participant to indicate a percentage of time they spent engaging in a particular activity (i.e., 0-25%, 26-50%, 51-75%, 76-100%). The Mod-SADS-L measurement was used during the second screening phase of the study to exclude participants who were experiencing any current mood or other psychiatric disorder. This measurement assesses both past and current mood disorders or other psychopathologies the individual may have had or is currently experiencing.

The results of this study are determined by examining only those individuals (n=68) who experienced depression during the 18-month study, unless the hypothesis being examined included comparing scores between those who stayed non-depressed with those who became depressed. Both the Ruminative Response Style (RRS) and the Distracting Response Style (DRS) derived from the Response Styles Questionnaire-Trait (RSQ-T) demonstrated test-retest reliability within the span of one year. However, these results were somewhat lower than Nolen-Hoeksema, Parker, and Larson's (1994) study of bereaved individuals, which looked at correlations between a 6-month period versus this study's 12-month period.

Looking only at the participants' (n=31) RSQ-S scores who experienced at least two episodes of depression during the 18-month study, it was found that there was significant reliability in the state responses. To determine if the response styles of non-depressed participants would be the same when experiencing depression, they examined the scores on the RSQ-T and the RSQ-S measurements endorsed by participants who became depressed. They found that there was good predictive validity for the RSQ-T

distraction scale, but only moderate predictive validity for the RSQ-T rumination scale, meaning that individuals who reported engaging in more distracting than ruminative responses when depressed actually endorsed the RSQ-S scale the same way; whereas those who reported ruminating more than distracting on the RSQ-T, when actually depressed, did not endorse ruminative responses to the extent they reported when endorsing the RSQ-T statements in a non-depressed state.

Just and Alloy (1997) also examined if the participants who endorsed a higher rate of rumination on the RSQ-T would experience a longer, more intense episode of depression, and if the participants who endorsed a higher rate of distraction on the RSQ-T would experience a shorter, less intense episode of depression. They found rumination scores on the RSQ-T could potentially predict the severity of the first episode of depression, but distraction scores on the RSQ-T could not predict severity. Also, the RSQ-T did not have good predictive validity for the duration of an episode for either high ruminators or high distracters. State measurement (RSQ-S) demonstrated good predictive ability for the severity of the episode, but not the duration. However, when the RSQ-T rumination scores were controlled for, there was no longer evidence of state predictability. In looking at the overall RSQ-T measurement and testing the hypothesis that those who endorsed higher ruminative responses in a non-depressed state would be more likely to experience a depressive episode, Just and Alloy found significant differences in the scores of the 68 participants who experienced a depressive episode as compared to the 121 participants who did not experience a depressive episode.

This study shows that the Responses Styles Questionnaire may predict which individuals are more apt to experience a depressive episode. Though there does not seem to be evidence that rumination is able to predict the duration of an episode, there is

some indication that it can partially predict the intensity of the episode. Distraction did not seem to play a significant role in predicting severity of, duration of, or resilience from a depressive episode. Unfortunately, there were no analyses run on gender effects or differences in the sample of the 68 depressed participants.

Strauss, Muday, McNall, and Wong (1997) conducted two studies to examine cultural stereotypes for how men and women are expected to respond to depression; and to what extent self-reports of responding to depression corresponded to those stereotypes. In the first study, 155 college students participated and were divided into four groups: two groups of males and two groups of females. The researchers administered a paper-and-pencil questionnaire to 76 of the participants (comprised of one male group and one female group) asking each participant to endorse to what extent they thought the average male or female college student would do when depressed. The questionnaire used 13 different statements; six of these statements were directly from Nolen-Hoeksema's RSQ: three were ruminative statements ("tries to determine why s/he is depressed," "cries to relieve the tension," and "talks to other people about his/her own feelings") and three were distraction statements ("avoids thinking of reasons why s/he is depressed," "does something physical, i.e., athletics," and "takes drugs or drinks alcohol"). There were three different versions of instructions: one asking what males would do when depressed; one asking what females would do when depressed; and the other was "gender unspecified," asking what the "typical college student" would do when depressed. The questionnaire then asked the participants which behaviors they thought would be the most effective in relieving depression. The other 79 participants (comprised of the remaining male and female groups) were administered the same paper-and-pencil questionnaire, but were asked to self-report how they would handle

depression, with the questionnaire ending in asking which behaviors the participant thought would be the most effective in relieving his or her own depression.

In the first study, looking at just the Rumination and Distraction categories, participants rated females more likely to ruminate and males less likely to ruminate than the gender unspecified group. Participants also rated males more likely to distract and females less likely to distract than the gender unspecified group. An analysis of the six individual items from Nolen-Hoeksema's RSQ showed that participants rated males as more likely to distract than to ruminate, and females as more likely to ruminate than to distract. The results of the question asking which behaviors would be best at relieving depression showed the ruminative behaviors were endorsed as a better strategy than the distracting behaviors. This was found for both males and females alike. These endorsements for rumination being a better coping mechanism go against Nolen-Hoeksema's evidence that rumination is a maladaptive response to depression.

Additionally, they examined how the stereotypes regarding responses to depression compared to the responses endorsed by males and females in the self-report condition. That is, when self-reporting, would men and women characterize their responses in line with the stereotypes? The results showed that in the self-report condition, women did endorse ruminative behaviors as suggested by the stereotype ratings. However, the men's self-reports showed they tended to ruminate more often than what was predicted by the stereotype ratings. When self-reporting, men endorsed engaging in more ruminative behaviors than distracting behaviors, and both males and females were about equal in their self-reports of engaging in distracting behaviors. Overall, the stereotype of females tended to be more aligned with women's actual self-reports, whereas the stereotypes of males tended to underestimate the rate of rumination

and overestimate the rate of distraction. Also, there were no significant differences found in the tendencies for both males and females to engage in distracting behaviors, though the stereotypes demonstrate the belief that men employ distraction techniques more than women.

Strauss et al. (1997) suggested that the issue of men being rated as using more distracting responses and women as using more ruminative responses in Study One may not be relevant to everyday experience. They felt it could be argued that asking the participants to endorse what they thought the average male, female, or gender unspecified college student would do when depressed may be too abstract to be relevant to reality when the "average person" is an unknown. In other words, the way in which participants from Study One endorsed their answers may be different from how participants would have endorsed someone they actually knew. The researchers wanted to examine if the same results would be found if the questionnaire asked individuals to report what they thought another individual whom they knew well, or spent time with, would do when depressed.

This concern was addressed by recruiting 40 pairs of same-sex roommates who were in their first year of college. Using the same questionnaire from Study One, the "target" roommate completed the self-report version of the questionnaire. Using a modified version of the questionnaire from Study One, the other roommate, the "rater", filled out what he or she thought the target would do when depressed. The results from Study Two were similar to those of Study One. The women perceived themselves, and were perceived by others, to use more ruminating behaviors in response to depression. It was also found that all raters perceived males to use distracting behaviors more than do females; however, in self-reports there were no significant differences found between

genders in the use of distracting behaviors in response to depression. Study One and Study Two indicate that though there is some discrepancy between the extent to which men and women self-report engaging in rumination when depressed, those discrepancies are, in actuality, extremely small. Although individuals consider men to engage in more distracting behaviors when depressed than women, self-reports show this to be inaccurate. Men and women self-reported engaging almost equally in distracting behaviors when depressed, though women also tended to report engaging in rumination slightly more than men.

Arnow et al. (2004) conducted a study to examine whether or not rumination or distraction had any causal affects on the recovery from depression as well as whether or not depression had a causal affect on rumination or distraction. A total of 168 individuals (53 males and 115 females) from three participating clinical research sites across the country were used in this study. Nolen-Hoeksema's Response Styles Questionnaire (using the 32-item form consisting of 21 Ruminative Response Scale items and 11 Distractive Response Scale items) was used to determine levels of rumination and distraction. The Structured Clinical Interview for Axis I DSM-IV Disorders (SCID-IV) and the Hamilton Rating Scale for Depression (HRSD) were administered to determine levels of clinical depression for each participant. Each individual must have had a score of 20 or higher, obtained from the HRSD, to meet criteria for this study. All participants met clinical criteria for either chronic Major Depressive Disorder (MDD) with nonpsychotic features, MDD plus dysthymic disorder, or were currently re-experiencing an episode of MDD from which they had not experienced full remission. Three treatment groups were created: one group was administered psychotropic medication for depression (Nefazodone); another was

administered a therapeutic technique specially created for depression called Cognitive Behavioral Analysis System of Psychotherapy which employs cognitive, behavioral, and interpersonal therapeutic techniques; and the final group was administered both the medication and the Cognitive Behavioral Analysis System of Psychotherapy. Arnow et al. found that higher levels of rumination at intake did not have any causal effect on the recovery from depression, nor did higher levels of depression have any causal effect on leading to more rumination. The researchers concluded that rumination and depression have an "unobserved common cause" (p.75). In fact, Arnow et al. found that high or low levels of ruminative or distracting response styles at intake had no significant effect on the outcome of depression at post-treatment follow-up.

The above studies indicate that while there are different styles with which individuals may respond to depression – rumination and distraction – they may, in fact, play no role in the recovery or duration from clinical depression. As many theories have discovered, the causes of depression and factors that help to maintain depression cannot be easily pinpointed. Nolen-Hoeksema states that rumination does not necessarily predict the onset or occurrence of depression, however, the Response Styles Theory claims that individuals who tend to ruminate also tend to experience longer and more intense episodes of depression. There have been mixed findings regarding this claim.

Methodological Considerations

Self-reports of rumination on the Response Styles Questionnaire constitute a central source of data supporting the Response Styles Theory of depression. However, there are important reasons to question the methodology employed in the Response Styles Questionnaire. The main concern with this questionnaire is the fact that it relies

on the ability to recall accurately how one generally responds to depression by endorsing statements on a four-point Likert scale of 'Almost Never' to 'Almost Always.' Numerous studies investigating this ability indicate that people often cannot report accurately about past behaviors, thoughts, (Stone, et al., 1998; Zimbardo & Weber, 1994; Bolger, Davis, Rafaeli, 2003), or emotional states, such as depression (Thomas & Diener, 1990; Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998). Evidence suggests that there are a number of factors that affect how memories are constructed (Zimbardo & Weber, 1994). As Stone et al. (1998) wrote

There is emerging evidence that people do not – and perhaps cannot – provide accurate information on the coping behaviors and cognitions they have engaged in over a particular retrospective reporting period...To the extent that participants' recall relies on global self-perceptions about how they generally cope, retrospective reports of coping may not accurately reflect their actual behavior (p. 1670).

Stone et al. (1998) examined if there are discrepancies between momentary reporting and short-term retrospective recall. They expected there would be little correlation between Ecological Momentary Assessment reports – which are collected in close temporal proximity to a 'target event' – and short-term retrospective reports – which are collected within 24 to 48 hours of the 'event.' Stone et al. also wanted to compare behavioral-coping recall accuracy to cognitive-coping recall accuracy. They posited that because behavioral-coping styles are possibly more set, and therefore more easily recalled than cognitive-coping styles, behavioral-coping would have a higher correlation between the Ecological Momentary Assessment and the retrospective recall task than would cognitive-coping.

In looking at the Ecological Momentary Assessment (EMA) and retrospective ratings, problems that were originally rated as “moderately stressful” on the EMA reports were then selected as “more stressful” by participants on the retrospective reports, demonstrating an inconsistency between momentary and retrospective reports. Results also showed that on retrospective ratings, behavioral coping strategies were over-endorsed and cognitive-coping strategies were under-endorsed. That is, in EMA reports, participants endorsed using cognitive-coping strategies more than behavioral-coping strategies; but when reporting retrospectively they endorsed just the opposite. In fact, participants were found to have *constructed* behavioral-coping strategies when reporting retrospectively and were found to have forgotten the cognitive-coping strategies they had originally reported using. This could be due to the effect of constructive memories mentioned earlier. Participants may be more prone to distort recollected memory due to their self-schemas. Similarly, knowing how the situation was resolved may also affect the recollection process (Stone et al., 1998; Zimbardo & Weber, 1994).

Thomas and Diener (1990) examined memory accuracy with a two-study investigation. Study I involved randomly sampling moments in participants’ daily lives over a period of three weeks via mood report forms. Study II was designed to have participants complete similar mood report forms, but only once at the end of each day, for a period of six weeks. Both studies examined intensity and frequency of reported positive and negative emotional experiences using pre-estimate, actual time (either randomly-sampled or end-of-the-day mood report forms), and post-estimate reports.

When comparing pre-estimates of emotional intensity to actual-time emotional intensity reports, both studies found that the pre-estimates of positive and negative

intensity were significantly higher than the actual-time intensity reports. Similarly, when comparing the post-estimate reports to the actual-time reports, it was found that positive and negative intensity estimates retrospectively reported were significantly higher than the actual-time intensity reported. Of notable interest, the differences in *intensity* estimates were greater with negative emotions than with positive.

When comparing the pre-estimates of emotional frequency to the actual-time emotional frequency reports, both studies found that the frequency of positive emotions was significantly lower on the pre-estimate reports than on the actual-time reports. Looking at the post-estimate reports compared to the actual-time reports, the positive frequency retrospectively reported was also significantly lower than what was actual-time reported. Both of these findings suggest that people underestimate the frequency of positive emotions in prospective ratings and underreport the frequency of positive emotions in retrospective ratings.

The Thomas and Diener (1990) findings suggest participants are not accurate when retrospectively reporting either the intensity or the frequency of their moods. In fact, individuals are more likely to misinterpret that the frequency of their emotions represent the intensity of their emotions; however, this was seen more with negative emotions than with positive emotions.

These studies convincingly demonstrate that delayed retrospective reports can be substantially discrepant from more immediate reports, such as those used in EMA. Stone et al. (1998) point out two potential sources of bias or distortion that are avoided via EMA, namely, self-schemas and knowledge of how an event concluded. Hurlburt, Heavey, and Seibert (2006) reviewed extant scientific research to develop guidelines regarding how to obtain accurate reports of inner experiences, such as thoughts,

emotions, and sensations. They created 15 guidelines to assist in obtaining accurate reports from individuals using introspective methods. Because Nolen-Hoeksema's Response Styles Questionnaire asks individuals to report on aspects of their inner experience, namely the nature and extent of their rumination when depressed, these 15 guidelines can help us evaluate the degree to which the Response Styles Questionnaire is likely to produce accurate reports of rumination during depression.

The first guideline suggests that skepticism is important when obtaining self-report information (Hurlburt, Heavey, & Seibert, 2006). Research indicates there are a variety of ways in which errors may occur in memory (i.e., self-schemas, retrieval environment, knowledge of situation outcome, etc.). As Hurlburt et al. state, "...science should be skeptical of subjects' ability to accurately recall, relive, or gain access to past experiences" (2006, p. 8) due to the overwhelming evidence of recall inaccuracy. Also, it is optimal to have a short duration between an event and the reporting of said event. One reason for this is that recall is better when done in the same psychological state as encoding, and to the extent that the delay in reporting is small, the likelihood of a change in state is reduced. Also, the shorter the duration between the event and the reporting period, the less likely the participant is to forget – or lose – the features of the event.

Other guidelines involve targeting specific, concrete episodes and keeping the targeted experience brief (Hurlburt, Heavey, & Seibert, 2006). Asking individuals about specific moments versus experience over time reduces the possibility of the individual relying on semantic memory (Tulving, 1984) or theory-guided recall to characterize the event (Pearson, Ross, and Dawes, 1992). Also, due to inherent limitations in the ability to encode and store information, it is best to keep the event being targeted brief.

Additionally, minimizing researcher demands – or demand characteristics –

should also be attempted when asking a participant for introspective information (Hurlburt, Heavey, & Seibert, 2006). Priming effects can also influence what is recalled. Questionnaires, like the Response Styles Questionnaire, may prime memory and therefore distort what is reported.

The last guideline offered by Hurlburt, Heavey, and Seibert (2006) is to place observations within a “nomological net”:

Introspective observations are of psychological constructs – attributes that are difficult or impossible to define operationally. Those who would use introspective observations should therefore explore the relationships of those observations to other kinds of research results. Cronbach and Meehl (1955) called the “interlocking system” of such relationships the nomological net, and argued that “*unless the network makes contact with observations, and exhibits explicit, public steps of inference, construct validation cannot be claimed*” (p. 18, italics in original).

Rumination, as operationally defined by Nolen-Hoeksema, is a construct that has been found to have predictive validity for the duration and intensity of depression (Nolen-Hoeksema and Morrow, 1991, 1993; Nolen-Hoeksema, Morrow, and Fredrickson, 1993; Nolen-Hoeksema, Parker, and Larson, 1994; Lyubomirsky, Caldwell, and Nolen-Hoeksema, 1998). Due to the Response Styles Questionnaire’s (RSQ’s) high reliance on retrospective recall, and the numerous problematic concerns of such types of recall, it would be beneficial to examine this construct using an introspective method less prone to the pitfalls of recall accuracy and other problems with retrospective reports.

Introspective Methods

There are a number of introspective methods that could be used to examine the construct of rumination. Two of these methods are briefly described below. A third method, Descriptive Experience Sampling (Hurlburt, 1990, 1993), proves to be the most appropriate introspective method to use in examining rumination, as it carefully addresses each of the guidelines developed by Hurlburt, Heavey, and Seibert (2006) for gaining accurate reports of inner experience.

Two variants of introspective methods have been around since the late 1970's (Hurlburt, 1997): thought-sampling and Experience Sampling Method. Though there have been similar methods to the thought-sampling and Experience Sampling Method as far back as the 1920's, there was a considerable lack of sophistication in those methods due to technological constraints. The similarities between these two methods appear considerable on the surface. Both methods use questionnaires and seek to quantify experiences, categorizing them accordingly; and both methods attempt to capture ecologically valid data from participants.

Thought Sampling

Thought-sampling had its first run in the psychological field in 1974 when Hurlburt and Klinger began to use the method in independent studies to obtain reports of the inner experiences of individuals (Hurlburt, 1997). In these studies, participants were instructed to rate their thoughts that had occurred at the moment of the beep on a rating scale provided by the researcher, and/or to write a brief description of their inner experiences that were occurring at the moment of the beep. The thought-sampling method provided quantitative data on individuals, allowing researchers to identify stable factors in participants.

Experience Sampling Method

The Experience Sampling Method (ESM) was developed by Csikszentmihalyi in 1975 (Hurlburt, 1997; Scollon, Kim-Prieto, & Diener, 2003). It differs from the thought-sampling method in that oftentimes participants are not asked to report thoughts or thinking, but situational contexts and moods. One of the strengths of ESM is that it helps to identify differences in personal characteristics between individuals during contextual stimulus conditions. That is, it helps to identify what the specific factors are that make similar individuals behave differently in the same conditions or situations. One example of an ESM study involved using a global measure to assess the extent to which individuals could be considered extroverted and then examining, via ESM, the extent to which these individuals engaged in activities consistent with the construct of extroversion (Scollon, et al., 2003). They found the individuals classified as extroverted based on the global measure did not report engaging in any more social activities than those who scored low on extroversion. This demonstrated that whereas the construct of extroversion may capture a personality type, per se, individuals may not engage in the preconceived, stereotypical activities of one labeled as extroverted.

A concern with ESM is its use of questionnaires and the corresponding possibility of creating demand characteristics and reactivity. That is, demand characteristics may occur if participants are aware of what the researcher is looking for and respond accordingly; reactivity may occur when participants become more aware of some aspect of their behavior due to the questionnaire and subsequently change their behavior due to this increased awareness. For example, if an individual is asked to fill out a questionnaire rating his or her behavior during a particular emotional state, then engages in experience sampling soon after, the individual may now be primed to focus

more on those behaviors during the particular emotional state he or she had endorsed on the questionnaire. Though ESM has the possibility to provide good introspective data, it is not as unobtrusive or objective as is desired when gathering such types of data because questionnaires are used. Additionally, because the questions are determined in advance of the reporting, participant responses are limited to what was anticipated or what the focus of the investigation is, thereby eliminating the possibility of discovering novel or unexpected experiences. There is still another method that can more accurately obtain such information: Descriptive Experience Sampling.

Descriptive Experience Sampling

Descriptive Experience Sampling (DES; Hurlburt, 1990) was derived in the late 1970's from the Thought Sampling method (Hurlburt, 1979). Unlike ESM and thought sampling methods of before, DES attempts to describe qualitatively a participant's experience, not to quantify it. It is an introspective method that asks participants to report what is present in their awareness as they are randomly cued.

DES uses a beeper to signal participants to note and record their experiences. The beeper used in DES is a pocket-sized electronic device that is programmed to signal individuals randomly – or in some situations, quasi-randomly – to take note of what is in their awareness *just prior to* the beep. Participants are then asked to write notes about the characteristics of their ongoing experience just prior to the beep. These notes are written in the participant's own words (that is, participants are *not* asked to endorse a number of predetermined questions or statements). Participants are not asked to rate, categorize, or quantify their experience; rather, they simply note and record it. Also, it should be pointed out the term “inner” experience is not meant to imply that one's awareness must be contingent on some event taking place inside the participant's mind

or body.

Participants are asked to record their experience in this fashion for a number of moments, most typically six. Participants are then interviewed within 24 hours of collecting the samples so the samples collected are still fresh in the participant's memory. The goal of this interview is to develop descriptions of the ongoing experience at each sampled moment. When being interviewed, the participant is asked open-beginning questions so as to decrease the chances of influencing or shaping reports of what was experienced. The typical first question asked for each beep is, "What was in your awareness at the moment just before the beep?" Once the sampled beep has been fully explored, the researcher's account of the experience is repeated back to the participant to maximize the accuracy of the description. This procedure is repeated for each beep. After each sample is collected, all beeped experiences are examined to determine the salient characteristics of the participant's experiences (i.e., the commonalities in experience across sampled moments).

Choosing a Method to Examine Inner Experience

The ability of DES to address each of the 15 guidelines outlined by Hurlburt, Heavey, and Seibert (2006) related to obtaining accurate reports of experience makes it the best overall method to address the concerns regarding the Response Styles Questionnaire. Both thought sampling and ESM are limited by their narrow scopes. The thought sampling method typically asks individuals to complete a questionnaire after each signal (Hurlburt, 1997), thus raising the concerns of demand characteristics and reactivity. Also, thought sampling focuses mostly on mood and thought, not an individual's awareness as a whole, thus eliminating potentially important information.

ESM also uses questionnaires to collect participant data (Scollon et al., 2003; Hurlburt, 1997), increasing demand characteristics and priming effects. ESM focuses mostly on contexts of an individual's experience (i.e., "Where are you?" "What are you doing?" "Who are you with?"), as well as mood and thought ratings reported via Likert scales. Both methods are attempting to gather information on certain aspects of an individual's awareness, whereas DES attempts to gather information on the entirety of an individual's awareness. These reasons make DES the best method to explore the connection between inner experience and endorsements on the Response Styles Questionnaire.

Another feature of DES that sets it apart from other introspective methods is its systematic efforts to bracket presuppositions. DES recognizes that everyone holds presuppositions. For instance, if a participant is describing a McDonald's sign, an investigator might have a mental representation of golden colored arches with a red sign underneath it, and seeing it at an angle from below. Meanwhile, the participant might have experienced looking at the golden arches straight on, and seeing a brown McDonald's restaurant behind the arches, with no presence of the investigator's assumed color red. To guard against these types of presuppositions occurring during the interviewing, open-ended questions are used with no particular answer expected or desired. The participant is asked questions in depth about the experience until a rich understanding of the experience is developed, ideally without the interference of any presuppositions or expectations. Bracketing presuppositions is just one reason DES does not use any type of questionnaires or list of ready-made questions for participants to answer.

Findings Using DES

As noted above, after samples have been gathered from an individual, the DES investigator reviews all of the samples to determine the salient characteristics of an individual's experiences. Past DES investigations have typically found that the salient characteristics of inner experiences involve the form of the experience rather than its content (Hurlburt, 1990, 1993; Hurlburt, Koch, & Heavey, 2002). In other words, the content of an individual's inner experience tends to vary widely while there are characteristic forms in which this inner experience tends to occur.

Hurlburt and Heavey (1999) developed the *Manual of Terminology* for 16 types of inner experience. Of the 16 types of inner experience described, the five most common are: inner seeing, inner speech, unsymbolized thinking, feelings, and sensory awareness (Hurlburt & Heavey, 2002). For example, using DES, Hurlburt (1993) found that depressed patients tended to have frequent inner experiences of unsymbolized thinking; that hypomanic patients tended to have inner experiences with more visual inner seeings (Hurlburt, 1993); and that schizophrenic patients tended to have inner experiences with "goofed up" inner seeings and hyper-clear emotional experiences (Hurlburt, 1990). These are but a few examples of common forms of inner experience among individuals diagnosed with similar psychiatric conditions.

Hurlburt, Koch, and Heavey (2002) used DES to determine if a connection exists between a particular observable behavior and inner experience. Using the observable behavior of rapid speech, they compared a group of participants who were measured as having a high rate of speech and a control group of participants who were measured as having a normal to slower rate of speech. These two groups were found to have significant differences in their inner experiences. Individuals who had a more rapid rate

of speech tended to have more than three times the experiences of “multiple awareness” (multiple awareness is the phenomenon of two or more mostly unrelated experiences taking place concurrently; see Hurlburt & Heavey, 1999) than the control group. This study demonstrates that though the individuals in this study were not diagnosed with any type of disorder, those sharing the observable behavior of rapid speech did have common characteristics of inner experience. The goal of this study was not to demonstrate that individuals who speak with a more rapid pace than others tend to share some common characteristic, per se, but that if individuals who share a mundane trait – rapid speech rate – have commonalities within their inner experience, then other observable behaviors or psychiatric disorders in more significant areas of research may tend to share commonalities in inner experience, as well.

The interobserver reliability of DES has been examined in a study conducted by Hurlburt and Heavey (2002). Using students enrolled in an introductory psychology course, Hurlburt and Heavey separately interviewed participants within 24 hours of a sampling day for a total of three sampling days. The participants were unaware they were being rated by the researchers. Participants told each independent researcher the content of his or her captured inner experience. Comparing the five most common types of inner experience reported by participants – inner seeing, inner speech, unsymbolized thinking, feelings, and sensory awareness – the typical reliability scores using the Spearman-Brown estimates ranged from .91 to .98, demonstrating a high interobserver reliability.

Present Study

The present study used Descriptive Experience Sampling to investigate the inner

experience of individuals who indicated engaging in high or average levels of rumination on the Response Styles Questionnaire (RSQ). This study proceeded in two phases. During the first phase, undergraduate students completed the RSQ. The RSQ rumination scores were then used to identify a subgroup of students who scored either high or average on the rumination subscale of the RSQ. During Phase II, these individuals participated in three to four days of Descriptive Experience Sampling (DES). For each individual participating in Phase II of this study, the descriptions of his or her inner experience at the sampled moments were examined to determine any salient characteristics within his or her inner experience across all sampled moments. After this was completed for each participant, the extent to which there were commonalities or differences in salient characteristics of the inner experiences within and between the high and average rumination groups was examined.

Additionally, three independent raters (not otherwise involved in the study) were asked to rate the descriptions of each sampled moment regarding the extent to which each moment of inner experience reflected rumination based on a definition of rumination written by the investigator and the investigator's advisor and fellow investigator, Christopher Heavey. The definition given to the raters was written specifically for this study and was intended to reflect the definition of rumination of the Response Styles Theory per Nolen-Hoeksema.

The reliability of these ratings was examined to determine the extent to which the raters agreed on the degree of rumination each moment of inner experience contained. The extent to which the samples from the high and average rumination groups contained different degrees of rated rumination was also examined. Additionally, the correspondence between the extent of rumination reflected in the sampled moments

based on the ratings and the scores on the RSQ Rumination subscale was examined.

In addition to rating the extent of rumination within the samples, we also asked raters to rate the valence of each sample using a definition written for this study.

As with the rumination ratings, the ratings given for valence were evaluated to determine the extent to which raters agreed on the valence of each sampled moment of inner experience. Finally, the extent to which samples within and between the high and average rumination groups contained similar or different valences were compared.

CHAPTER THREE

METHOD

This study proceeded in two phases. In Phase I, potential participants were screened to assess the extent to which they reported ruminating when depressed. In Phase II, a subset of those screened who reported either high or average levels of rumination when depressed participated in DES and completed additional measures.

Phase I: Screening Phase

Participants

Forty-two students were recruited from the University of Nevada, Las Vegas' Psychology 101 Subject Pool. The mean age of participants was 19 years and 2 months ($SD = 1.6$). There were 4 African-Americans, 9 Asians, 18 Caucasians, 3 Hispanics, 1 Latina, 2 Pacific Islanders, as well as 4 participants who indicated they were multi-racial. Eighteen of the participants were male and twenty-three were female. Each participant received one half hour of research credit for participating in this phase of the study.

There were thirty-eight questionnaires completely filled out, three partially filled out, and one which was not filled out at all. The latter four questionnaires had to be discarded, leaving a total of twenty males and eighteen females.

Materials

Demographic Forms and Informed Consent

The Demographics Form was to obtain information such as name, age, gender, ethnicity, and marital status. The informed consent form stated the purpose of the study, the procedures, researcher contact information, and assured students that all identifying information would remain confidential.

Response Styles Questionnaire

The Response Styles Questionnaire (RSQ) is a measure developed by Nolen-Hoeksema (1990) to assess the extent to which one engages in ruminating or distracting behaviors when feeling sad or depressed. Rumination and distraction are the two major dimensions of the RSQ. The RSQ consists of 71 items, with 22 of the items focusing on rumination. Examples of ruminative thoughts and behaviors are: “Think about how alone you feel”; “Think about how angry you are with yourself”; and “Write down what you are thinking and try to analyze it.” Examples of distracting thoughts and behaviors are: “Do something fun with a friend”; “Talk with friends about something other than how you feel”; and “Work on a hobby that requires concentration.” The RSQ has been shown to have good internal consistency, with alphas greater than .80 (Just & Alloy, 1997; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema et al., 1994; Nolen-Hoeksema et al., 1999; Nolen-Hoeksema & Jackson, 2001; Kuehner & Weber, 1999; Chang, 2004).

The instructions for the RSQ (Nolen-Hoeksema & Morrow, 1991) were printed on the questionnaire, just above the listed statements. The instructions were as follows:

People think and do many different things when they feel depressed. Please read each of the items below and indicate whether you never, sometimes, often or

always think or do each one when you feel down, sad, or depressed. Please indicate what you *generally* do, not what you think you should do.

Following the instructions were 71 numbered statements followed by four boxes to indicate an answer of *Almost Never; Sometimes; Often; and Almost Always* (see Appendix A for a copy of the questionnaire).

Procedure

The investigator attended Psychology 101 classes at UNLV to offer students the opportunity to participate in Phase I of this study. Instructors left the room before the administration of any materials so any student who chose not to participate could leave without feeling like he or she would be penalized. Students were told that they would be given a form to obtain demographic information along with the informed consent form explaining the purpose of this study and to give consent. All students understood this was voluntary participation and completed both forms. The RSQ was then administered to the students via paper and pencil. The investigator informed the students that those who met certain requirements might be contacted to participate in Phase II of the study.

After the RSQs were completed, they were given to a research assistant and scores for the Ruminative Response Scale of the RSQ were tallied. The investigator was kept blind to the RSQ scores until after the completion of Phase II.

Phase II: Descriptive Experience Sampling Phase

Participants

Participants for Phase II were six students recruited from Phase I; three were male and three female. The average age of the participants for Phase II was 20 years of age ($SD = 2.7$). Ethnicities of participants for Phase II were: one African-American, two

Caucasians, one Hispanic, one Latina, and one person who identified herself as multi-racial. Each participant received three hours of additional research credits for their participation in Phase II. Those picked for this Phase of the study were chosen based on their scores on the Ruminative Responses Scale (RRS), a subscale to the RSQ.

Materials

Informed Consent

A second informed consent form was used to inform participants about the purpose, procedures, and confidentiality of the second phase. The form stated that participation in the study was voluntary and could be withdrawn at any point in the study.

Beck Depression Inventory-II

The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report inventory designed to assess the severity of depressive symptoms. It takes approximately five minutes to complete. Each item has a header that is meant to focus the test-taker to the overall purpose of the presented statement. The items are scored on a 4-point (0-3) scale with higher scores reflecting greater depressive symptoms. The overall range of scores is from 0-63, with cutoff scores defining four possible categories of severity of depressive symptoms: minimal (0-13), mild (14-19), moderate (20-28), and severe (29-63) depressive symptomatology (Beck, Steer, & Brown, 1996). The timeframe the test examines is the previous two weeks of an individual's life, including the same day the questionnaire is completed; this mirrors the timeframe used in the DSM-IV-TR to assess depressive symptomatology.

Symptom Checklist 90 – Revised

The Symptom Checklist 90 – Revised (SCL-90-R) is a 90-item self-report inventory intended to measure psychological symptoms or problems that an individual may be experiencing (Derogotis, 1994). This measurement is based on nine primary symptom dimensions and three global indices of distress. The test takes approximately 15 minutes to complete.

The SCL-90-R is written at a sixth grade reading level helping to ensure a higher level of comprehension and test completion. Each item is a brief statement or description of common problems individuals may sometimes experience; for example, “Nervousness or shakiness inside,” “Blaming yourself for things,” and “Trouble falling asleep,” (Derogotis, 1994). The 90 items are scored on a 5-point rating scale (0-4) that measures the level of distress each problem has caused the individual within the past 7 days, including the day of testing. Higher scores reflect greater distress.

The Global Severity Index (GSI) measures all nine dimensions and is the best overall summary of the individual’s amount of psychological distress. For the GSI, all 90 scores are added up and then divided by the number of items completed. Studies on the internal consistency of the SCL-90-R have been shown to be good, ranging from .77 to .90 (Derogotis, 1994). Test-retest for the SCL-90-R is also good.

Descriptive Experience Sampling Materials

Descriptive Experience Sampling (DES) employs a beeper that randomly emits an electronic signal, cuing a participant to capture what he or she is aware of at the moment of the signal (also called “the beep”). The beep is programmed to sound randomly between the time the beeper is turned on and 60 minutes, with a mean duration between beeps of 30 minutes. The beeper has an adjustable volume dial with a push-

button on top that an individual will press to stop the beeper's signal once it begins; the beeper is used with an earpiece.

Procedure

To select participants for Phase II, a research assistant examined the RSQ scores of Phase I participants and forwarded to the investigator names of the participants who scored one or more standard deviations above or below the mean on the Ruminative Response Scale of the RSQ. The investigator then called each potential participant and either left a message or spoke to the prospective participant regarding Phase II of the study. A phone script was used to ensure consistency of the description of Phase II. Participants contacted via telephone were given a brief explanation stating the study's purpose: to examine the inner experiences of individuals by focusing on random moments of their inner world. A brief description of DES was provided, including the requirements of participation in terms of using the beeper and notebook, as well as the investment of personal time – approximately three sampling hours during which the participant can go about his or her normal activities, and one interview hour for each sampling day (three to four days) – for the investigation.

Overall, of the 15 participants from Phase I who were contacted, 4 agreed to participate in Phase II. Due to the lack of participants, the investigator contacted two participants from Phase I who had originally approached her regarding their interest in further participation in this study, bringing the total number of participants up to six. Of those six, four participants scored two standard deviations above the mean of the RSQ Rumination subscale and two participants scored near the mean. The investigator remained blind to all scores until the completion of the study.

The participants continuing on to Phase II of the study were scheduled an initial

meeting with the investigator and fellow investigator, Christopher Heavey, in the Experience Sampling Laboratory on the UNLV campus. During the initial meeting at the Experience Sampling Lab, the participants were given a more extensive description of the Descriptive Experience Sampling method. The description given included a brief history of self-report measures and the evolution of DES.

The investigators demonstrated how to operate the beeper used in DES to obtain samples of each participant's inner experience. When the beeper is initially turned on, a signal is heard which lets the participant 1) know that the unit is working and 2) adjust the beeper's volume to an appropriate level which is typically dependent on the activity the participant is engaging in during the sampling process. This initial signal is the same signal heard during sampling that cues the participant to capture what is in his or her awareness at the moment of the beep.

The moment of the beep was explained as what is in a person's awareness just as the beeper's signal is heard. An analogy was typically given to assist in understanding what is meant by, "the moment of the beep," (i.e., like that of a timeline). For example, imagine you [the participant] are doing whatever it is you are doing when suddenly you hear the beep signal. What we are interested in learning is what it was that was in your awareness in that last undisturbed moment *just* before the beep sounded. We asked the participants to focus specifically on what was in their awareness and to write down – in the notebook provided– as much detail as would be needed to accurately describe the details of each moment of experience during the interview.

After demonstrations on how to use the beeper were given, participants were then asked to demonstrate that they understood the directions. Participants were given an earpiece, a beeper, and a pocket-size notebook in which to write down notes about the

captured moments. They were instructed to sample during times that were convenient to them and while engaged in their normal activities. Also, we asked participants to perform the sampling task during different times or within different settings (i.e., to sample during various periods versus only sampling while in class or studying).

After explaining the process of DES and answering any questions each participant then completed the informed consents, a pre-sampling BDI-II, and an SCL-90-R. It should be noted that the BDI-II was not used to diagnose depression, but rather as a measure for the severity of depression. Before participants left the initial meeting, regular meeting times were scheduled for once to twice a week until the conclusion of the participant's involvement in the study.

Each participant completed three to four sampling days and was asked to collect a total of six beeps during each sampling day. Within 24 hours of sampling, the participant and both investigators met at the Experience Sampling Laboratory to discuss each beep in depth until both participant and investigators were satisfied that the inner experiences were fully explored and understood. Each interview for a sampling day took no longer than one hour. Once the information was collected for each beep of a sampling day, a summary of each beep was written by the investigator and reviewed by the co-investigator to maximize the accuracy of the summary.

On the final day of interviewing, the post-sampling BDI-II was administered and the investigators explained the goals of the study to the participants. Any questions participants had regarding information on their provided samples were answered at this point, as well.

After sampling was completed, each participant's summaries were examined to identify what salient characteristics, if any, were found in each participant's inner

experience. To determine salient characteristics, the investigator noted recurring types of inner experiences a participant reported. The primary investigator coded each sample's inner experiences with codes as determined by the *DES Manual of Terminology* (Hurlburt & Heavey, 1999). Each coded sample was reviewed by the co-investigator to ensure agreement. If there were any discrepancies of sample codes, investigators reviewed the sample together to discuss the inner experience of the discrepant sample.

After determining each participant's salient characteristics, these salient characteristics were then compared to the other participants' salient characteristics within their respective groups to find out if any commonalities existed among participants. Finally, the salient characteristics were then compared between the two groups to discover what commonalities or differences, if any, existed between those who scored high and those who scored near the mean on the RSQ Rumination subscale.

To conduct the ratings of the samples of experience, the written descriptions of the samples were compiled and then randomized for the raters. The raters were three undergraduate students at UNLV who had been volunteering as research assistants for co-investigator, Christopher Heavey. They were naïve to the study, rumination as it pertained to the study, valence as it pertained to the study, but were, to some extent, familiar with DES through their previous work with Dr. Heavey. Raters were asked to indicate the extent to which each of the samples reflected rumination using an ordinal rating scale – *No Rumination, Little Rumination, Some Rumination, A Lot of Rumination* – created by the investigators. Rumination was rated on a scale of 0 (*No Rumination*) to 3 (*A lot of Rumination*). Raters were given the following instructions:

We are interested in your judgment concerning the extent to which the

experience at each moment reflects **ruminati**on****. Rumination involves being aware of or focusing on *self-directed* negative thoughts or feelings. This can include focusing on the causes, meanings, or consequences of negative feelings. For each sample description, please rate the extent to which *self-directed* negative thoughts or feelings are present (bold and italics in original).

After rating rumination, raters were then instructed to rate the degree of valence for each sample. Just as rumination, valence was put into an ordinal scale for rating ease. Raters were asked to rate the valence of each sample using the following instructions: “Please rate the extent to which the tone or content of each sample is negative, somewhat negative, neutral, somewhat positive, or positive.” Valence was rated on a scale of -2 (*Negative*) to +2 (*Positive*). Raters were blind to all information about participants throughout the rating process. The beeps were randomized and then given to each rater in a different order. Each rater rated all beeps.

CHAPTER FOUR

INDIVIDUAL PARTICIPANT PROFILES

Cindy

Cindy (all names have been changed) was an 18-year-old single, bi-racial, female freshman attending UNLV. Her initial score on the BDI-II was 17 and her BDI-II score at the end of the study was 19, putting her within the mild range of depression. Her SCL-90-R GSI T score was 66, indicating Cindy had an elevated level of psychological distress at the time of test administration. Her score on the RSQ's Ruminative Responses Scale (RRS) was 66, putting her in the 95th percentile of all females who take this measurement; this score is indicative of one who strongly claims to engage in ruminating thoughts and behaviors when depressed. Cindy always showed up for the interview well dressed and typically chewing gum. She was vivacious and outgoing and appeared genuinely engaged in sampling.

We observed roughly five types of inner experience with Cindy. The most salient characteristic in Cindy's inner experience was the phenomenon of unsymbolized thinking. Unsymbolized thinking is when a person has a thought or an idea in his or her awareness that is not represented with words, images, or any other symbols. It is sometimes described as just a pure thought. Over two-thirds (72%) of Cindy's beeps had unsymbolized thinking. For example, on her first day of sampling, a beep caught her while she was listening to a talk radio program in her car about spanking. She was

innerly expressing her opinions on spanking at the moment of the beep. As Cindy was thinking about spanking and was agreeing with those callers who approved of spanking, she also had a sense that spanking, as discipline, had been okay in her life. This “thinking” and “agreeing” was not represented with words or images, however. It was more of just a sense, or an idea, that spanking was okay.

In another beep, Cindy was in her chemistry class listening to a lecture about heat components. She had a sense of feeling confused, frustrated, doubtful, and overwhelmed by the material. These feelings seemed to be all mixed together. Her sense of confusion and wondering, “Will I ever get this by my test on Thursday?” was not actually represented with words or images.

Another example of Cindy’s experience with unsymbolized thinking occurred as she was walking towards a street she was going to cross. A car had just honked at an African-American man standing on the sidewalk and Cindy was wondering if the people who were honking actually knew this man or if they were just honking at him. This wondering was not represented with words. One beep captured Cindy’s awareness of her car making a weird noise accompanied by wondering something like, “What’s wrong with my car?” Again, this thought was not represented with words.

A final example was when Cindy was at a local fast food restaurant. She was noticing a toddler running around a table and was wondering if she could ever be a mother. This wondering was not represented with any words or images. Instead, it was an idea that Cindy was somehow considering whether or not she could ever be a mother accompanied with a feeling of fear at this thought of being a mother. She experienced this phenomenon of unsymbolized thinking in 13 of her 18 beeps.

Over half of Cindy's captured moments (55%) also included a focused awareness of other people. Surprisingly, though perhaps coincidentally, these others were typically minorities. This awareness of others had a broad range from just noticing someone to noticing someone and feeling a sense of fear and tingling sensations throughout her body. For example, the beep where Cindy was noticing the African-American man who had just been honked at happened to be one of her more mundane awareness's of others.

In another experience (not involving minorities), she was walking in the dorms with a friend and noticed a young woman wearing a tiara, holding roses off to her left, standing on her tip-toes, and kissing what appeared to be the young woman's boyfriend. Cindy noticing this young couple's public display of affection was accompanied by an overall feeling of disgust, saying she doesn't like it when people "make-out" in public.

Another example of Cindy's observation of others was the beep when she was watching a young Hispanic mother and her toddler and feeling scared about the thought of being a mother. This particular awareness of another had a rather profound effect on Cindy as compared to the previous example, as will be seen later when talking about her other inner experience characteristics.

In yet another beep, Cindy was still in her chemistry class and was aware of a young man who only seemed to show up to her group during group quizzes. She was angry and annoyed that this young man only came to her group when it was test time to receive a "free grade." In fact, this anger and annoyance she was feeling was accompanied with the experience of a tingling feeling that was felt all over her body. Again, we will address these physical sensations she experienced later in the chapter.

Cindy's incorporation of others into her inner world did not require the physical presence of another individual. In the beep of her listening to the talk radio program

about spanking, she was agreeing with those callers who said spanking was okay, but was feeling annoyed towards those callers who were objecting to spanking. In fact, Cindy's annoyance towards those individuals appeared still evident as she described her reaction towards those who didn't agree with spanking during the interview process.

Another salient characteristic of Cindy's inner experience was feelings. This characteristic was seen in half of Cindy's beeps. We saw her experiencing feelings of annoyance with the callers who objected to spanking, as well as the feelings of annoyance and anger with her classmate who only showed up to receive a "free grade". She felt fear and was scared when she thought about being a mother and felt disgust while watching the young woman kissing her boyfriend. Cindy also felt stressed, as can be seen when she was wondering what was wrong with her car; and when she was in her chemistry class feeling stressed – as well as confused, doubtful, and overwhelmed – about the material on an upcoming test.

A final example of Cindy's awareness of feelings was when she was at a friend's dorm and realized she was going to be late for class. At the moment of this beep, she was feeling panicked that her instructor might mark her absent, as well as feeling tired and not wanting to go to class. Cindy's inner experiences of feelings were mostly negative (eight out of nine). Also, she was often being critical of others or was worrying about herself (her behavior) in a situation.

Along with Cindy's tendency to incorporate those around her into her inner world, it was also discovered that when she was experiencing some type of strong emotional response, such as the feelings just mentioned, it was often accompanied with some sort of physical sensation. In fact, more than half the time (55%) she experienced

a feeling, it was accompanied with a physical sensation. The phenomenon of physical sensations occurred in just over a quarter (27%) of Cindy's overall beeps.

The beep that caught Cindy aware of watching the toddler and wondering if she could ever be a mother seemed to arouse a powerful reaction in Cindy. As she wondered if she could ever see herself as a mother or ever be a mother, she felt fear and was scared at the prospect of being a mother. This feeling of fear was accompanied with a tingling in her upper arms. This beep was not unlike other beeps when Cindy was experiencing a feeling.

For example, in the beep that caught her while she was driving her car, she was at a stoplight and was noticing her car making a noise that was similar to a noise it made when it recently had to be repaired. She was feeling stressed about this noise while wondering what it was that was wrong with her car. Her stress seemed to be associated with a sense of tightness in the upper center of her chest.

Another example was when she was in her chemistry class listening to the difficult lecture. She had a sense of feeling confused and wondered if she would be able to understand this information by her upcoming test that Thursday. Her sense of confusion was accompanied by related feelings of frustration, self-doubt, and feeling overwhelmed. Along with this was an awareness of her beginning to feel a low heat rise in her face and arms due to this confusion and frustration. It felt to her like this heat was moving from the inside and moving towards the outside of her body.

These sensations also accompanied positive feelings. At one beep, Cindy was typing an email to her boyfriend and thinking about how wonderful it was going to be when he came to visit her. Along with this thought she was aware of a feeling of love

and excitement. This feeling of love and excitement was manifested in what felt like a warmth in the upper part of her torso.

Cindy's experience lacked inner speech (seen in only 1 out of 18 beeps) and her complete lack of inner seeing, given that these are two of the five most common types of inner experiences. She was bright, perky, and compliant – a stark contrast with her preponderance of negative, critical, and anxious emotions seen in her samples. Cindy seemed eager to participate in this study and brought high levels of energy into the interview process. On the second day of sampling, Cindy had two beeps in which she was unsure what she was aware of and as a result did not take note of those and continued to collect two additional beeps. After we had collected our last set of beeps she inquired about both the original questionnaire she had filled out (the Response Styles Questionnaire) and what her beeps meant.

When we look at how raters judged Cindy's samples for degrees of rumination ($M = .52$), we see she had a high degree of rumination. In fact, 44% of her samples were rated as having some degree of rumination. The valence of her samples was rated as somewhat negative ($M = -.48$), which is not surprising given that seven of her eight samples involving feelings contained negative emotions.

Sylvia

Sylvia was an 18-year-old single, Hispanic female freshman attending UNLV. Her initial score on the BDI-II was 13, placing her in the mild range of depression, her post study BDI-II score was 9, putting her below the mild range of depression. On the SCL-90-R, her GSI T score was 66, indicating the possibility of some psychological distress at the time of testing. Finally, on the RSQ's RRS, her score of 65 put Sylvia

within the 95th percentile among all women who have taken this measurement. This meant that she believed she responded to feelings of sadness or depression with rumination. Sylvia attended each interview promptly, prepared, and casually dressed. Though she appeared thoughtful and quiet during the interview process, there was a sense of guardedness about her, as well.

We observed essentially six types of inner experience with Sylvia but there were two that stood out to be more salient than the others: unsymbolized thinking and feelings. The most salient characteristic in Sylvia's inner experience, the phenomenon of unsymbolized thinking, occurred in over two thirds (71%) of her samples. In fact, one of Sylvia's first beeps contained our first example of her unsymbolized thinking. Here, Sylvia was working on a crossword puzzle and thinking about whether or not she would be able to distinguish "fake" from "real" thoughts when the beep went off. It was at this time the beep went off. This thought of wondering whether or not she would be able to distinguish "fake" and "real" thoughts was not represented with words or images, rather, just an idea – or pure thought – of whether or not she would be able to distinguish her thoughts.

Another example of unsymbolized thinking occurred while Sylvia was doing dishes. She wanted to unplug her father's cell phone from the wall so she could plug in a radio and listen to music while doing the dishes. She was unsure how she was experiencing the thought process of debating on whether or not to unplug his cell phone and plug in the radio; she only knew this thought was somehow present.

One moment caught Sylvia while she was watching a movie. At the moment of the beep, she was wondering to herself how a woman could run in high-heeled shoes if she had never before worn them. As she wondered this, she was also having the

accompanying thought that was something like, “That doesn’t make sense.” She was unsure how these thoughts were occurring; only that there were no words or images associated with them and that they were occurring simultaneously.

Another example occurred while Sylvia was in her English class playing a game, dot-to-dot, with her friend. At the moment of the beep she was watching her friend move her pen and was thinking something like, “I hope she doesn’t go there because that’s where I want to go.” Again, this thought was not represented with words; rather, just a sense that she hoped her friend didn’t see the move she saw.

The next two examples of Sylvia’s unsymbolized thinking evidence her often-negative attitudes, which were seen in over 80% of her captured experiences. This negativity often included Sylvia being critical of herself or others, as well as experiencing feelings of guilt or anxiety for her actions.

The first of these examples occurred as she was talking to one of her sisters. As she was talking to this sister, her younger brother and other sister began to give their opinions on the subject at hand with this other sister saying, “Ixnay on the ‘something’.” At the moment of the beep, Sylvia was wondering something like, “Why does she talk like that?” and was feeling very annoyed with this sister. She was also thinking something like, “Why am I always so mean?” This thought was in regard to her feelings towards her sister. The wondering and thinking, which were going on simultaneously at the moment of the beep, had no words or images associated with them; there was just a sense of these being in her awareness.

In a final example of Sylvia’s unsymbolized thinking, she was eating dinner at the table with her family. At the moment of the beep, she was thinking that she didn’t want to be there and was wishing her family would leave. These thoughts were not

represented with words or images, though they were accompanied with feelings of annoyance with being “stuck” at dinner.

The other salient characteristic we saw within Sylvia’s awareness was feelings, which occurred in about 67% of her beeps. Again, this can be seen in one of her earlier beeps as she was wondering if she would be able to distinguish “fake” from “real” thoughts, she also had a feeling of an “impending beep” which was causing her to feel anxious. This anxiety was experienced as feeling nervous and having knots in her stomach.

In another sample, Sylvia was studying for a biology test and at the moment of the beep was feeling overwhelmed by everything that was going to be on the test. She was aware of feeling a fear of failure that was experienced as being anxious and mentally tired.

In another example, Sylvia had just gone into her room to get away from her mom who had just made her angry. At the moment of the beep she was engaging in some distracting techniques. She was aware of feeling frustrated; this frustration felt like it was located in the back of her head.

On her second day of sampling, Sylvia was watching a movie with her friends. She had just realized there was some irony in the choice of actress used for a fictitious magazine cover due to the real-life relationship between her, the leading actress, and their shared romantic connection with a man. At the moment of the beep, Sylvia had a feeling of being amused by her “revelation,” as well as a feeling of accomplishment for noticing this before her friends did. The phenomenon of unsymbolized thinking was also present in this sample as her feeling of accomplishment was accompanied with a thought that had no words or images to represent her thought of, “I’m amazing.”

In another example of Sylvia's awareness of feelings, she was driving in her car and changing radio stations. She had heard a musician on the radio and at the moment of the beep was feeling annoyed by the song and the singer, Jewel.

During another beep, while riding with her friend, she was trying to decide whether to go pick up her brother or go home first and then come back for him. At the moment of the beep, she was feeling a sense of annoyance at the urgency of having to make this decision. This annoyance was seen in many of her samples.

For example, as she was sitting at home on her couch feeling drowsy. A beep caught her wondering why she was drowsy and she had a feeling of annoyance that was related to being drowsy.

A final example of Sylvia's feelings can be seen in her last beep while she was at home and her older sister was calling their two dogs. At the moment of the beep, Sylvia was wondering if her other sister had already let the dogs out and was aware of feeling annoyed at the possibility that *she* may have to let the dogs out.

Though Sylvia appeared to be a relatively relaxed, laid-back individual, she demonstrated having a significant amount of negativity and frustration within her inner world, which could be seen in her conversations with the investigator. Her calm and cool demeanor appeared to mask her high awareness of feelings, which were noted to be negative over half of the time. Of interest with Sylvia was her lack of inner seeing, one the more common of types of inner experiences, which were seen in only 3 out of 24 beeps. Though Sylvia did not appear to be highly interested in the study, she volunteered to do a fourth day and demonstrated a desire to want to express her moments of awareness with as much clarity as possible.

In reviewing the level of rumination present in Sylvia's captured inner experiences, raters judged Sylvia's samples to have had a high degree ($M = .76$) present. In fact, 70% of Sylvia's samples were rated as having some degree of rumination. The average level of valence of Sylvia's samples was rated as somewhat negative ($M = -.68$). Examining this score both within and between groups, this was the most negative score received in terms of valence. This is not surprising when it was discovered that 79% of Sylvia's samples were rated as containing some degree of negativity.

Trevor

Trevor was a single, 19 year-old African-American male senior at UNLV. His pre-sampling score on the BDI-II was 20, which is the lower cutoff score for moderate depression, and his post-sampling score was 14, which is the lower cutoff score for mild depression. Trevor's SCL-90-R GSI T score was 66, indicating a possibility of elevated psychological distress at the time of test administration. His score on the RSQ's RRS was 63, putting him in the 95th percentile of the rumination subscale. This is an indication that Trevor believes himself to be prone to respond to feelings of sadness or depression with ruminative thoughts and/or behaviors more than 95% of the rest of the population. In contrast to these scores, however, Trevor's general disposition seemed relaxed and generally happy. He appeared thoughtful when reflecting back on his samples, and laughed freely and often while recounting them.

We captured roughly eight types of inner experience with Trevor. The most salient characteristic we found, however, was the phenomenon of inner seeing, which occurred in almost 40% of his samples. This is when is when an individual has the experience of mentally seeing a picture in his or her awareness at the moment of the

beep. For example, Trevor was in his anthropology class listening to his professor speaking on the topic of religion. At the moment of the beep, he was thinking about an episode of *South Park* that had to do with Scientology. He was mentally seeing a rapper, R. Kelley, who was in an upstairs closet with actors Tom Cruise and John Travolta. Kelley is trying to get Cruise and Travolta out of the closet while a film crew was taping the footage. Trevor was seeing this scene just as he had on TV: in color and looking straight at the scene.

We see Trevor aware of another inner seeing on his following beep. Here, he had just received a paper back from his professor and had seen he received an 'A' on it. At the moment of the beep, he was mentally seeing his mouth saying, "I'm going to get an A [in this class]." In this he was mentally seeing his mouth and lips move. It looked as though they were drawn like a cartoon, yet looked realistic, too. He was looking at his lips straight on and it looked as though they were about five feet in front of him. Also, there was nothing behind the lips. Just darkness. This was not the only sample Trevor experienced inner seeing surrounded just by darkness. This experience occurred on multiple occasions.

For instance, in another sample, Trevor had been thinking that it was really hot outside. At the moment of the beep, he had his eyes closed and was mentally seeing a "big ball" in his head. He knew this 'ball' was a representation of the sun he felt upon his skin. This sun was moving like a gaseous ball. It was yellowish orange in color and had flare-ups coming out of it. The tips of these flare-ups were red in color. This sun was surrounded by black. This inner seeing seemed to have a frame to it, like that of a movie film: rectangular in shape, going lengthwise. There was less black above and

below the sun and more black on the left and right side of the sun. He was looking at this picture in his head, straight on.

In another example, Trevor was in his room thinking about the trip to Six Flags Magic Mountain theme park he was taking the next day. At the moment of the beep, he was mentally seeing the bus he would be taking on the trip. The bus was gray with a blue streak; he was looking at it from a side view. The front of the bus was facing towards the left and the back towards the right. Again, there was no background to the bus, just darkness.

Inner seeing was not the only visual awareness captured within Trevor's inner world. One example of this was when he was in the Student Union with his friend. At the moment of the beep, Trevor was looking at his friend's tee shirt and reading the logo, "Active," which was printed on the front. He was noticing a squiggly looking design that looked like the letter 's' in front of the word "Active." Due to this 's' looking design, Trevor thought that the logo name was "*SActive*." He was also noticing how the letters looked like they were in some sort of cursive font, that the tee shirt was white, and the lettering of the logo was black. This particular sample falls into the category of sensory awareness, a phenomenon that was found in just over 30% of his experiences.

Again, sensory awareness involves the five senses. When an experience involves one of the senses – in this case, seeing – and is the focus of an individual's awareness, it is coded as sensory awareness. Another sample can be seen in the previous example of Trevor's inner seeing of the sun. While seeing this sun, he was also aware of feeling hot and that the side of his right arm was feeling hot.

In the following sample, though Trevor had multiple phenomena occurring just before the moment of the beep, he was aware that the earpiece in his ear had a sense of heat to it due to the hotness of the day. It was in this same sample that we also see feelings in Trevor's awareness, another phenomenon occurring in just over 30% of his samples. In this sample, he was talking to his friend and was aware at the moment of the beep that he was feeling annoyed.

In another sample, Trevor used the word "dejection" to describe the feeling he was aware of at the moment of the beep. He had been playing a boxing video game and his fighter was getting beat up. At the moment of the beep, he had the thought that he was probably going to lose and as a result, was feeling dejected. As an upside, however, Trevor's other inner experiences involving feelings were typically more positive in nature.

For example, in one sample, Trevor was in class and a moment before the beep went off the professor had made a joke at which no one laughed. Though Trevor had felt somewhat sorry for the professor, he also felt that it was amusing that no one had laughed. At the moment of the beep, Trevor was feeling amused, smiling, and trying not to laugh out loud. He was aware of having a big smile on his face and was ducking down so his professor wouldn't see him smiling.

In the sample described earlier when Trevor had the inner sight of *South Park* in his awareness, he was also aware of feeling amused by this memory and felt like he was trying to keep his laughing inside as he was in class. This was the typical essence of how Trevor came across; like he had something amusing to say or had some amusing thought running through his mind. His demeanor did not seem consistent with his scores

on either the BDI-II or the SCL-90-R. Trevor appeared conscientious in fulfilling his role in this study though he did not appear overly interested in his inner experiences.

In reviewing the level of rumination present in Trevor's captured inner experiences, raters found there to be essentially no rumination present ($M = .23$), which is not consistent with his RSQ Rumination score. In fact, between groups, Trevor was rated as having the second lowest degree of rumination present among participants. The average valence of his samples was rated as slightly negative in tone ($M = -.13$)

Kyle

Kyle was a 21 year old, single, Caucasian freshman attending UNLV. His initial score on the BDI-II score was 4 and his post-sampling score was 3, putting him within the minimum range of depressive symptomatology. His SCL-90-R GSI T score was 56, putting him in the normal range. His score on the RSQ's RRS, however, was 60 – putting him in the 95th percentile of all males who take this measurement – indicating Kyle reported responding to feelings of sadness or depression with ruminating thoughts and/or behaviors. Kyle appeared to have a laid-back, cheerful demeanor. He dressed nicely and smiled often. He was energetic, polite, and seemed interested in his inner experiences. He also had an air of confidence and appeared to be impressed by his abilities, either real or perceived.

There were essentially seven types of inner experiences discovered in Kyle's samples. The most salient characteristic of Kyle's inner experience was the phenomenon of unsymbolized thinking, which was seen in 55% of his samples. Typically, the unsymbolized thinking occurred as Kyle was trying to figure out, or sort through, a problem. For example, he was working on conversion problems for his

chemistry homework. At the moment of the beep he was thinking about how much time it would take to do all of the homework problems. He was also thinking that if he did them the long way, it would be easier and faster for him to do these problems in the future. These thoughts were not represented with words or images and were happening simultaneously.

In one sample, Kyle had been thinking of the young woman with whom he had just had lunch. She had told him that she and her boyfriend had broken up. At the moment of the beep, he was thinking something like, “I might have a chance with her. What would I need to do to get her to like me?” Again, these thoughts were not represented with words; they involved a sense of wondering.

Another example occurred as Kyle was working on a research paper for class. At the moment of the beep, he was trying to figure out what he was going to write and had a thought that was something like, “How am I going to put this into my own words in the paper?” This was not represented with words; it was just a general idea.

Later, while Kyle was still working on this paper, he was getting frustrated because he wasn't sure what he should be writing. He was waiting for his father to return home to help him write the paper as his father knew a good deal on the topic of the paper due to his profession. Just before the moment of the beep, Kyle had gotten up to leave the room to watch a ball game until his father returned. At the moment of the beep, he was walking in the hallway with a sense that he was leaving what he had been doing because he didn't know what to write, but that it would be okay when his father returned. Once more, this thought was not represented with words or images.

Another type of inner experience seen with Kyle was inner speech. For example, Kyle was at the library and was stretching. Just before the beep, he had asked his friend

if he [his friend] had ever been able to “stretch” his brain. At the moment of the beep, Kyle was thinking, “I’m probably the only person that thinks I can stretch my brain.” He was saying this to himself in his head, but there was no external sound.

Kyle’s other inner experiences were spread out rather evenly in types and frequency. For example, Kyle had just asked the young woman he had lunch with out for a date. At the moment of the beep, he was mentally seeing multiple varying scenes in his head that could happen on this date. All of these mental or inner seeings were occurring at the same time, like a collage. In this same beep, he was also aware of feelings of excitement as well as a sense of nervousness about what could happen on the date. In this sample, two different phenomena were occurring: inner seeing and feelings.

Finally, Kyle experienced one moment where he couldn’t capture what was in his awareness. He was lying down watching a movie, but he wasn’t paying attention to the movie and was unable to recall later even what movie it was. At the moment of the beep he had a sense that there was a lot of things going on within his awareness, but was unable to identify what any of these things were.

Overall, Kyle’s samples were not especially noteworthy in characteristics or valence. On his second day of sampling, a majority of the day was spent working on his paper for class. On this second day, Kyle’s beeps typically had a sense of him being very focused; whether he was skimming through a book looking for statistics, or typing his paper on the computer being aware only of his typing and the words that were appearing on the computer screen. In those instances where Kyle seemed particularly focused was when unsymbolized thinking appeared most. Although he seemed interested in his inner experiences, he did not seem particularly interested in the nature of this study; rather, it appeared he might have been more concerned with fulfilling the

requirements for his class. However, the demonstration of interest in his own inner experiences gave the researchers confidence that he approached his part in the study earnestly.

In reviewing the level of rumination present in Kyle's inner experiences, the raters' ultimate score ($M = .26$) showed there to be little rumination present. Looking at this score in relation to the scores of the other participants both within and between groups, this score falls near the average level of rumination rated among participants. In regards to valence, the average of ratings of his samples was slightly positive in tone ($M = +.30$), though this score was the most positive of all valence scores among all participants.

Charlie

Charlie was a 25-year-old married, male senior at UNLV. Charlie did not complete the pre-sampling BDI-II, but his post sampling score on the BDI-II was 2, putting him within the non-depressed range. His SCL-90-R GSI T score was 46, indicating Charlie to be within the normal range of psychological wellness. Finally, he scored 45 on the RSQ's RRS, putting him within the 68th percentile of all males who take this measurement. This also means that Charlie believes he engages in rumination when depressed a little more than average. Charlie arrived at each interview promptly and well dressed. He was articulate and appeared to search for clarity with each beep he described.

There were four aspects of Charlie's inner experience that were particularly salient. Inner seeing, which was present in approximately 33% of his samples, occurred more often than other forms of experience. The first instance of this was seen when he

was checking his email and listening to a song, *Don't Want to Miss a Thing* by Aerosmith. At the moment of the beep, Charlie was mentally seeing in his head from the movie this song was in where the actor, Ben Affleck, was showing an animal cracker to his leading lady. In this inner seeing was Steven Tyler's "big mouth" singing into a microphone like he was singing the song towards Affleck and his co-star.

In another example, Charlie was studying and reading about the innervation of skeletal muscle. He had just finished reading and was mentally seeing a picture of how muscle cells are innervated. The mental seeing seemed like an accurate recreation of a picture from his book. It was in green ink, just as it had appeared in the book. It did not have a border and it seemed to be located in his head.

Another example occurred while he was studying. At the moment of the beep he was thinking about the three professors who were team teaching his class. He was specifically thinking that Dr. Griffitts (all names have been changed) was the best teacher of the three. This thought was represented by an inner seeing of the three teachers in front of his class. This was a moving inner seeing with Dr. Griffitts in the middle. He could see that Dr. Griffitts was smiling and Charlie had a general sense that the surroundings in this inner seeing matched those of his classroom. Charlie couldn't see what any of the professors were wearing or pinpoint the details of their position or pose at the moment of the beep other than their order and that they were facing forward.

In a final example of Charlie's inner seeing, he was walking on campus to a meeting at the Alumni Building. He was thinking about what he was going to say to the person he was on his way to meet. He hadn't been in touch with this person for a while and wanted to open the conversation with something humorous. This "thinking" was in the form of Charlie mentally seeing himself sitting in a chair and facing the person he

was going to meet who was sitting across a desk from him. Charlie was mentally seeing this from the point of view of standing in the door seeing both himself and this other person from an angle. Though he couldn't see details – such as what they were wearing – he could see his left hand on the fret board of a guitar, moving as if it was playing along to a song by Dave Matthews.

Within Charlie's broad range of inner experience we also saw samples containing inner speech, unsymbolized thinking, and feelings. In an example of Charlie's inner speech – the phenomenon in which an individual is aware of the experience of speaking internally with its same tones, inflections, pauses, etc., but without sound – we will use a sample taken from his second sampling day. He was studying for an exam and was reading a passage that said, "A-Band goes from I-Band to I-Band." He was repeating these words over in his head and was experiencing them in his own voice just as if he were saying them out loud.

An example of Charlie's experience of unsymbolized thinking can be seen in his last beep on his final sampling day. He was in a class and his professor had asked a question concerning what was involved in the Abrahamic Covenant. Charlie was trying to think of the answer to the question and had already thought of two aspects of the Abrahamic Covenant. He was still searching for the third aspect when the beep sounded. There were no words or inner seeing present to this searching; he described it as a, "deep thought."

Charlie experienced feelings in 22% of his samples. These feelings were negative and typically involved frustration. For example, in one sample he was on the phone with the local power company. At the moment of the beep, he was on hold and feeling frustrated and having "bad thoughts" about the power company. He described

these bad thoughts as anger towards particular people and the power company in general. For example, he was feeling angry towards the woman on the phone for putting him on hold and making him wait, for the inconsideration of making him quit working on his homework to make this phone call, for challenging his character by not only questioning whether he had, in fact, paid the power company, but also by making him substantiate this payment.

In the next example, he was sitting in his genetics class. The class was just starting and Charlie was wondering if his professor would be coming to class so that he could ask her some questions about the exam she had given the class in the previous session. It became evident to Charlie that it would only be his professor's student aides to answer questions and that his professor – who could easily change a grade when she realized her error in marking one of her questions as incorrect – would not be making this class session. It was at this moment the beep went off and Charlie realized his annoyance. This annoyance was experienced as a tingling and diffuse sense of uneasiness.

This feeling of annoyance persisted and was seen in the following two samples. In his next beep, he was still in the genetics class and the student aides were now going over the exam. The class was going over one of the questions on the test and Charlie was saying to himself, “Males *cannot* receive an X chromosome from their father!” Along with this thought, Charlie was experiencing frustration that seemed like pressure building in his chest.

In the following sample, Charlie was still in this class and they were now nearing the end of reviewing the test. Just before the beep, the class was reviewing a question and Charlie was saying to himself, “She never asked from whom! My teacher is an

idiot!” Charlie told the interviewer this thought was about the fact that he was being marked off for not supplying information on a question when the question didn’t ask for the information to be supplied. Along with this thought was a sense of frustration and physical exhaustion all over his body.

In general, Charlie was very acquiescent and eager to help with this study. At one point he expressed concerns that his experiences would be too boring for the interviewers. “I just didn’t want to be a failure to you guys,” he stated because he was concerned that his beeps weren’t going to be interesting. Investigators assured him of our interest in all experiences, which seemed to ease his concerns. Charlie was compliant in arriving early or on time for each interview and showed genuine interest in his part of the study.

In reviewing the level of rumination in Charlie’s inner experience, raters judged his samples as having essentially no rumination present ($M = 0.28$). With regard to the valence of Charlie’s inner experience, the raters judged Charlie’s samples to be somewhat negative ($M = -.39$), consistent with what we saw in the aforementioned examples.

Rosie

Rosie was a 19 year-old single, Latina female freshman attending UNLV. Her pre-sampling score on the BDI-II was 12 and her post-sampling score was 2, putting her within the minimum range of depression. Her SCL-90-R GSI T score was 37, indicating below average levels of psychological distress at the time of testing. She scored 42 on the RSQ’s RRS, putting her in the 50th percentile of all females who have taken this measurement, indicating Rosie believed she responded to feelings of sadness or

depression with ruminative responses an average amount of the time. Rosie showed up to the interviews casually dressed and her demeanor was relaxed. She often laughed or appeared cheery when describing her samples and seemed at ease talking with the interviewers.

There were roughly seven types of inner experiences seen with Rosie. One of Rosie's more common forms of inner experiences was sensory awareness, which was seen in approximately 33% of her samples. For example, on her second day of sampling, Rosie was driving alone in her car and was at a stoplight. At the moment of the beep, she was "zoning out" on the burgundy color of the car in front of her. The only thing in her awareness was the burgundy-ness of the car.

Another example was seen when Rosie was talking with her co-worker about the sequel to an upcoming movie. At the moment of the beep, she was aware of holding a drink in her hand. The drink was cold and had a wetness to it that she was aware of being on her fingers and palm.

The next example of sensory awareness occurred while Rosie was on the phone talking with a friend. At the moment of the beep, she was reaching for her purse with her left hand and grabbing the straps of the purse. She was aware of the straps feeling rough on her fingers and of feeling the sensation of the roughness.

A final example occurred as she was signing a credit card slip for her lunch bill. Just before the moment of the beep, she realized that the pen she was using to sign the slip had blue ink. At the moment of the beep, she was looking at the ink and watching the letters of her signature appear as the blue ink appeared on the paper.

The other characteristic that also occurred in approximately 33% of Rosie's samples was the phenomenon coded under "just -". This phenomenon is when a person

is just doing something at the moment of the beep and is not aware of any inner experiences. For example, Rosie was on the phone talking to her cousin in Chicago who had just graduated from high school. She was telling her cousin that she should go to UNLV and the beep went off as she was saying, “UNLV.” Although she was pushing her car door to open it to get out of her car while talking with her cousin, she was not paying attention to this; only to what she was saying. In this instance, her awareness was coded as just talking.

Another example was seen the next sampling day as Rosie was eating breakfast and watching *The Nanny* on TV. At the moment of the beep, she was aware of the three people on the TV and of Fran Drescher’s character giving the wrong name of a psychologist related to a book. Here, this sample was coded as just watching TV.

The next example occurred when Rosie had been trying on a pair of glasses. At the moment of the beep, she was taking the glasses off her face. She was looking at her face in a mirror. The glasses were still in front of her face and she was mostly aware of her eyes. This was coded as just doing.

The other characteristics which occurred in Rosie's inner experiences included unsymbolized thinking (16%), inner speech, perceptual awareness, and “other” occurring in 11% of her samples, and one occurrence of feeling (5%). Of notable interest was Rosie's lack of inner speech (occurring in 2 out of 18 samples), feelings (occurring in 1 out of 18 samples), and inner seeing (occurring in zero samples) within her inner experiences. Inner speech, feelings, and inner seeing are three of the five most common types of inner experiences, yet they were rare within Rosie’s inner world.

Rosie was rated as having essentially no rumination present in her samples ($M = .13$). In looking at this score in relation to the other participants’ scores both within and

between groups, we found that her samples were rated as having the lowest amount of rumination present within her sampled moments. Also, raters found the valence of her samples to be neutral in tone ($M = +.02$). Again, when this score is compared both within and between groups, Rosie's valence among participants is the second most positive overall. This corresponds well with what we might expect from someone with essentially no rumination present within her inner world.

CHAPTER FIVE

RESULTS

Rumination and Momentary Experience

I began by examining the extent to which rumination was present in sampled moments of experience. Three independent raters rated the extent to which each sample contained rumination as well as the overall valence of the experience. To determine the extent to which the ratings were reliable, a Cronbach's alpha was computed using each of the three ratings as one item on a rumination or valence scale. The ratings were reliable for both rumination ($\alpha = .78$) and valence ($\alpha = .92$). Given that the ratings of rumination were reliable, I next examined the extent to which rumination was reflected in individual samples of experience. Rumination was rated on a 4-point scale ranging from 0 (*None*) to 3 (*A Lot of Rumination*). In total, there were 107 sampled moments of experience. Of these, the highest average rumination score was 2.67. The average rumination rating for all samples was .36. However, 58% of the samples – or 62 beeps – were rated as having no rumination.

The following are samples that were rated high in rumination. This sample was rated as having the highest degree of rumination of all the samples with a rating of 2.67.

Before the beep, Sylvia was talking to one of her sisters. Then her younger brother and other sister began to give her their opinions. This was making her angry. Her younger sister had just said something about “Ixnay on the ‘something’.” At the moment of the beep Sylvia was wondering why her sister talks like that and feeling very annoyed with her. This annoyance felt like frustration, irritation, and a feeling of rising anger. There were no physical sensations accompanying this feeling. She was also thinking something like, “Why am I always so mean?” This thought seemed to be in the back of her head. There were no words or images to this thought. In addition to this thought she was feeling guilty and knew that what she was doing was wrong.

This next example comes from Cindy and had the second highest rating of rumination, with a score of 2.3.

Cindy was in her Chemistry class and the instructor was lecturing about heat components. She was feeling confused and wondering something like, “Will I ever get this by my test on Thursday?” This thought was not represented with words or images. She was also feeling frustrated, doubtful and overwhelmed. These thoughts and feelings seemed to be all mixed together. She also felt a low heat rising in her face and arms that seemed to be related to her confusion and frustration. This heat was moving from the inside towards the outside of her body.

The next example was from Sylvia’s sampling. The raters all rated this sample as containing “*Some Rumination*” with a score of 2.

Sylvia was studying for a biology test and had just sat back. She was feeling overwhelmed by everything that was going to be on the test. At the moment of the beep she was thinking, “Why is everything so similar?” This thought was in words, but she was unsure as to how these words were present. Her head felt like it was heavy, as though it had a weight to it. She was aware of feeling a fear of failure that was experienced as being anxious and mentally tired.

Another example also comes from Sylvia. Again, the raters agreed upon the level of rumination, rating this sample an even 2.

Sylvia was eating dinner at the table with her family. At the moment of the beep she was thinking that she didn’t want to be there. She was wishing her family would leave. She also wanted to go back and finish watching her movie. These thoughts were not represented with words or images. She also felt annoyed about being stuck at dinner when she wanted to be watching her movie.

The following example was from Cindy’s sampling. The degree of rumination in the sample was rated as 1.67.

Cindy was grabbing her bag off her friend’s floor to leave to go to her class. She knew she was going to be late and was thinking things like, “Oh my God, I can’t be late because he’ll mark me absent,” and “Oh crap.” She also had a mild panicky feeling as well as a sense of being tired and not wanting to go to class. These thoughts and feelings had no mental representations but were mixed up like they were all just one big thought/feeling.

This example comes from Kyle. Its level of rumination was rated as 1.67.

Kyle had been working on his paper and was getting frustrated because he wasn't sure what he should be writing. He was waiting for his father to return to help him with his paper. His father is a physician and knows a great deal about antidepressant medication, the topic of his paper. Just before the moment of the beep, he had gotten up to walk out of the room to watch the basket ball game until his father returned. At the moment of the beep he was walking in the hallway feeling frustrated. This frustration had a physical sense to it like a tension in his mind. Along with his frustration was a sense that he was leaving what he had been doing because he didn't know what to write, but that it would be okay when his father returned. This thought was not represented with words or images.

Finally, the following was an example of one of Trevor's experiences. The average rating of the degree of rumination in this sample is 1.33.

Trevor was in his room playing a boxing video game. At the moment of the beep he was thinking he was probably going to lose. This thought had no words to it. It was also accompanied by a feeling of dejection. He was aware of two boxers on the TV screen in front of him. He was aware his boxer had a swollen and bruised face. He wanted to throw a punch [in the game], but was unsure how this 'want' was present. He was also aware of the controller in his hands. He was not aware of physically holding the controller, but that the controller had something to do with throwing the punch.

Along with the above samples rated as having rumination, the following are samples that were rated as having no rumination and neutral valence. The first sample is from Sylvia's last sampling day. Again, the raters rated this sample as having no rumination.

Sylvia was watching a movie and had just seen a record being put on a record player. At the moment of the beep, she was wondering something like, "How do they [records] possibly work?" This wondering had no specific words to it.

The next sample is from Trevor. This sample was rated as having no rumination. Trevor was in his room thinking about the trip to *Six Flags Magic Mountain* theme park he is taking tomorrow. At the moment of the beep he was innerly seeing a bus he would be taking on the trip inside his head. The bus was gray with a blue streak. He was looking at it from a side view. The front of the bus was facing towards the left and the back towards the right. There was no background, just darkness.

The following sample comes from Charlie. Here again, raters judged that there was no rumination present.

He was in class. He was sitting in the front row and the professor had asked a question about what was involved in the Abrahamic Covenant. He was trying to think of the answer to the question. He had thought of two aspects of the Abrahamic Covenant – the promise of land and deliverance – when the beep sounded. He was still searching for the third aspect, the promise of posterity.

There were no words or images present. He described it as a "deep thought."

A final example comes from Cindy. Again, this was rated as having no rumination and was neutral in tone.

Cindy was walking toward a street she was going to cross. At the moment of the beep she was looking at an African American man standing on the other side of the street. A car had honked its horn a moment before and now the man was waving at the car, which had already passed by him. Cindy was observing this man and was wondering if the people in the car were friends of his or if they were just honking at him. This wondering did not occur with words but just the idea or thought was present. She could see this guy's entire body, but she was more aware of her wondering if he knew the people honking

Below in Table 1 shows the average ratings for both rumination and valence for each of the examples provided above.

Table 1. Sampling Data Ratings

Participants			
	Group	Rumination	Valence
Sylvia	2	2.67	-2
		2	-2
		2	-2
		0	0
Cindy	2	2.3	-1.67
		1.67	-2
		0	0
Kyle	2	1.67	-1.33
Trevor	2	1.33	-1.33
		0	0
Charlie	1	0	0
Overall Mean		.36	-.22

In looking at the above examples, it is difficult to say that these samples do, in fact, contain rumination. The problem may lie, however, in the somewhat loose definition of ‘rumination’. That is, in defining rumination as, “self-directed negative thoughts or feelings,” and asking raters to, “rate the extent to which self-directed negative thoughts or feelings are present,” may have inadvertently confounded the construct of rumination by asking raters to focus on negativity. As a result, each time a participant was experiencing a negative event, instead of rating the sample as having no

rumination, it was most oftentimes rated as having rumination due to the presence of negative thoughts or feelings, self-directed or otherwise.

For example, with Cindy's sample, when she was grabbing her things off her friend's floor thinking, "Oh my God, I can't be late because he'll mark me absent," and, "Oh crap," these were negative in nature, but they were not actually *self-directed* thoughts or feelings. She did report having a mild panicky feeling and a sense of tiredness that was in her awareness, and this is where it becomes difficult to distinguish: what is rumination and what is negativity.

It could, in fact, be from here that the problem stems. An example of this is seen in Sylvia's sample, when she was having dinner with her family and she wanted to go back to watching the movie she had been watching and wished her family would go away. Here, she felt annoyed with being stuck at dinner with her family when she wanted to be watching her movie. The raters all agreed that this sample deserved to receive a score of 2 – *Some Rumination*. Each rater believed Sylvia was experiencing rumination during this sample. However, this sample did not contain any self-directed negative thoughts or feelings – no rumination. It only contained negative thoughts and feelings.

In fact, looking at the correlation between ratings of rumination and ratings of valence at the level of the individual samples reveals a strong negative correlation between these ratings, $r(105) = -.70$. The correlation between average ratings of rumination and valence at the level of the individual participants also reveals a strong negative correlation, $r(4) = -.79$. These correlations could indicate the problem within the rating process: the lack of specificity between the two ratings.

Group-Level Evaluation

In this section I examined the ratings of rumination and valence and the responses provided by subjects on the questionnaires. The High Rumination Group was composed of four participants who all scored two or more standard deviations above the mean of the RSQ Rumination subscale. The Average Rumination Group consisted of two individuals who scored near or somewhat above the mean on the RSQ Rumination Subscale. Of course, the statistical power of these comparisons is very low due to the small sample size. Nonetheless these comparisons may suggest directions for future research.

The scores, means, and standard deviations for the three questionnaires administered at the start of data collection are shown in Table 2. As expected, there was a significant difference between the two groups on the Ruminative Responses Scale, $t(4) = -9.15, p < .001$. There was also a significant difference between the two groups on the SCL-90-R, $t(4) = -4.73, p < .05$. There was no difference between the groups on the BDI-II, $t(4) = -1.08, ns$.

Table 2. Questionnaire Data

Participant	Group	Measure		
		RRS	SCL-90-R	BDI-II
Cindy	High	66	66	17
Sylvia	High	65	66	13
Trevor	High	63	66	20
Kyle	High	60	56	4
Charlie	Average	45	46	2
Rosie	Average	42	37	12
Mean		56.83	56.17	11.3
Stand. Dev.		10.57	12.34	7.64

Note. *RRS: Ruminative Response Scale, raw scores*
SCL-90-R = Symptom Checklist 90- Revised, raw scores
BDI-II: Beck Depression Inventory.

Table 3 shows the average ratings for degree of rumination reflected in the sampled moments and the valence of sampled moments. Independent samples *t* tests revealed that the differences between the groups were not significant for either rumination ($t(4) = -1.24, ns$) or valence ratings ($t(4) = .18, ns$). Thus, although the differences in the mean ratings of rumination and valence are in the expected direction, these differences are not large enough to reach significance. More specifically, the two highest average rumination ratings were for participants in the high rumination group and the lowest average rumination rating was in the average rumination group, but there was also substantial similarity/overlap in the average rumination ratings for the three participants in the middle of the distribution.

Table 3. Rumination and Valence Ratings

Participant	Group	Rumination Rating	Valence Rating
Cindy	High	.52	-.48
Sylvia	High	.76	-.68
Trevor	High	.23	-.13
Kyle	High	.26	+.30
High Group Mean		.44	-.45
Charlie	Average	.28	-.39
Rosie	Average	.13	+.02
Average Group Mean		.20	-.06
Overall SD.		.23	.36

Correlational analyses revealed a high but nonsignificant degree of correspondence between scores on the Ruminative Responses Scale of the RSQ and average ratings of the degree of rumination reflected in the sampled moments, $r(4) = .65, ns$. There was much lower correspondence between scores on the Ruminative Responses Scale and average valence ratings, $r(4) = .29, ns$. Although this was not a focus of the study, it is worth noting that there was a very strong association between the Ruminative Responses Scale and Global T scores on the SCL-90-R, $r(4) = .91, p < .001$, as can be seen on Table 4.

Table 4. RRS and SCL-90-R Scores

Participant	Group	RRS	SCL-90-R
Cindy	High	66	66
Sylvia	High	65	66
Trevor	High	63	66
Kyle	High	60	56
Charlie	Average	45	46
Rosie	Average	42	37

Note. RRS: *Ruminative Responses Scale*
SCL-90-R = *Global Severity Index T score*

Salient Characteristics Within and Between Groups

In this section, I examined the salient characteristics of participants' inner experiences to discover any within group similarities as well as any between group differences. When looking at the High Rumination Group – Cindy, Sylvia, Trevor, and Kyle – there were a few similarities among the participants. First, Cindy, Sylvia, and Kyle's most common inner experience was unsymbolized thinking. These three also seemed to have a generally negative disposition toward others. The one thing that is seen in samples for all three participants is their preponderance of bringing their outside world into their inner world.

For example, Cindy often worried about how others perceived her, though it was her perception of and reaction to others that was typically negative. Others often annoyed her, from something such as radio listeners having an opposing opinion to her own, to the couple kissing in public. Cindy used the word "annoyance" to describe many of her feelings in her beeps, and eight out of her nine captured feelings were

negative in context. All of Cindy's feelings were coupled with unsymbolized thinking. She also brought her outside world into her inner world and reacted to it physically. When upset enough she would have physical sensations such as tightness in her chest, tingling in her arms, or would get the feeling of heat emanating up her arms and up to her face. Her samples often focused on others, and whether coincidental or not, most of these other people were minorities. When interacting with Cindy, she appeared bright and perky, even quick to smile; a stark contrast to her inner world filled with negative, critical, and anxious thoughts and emotions seen in her samples.

Sylvia was much like Cindy, wearing a smile on the outside but experiencing an inner world filled with negativity. Sylvia appeared to internalize much of the negative part of her outside world, which could be why she was reporting to be so annoyed or frustrated with others. She had an overwhelming amount of both unsymbolized thinking and feeling, occupying as much as 71% of her inner experiences. Not all of Sylvia's feelings were accompanied by unsymbolized thinking as we saw with Cindy, however, this did occur over half the time. She appeared to have a great deal of recognized annoyance that ranged anywhere from a classmate to her mother to a singer on the car radio. She was even critical of her friend who wanted to go to a video store to buy popcorn! To say the least, Sylvia saw most of her world through a veil of annoyance and frustration. It appeared that when she didn't like a situation that was in her control, she tended to blame others for her discontent. It was the same when she was in situations where she has no control: she continued to blame others. It must be stated again, though, that you would probably not recognize Sylvia as such a frustrated individual. She was friendly and engaged in conversation with the investigator about outside interests before the interview process began.

Finally we have Kyle, who seemed aloof in general, both with the people he described interacting with as well as with his part in the study. He did, however, appear interested in his samples and appeared eager to tell the investigators about his inner experiences. He also appeared to really believe he could stretch his brain and gave the impression of exuding great confidence. This was still evident as he recounted giving his friend the wrong answer to a question, only to find out his answer was not one of the correct-answer options. He said he was still laughing about it, though it seemed there may have been some embarrassment from being incorrect. Though Kyle's salient characteristic was unsymbolized thinking, it did not seem to coincide with any of his other experiences.

In looking at the Average Rumination Group – Charlie and Rosie – it seems they had little in common with regard to their inner experience except perhaps the fact that each of them had varied types of inner experience.

Comparisons of the relative frequencies of the form of inner experiences across the two groups, shown in Table 4, revealed that the High Rumination Group had relatively more frequent feelings and unsymbolized thinking. In fact, unsymbolized thinking was the most frequent form of inner experience for three of the four participants in the High Rumination Group, whereas it was not the most frequent form of inner experience for either of the participants in the Average Rumination Group. Independent samples *t* tests revealed that none of the group differences in forms of inner experience were significant.

Table 5. Five Most Common Inner Experiences Reported

Participant	Percentage Reported				
	Feelings	Inner Seeing	Inner Speech	SA	U
Cindy	50	0	5	22	72
Sylvia	67	13	13	0	71
Trevor	31	38	13	31	19
Kyle	31	15	8	0	55
Charlie	22	33	22	0	22
Rosie	5	0	11	33	16
Mean	34.33	16.50	12	14.33	42.5
Stand. Dev.	21.67	16.08	5.80	16.13	26.51
High Ruminations	34	15	10	11	56
Average Ruminations	14	17	17	17	19

Note. SA = Sensory Awareness; U = Unsymbolized Thinking

CHAPTER SIX

DISCUSSION

The primary objective of this study was to examine the inner experiences of individuals who reported engaging in high levels of rumination on the Response Styles Questionnaire (RSQ) and those who reported engaging in low levels of rumination to determine if there were differences in the inner experiences of the individuals within these two groups as well as the extent to which the construct of rumination was reflected within their inner experiences.

The study originally planned on 12 participants for the two groups, with 6 in the High Rumination Group and 6 in a Low Rumination Group. However, only four participants were recruited for the High Group and no participants were recruited for the Low Group. As it turned out, there was only one participant in the subject pool who scored 2 standard deviations (SDs) below the mean – the requirement to be in the Low Rumination Group – on the RSQ and he declined to participate in the study. In fact, there were no other participants who scored more than 1 SD below the mean on the RSQ, making the target impossible even if the standards for the Low Rumination Group had been lowered. Therefore, the “Low” group became “Average” for this study.

The participants selected for this Phase of the study were chosen based on the means and standard deviations reported by Nolen-Hoeksema, Larson, and Grayson (1999). However, their sample ended up being markedly different than those means and

standard deviations of the participants who took part in this study. For example, Nolen-Hoeksema, Larson, and Grayson (1999) reported that the male mean for the Ruminative Responses Style (RRS) questionnaire was 39.64 ($SD = 10.03$), and that the female mean for the RRS was 42.01 ($SD = 10.64$). Yet, for participants in this study the mean for males on the RRS was 49.78 ($SD = 10.88$), and the mean for females on the RRS was 51.90 ($SD = 10.74$), a difference of just over one standard deviation for each gender.

For practical reasons, data collection stopped at six subjects, and the group intended to have low RSQ scores actually had scores near or slightly above average. Thus, the small sample size and lack of separation of the groups on the rumination scale limited the power of the comparisons that could be made. Nevertheless, the data gathered may be of some use as an initial exploration of the extent to which rumination is reflected in inner experience.

For the purpose of this study, we looked at moments of inner experience in several ways. First, we were interested in whether or not levels of rumination differed within the inner experience of those in the High Rumination Group as compared to those in the Average Rumination Group. Also, it should be kept in mind that rumination is a content category, whereas the differences observed in the form of inner experience are involve the process.

Three raters rated the degree to which each sample of inner experience reflected rumination. The ratings of the degree of rumination in the sampled moments were slightly higher within the High Rumination Group, but the difference was not significant. Overall, the rating of the degree of rumination reflected in the sampled moments was low, with both groups having average ratings below .5 on a scale ranging from 0 to 3. As with rumination, there was no overall difference in valence between the

High Rumination Group and the Average Rumination Group, with an average of -.22 on a scale ranging from -2 to +2.

The two female participants in the High Rumination Group had the two highest averages for the ratings of the extent to which rumination was reflected in their inner experience. And in regards to the BDI-II, Cindy's score indicated at the start of the study that she had mild depression and Sylvia's score indicated that she had slightly milder depressive symptoms. These rumination findings, along with evidence of depressive symptoms in these two subjects, are consistent with Nolen-Hoeksema's argument that women tend to ruminate more than men when distressed (Nolen-Hoeksema 1991, Nolen-Hoeksema, Larson, & Grayson, 1999).

In fact, these two participants also had the lowest valence scores. Their data was consistent with Nolen-Hoeksema's (1991) assertions about the cognitions of those with ruminative response styles. That is, individuals who have ruminative response styles come to have a more negative outlook and, in turn, come to respond to situations negatively. Their emotions and behaviors may come to look negative, but this is due more to the ruminative-ness of their nature if one is depressed, as both Cindy and Sylvia endorsed feeling at the outset of the study. Both Cindy and Sylvia seemed to fit Nolen-Hoeksema's assertion with their levels of depression and the few instances of rumination we found occurring within their inner experiences, and we can see by their valence scores that these two factors may be playing a role in their projected negative-emotional state.

Overall, there was a high degree of correspondence between the RSQ's Ruminative Responses Scale (RRS) scores and the rating of rumination seen within inner experiences. This was a non-significant degree of correspondence, which may

have been due to the small sample size. Nolen-Hoeksema (1991) has purported rumination to be a stable trait across time, and this study has shown it can be seen within the inner experiences of individuals who endorse the RSQ's Ruminative Responses Scale (RRS) as one who engages in ruminative thoughts or behaviors when depressed.

This finding also showed there to be a much lower correspondence level between the RRS scores and the rating of valence seen within both groups' inner experiences. Finally, there was an almost perfect correlation between the SCL-90-R and the RSQ. This may be evidence that the RSQ lacks of discriminative validity. Instead of measuring the construct of rumination, it could be measuring general distress.

In fact, this is consistent with Nolen-Hoeksema, Wisco, and Lyubomirsky's (2008) review of the many findings that have come to light since the Response Styles Theory's inception some 16 years ago. More specifically, researchers have discovered rumination to be linked to more than just depression. Rumination has been linked to other pathologies such as worry, dependency, neediness, anxiety, self-harm, and binge-drinking, just to name a few. With the number of pathologies Nolen-Hoeksema, Wisco, and Lyubomirsky (2008) claim rumination has been found to be related to, and the high correlation the RSQ had with the SCL-90-R in this sample, it would be of interest to further explore the lack of discrepancy between these two measures.

Finally, I examined each sample to determine if there were any salient characteristics either within or between groups. The Average Rumination Group's inner experiences were fairly evenly distributed among the most common forms of inner experience (Heavey & Hurlburt, 2008). The High Rumination Group had more frequent feelings and much more frequent unsymbolized thinking. They had somewhat less frequent inner speech.

Heavey and Hurlburt (2008) found that the five frequently occurring phenomena of inner experience each occurred approximately one quarter of the time. Though the High Rumination Group had all five, they all occurred at the rate of somewhat less than one quarter of the time.

Limitations

The present study had numerous limitations. First, it had a small sample size. Due to this, the study had low statistical power to detect differences between the two groups. Also, the Average Group only had two participants in it and the High Group only four; with so few in each group, it diluted the two extremes, making it difficult to discern any differences.

Another limitation was the number of sampling days done with the participants, with most doing three sampling days, and one participant doing a fourth day. Descriptive Experience Sampling (DES) is a time consuming method, taking a considerable amount of investigator hours, as well as participant hours. It is sometimes difficult to retain participants for as long as would be desired due to the intense process; especially when participants are looking for some sort of compensation, and usually receiving only credit hours. Due to the difficulty participants sometimes have in retrieving their inner experiences when they are new to the DES process, it is preferred that the first day is used as a practice day for participants to familiarize themselves with the types of questions the investigators will be asking, and then have at least three days after that to collect more sampling data. In the current study the results were very similar with and without Day 1 samples; thus, Day 1 samples were included. Although this did not appear to affect the findings, it may have influenced them in some

unrecognized way. Also, more days of sampling would have provided greater confidence in the results.

A third limitation was there was no Low Rumination Group. This was originally meant to be one of the extreme groups but could not be formed due to the lack of low scoring participants in the subject pool. Instead, as I was blind to all scores, the four who agreed to be in the study turned out to be in the High Rumination Group, and the other two participants who volunteered ended up falling in the average or just above average range, thus, creating the Average Rumination Group.

A fourth limitation was that the raters rated both rumination and valence scores at the same time. After reading the sample description, the raters rated the description for the level of rumination in the sample then rated the tone of the valence within the sample, or vice versa. Due to both ratings being completed at the same time, this may have primed the raters to rate the valence more in line with how he or she rated the rumination, or vice versa.

A final limitation was the possibility that the investigators served as a source of bias when writing the descriptions of the participants' inner experiences. Although not knowing the participants' RRS scores when interviewing the participants, the interviewers may still have been able to discern which participants were more likely to have elevated rumination scores after interviewing begun, thus distorting the way in which the descriptions were written.

Conclusion

In general it appears that there is something different going on within the inner experience of those who report that they ruminate when depressed or sad, but due to the

small number of participants, it is difficult to tell exactly what it is that is going on. Unfortunately, there is not enough information at this time to formulate what this may mean in terms of rumination, depression, or other pathologies.

To further this research, the use of Descriptive Experience Sampling would still be the best method to use to retrieve real-time, or pristine, samples of inner experience. Using more participants who endorsed not only high ruminative scores on the RRS, but who also endorsed low ruminative scores and who have some level of ongoing depression at the time of the study would improve our ability to understand how self-reported rumination relates to inner experience. I would be looking at the rumination and valence in inner experience as I did in this study, but I would add another measure to look at the intensity of the participant's depression, as well. At the end of the study, I would examine the RRS scores along with the depression intensity scores to see if they corresponded with the rated rumination and valence scores. Further research in this area may be beneficial to psychology. If rumination is found to be a factor in intensifying and perpetuating depression, preventative tools and strategies can start to be a focus in therapy.

APPENDIX

APPENDIX A

Response Styles Questionnaire

People think and do many different things when they feel depressed. Please read each of the items below and indicate whether you never, sometimes, often, or always think or do each one when you feel down, sad, or depressed. Please indicate what you *generally* do, not what you think you should do.

Almost Never	Sometimes	Often	Almost Always	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. ask someone to help you overcome a problem
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. write about your feelings in a diary or journal
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. think of how someone (or some fictional character) you respect would deal with your current situation
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. think "I'm not going to think about how I feel"
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. think about how alone you feel
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6. think "I won't be able to do my job/work because I feel so badly"
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. think about your feelings of fatigue and achiness
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. think about how hard it is to concentrate
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. try to find something positive in the situation or something you learned
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10. think "People will see what I'm really like"
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. take recreational drugs or drink alcohol
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. think "I'm going to do something to make myself feel better"
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13. help someone else with something in order to distract yourself

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 14. think "What am I doing to deserve this?" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 15. think about how passive and unmotivated you feel |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 16. remind yourself that these feelings won't last |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 17. think "I am embarrassing my family/friends/mate" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 18. analyze recent events to try to understand why you are depressed |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 19. think about how you don't seem to feel anything anymore |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 20. daydream, fantasize, or think about good things |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 21. think "Why can't I get going?" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 22. think "Why do I always react this way?" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 23. watch TV to distract yourself |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 24. go to a favorite place to get your mind off your feelings |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 25. go away by yourself and think about why you feel this way |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 26. talk it out with someone whose opinions you respect (i.e. friend, family, clergy) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 27. think "I'll concentrate on something other than how I feel" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 28. write down what your are thinking about and analyze it |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 29. do something that has made you feel better in the past |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 30. think about a recent situation, wishing it would have gone better |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 31. think "I'm going to go out and have some fun" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 32. make a plan to overcome a problem |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 33. stay around people |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 34. think " I am ruining everything" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 35. concentrate on your work |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 36. think "There must be something wrong with me or I wouldn't feel this way" |

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|--------------------------|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 37. think "I am disappointing my friends/family/mate" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 38. deny how you are feeling |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 39. think "I've ruined another school year/job/relationship" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 40. think "Why do I have problems other people don't have?" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 41. do something reckless or dangerous |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 42. think "Why can't I handle things better?" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 43. think about how sad you feel |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 44. think about all your shortcomings, failings, faults, mistakes |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 45. do something you enjoy |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 46. think about how you don't feel up to doing anything |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 47. think "I have no right to feel this way--I am really selfish" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 48. think "My friends are getting sick of me and my problems" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 49. call your therapist to talk about your feelings |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 50. decide to try to improve some area of your life |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 51. think "I am disappointing God" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 52. do something fun with a friend |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 53. analyze your personality to try to understand why you are depressed |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 54. go to sleep to escape how you feel |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 55. take your feelings out on someone else |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 56. go someplace alone to think about your feelings |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 57. deliberately do something to make yourself feel worse |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 58. eat |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 59. pray |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 60. read |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 61. think about how angry you are with yourself |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 62. think about how angry you are with someone else |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 63. think back to other times you have felt depressed |

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|--------------------------|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 64. take prescription medications to make yourself feel better |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 65. think "I've got things under control" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 66. think "No one wants to be around me because of my mood" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 67. listen to sad music |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 68. isolate yourself and think about the reasons why you feel sad |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 69. think "I must really have serious problems or I wouldn't feel this way so often" |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 70. try to understand yourself by focusing on your depressed feelings |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 71. Do something active to get your mind off of your feelings (i.e. jog/aerobics/exercise) |

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