RUMINATIVE RESPONSE TO DYSPHORIC MOOD:

CRITERION-RELATED AND PREDICTIVE VALIDITY OF SELF-REPORT

BY

PAUL FREEMAN, M.SC.

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In Partial Fulfilment of the Requirements
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Abstract

Nolen-Hoeksema's (1991) Response Styles Theory posits that an individual's tendency to respond to minor negative moods by ruminating about symptoms and about the causes and consequences of being depressed will lead to longer and more severe depressed moods. Though generally very supportive of Response Styles Theory, empirical research has been limited by its dependence upon the Response Styles Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991), a self-report, endorsement-style measure of response to negative mood. Two studies evaluated the behavioural and predictive validity of the RSQ Rumination scale as well as self- and symptom-focused subfactors. In Study 1, university students demonstrated concordance between self-reported ruminative style and ruminative thought content recorded during an induced sad mood. Self-reported tendency toward healthy self-reflection was found to modestly improve the degree of concordance. Both RSQ Rumination and the self-focus factor were predictive of the severity, but not the onset or duration, of the induced mood when baseline mood was statistically controlled. In Study 2, judges rated ruminative style as evidenced in interviews with clinically depressed patients. Self-reported ruminative styles were again predictive of corresponding thought content in the clinical interviews, but did not predict indicators of repetitive ruminative process. RSQ Rumination was predictive of the perceived ability to manage depressed moods, though questionnaire scores were not predictive of perceived controllability or benefit of ruminations. In both studies, occurrent ruminative thought content was predictive of the severity of mood episodes,

providing partial support for the validity of Response Styles Theory. Measures of

occurent ruminative process in Study 2 were not predictive of mood outcome.

This research provides preliminary evidence of the behavioural and predictive

validity of self-reported ruminative style and of the Response Styles Theory.

Directions for future research include further investigation of the roles of

rumination subtypes at both the clinical and subclinical levels, the development of

new rumination measures that more adequately capture ruminative process, and

measures that are specifically tailored for use in clinically-depressed populations.

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me a strong work ethic (with varying degrees of success!); my mother, who was always there for me with support, both emotional and financial; and to two friends, Lynn and Natali, who inspired my career direction each in her own way.

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Introduction

Nolen-Hoeksema's (1991; Nolen-Hoeksema & Morrow, 1993) Response-Styles Theory proposes that a tendency to respond to periods of mild dysphoria by dwelling on one's depressive symptoms and on the meaning and implications of those symptoms is likely to prolong and even exacerbate that mood state. This response is theorized to be a conscious and intentional, but dysfunctional, attempt to gain insight and search for solutions (Lyubomirsky, Caldwell & Nolen-Hoeksema, 1998). The author suggests that most people engage in some degree of rumination when they become aware of sad mood; however, many quickly disengage this process by distracting themselves with pleasurable activities, alleviating their mood enough to allow them to more effectively uncover and correct the underlying problem (Nolen-Hoeksema, Morrow & Fredrickson, 1993). In contrast, individuals with a strong tendency toward rumination become so absorbed by this introspective process that they fail to take corrective action. As a result, sad mood is prolonged and intensified.

The rumination construct is rooted in the earlier self-regulation theories of Duval and Wicklund (1972) and Carver and Scheier (1981). The essence of self-regulation theory is that the act of directing attention toward the self helps the individual to become aware of inconsistencies between actual and desired states, so that behaviours may be implemented to correct perceived shortcomings. Though they differ in the precise mechanism, each theory argues that negative mood will result when the individual judges that he or she will be unable to correct the shortcoming. He or she would then be expected to

discontinue the unpleasant state of self-focus, perhaps by distracting or by re-evaluating the unattainable goal. Self-focus perseveration theory (Pyszczynski & Greenberg, 1987) proposes that more severe and longer lasting depressed mood results when an individual fails to disengage self-focused attention when to do so would appear emotionally adaptive. Such individuals effectively become trapped in a prolonged confrontation with their inability to correct the discrepancy, which only serves to intensify their distress. Laboratory studies with student populations have provided evidence that dispositionally self-focused individuals are emotionally more reactive (Scheier & Carver, 1977), and are more vulnerable to distress following negative life events (Ingram, Johnson, Bernet, Dombeck & Rowe, 1992, Study 2). Induction of self-focus by placing individuals in front of a mirror (Gibbons and colleagues, 1985, Study 2) has also been shown to intensify existing negative mood states among psychiatric inpatients.

Despite its developmental roots, Nolen-Hoeksema (e.g., Lyubomirsky & Nolen-Hoeksema, 1993) represents ruminative response as a unique variety of self-focused attention that can be differentiated from related constructs such as automatic negative thoughts (e.g., Beck, Rush, Shaw & Emery, 1979) and earlier definitions of self-focus (e.g., Pyszczynski & Greenberg, 1987; Scheier & Carver, 1981). Unlike these more acute responses to upsetting external circumstances and to resultant awareness of personal shortcomings, rumination is conceptualized by its author as a response specifically to the sad mood state itself, requiring no external trigger. This may help to account for many cases of depression that seem to have no apparent cause (Nolen-Hoeksema, 1991). The

distinction between rumination and other forms of self-focus has recently been supported empirically as well. In a meta-analysis of 226 studies relating self-focus to negative affect (depression, anxiety or negative mood), Mor and Winquist (2002) found larger effect sizes for rumination than for other forms of self-focus. Unlike negatively-distorted automatic thoughts, the causal impact of the ruminative response on mood is primarily a function of the chronic and repetitive process of this thinking style as opposed to the content or valence of the thoughts themselves (Nolen-Hoeksema, 1993). According to Nolen-Hoeksema, Morrow and Fredrickson (1993), ruminative thinking is very often more realistic than distorted (e.g., "I feel miserable", "My friends are starting to avoid me because I'm so negative all the time").

According to the author (e.g., Nolen-Hoeksema, 1991; 1993) ruminative response is conceptualized as a trait-like style of responding that includes both behavioral and cognitive components that focus attention specifically on symptoms and their possible causes and implications. As such, it has attracted comparison to similar constructs such as self-consciousness (for example as defined by Fenigstein, Scheier and Buss, 1975) and worry. Nolen-Hoeksema (1993) distinguishes ruminative response from self-consciousness in that the latter is seen as part of a general tendency toward self-analysis. Ruminative response style entails no such tendency, and occurs only in response to awareness of sad mood. Though rumination and worry are each repetitive and non-productive in nature, their difference may lie primarily in content. Segerstrom, Tsao, Alden and Craske (2000), for example, found that once the

common component of repetitive process[1] was partialled out, rumination was predictive of depressed mood but not predictive of anxiety.

Subsequent investigation of the rumination construct has consistently supported a link between response style and depressed mood, using a variety of methodologies. In one of the earliest tests of this theory, Morrow and Nolen-Hoeksema (1990) induced a dysphoric mood in a sample of student participants, and had them perform one of four activities which were either ruminative or distractive and either physically active or passive in nature. As predicted by the theory, individuals in the active-distracting condition showed the greatest improvement in mood over the course of the activity. Those induced to ruminate, on the other hand, especially those in the passive condition, remained sadder than they were prior to the induction. In a follow-up study of naturally dysphoric and non-dysphoric students, Nolen-Hoeksema and Morrow (1993) similarly found that induced rumination led to a significant increase in sad mood, while those induced to distract experienced less dysphoria. No effect was found for non-dysphoric participants in either condition. The relationship between induced

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[1] For the sake of clarity, the term 'ruminative process' will be used to refer specifically to the repetitive and often unproductive nature of ruminative thinking. Specific references to ruminative thought content will be noted as such. Any other derivative of the word 'rumination' used in the text is a more global reference to both content and process of thinking as intended by Response Styles Theory.

response style and dysphoric mood has since been replicated by Lyubomirsky and Nolen-Hoeksema (1993; 1995).

More naturalistic studies of response style have similarly been supportive of the theory. Nolen-Hoeksema, Morrow and Fredrickson (1993) asked a sample of university students to monitor and record the severity and duration of sad mood episodes over a period of 30 days. With each episode they were also asked to identify any ruminative or distracting responses they may have used from a list provided at the outset of the study. Results indicated that a greater reported tendency to use a ruminative style related to longer duration of dysphoric moods. No effect on episode duration was found for distracting responses.

In order to more economically measure this phenomenon, Nolen-Hoeksema and Morrow (1991) developed the Response Styles Questionnaire (RSQ), a self-report measure of the frequency with which respondents typically use a variety of ruminative and distracting cognitive/behavioural responses to dysphoric mood. Prospective studies utilizing the RSQ have demonstrated that ruminative response style predicts both the duration and eventual severity of the mood episode (e.g., Nolan, Roberts & Gotlib, 1998; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Parker & Larson, 1994) independent of initial mood.

Mechanisms of Action

Although Response Styles Theory emphasizes the importance of attention to symptoms, Nolen-Hoeksema (1991, 1993) acknowledges that the ruminative response style involves attention to both symptoms and aspects of the self. An

examination of the item content of the RSQ Rumination subscale suggests that it measures both self- and symptom-focused thinking. Further, in all studies which have involved the induction of ruminative response to study its effect on mood (e.g., Lyubomirsky & Nolen-Hoeksema, 1995), participants were directed to "focus their attention on thoughts that were emotion-focused, symptom-focused *and self-focused*" (p. 179, italics added). Nolen-Hoeksema, however (1993), asserts that the emotion-focused aspect of rumination is of primary importance in its effect on mood states. Empirical evidence, however, supports the impact of both self-focused attention and rumination on symptoms on the course of sad mood episodes. Each is hypothesized to prolong and intensify such episodes through its effects on thinking, problem-solving ability and instrumental behaviour.

Impact on thinking. Rumination and self-focused attention have each been implicated in a variety of negative cognitive processes known to be characteristic of depressed individuals. Ruminative response to dysphoric mood has been shown to negatively bias recall of autobiographical information (Lyubomirsky, Caldwell & Nolen-Hoeksema, 1998), to increase accessibility of negative cognitions (Needles & Abramson, 1990, cited in Nolen-Hoeksema, 1991), and to negatively bias interpretation of hypothetical situations (Lyubomirsky & Nolen-Hoeksema, 1995). Attention to self has demonstrated a similarly negative effect on thinking, including mood-congruent recall of autobiographical events (McFarland & Buehler, 1998; Pyszczynski, Hamilton, Herring & Greenberg, 1989), internalization of attributions for poor task performance (Greenberg,

Pyszczynski, Burling & Tibbs, 1992) and negative expectancies for future

outcomes (Pyszczynski, Holt & Greenberg, 1987).

In their own reflection on ruminative response style, Ingram, Miranda and

Segal (1998) describe a reciprocal pattern of activation between dysfunctional

schemas and negative affective structures. Once triggered, a self-sustaining

loop effect is established in which mood-congruent memories, thoughts and

associations are pushed increasingly into conscious awareness. Ruminative

thoughts are the cognitive products of this reciprocal activation of negative

schemas and affective structures. The authors caution that such repetitive

thinking about a problematic situation is often successful in leading the individual

to solutions to the problem. They even suggest an evolutionary advantage to

rumination in that novel solutions may be created and applied in future

circumstances. Such thinking, according to Ingram and colleagues, only

becomes depressogenic when the activated cognitive structure is a negative self-

schema.

Impact on problem solving. Both ruminative response and self-focused

attention have also been linked to impairment of problem-solving ability.

Lyubomirsky and Nolen-Hoeksema (1995) demonstrated that dysphoric

individuals induced to ruminate produced more dysfunctional solutions to

hypothetical interpersonal events than did distracters. These authors also found

that induced rumination led to more negative interpretations of interpersonal

events, which might be expected to lead to maladaptive problem negotiation.

Strack, Blaney, Ganellen and Coyne (1985, Study 3) demonstrated that when

dysphoric students were induced to decrease self-focused attention,

performance on anagram problem solving was enhanced.

Impact on instrumental behaviour. Both forms of dysphoric self-attention

have been shown to interfere with behaviours that might serve to distract the

individual from the negative mood state or lead to positive, mood-alleviating

outcomes. In a series of three studies examining problem solving in university

students, Lyubomirsky, Tucker, Caldwell and Berg (1999) induced rumination or

distraction in naturally dysphoric and non-dysphoric individuals (i.e., 4 groups).

The rumination induction required participants to focus attention on a series of 45

self-, symptom-, and emotion-focused items, including "your current level of

energy", "physical sensations in your body", "what your feelings might be", "your

character and who you strive to be" and "why things turn out the way they do".

In Study 1 they found unexpectedly that dysphoric ruminators were just as able

to generate solutions to personal problems that both they and independent

judges felt would be effective; however this group rated themselves as least likely

to actually implement these solutions. This finding was consistent with an earlier

study (Lyubomirsky & Nolen-Hoeksema, 1993) in which dysphoric ruminators

(induced) were unwilling to undertake pleasurable activities that they themselves

acknowledged would probably improve their mood. In Studies 2 and 3, the

authors adapted the rumination induction into a 'think-aloud' procedure, which

was audiotaped and content-analysed by independent judges. Dysphoric

ruminators were judged as more negative, more focused on feelings, more

problem-focused, more self-critical and self-blaming, less self-confident and less

optimistic than the other three study groups. They viewed their own personal problems as more severe, expressed less general perceived control and evidenced less constructive problem-solving effort than did the other groups. These findings seem to indicate that ruminators, at least in the laboratory setting, do in fact attempt to solve their problems while they are ruminating, but these efforts are undermined by concurrent depressogenic thinking styles. The authors suggest that simultaneous focus on problems and self-blame for those problems may establish a vicious cycle of stress and pressure undermining problem solving efforts and making problems worse. They further suggest that negative rumination undermines confidence in their ability or energy to implement solutions, and that a perceived lack of control may undermine outcome expectancies. This conclusion was recently supported by Ward, Lyubomirsky, Sousa and Nolen-Hoeksema (2003), who found that ruminators expressed less confidence in, and less willingness to commit to, solutions they have generated to problems posed by the researchers.

Cognitive inflexibility. In a line of research that may account for difficulties in both problem solving and instrumental behavior, Davis and Nolen-Hoeksema (2000) studied the relationship between self-reported ruminative style and perseverative and inflexible thinking styles. The authors compared RSQ Rumination scores to performance on the Wisconsin Card Sorting Task (WCST; Grant & Berg, 1948), a commonly used neuropsychological measure of cognitive flexibility. Controlling for potentially confounding cognitive abilities such as general intellect, working memory, basic reasoning and externally-directed task-

switching ability, the authors found that rumination was associated with a tendency to perseverate in a problem-solving strategy even after negative performance feedback. Ruminators also demonstrated a more frequent failure to maintain an adaptive strategy.

These findings suggest that ruminators may be less able or willing to abandon dysfunctional cognitive processes or to take the initiative to remove themselves from situations or contexts that might promote rumination and/or prevent distraction. They may also be less able to maintain a problem solving strategy even in the face of positive outcomes. Ruminators therefore find themselves in a state of perseverative self-focus that reinforces awareness of personal and situational difficulties and prevents initiation and maintenance of effective instrumental behavior.

Desirability and Controllability of Ruminative Response

The findings of the aforementioned studies strongly suggest that rumination interferes with implementation of adaptive coping strategies in the early stages of dysphoric mood episodes, thus prolonging and in many cases even intensifying the mood. It would seem of the utmost importance to gain an understanding of what maintains and/or motivates rumination, possibly even in the face of evidence that it is making the situation worse. In a large sample of community-dwelling individuals assessed with a mail-out survey, Nolen-Hoeksema and Jackson (2001) hypothesized that a variety of beliefs about coping with emotions mediate the tendency to ruminate. They demonstrated that a combination of perceived responsibility for the emotional tone of social

relationships and belief in the uncontrollability of emotions and distressing life events mediates gender differences in rumination. These results do not, however, address the issue of the desirability of such rumination. The authors found only a moderate but significant correlation (r = .38) between a brief version of the RSQ and an adapted version that asked about the appropriateness of each ruminative response. In other words, even ruminators do not seem to strongly believe in the value of rumination.

If ruminative thinking is, in fact, perceived by the individual as undesirable, then one must ask why it persists. According to 'ironic processes theory' (Wegner, 1994), thought suppression involves both a conscious effort to distract attention away from unwanted thoughts and a more automatic process of monitoring their presence. According to this theory, when a person with a tendency toward thought suppression is under conditions of high cognitive load (e.g., stress), cognitive resources needed for the suppression effort are depleted, while the more automatic monitoring system remains intact. Thus, thought suppression has the ironic result of increasing awareness of unwanted depressive thoughts. In a sample of 103 undergraduates, Wentzlaff and Luxton (2003) found that people who were classified as high suppressors at Time 1 and who experienced high amounts of stress over the subsequent 10-week period scored the highest on RSQ Rumination at Time 2. These findings support the possibility that ruminative thoughts are often perceived as unwanted, but are maintained by the very act of trying to suppress them.

Cox, Enns and Taylor (2001) have proposed that a fear of depressive

symptoms, which they have labelled 'depression sensitivity', prevents some individuals from disengaging from rumination. According to these authors, catastrophic interpretation of depressive symptoms in terms of possible relapse, impact on life functioning and personal shortcomings may lead to either refusal or inability to ignore these symptoms even temporarily. The authors have not commented on the degree to which rumination is experienced as intrusive versus desirable and intentional in the context of this theory.

Other researchers have approached the issue of rumination from the perspective that the individual perceives it as desirable, in accordance with the original Response Styles Theory (e.g., Lyubomirsky, Caldwell & Nolen-Hoeksema, 1998). Greenberg and Pyszczynski (1986, Study 2) found that depressed individuals were less likely than non-depressed counterparts to disengage from distressing self-focus following negative outcomes. These authors drew the conclusion that self-focusing individuals may be reticent to discontinue ruminative thinking since to do so would interfere with efforts to gain insight and to correct a perceived discrepancy between actual and ideal states. Papageorgiou and Wells (2001a) interviewed a sample of patients diagnosed with recurrent major depressive disorder to uncover their positive and negative beliefs about rumination. Common themes in these positive beliefs included a desire to find answers to depressed mood and prevention of future failures, while negative statements described rumination as uncontrollable and as a vulnerability factor for suicide. Based on these results, the same authors (2001b) developed the 9-item Positive Beliefs About Rumination Scale (PBRS), which

was moderately correlated (r = .53) with the short-form RSQ in a sample of undergraduate students. These studies indicate that in some cases and to varying degrees, ruminators may perceive or at least expect a benefit from rumination, yet no published studies to date have specifically investigated the degree to which ruminators feel control over their ruminations.

Relationship Of Rumination To Other Vulnerability Factors

Spasojevic and Alloy (2001) conducted a longitudinal study assessing the causal role of rumination in the development of major depressive episodes among university students. They found that even after controlling for concurrent depressed mood, rumination mediated the causal influence of a variety of established vulnerability factors, including negative cognitive style, self-criticism, neediness and past history of depressive episodes. Others have similarly found that rumination mediates the impact of a fear of cognitive dyscontrol in depressed outpatients (Cox, Enns & Taylor, 2001) and that it mediates the impact of both gender and neuroticism on dysphoria in non-clinical samples (Nolan et al., 1998; Roberts et al., 1998). Together, these findings suggest that rumination represents one mechanism by which these risk factors exert their influence on mood. It should be noted, however, that Bagby and Parker (2001) found only a small but significant (r = .24) relationship between rumination and neuroticism.

Rumination and Clinical Depression

The majority of response-styles research has focused on the properties and impact of ruminative response in student and community dwelling samples. More recently however, the RSQ Rumination scale has been increasingly applied

to the clinical features and implications of such a coping style. Though a central claim of Nolen-Hoeksema's (1991) theory is the ability of ruminative thinking to intensify episodes of dysphoric mood, it stops short of specifically implicating rumination in the development of clinically-diagnosable major depressive episodes. Similarly, the theory does not speculate as to the effect of a ruminative response style on the course of clinical episodes. The important clinical implications of understanding a coping mechanism with such potential to influence even chronic and recurrent depressions, however, have influenced a number of researchers to examine rumination in clinical populations.

Just and Alloy (1997) were the first to investigate whether Response Styles Theory could be extended to include development of 'clinical' episodes. These researchers followed a sample of non-depressed (based on clinical interview) university students for a period of 18 months. These participants were re-interviewed every six weeks for the presence of a depressive episode since the previous assessment (as defined by BDI score $\geq$ 10 for two weeks or more). These researchers found that baseline RSQ Rumination scores predicted the development of at least one depressive episode during follow-up, even after controlling for cognitive styles. They also found that rumination was correlated with the severity, but not the duration of these episodes.

Roberts, Gilboa and Gotlib (1998) also assessed both current and past episodes of major depression using self-report with student samples. Controlling for current symptom level, the authors found higher rumination scores among currently- and previously-depressed individuals when compared with never-

depressed participants, and found that individuals whose past episodes met both duration and severity criteria for diagnosis had higher scores than those who had not met duration criteria. The authors concluded from this latter finding that rumination is related to the duration of depressive episodes; however, the study design did not permit measurement of individual differences in the severity of these episodes. Conceivably, a more severe episode might require a longer recovery time and so no conclusions can be drawn about a relationship with duration without controlling for episode severity.

As clinical investigations of rumination, the above studies have provided preliminary evidence of the generalizability of Response Styles Theory to clinical levels of depressed mood, but the strength of this evidence is tempered by the use of self-report measures for diagnosis of depressive episodes. Later, more methodologically stringent clinical studies have been less consistent in their support of the rumination construct.

Nolen-Hoeksema (2000) reported the most comprehensive evaluation of response styles in clinical depression to date. The sample was composed of 1132 individuals recruited from the community by random telephone survey. At Time 1, 104 of these participants were diagnosed with a major depressive episode using both Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon & Williams, 1995) and Hamilton Rating Scale for Depression (HAM-D; Hamilton, 1960), and 139 were diagnosed at Time 2 approximately one year later. Individuals who were clinically depressed at either Time 1 or Time 2 had higher scores on RSQ Rumination at both Time 1 and Time 2. Controlling for

baseline diagnostic status and severity, baseline RSQ predicted diagnostic status and depression severity at Time 2. Depressed individuals who remitted by follow-up had lower RSQ Rumination scores than those who did not remit. Perhaps most importantly, baseline rumination predicted the onset of new depressive episodes one year later, when baseline severity was statistically controlled. Based on these findings, the author tentatively extended her theory to include the power of ruminative style to affect the onset and chronicity of major depressive episodes.

In a sample of 84 university students clinically diagnosed with recent-onset major depressive episode, Lara, Klein and Kasch (2000) also found significant correlation between RSQ Rumination and mean symptom severity over a six-month follow-up period, though this association was no longer significant after controlling for number of baseline depressive symptoms. Rumination score also failed to predict time to recovery or time to relapse among remitted participants.

The rumination construct has also been investigated in terms of its relationship to clinical treatment outcomes. Bagby and colleagues (1999) investigated the relationships between response styles and response to 14 weeks of antidepressant treatment among a sample of 89 unipolar depressed outpatients. RSQ Rumination measured pre-treatment was not correlated with the number of past depressive episodes, with current symptom severity as measured by the HAM-D, or the duration of the current episode prior to assessment. Defining recovery from the depressive episode as a 50% or greater

improvement on the HAM-D and final score $\leq$ 9, the authors found that neither rumination nor distraction predicted change in symptom severity or recovery from the depressive episode. Bagby and Parker (2001) replicated these findings in a larger sample of depressed outpatients.

Schmaling, Dimidjian, Katon and Sullivan (2002) studied RSQ response styles among a sample of primary care patients who met DSM-III-R criteria for dysthymia or minor depression for at least four weeks and who scored $\geq$ 10 on HAM-D. A sample of 92 patients were randomly assigned in a double-blind fashion to problem-solving therapy and either paroxetine or placebo and followed up at 11 and 25 weeks. In this case RSQ Rumination was associated with the number of previous depressive episodes. Neither rumination nor distraction scores predicted 11-week recovery status. Interestingly, RSQ Rumination was not associated with either baseline or follow-up symptom severity as measured by the HAM-D clinical interview (after baseline mood partialled out), but was correlated with self-reported baseline and 11-week severity. It should also be noted that rumination scores decreased significantly by week 11 follow-up, though this change was not related to treatment condition.

Siegle, Sagrati and Crawford (1999) similarly evaluated the impact of rumination on response to cognitive therapy in a sample of unipolar depressed or dysthymic outpatients. Rumination scores were predictive of a slower rate of recovery, but this effect was mediated almost entirely by initial symptom severity. A similar result was found by Arnow, Spangler and Burns (1999).

Findings from a clinical follow-up study, however, lend support to the role

of rumination in the course of depressed mood. Kuehner and Weber (1999) measured ruminative response style on among 52 unipolar depressed patients four weeks after discharge from inpatient stay. Among those who had not remitted at discharge, RSQ Rumination scores at four weeks predicted presence of a major depressive episode at four months. In those cases of patients who had remitted at discharge, baseline rumination predicted severity of depressed mood at four-month follow up. Both results were independent of concurrent depressed mood.

The different pattern of findings between recruited clinical samples (e.g., Nolen-Hoeksema, 2000) and treatment-seeking samples (e.g., Bagby et al., 1999) may be partially attributable to important qualitative and quantitative differences between these groups. It is possible that individuals who seek treatment may be unique in terms of their cognitive processes and the history, severity and configuration of depressive symptoms. Recruitment designs offer important potential advantages in that they may include depressed individuals who for a variety of reasons might never have sought treatment and been evaluated empirically, thus including a more complete representation of the experience of clinical depression. Treatment-seeking individuals, as opposed to those who meet DSM-IV criteria but have never sought treatment, may be experiencing more severe symptoms, may have a more extensive history of depressive episodes, and/or may have previous psychotherapy experience, variables which might moderate the relationship between self-reported rumination and clinical course.

Application of the RSQ, designed for use with non-clinical samples, to clinical depression also presents a problem. The RSQ asks respondents to report the frequency of various responses to sad mood, but as Lara, Klein and Kasch (2000) have pointed out, a person who has experienced current or past major depressive episodes may interpret these items differently from someone who has never experienced clinical depression. This may to some degree limit the validity of comparison between clinical and non-clinical findings with the RSQ and the application of the RSQ measure with clinical samples.

The evaluation of self-reported rumination in a treatment outcome study is also problematic due to the impact of treatment itself. Antidepressant medications, such as those used by Bagby and colleagues (1999), are designed to effect certain neurochemical changes in the brain. Selective serotonin reuptake inhibitor (SSRI) antidepressants, such as the paroxetine used in the aforementioned study, is also one the treatments of choice for obsessive traits (Stein, 2002), which at the process level bear significant similarity to ruminative thinking. It therefore stands to reason that self-reported ruminative tendencies, measured prior to treatment, may bear little resemblance to actual rumination during the treatment period due to the neurochemical effects of the treatment itself. Thus, it should not come as a surprise that self-reported rumination fails to predict treatment outcome. The same criticism may be made against treatment studies using Cognitive Therapy, which by design targets negative dysfunctional thinking styles. Such alteration of the patient's normal tendency to ruminate should be expected to weaken the association between pre-treatment measures

of ruminative style and actual ruminative response during or after treatment.

Ruminative Response Scale: A Multidimensional Construct?

Nolen-Hoeksema and her colleagues have implicitly treated rumination as a unidimensional construct, essentially representing a tendency to focus attention on one's dysphoric mood symptoms and their implications. In support of this view, a factor analysis of the full RSQ in a college student sample (Butler & Nolen-Hoeksema, 1994) yielded a two-factor solution, one for rumination and one for distraction, as intended in the design of the questionnaire. There is more recent evidence, however, to suggest that RSQ Rumination is psychometrically more complex. Roberts, Gilboa and Gotlib (1998) found a three-factor solution to RSQ Rumination in a student sample, accounting for 55.7% of total variance. These factors represented symptom rumination (e.g., "Think about how alone you feel"), introspection/self-isolation (e.g., "Go someplace and think about your feelings") and self-blame (e.g., "Think about a recent situation and wish it had gone better"). The authors were able to replicate this factor structure using confirmatory factor analysis.

Focusing attention specifically on the Roberts et al. (1998) factor analysis of RSQ Rumination, Conway, Csank, Holm and Blake (2000) were highly critical of the RSQ. They pointed to apparent item overlap with the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980), especially in the 'Symptom-Based Rumination' subfactor, which may place in doubt the unique contribution of RSQ Rumination to depressive vulnerability. They also drew attention to the fact that these subfactors were differentially correlated with important variables such as

gender and neuroticism. Finally, and perhaps most importantly, the subfactors uncovered by Roberts and his colleagues were not strongly correlated with each other (as low as .35 in one sample). These findings, according to Conway and colleagues (2000) raise the question of whether rumination as measured by the RSQ is a unitary construct, and the authors suggested that it may be more meaningful to use individual subfactor scores only.

Further complicating this situation are later factor analyses with clinical samples (Bagby & Parker, 2001; Cox, Enns & Taylor, 2001) that have identified almost identical two-factor solutions for RSQ Rumination. The first factor is specifically related to focus on depressive symptoms (e.g., "Think about how sad you feel"), and is nearly identical in item content to its counterpart from the Roberts et al. (1998) analysis. The second contains items related to analysis of the self and possible underlying causes of depression (e.g., "Analyze your personality and try to understand why you are depressed"). Bagby, Parker and Cox (1999) later replicated this factor structure with both student and patient samples using confirmatory factor analysis. In support of Response Styles Theory, Cox and colleagues (2001) found that BDI scores were more strongly correlated with the symptom-focused rumination score. The same was true of the relationship with neuroticism. Rumination subfactors themselves were only moderately correlated with each other (r = .33), on par with the findings (r = .39) of Bagby and Parker (2001). These results add further support to the argument by Conway and colleagues (2000) that future rumination research should consider subtypes of rumination separately.

Given this evidence for the multi-dimensional nature of RSQ Rumination, one of the main aims of the present research was to evaluate the criterion-related and predictive validity of self- and symptom-focused subtypes of self-reported ruminative style. For this purpose, the Bagby and Parker (2001) two-factor structure was selected over the Roberts et al. (1998) three-factor structure the because it permitted a more direct evaluation of Nolen-Hoeksema's (1993) claim of the causal primacy of focus on symptoms versus focus on personal shortcomings.

Construct Validity in Self-Report Measurement

Results of research based on the Response Styles Questionnaire have been very supportive of the theoretical impact of ruminative response on mood, though this evidence has been less consistent when applied to clinical levels of depressed mood. Like any self-report instrument, however, the value of its results is limited by issues of reliability and validity. Research is needed to establish the degree to which self-reported tendencies to ruminate in response to dysphoric mood correspond to the real-world situation.

The most important issue to consider in assessing the value of a self-report instrument is its construct validity: Does the instrument accurately measure that which is intended? (Barnett & Zucker, 1990). Many of the variables of interest to psychologists are abstract concepts not open to direct, objective measurement. Instead they are 'constructs', theoretical frameworks used to explain and organize an existing body of observations (Kendall & Norton-Ford, 1982). Interview or questionnaire items must be generated to approximate as

closely as possible the underlying construct for which they were intended. The

section that follows reviews several potential pitfalls with the use of self-report,

endorsement-type measures. Wiggins (1973/1988) proposed three conditions

which must be met in order for a response to a questionnaire or interview item to

be valid, one of which is of particular relevance to the consideration of the RSQ:

A respondent must be able to accurately assess and report on mental processes

such as thoughts, feelings or motives. An important limiting factor in such reports

is the human memory. It has been concluded (American Psychiatric Association,

1982) that human beings have a very limited ability to accurately recall events,

feelings, thoughts or behaviour from even the recent past. Further, there appears

to be a tendency for current emotional states to structure such recollections

(Evans & Hollon, 1988; Glass & Arnkoff, 1997). A questionnaire such as the RSQ

is highly dependent upon the respondent's ability to accurately recall not only the

mood state but also the cognitive response to that mood.

Glass and Arnkoff (1982; 1997) have criticized the use of self-report

endorsement measures, such as the RSQ, that ask respondents to judge the

degree to which a number of pre-established thoughts, traits, behaviours or

feelings represent their own experience. The authors warn that these techniques

carry a high level of demand characteristics. For example, they suggest that the

response to a questionnaire item such as "I cry more that I used to" (BDI; Beck,

1967) may not reflect actual self-evaluation of mood so much as a post-hoc

judgement of the plausibility of the question. Similarly, endorsement of a thought

such as "I'm not smart enough to go to university, so what's the point in applying"

may represent a match to the respondent's self-concept, rather than the actual occurrence of the thought. Glass and Arnkoff (1982) have also suggested that a respondent's rating of the frequency of a given thought may reflect the personal impact or importance of that thought, rather than an actual assessment of its frequency.

In sum, cognitive and memory limitations, as well as strong demand characteristics, raise important concerns about the construct validity of many common self-report, endorsement-type measures. These criticisms are of particular relevance in the case of the RSQ, since respondents are not only asked to report on higher-order cognitive activities, but they must do so by recalling past episodes of depressed mood. Furthermore, as a mood-state dependent cognitive process, self-report measurement of ruminative response may be open to the influence of the respondent's mood at the time of measurement (e.g., Kasch, Klein & Lara, 2001; Nolen-Hoeksema, Parker & Larson, 1994), such that the self-report of a currently non-depressed individual may not be an accurate representation of actual cognitive response when experiencing a depressed mood (Just & Alloy, 1997).

Construct validity of the RSQ. Only one study to date has systematically examined the psychometric properties of RSQ Rumination. Kasch, Klein and Lara (2001) found, in a sample of 140 undergraduate students clinically diagnosed with a recent-onset major depressive episode, that the measure was correlated with several relevant cognitive vulnerability factors, including emotion-focused coping, self-criticism and negative temperament.

Perhaps one of the most compelling lines of evidence for the validity of self-reported rumination comes from the work of Siegle and colleagues, who have conducted a series of studies evaluating ruminative thinking from an information-processing perspective. Conceptualizing rumination as the sustained processing of emotional information after it has been presented, these researchers have linked self-report measures of ruminative response, including the RSQ, to both physiological and neuroimaging measures of sustained attention to emotional information. Using pupil dilation as an indicator of cognitive load (Beatty, 1982), Siegle, Steinhauer, Carter and Thase (2000) measured reaction times as a sample of undergraduate students indicated the positive, negative or neutral valence of a series of words presented on a computer screen. A combination of normed and individually-generated words was used to increase the likelihood of sustained processing. Controlling for individual differences in depressed mood and reaction time on a non-affective task, several different self-report measures of rumination, including RSQ Rumination (r =0.38) were moderately correlated with delayed disengagement from processing of negative personally-relevant stimuli. A later replication with a small sample of depressed outpatients (Siegle, Steinhauer, Carter, Ramel & Thase, 2003) similarly linked sustained attention to negative emotional stimuli with self-reported rumination, though in this case RSQ Rumination itself was not significantly correlated. Siegle et al., (2000) also looked at a tendency for sustained fMRI amygdala response for several seconds after the processing of negative stimuli, which has been linked (e.g., Siegle, Steinhauer, Thase, Stenger

& Carter, 2002) to depressed mood. Again, after controlling for differences in depressed mood, self-report measures of rumination were significantly correlated with sustained processing of negative emotional information (RSQ Rumination: r = .59).

Though research such as that by Siegle and colleagues is indeed suggestive of a cognitive process linked to the self-report of ruminative response style, there remains no published evidence specifically linking this self report to actual cognitive output during dysphoric mood. In addition, though the information-processing evidence presented here suggests the presence of a ruminative process, it can tell us nothing about the content of such rumination.

The need for criterion-related validation of the rumination construct and of the RSQ questionnaire has been raised by Roberts, Gilboa and Gotlib (1998) and by Bagby, Parker and Cox (1999). Nolen-Hoeksema, Morrow and Fredrickson (1993) found a significant correlation (r = .62) between responses to this scale and daily endorsement of a list of possible ruminative responses over a 30-day period. Just and Alloy (1997) created a state version of the RSQ to assess actual response to each depressive episode experienced by participants over an 18-month period. Within-subjects correlation for these state RSQ measurements among participants who experienced at least two distinct episodes (r = .61) suggests consistency of response style; however the correlation between baseline trait RSQ and the state RSQ measure at first episode only approached statistical significance (r = .23, p = .09). These procedures are described by their authors as indicators of the criterion-related

validity of the RSQ; however, an examination of the diary form used by Nolen-Hoeksema and colleagues (personal communication, 1999) shows that its items are remarkably similar to the original questionnaire items. The Just and Alloy (1997) state measure uses the same items as the original RSQ, changing only the instructions and the anchors of the Likert scales.   Though such efforts to measure ruminative cognition in an ongoing fashion significantly reduce the possible impact of faulty recall, the use of endorsement-style measures of ongoing response style still fails to address the more important criticism by Glass and Arnkoff (1997): Are participants simply responding to the plausibility of items provided by the experimenter, rather than actual occurrence of thoughts? These findings, therefore, may represent little more than a measure of temporal stability of self-reported ruminative response, telling us little about the actual occurrence of ruminative thinking.

To date, no published study has specifically investigated the concordance between RSQ Rumination and occurrent ruminative response to sad mood. The main purpose of this research was to evaluate the criterion-related validity of RSQ Rumination by comparing questionnaire scores to open-ended, real-time cognitive activity during sad and depressed moods.

Factors Influencing Self-Report Accuracy

An interesting issue to consider in addition to establishing the overall degree of convergence between endorsement measures of ruminative response and real-life response style is the determination of cognitive or personality traits which might enhance the accuracy of the self-report. One potential such variable

is private self-consciousness, the trait-like tendency to attend to one's inner experiences, including thoughts, feelings and physical sensations (Fenigstein, Scheier & Buss, 1975). Buss (1980) has argued that as a result of frequent reflection on their moods, motives and goals, highly (private) self-conscious individuals "know themselves very well" (p. 20). A number of researchers (e.g., Gibbons et al., 1985; Pryor, Gibbons, Wicklund, Fazio & Hood, 1977) have demonstrated that self-awareness induced by placing individuals in front of a mirror enhances the concordance between self-report and behavioural measures of traits. Musson and Alloy (1988) have suggested that the highly accurate judgements of control seen among depressives may be the result of a greater self-preoccupation. Ongoing awareness of internal processes may enhance the encoding of these experiences in memory, thus contributing to more accurate retrospective self-report. In addition to evaluating the accuracy of questionnaire-reported ruminative style, the present research (Study 1) evaluated the theory that trait-like reflective self-consciousness contributes to the accuracy of self-reported ruminative response style.

Importance of Ruminative Process

       One of the most important shortcomings of research into Response Styles Theory to date is that it has almost entirely overlooked a key component of the rumination construct: ruminative processes. The word 'rumination', by definition, suggests a repetitive activity. It is the process aspect of rumination that most specifically distinguishes it from related cognitive vulnerability constructs such as self-focused attention and negative automatic thoughts (Nolen-Hoeksema, 1993).

Admittedly, cognitive processes are inherently difficult to measure accurately.

The already-established limitations of the human brain to accurately report

cognitive content are only compounded by asking the individual also to report the

frequency with which individual ruminative thoughts occur. The RSQ can be

seen as a resignation to this problem, focusing instead on only the content of

rumination. Its ease of use has led to a rapid growth of rumination research,

pushing the issue of ruminative process further away from empirical

consideration. Siegle and colleagues (2000; 2002; 2003) attempted to capture

ruminative response by means of observable proxy indicators such as amygdala

activity and pupil dilation with successful results. The difficulty, however, is that

their indicators of ruminative responding are so far removed from the real item

that the theoretical value of their findings is difficult to assess. A better measure

of ruminative response would be more clearly linkable to occurrent thought

content. The present research took a more global approach to measuring and

evaluating ruminative response style. In the first study, the predictive validity of

the more content-oriented RSQ was evaluated against a second measure, the

Rumination-Reflection Questionnaire (Trapnell & Campbell, 1999), seen as

better suited to capturing ruminative process. The second study utilized third-

person ratings of both ruminative content and process within the context of

interviews with depressed outpatients.

Ruminative Thinking Versus General Negativity of Thought

Perhaps the most distinctive characteristic of the depressed person is a

relatively pervasive negativity of thought, which contributes to a vicious circle of

negative self-evaluations and attributions and increasingly negative mood

(Ingram, 1984). This negative bias, in fact, lies at the core of cognitive theories of

depression (e.g., Beck, 1967). The Balanced States-of-Mind (BSOM) ratio was

described by Schwartz (1997) as the balance between positive and negative

cognitive content or affective experiences. Specifically, a SOM ratio is defined as

P/(P+N), where P represents the number of positive and N represents the

number of negative affects or thoughts. The author suggested that the high-

functioning individual is characterized by the 'positive dialogue' (SOM = .67 -

.90), while the stressed but successfully coping individual is characterized by the

'successful coping dialogue' (SOM = .59 - .66). Subclinical and clinical states of

depression and anxiety are characterized by SOMs less than .59 (more detailed

discussion of a number of SOM subcategories is beyond the scope of the

present research). Schwartz, Reynolds, Thase, Frank and Fasiczka (2002)

recently found empirical support for the BSOM model in a treatment outcome

study of clinically-depressed outpatients.

At least in terms of content, ruminative thought is by definition a subset of

negative thought specifically related to aspects of the emotional experience and

its implications. In order for the theorized causal and maintenance role of

ruminative thinking (as defined by Nolen-Hoeksema, 1991) to be convincingly

supported, it must be demonstrated to affect mood levels above and beyond the

impact of a general negative bias in thinking such as that proposed by States-of-

Mind theories. The present research was the first to address this important

question empirically.

<u>Overview of the Present Research</u>

The primary purpose of the present research was to evaluate the criterion-related validity of a self-reported tendency to ruminate in response to dysphoric mood, as measured by the endorsement-style RSQ Rumination questionnaire. The first of two studies used a thought-listing approach to measure ruminative thought content, as a means of assessing concordance of self-reported ruminative style with content of occurrent thoughts among university students in an induced sad mood episode. Secondary analyses examined ability of self-reported ruminative style and occurrent ruminative thought content to predict the course and severity of the induced sad mood episode. The second study similarly examined agreement between self-reported ruminative tendency and ruminative content and process within interviews conducted with a sample of clinically-depressed outpatients.

<div align="center">Study One</div>

This study assessed the criterion validity of the Ruminative Response subscale of the RSQ in a sample of students undergoing negative mood induction. An open-ended thought recording procedure adapted from a study by Salovey, Mayer, Goldman, Turvey and Palfai (1995) was used to collect a sample of ongoing cognitive activity, which was in turn coded for ruminative content and compared to self-reported ruminative style. The main hypotheses of this study related to a concordance between self-reported ruminative style and the ruminative content of thoughts generated in the context of the induced sad mood. Specifically, full RSQ Rumination score was expected to predict overall

ruminative thought content, while self- and symptom-focused RSQ Rumination

subfactors were hypothesized to predict actual occurrence of ruminative thought

content. A more exploratory analysis investigated the possibility that greater

personal insight resulting from a trait-like tendency to self-focus would moderate

concordance between questionnaire self-report and frequency of ruminative

thought content during a period of sad mood. Finally, to evaluate the construct

validity of ruminative response itself, it was hypothesized that both self-reported

ruminative style and laboratory-measured ruminative thought content predict the

onset, duration severity of induced sad mood.

Method

Participants

An initial group of 145 introductory psychology students completed both a

self-report questionnaire package at Time 1 and the laboratory-based thought

recording session two to three weeks later. All participated in exchange for

course credit. Eleven of these participants were later excluded due to excessive

amounts of missing data and/or clear misunderstanding of Time 2 instructions.

Only those who met criteria for sad mood following the induction (score < 75 on a

150mm on a visual analogue scale – detailed in Measures section below),

including those who began the session with a significant degree of existing sad

mood, were retained for statistical analyses, thus eliminating 58 participants.

Following evaluation of assumptions for multiple regression analysis and

examination of univariate outliers, square root transformation was successfully

applied to the BDI score and to rumination index ratios to correct moderate

positive skewness. Following these transformations, tests of the Mahalanobis

distance for residuals ($\underline{p}$ < .001) revealed two multivariate outliers, which were

removed from the sample. The final study sample included 30 male and 55

females (N=85), ranging in age from 17 to 47 years (mean = 21.7 years).

<u>Measures</u>

Rumination. (1) The 22-item Rumination subscale of the Response Styles

Questionnaire (RSQ-Rum; Nolen-Hoeksema & Morrow, 1991) is the most

commonly used self-report measure of ruminative response to dysphoric mood

(Appendix A). Respondents are asked to endorse (using a 4-point Likert scale)

the degree to which they tend engage in a variety of thoughts and behaviors that

focus attention on symptoms and their implications (e.g., "Think about how alone

you feel", "Isolate yourself and think about the reasons why you feel sad"). Alpha

internal consistency of the RSQ Rumination in the present study was excellent

(Cronbach's alpha = .90). Convergent validity has been established through

correlation with a variety of related self-report constructs, including emotion-

focused coping, self-criticism and negative affectivity (Kasch, Klein & Lara,

2001). One-year test-retest reliability among university students has been found

to be moderate ($\underline{r}$ = .47, $\underline{p}$ < .001; Just & Alloy, 1997). One limitation of the RSQ

Rumination scale that should be noted is that while it measures ruminative

content very well, its instructions and item wording may not lend themselves to

effective measurement of ruminative process. Though the instruction "…indicate

whether you never, sometimes, often or always think or do each one when you

feel down, sad or depressed" is likely intended to capture the repetitive process

of rumination, it may be unclear to the respondent whether the instructions mean the frequency of each thought <u>within</u> a sad episode (as intended) or frequency <u>across</u> episodes.

(2) Participants also completed a more recently-developed instrument, the Rumination subscale of the Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999). The RRQ is an adaptation of the more traditional Private Self-Consciousness Scale (PrSC; Fenigstein, Scheier & Buss, 1975), and distinguishes motivation for attending to the self. According to the authors, RRQ Rumination measures "self-attentiveness motivated by perceived threats, losses or injustices to the self" (p. 297). Respondents are asked to rate the personal descriptiveness of a variety of introspective cognitive tendencies (e.g., "My attention is often focused on aspects of myself I wish I'd stop thinking about", "I don't waste time re-thinking things that are over and done with – reversed scoring) along a 5-point Likert scale (see Appendix B for the full RRQ). It should be noted that RRQ Rumination is designed to measure the trait-like, daily tendency to ruminate, as opposed to rumination as a response to sad mood; however, its inclusion in the present analyses allowed evaluation of the relative utility of the RSQ Rumination measure. Also, the wording of RRQ Rumination items (e.g., I always seem to be "re-hashing in my mind recent things I've said or done", "Sometimes it is hard for me to shut off thoughts about myself") may be better suited to measurement of the repetitive nature of ruminative process. Convergent validity has been demonstrated in significant correlations with Neuroticism (NEO-FFI; Costa & McCrae, 1992; r = .64), with BDI-Short Form

(BDI-S; Beck & Beck, 1972; r = .38) and with the Negative Affectivity subscale of

the Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen,

1988; r = .46). Internal consistency of RRQ Rumination in the present study was

excellent (Cronbach's alpha = .88).

Trait self-consciousness. The trait-like tendency to focus attention on inner

aspects of the self regardless of current mood (self-consciousness) was

measured using the Reflection subscale of the Rumination-Reflection

Questionnaire (RRQ; Trapnell & Campbell, 1999). The Reflection subscale is

composed of 12 items and assesses a healthy "self-attentiveness motivated by

curiosity or epistemic interest in the self" (p. 297). The authors found that RRQ

Reflection was uniquely correlated (r = .61) with Openness to Experience (NEO-

FFI; Costa & McCrae, 1992), and showed near-zero correlation (r = .04) with

BDI-S. RRQ Reflection was selected for the present study because it is a

relatively 'clean' measure of self-consciousness, minimally influenced by

depressed mood and presumably independent of depressive response styles

(e.g., "I love exploring my inner self", "I'm very self-inquisitive by nature"). Internal

consistency of RRQ-Reflection was excellent in the present sample (Cronbach's

alpha = .91).

Depressed mood (Time 1). The RSQ Rumination scale has frequently

been criticized (e.g., Just & Alloy, 1997; Roberts et al., 1998) for being highly

influenced by concurrent mood. This may be due in part to apparent item

overlap with the BDI (Segerstrom, Tsao, Alden & Craske, 2000; Treynor,

Gonzalez & Nolen-Hoeksema, 2003). Intended as a measure of trait-like

cognitive response to sad mood, scores on the RSQ should theoretically be independent of concurrent mood. For this reason, Just and Alloy (1997) recommended that any evaluation of self-reported ruminative tendencies should control individual differences in depressed mood at the time of self-report. The Beck Depression Inventory (BDI; Beck, 1967) was administered at Time 1 to assess concurrent depressed mood. The BDI is a 21-item self-report inventory surveying a range of affective, cognitive and physiological symptoms of depression (see Appendix C for sample items). It is the most commonly used measure of dysphoric mood, and has consistently demonstrated favourable reliability and validity (see Beck, Steer & Garbin, 1988 for a detailed review). Alpha internal consistency for the BDI in the present sample was 0.88.

Coping styles. The Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990) is a 48-item self-report questionnaire assessing respondents' preferred means of responding to life stressors (see Appendix D). Three 16-item subscales measure task-oriented coping (e.g., "Think about how I have solved similar problems"), emotion-oriented coping (e.g., "Blame myself for not knowing what to do") and avoidance coping (e.g., "Watch TV"). This latter scale is further divided into distraction and social diversion subscales. The psychometric properties of the CISS have been evaluated and summarized by the authors (1994). This questionnaire was included in the questionnaire at Time 1 at the suggestion of a committee member in the original proposal meeting. Its intended purpose was to evaluate the predictive value of ruminative response style relative to the similar and more traditional construct of emotion-focused

coping. It was subsequently decided that such a comparison, though of theoretical interest, was outside the scope of the present research. For this reason data from the CISS questionnaire were not included in the present analyses.

Distractor questionnaire. A 34-item version of the Evaluation of Others Questionnaire (EOOQ; Shapiro, 1988) was chosen to obscure the true focus of the study at Time 1 (see Appendix E). The EOOQ consists of a list of adjectives that describe people, and asks respondents to rate the degree to which each describes people in general on a scale from 0 to 10. This questionnaire was chosen because its content bears no apparent relationship to the variables of interest, and because its heterogeneous nature was expected to prevent participants from inferring the true nature of the study, which might have adversely biased responses. Data from the EOOQ were not included in the present analyses.

Mood induction. Several approaches for the induction of sad mood were considered for this research. More traditional approaches, such as Velten's (1968) self-referent adjectives technique, and autobiographical recall (Wood et al., 1990), were rejected because they inherently induce self-focused attention, a key variable in this study. Instead, sad mood was induced using a musical mood induction procedure similar that developed by Sutherland, Newman and Rachman (1982). Participants were informed that the purpose of this portion of the experiment was to induce a degree of sad mood and were asked to use whatever means they found effective to create such a mood. Previous authors

(e.g., Clark, 1983; Clark & Teasdale, 1985; Sutherland, Newman & Rachman, 1982) have noted that music alone is usually not sufficient to induce mood, and recommend specification of the intended mood. In light of concerns about possible demand characteristics, Teasdale and his colleagues (e.g., Clark & Teasdale, 1985; Teasdale & Spencer, 1984) have been able to verify the genuineness of the resultant mood via self-report and measures of psychomotor retardation and depressive cognitions.

The music selected for the mood induction was Prokofiev's "Russia Under the Mongolian Yoke" (length: 5 minutes, 20 seconds), a non-lyrical classical work which, when played at half-speed, has become a standard for music induction of sad mood (e.g., Clark & Teasdale, 1985; Segal, Gemar & Williams, 1999). Lights in the room were dimmed in order to set a more mood-appropriate atmosphere and the music was heard through headphones. These measures were intended to further isolate participants from extraneous stimuli and enhance participants' ability to immerse themselves in the atmosphere of the music. Of the 134 usable cases, 110 (82%) reported some increase in sad mood immediately after the mood induction.

Time 2 thought and mood recording. A special form was created to permit participants to make ongoing recordings of thought activity during the course of the induced sad mood (see Appendix F for a completed example). At the top of the page, participants recorded current level of sad and anxious mood on 150mm visual analogue scales (happy---sad, nervous---calm) adapted from Segal, Gemar and Williams (1999). The inclusion of the anxious mood measure was

intended only to further obscure the purpose of the study and was neither scored nor included in data analysis. Sad mood scores at each two-minute interval were computed by measuring the length of the line to the mark made by participants to indicate their mood along the happy---sad continuum (high score equals sadder mood).

In the remaining space, participants were instructed to make an ongoing record of all cognitive contents, including any thoughts, mental images, memories or observations that came to mind. They were further instructed that the best way to do this would be in brief, pointform phrases, permitting them to more easily keep up with the stream of thoughts in 'real-time'. The recording forms were provided to participants in a 10-page booklet. At two-minute intervals, participants were signalled by a brief dimming of room lights to stop recording, turn to the next page in the booklet and record current mood again at the top of the page. They then immediately continued to record thoughts in the space below. To familiarize participants with the procedure, two practice runs were conducted during which they could ask questions to clarify the instructions. This was followed by a final mood recording, which served as the baseline pre-induction mood level.

Following the mood induction, six two-minute intervals were measured, followed by a final mood measurement (total of 12 minutes, following the procedure used by Salovey and colleagues, 1995). The mood measure taken immediately after the mood induction served as the indicator of the success of the induction procedure (cutoff score of 75/150 or greater). For the purpose of

these analyses, severity of the induced sad mood episode was defined as the

highest level of sad mood recorded by each participant during the 12-minute

post-induction period. Mean peak severity of induced mood in this sample was

102.87/150 (SD=20.57). Duration of the induced mood was operationalized as

the number of two-minute mood samples required for the individual to return to

and remain below the cutoff score (75/150). Those who did not return and stay

below the cutoff score were assigned the maximum score of 7, corresponding to

12 minutes of induced sad mood. Thus calculated, the mean duration of induced

sad mood was 4.63 (SD = 2.32) mood samples.

Thought records were analysed using a procedure adapted from previous

studies of self-focused thought (Exner, 1973; Greenberg & Pyszczynski, 1986;

Lavallee & Campbell, 1995; Wood et al, 1990). Though it was suggested to

participants that they record thoughts in brief phrases and/or pointform, there

was some use of more complex sentence structure. The experimenter, blind to

both mood and self-report scores, clearly indicated and numbered individual

thought units prior to analysis by coders. Complex thoughts were divided into

discrete units consisting of simple sentences, independent clauses and distinct

phrases based on previously-established guidelines (Meichenbaum & Goodman,

1979; Sethi & Nolen-Hoeksema, 1997).

A team of six honours level psychology students was recruited to serve,

along with the experimenter, as coders for the thought data. A preliminary

coding manual was designed by the experimenter, who then trained coders over

a series of four training and practice sessions. In addition to the coding manual,

coders also received a printed overview of the Response Styles Theory with examples of ruminative thought (see Appendix G) and a copy of the RSQ Rumination questionnaire. Several thought records collected during early pilot work were used for training and were not included in analyses. Coding guidelines were adjusted and made more explicit over several trials based on feedback from coders. Once revisions to the coding manual had been completed, the final study sample of 145 booklets was divided among the six judges and the experimenter.

As detailed in the coding manual (Appendix H) all thoughts were categorized on two dimensions: valence (positive, negative or neutral) and ruminative focus (self-focused, symptom focused or non-ruminative). The distinction between self- and symptom-focused thoughts in the coding manual was based upon examination of the two subfactors of the RSQ Rumination. Valence of thought units was coded independently of rumination to permit comparison of ruminative thinking to general negativity of thought. A special form was designed for the purpose of recording codes for up to 22 thoughts (the maximum number recorded) on each page of the thought recording booklet (see Appendix J for a completed example). Actual examples from each of the nine possible coding categories can be seen in Figure 1.

For the purpose of establishing inter-rater reliability of the coding manual, a total of 29 of the 145 booklets (20%) were randomly selected to be coded by all judges (N=1380 thoughts). The experimenter's ratings were used as the standard for comparison. Reliability was measured at three pre-selected points in coding

Figure 1

Samples of Nine Thought Coding Categories

Self-Focus   "My life is going really well these days" (+)

                              "I can't believe I said those mean things to my

                                    boyfriend last night" (-)

                              "I don't like thinking about depressing things" (o)

Symptom-Focus   "I feel so relaxed right now" (+)

                              "I feel sad" (-)

                              "Numb feeling" (o)

Other (non-ruminative)   "Can't wait for tonight's party" (+)

                              "When is this experiment going to end?" (-)

                              "School is almost over" (o)

Note. (+) positive valence; (-) negative valence; (o) neutral valence

process, using sets of nine or ten booklets. This was done to detect and/or

prevent coder 'drift' from the manual over time. One judge's ratings demonstrated

consistently poor agreement with all other judges (all Cohen's kappas < .50). All

data coded by this judge were recoded by the experimenter for inclusion in the

final dataset. According to standards established by Robson (1993), agreement

for the remaining four judges with the experimenter's ratings was in the good to

excellent range (Thought valence: Kappa's ranged from .691 to .788; Thought

focus: Kappa's ranged from .707 to .765). These reliability figures are on par

with previous studies coding thought valence (e.g., Bruch & Pearl, 1995;

Heimberg, Salzman, Holt & Blendell, 1993) and thought focus (e.g., Mahone,

Bruch & Heimberg, 1993).

Thought record data were transformed into index ratios for the purpose of

data analysis. Ratios were computed for ruminative and non-ruminative negative

thought frequency by counting the total number of negative-valenced thoughts in

each category and dividing these by the total number of thoughts recorded.

Procedure

At Time 1, in groups of up to 60 individuals, participants completed a

package containing a consent form (Appendix K) and all of the self-report

questionnaires (sequence: RSQ, EOOQ, CISS, RRQ and BDI). A personal

information form including sex, date of birth and the first three digits of the postal

code (Appendix L) was also part of the package and was used to match Time 1

and Time 2 data while maintaining the anonymity of responses.

This study was presented to participants as an exploration of the

relationship among mood, thinking styles and attitudes. Once participants had

completed the questionnaire package, they were invited to sign up for a 'second

study' to be held two to three weeks later, described as an examination of the

effect of music on mood and on thinking styles. The time gap and cover story

were intended to reduce the likelihood of participants making any connection

between the Time 1 self-report rumination measures and the Time 2 thought-

listing task.

Time 2 sessions were conducted in the psychology computer laboratory,

in groups of up to 14 individuals. This small-group design permitted careful

control of communication or cues among participants, which might have

contaminated responses. The laboratory is arranged in seven rows of seven

computer terminals. The terminal at one end of each row is enclosed within a

study carrel. Participants were seated only at the ends of each row, again to

minimize distraction and extraneous cues from their surroundings.

Upon arrival in the laboratory participants were asked to complete a

second consent form (Appendix M) and a personal information form, identical to

that administered at Time 1, was attached to the front of the thought-mood

recording booklet. Once participants had been seated at their computer

terminals, they were given detailed instructions for the thought recording portion

of the study (see Appendix N for detailed script). This procedure was practiced

for two intervals (4 minutes), followed by a final mood measurement that served

as the indicator of pre-induction mood level. Upon completion of the mood

induction procedure, room lights were restored and headphones were removed.

Participants were instructed to complete the first mood report and to begin recording cognitive activity. As previously instructed, participants began a new mood recording and continued the thought record every two minutes, when signalled by the brief dimming of room lights. Once the six thought-mood measurements had been completed, participants completed a final mood measurement.

In order to facilitate return to pre-induction mood levels at the end of the session, a brief, more upbeat piece of classical music ("Minute Waltz" by Chopin) was played over laboratory loudspeakers. Participants were instructed once again to immerse themselves in the light, more positive tone of the music. Unlike the sad induction, room lights were left on for this portion of the session.

Debriefing. Given the emotional nature of the study, a list of phone numbers for counselling and crisis services was distributed to all participants at the end of each session at both Time 1 and Time 2 (see Appendix P). In order to prevent potential contamination of the responses of future participants, no feedback was provided in-session that might be communicated to others. Instead, a detailed explanation of the true purpose and significance of the study was distributed to participating classes after data collection had been completed (see Appendix Q).

Pilot work. Four runs of the Time 2 procedures were conducted with recruited participants in order to practice the procedure as well as to adjust timing and measurement parameters and participant instructions where necessary. Two specific changes were made to the original procedure as a result of the pilot

work.   First, the length of the thought recording period was shortened from 20

minutes to 12 in response to a high proportion of thoughts indicating extreme

boredom and even anger on the part of participants as time passed. It was felt

that this unintended affective reaction might adversely affect the outcome of the

study. Second, a questionnaire was originally included at the end of the thought-

mood recording booklet as a means of measuring both repetitive ruminative

process as well as respondents' opinions of the desirability and controllability of

their ruminative thoughts. Respondents were asked to review their booklets and

record the three most commonly-listed thoughts as a means of capturing

repetitive occurrence of ruminative-content thoughts. Each thought was then

scored by the respondent on Likert scales as controllable versus uncontrollable

and desirable versus undesirable. It became immediately apparent however,

that very few thoughts occurred more than once or twice throughout a booklet,

probably due to self-editing. The few thoughts that were repeated more

frequently were almost all non-ruminative in content (e.g., "bored", "tired",

"hungry", "How many more pages?"). It was therefore decided to address the

issues of ruminative process and the intrusiveness and desirability of rumination

in the clinical study. None of the pilot data were included in the present

analyses.

<div align="center">Results</div>

Factor Structure of the RSQ Rumination Scale

In order to separately evaluate the self- and symptom-focused subtypes of

rumination, it was first necessary to establish that these factors could be

replicated in the present sample. The 21 items that overlap with the version of

the RSQ analyzed by Bagby and Parker (2001) and others were subjected to

principal components analysis (N=85). Direct oblimin rotation failed to converge

after 25 iterations. A forced two-factor solution, however, yielded a factor

structure very similar to that uncovered by Bagby and colleagues (1999), with the

exception of two items ("Think about all your shortcomings, faults and mistakes"

and "Think about how angry you are with yourself") which previously loaded on

self-focus but in the present analysis loaded with symptom-focus. The remaining

19 items loaded onto the same factors, including four that did not load on either

factor. Given the high degree of similarity of the present factor structure to the

that of Bagby and colleagues (1999), and in order to facilitate direct comparison

to previous studies of self- and symptom-focused rumination the decision was

made to create the present subscales from this pre-established factor structure.

This resulted in a 9-item Self-Focus subscale (e.g., "Think about a recent

situation, wishing it had gone better", "Isolate yourself and think about the

reasons why you feel sad") and an 8-item Symptom-Focus subscale (e.g., "Think

about how sad you feel", "Think about how you don't feel up to doing anything").

Cronbach's Alpha internal consistency coefficients for Self- and Symptom-Focus

subscales in the present sample were .84 and .80, respectively. These 17 items,

plus five others that did not load onto either factor, make up the full RSQ

Rumination scale in the statistical analyses. Item distributions for the two

subscales are indicated in Appendix A.

<u>Descriptive Statistics and Correlations</u>

Table 1 displays values and Pearson correlations among major Time 1 variables in the final study sample (N=85). Scores on RSQ Rumination (e.g., Nolen-Hoeksema, Parker & Larson, 1994; Segerstrom, Tsao, Alden & Craske, 2000), self- and symptom-focus subfactors (e.g., Bagby, Parker & Cox, 1999) and RRQ scales (e.g., Trapnell & Campbell, 1999) were comparable with those found in previous undergraduate and non-clinical adult samples. Scores on the BDI, however, were somewhat higher than what are normally found in student samples. This is likely due to the exclusion in the final sample of non-depressed and non-respondent individuals and the inclusion of those with pre-existing dysphoric mood. Correlations between Time 1 BDI score and self-reported sad mood immediately before and after the mood induction were .22 and .35, respectively (both $\underline{p}$ < .05).

Correlations among Time 1 variables were also consistent with previous research, though no published data exist of correlations for RSQ Rumination subfactors in non-clinical samples. Correlations with RRQ Reflection were relatively low or non-significant, as expected given that this is intended as a measure of healthy self-awareness.

The maximum possible sadness score in the Time 2 thought- and mood-recording booklet was 150. Mean pre-induction mood was 75.25/150 (SD=31.65). Mean post-induction mood was 103.80/150 ($\underline{SD}$=20.57). Index ratio scores for ruminative and non-ruminative negative thought frequency were as follows: self-focus index: $\underline{M}$=.07, $\underline{SD}$=.09; symptom-focus index: $\underline{M}$=.13,

Table 1

Descriptives and Correlations for Time 1 Questionnaire Variables (N=85)

	M	(SD)	2	3	4	5	6
1. BDI	10.17	(8.00)	.47**	.43**	.44**	.03	.54**
2. RSQ-Rum	48.37	(12.51)		.94**	.84**	.25*	.48**
3. RSQ (Self)	20.44	(6.18)			.66**	.23*	.34**
4. RSQ (Symp)	17.29	(4.53)				.12	.51*
5. RRQ-Ref	35.35	(3.17)					.22*
6. RRQ-Rum	37.84	(5.49)					

Note. BDI = Beck Depression Inventory; RSQ-Rum = Response Styles

Questionnaire (Rumination Scale); RSQ (Self) = self-focus subfactor; RSQ

(Symp) = symptom-focus subfactor; RRQ-Ref = Rumination-Reflection

Questionnaire (Reflection scale); RRQ-Rum = Rumination-Reflection

Questionnaire (Rumination scale)

* $p < .05$, two-tailed. ** $p < .01$, two-tailed.

SD=.13; total rumination index: M=.20, SD=.17; non-ruminative thought index: M=.13, SD=.11.

Table 2 presents correlations between these thought record indices and other study variables. Consistent with the primary hypotheses of the study, all rumination indices were significantly correlated with their corresponding RSQ scores; however, subtypes of rumination were neither uniquely nor primarily correlated with their self-report counterparts. In the case of the self-focus index ratio, there was no significant difference between its correlations with RSQ-Self and RSQ-Symptom, Student's t (82) = 1.52, ns. The same held true for correlations with symptom-focus index, Student's t (82) = 0.12, ns.

As expected, in most cases rumination indices were significantly correlated with pre- and post-induction mood levels and with the duration and peak severity of the induced mood, though these correlations were only moderate. The exceptions were the lack of correlation between self-focus index and both post-induction mood and peak severity. In contrast, negative non-ruminative thought index showed near-zero correlation with all self-report rumination scores and a small but significant correlation only with post-induction sad mood. Correlations between RRQ Reflection and all thought indices were near zero, as expected for a variable intended to capture healthy self-curiosity.

Hypothesis 1: Self-Reported Ruminative Response Style Predicts Occurrent Rumination in Response to Sad Mood

The main hypotheses for this study (# 1 and 2) related to the criterion validity of self-reported rumination. Specifically, it was hypothesized that self-

Table 2

Thought Record Indices: Correlations with Self-Report Measures (N=85)

Self-Report	Thought Record Indices			
	Full Rumination	Self-Focus	Symp-Focus	Non-Rum
BDI	.37**	.29**	.27*	.17
Pre-Sad	.33**	.22*	.28*	.01
Post-Sad	.25*	.03	.30**	.22*
Peak Severity	.39**	.06	.45**	.20
Duration	.35**	.16	.33**	.16
RSQ-Rum	.58**	.35**	.50**	.03
RSQ (Self)	.53**	.35**	.43**	.05
RSQ (Symp)	.47**	.22*	.44**	.01
RRQ-Rum	.30**	.23*	.30*	.07
RRQ-Ref	.01	.09	.07	.01

Note. Pre-Sad = pre-induction sadness; Post-Sad = post-induction baseline

sadness; Peak Severity = highest reported level of sad mood during the post-

induction measurement period; Duration = duration of induced sad mood

episode; Non-Rum = proportion of non-ruminative negative thoughts

* p < .05, two-tailed. ** p < .01, two-tailed.

reported ruminative response style, as measured by the RSQ Rumination scale, would be predictive of ruminative thought content as recorded by participants experiencing a laboratory-induced sad mood. To assess these hypotheses, hierarchical multiple regression analyses were conducted. In order to statistically control for the possible influence of concurrent sad mood on self-report, Time 1 BDI scores (square-root transformed) were entered at the first step of each regression analysis. Given its significant correlations with the thought index scores, RRQ Rumination was entered simultaneously with RSQ Rumination at step 2 in order to evaluate the relative predictive value of each measure. Table 3 displays the hierarchical regression predicting overall ruminative index ratio from full rumination scale scores. Concurrent mood at Time 1 accounted for 16% of variance in Time 2 rumination, $\underline{F}$ change (1, 83) = 15.48, $\underline{p}$ < .001. At step 2 of the analysis, the combination of RRQ Rumination and full-scale RSQ Rumination scores predicted an additional 20% of variance in actual rumination at Time 2, $\underline{F}$ change (2, 81) = 12.69, $\underline{p}$ < .001. Examination of standardized beta weights and squared semi-partial correlation coefficients ($\underline{sr}^2$) in the final regression model, however, indicates that only the RSQ Rumination score was a significant predictor of laboratory-measured rumination, $\underline{t}$ (84) = 5.04, $\underline{p}$ < .001, contributing the full 20% of this variance.

Hypothesis 2: Self- and Symptom-Focus Subfactors of RSQ Rumination are Uniquely Predictive of Counterpart Subtypes of Ruminative Response

In order to validate the Self- and Symptom-Focus subfactors of the RSQ Rumination scale, each subfactor should be found to uniquely predict its

Table 3

<u>Hierarchical Multiple Regression Predicting Full Ruminative Thought Index from</u>

<u>Self-Reported Ruminative Style, Controlling for Concurrent Sad Mood (N=85)</u>

Step	ΔR^2	std β	final β	sr^2
1. Time 1 BDI (sqrt)	0.16***	0.40***	0.18	0.02
2. RSQ Rumination	0.20***		0.52***	0.20
RRQ Rumination			-0.08	0.00
Total Adjusted R^2 =	0.36			

Note.   std β = standardized beta weight for the variable when first entered into the regression; final β = standardized beta weight for the variable in the final regression equation; sr^2 = squared semi-partial correlation with DV, representing proportion of variance uniquely attributable to the variable in the final model; Time 1 BDI (sqrt) = Time 1 Beck Depression Inventory (square root transformed)

* $p< .05$.   ** $p < .01$.   *** $p< .001$.

laboratory-measured counterpart. This hypothesis was again tested using hierarchical multiple regression analysis. Table 4 shows that sad mood at Time 1 accounted for 9% of variance in self-focused rumination index ratio at Time 2, F change $(1, 83) = 8.41$, $p < .01$. The combination of the two RSQ subfactor scores, then entered at step 2 of the analysis, accounted for a further 6% of variance in actual self-focused rumination, F change $(2, 81) = 2.88$, $p = .06$. Only RSQ Self-Focus significantly predicted its counterpart thought index in the final model, $t(84) = 2.17$, $p < .05$, uniquely predicting 5% of variance (sr^2) in the dependent variable.

Table 5 displays a similar test of the validity of the Symptom-Focus subfactor of RSQ Rumination. Individual differences in Time 1 mood accounted for 9% of variance in Time 2 symptom-focused rumination index ratio, F change $(1, 83) = 8.20$, $p < .01$. RSQ subfactors, entered simultaneously at the second step of the analysis, accounted for an additional 15% of variance in symptom-focused rumination, F change $(2, 81) = 7.74$, $p < .01$. Consistent with the hypothesis, an examination of final beta weights indicated that only RSQ Symptom-Focus was a marginally-significant predictor of its laboratory-measured counterpart $t(84) = 1.98$, $p = .05$. It should be noted, however, that RSQ Symptom-Focus only uniquely contributed 4% of variance, suggesting that much of its predictive value was due to shared variance with RSQ Self-Focus.

Hypothesis 3: Trait Self-Consciousness Improves Accuracy of Self-Reported Ruminative Response Style

A secondary hypothesis of this study was that trait self-consciousness, as

Table 4

Hierarchical Multiple Regression Predicting Self-Focused Ruminative Thought

Index from RSQ Self- and Symptom-Focus Subfactors, Controlling for

Concurrent Sad Mood (N=85)

Step	ΔR^2	std $\underline{\beta}$	final $\underline{\beta}$	$\underline{sr}^2$
1. Time 1 BDI (sqrt)	0.09**	0.30**	0.19	0.03
2. RSQ Self-Focus	0.06		0.31*	0.05
RSQ Symptom-Focus			-0.06	0.00
Total Adjusted $\underline{R}^2$ =	0.12			

Note.   std $\underline{\beta}$ = standardized beta weight for the variable when first entered into

the regression; final $\underline{\beta}$ = standardized beta weight for the variable in the final

regression equation; $\underline{sr}^2$ = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model;

Time 1 BDI (sqrt) = Time 1 Beck Depression Inventory (square root transformed)

* $\underline{p}$< .05.   ** $\underline{p}$ < .01.   *** $\underline{p}$< .001.

Table 5

Hierarchical Linear Regression Predicting Symptom-Focused Ruminative

Thought Index from RSQ Self- and Symptom-Focus Subfactors, Controlling for

Concurrent Sad Mood (N=85)

Step	$\Delta \underline{R}^2$	std $\underline{\beta}$	final $\underline{\beta}$	$\underline{sr}^2$
1. Time 1 BDI (sqrt)	0.09**	0.30**	0.09	0.00
2. RSQ Self-Focus	0.15**		0.22	0.03
RSQ Symptom-Focus			0.26	0.04
Total Adjusted $\underline{R}^2$ =	0.21			

Note.   std $\underline{\beta}$ = standardized beta weight for the variable when first entered into

the regression; final $\underline{\beta}$ = standardized beta weight for the variable in the final

regression equation; $\underline{sr}^2$ = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model;

Time 1 BDI (sqrt) = Time 1 Beck Depression Inventory (square root transformed)

* $\underline{p}$< .05.   ** $\underline{p}$ < .01.   *** $\underline{p}$< .001.

measured in this study using the RRQ Reflection scale, improves the accuracy of self-reports of one's tendency to ruminate during sad mood. According to Baron and Kenny's (1986) guidelines, a moderator effect is demonstrated when the interaction of the independent and moderator variables has predictive value above and beyond the main effects of each variable. In this case, the interaction term showed a near-significant predictive trend (final beta = 1.15, $\underline{t}$ (84) = 1.76, $\underline{p}$ =.08), providing some evidence that higher trait self-consciousness is related to stronger concordance between self-reported ruminative style and frequency of occurrent ruminative thoughts.

Hypothesis 4: Self-Reported Ruminative Style Predicts Severity and Duration of Induced Dysphoric Mood

As an examination of the predictive validity of a self-reported ruminative response style, hierarchical regression analyses were performed to assess whether the severity and duration of the laboratory-induced sad mood could be predicted from self-reported ruminative response style. In addition to the predictive value of overall self-reported rumination, it was hypothesized, in accordance with Nolen-Hoeksema's (1993) position that focus on depressive symptoms is of primary importance in affecting the course of that mood, that the Symptom-Focus subfactor of RSQ Rumination would be a stronger predictor of mood outcomes than focus on self. Because pre-existing sad mood episodes could not be reliably attributed to ruminative processes, only those participants whose sad mood could be confidently attributed to the induction itself were included in the analyses. Specifically, only those participants ($\underline{N}$=46) whose pre-

induction sad mood was below the midpoint (75) of the self-report scale and whose mood exceeded this cutoff immediately after the musical induction were included in these analyses.

As previously stated, severity of the induced sad mood was operationalized as the highest mood score recorded in the post-induction period. Duration of the induced mood was defined as the number of intervals it took for mood recordings to return to and stay below the cutoff score of 75/150. Table 6 displays correlations of both severity and duration of induced mood with self-report variables and rumination indices. Of the self-report rumination measures, only RSQ Self-Focus was significantly correlated with both mood outcomes. Full-scale RSQ was also correlated with severity of mood. Contrary to Nolen-Hoeksema's (1993) assertion of the greater predictive value of ruminative process versus content, RRQ Rumination was not significantly correlated with either mood outcome despite its apparent superiority in measuring ruminative process. The picture was very different for indices of actual rumination. Here, both overall rumination and symptom-focus were related to both severity and duration of induced mood. Non-ruminative negative thoughts did not correlate with either outcome measure.

For regression analyses predicting severity of the induced sad mood state, it was deemed necessary to statistically control (at step 1) for pre-induction level of sad mood, since this would be expected to directly influence eventual severity. Table 7 displays a pair of hierarchical multiple regression analyses assessing the predictive value of full RSQ and RRQ rumination scores as well as RSQ

Table 6

Severity and Duration of Induced Dysphoric Mood: Correlations with Self-Report

Variables and Rumination Indices (N=46)

	Peak Mood Severity	Duration of Induced Mood
Time 1 BDI	.40**	.36*
Pre-Induction Sad	.32*	.15
Post-Induction Sad	.86**	.32*
RSQ Rumination	.40**	.27
RSQ Self-Focus	.42**	.30*
RSQ Symptom-Focus	.19	.12
RRQ Rumination	.23	.26
RRQ Reflection	.25	.34*
Full Rumination Index	.39**	.31*
Self-Focus Index	.08	.05
Symptom-Focus Index	.41**	.33*
Non-Ruminative Index	.25	.20

Note. * $p < .05$, two-tailed. ** $p < .01$, two-tailed.

Table 7

Hierarchical Regression Analyses Separately Predicting Severity of Induced Sad Mood from Self–Reported Rumination and from Rumination Subfactors (N=46)

Step	ΔR^2	std β	final β	sr^2
1. Pre-Induction Sad Mood	0.10*	0.32*	0.23	0.05
2. RSQ Rumination	0.11		0.37*	0.10
RRQ Rumination			-0.07	0.00
Total Adjusted R^2 =	0.16			
1. Pre-Induction Sad Mood	0.10*	0.32*	0.21	0.04
2. RSQ Self-Focus	0.12*		0.42*	0.10
RSQ Symptom-Focus			-0.10	0.01
Total Adjusted R^2 =	0.17			

Note.   std β = standardized beta weight for the variable when first entered into the regression; final β = standardized beta weight for the variable in the final regression equation; sr^2 = squared semi-partial correlation with DV, representing proportion of variance uniquely attributable to the variable in the final model

* p< .05.   ** p < .01.   *** p< .001.

subfactor scores with regard to the severity of the induced mood. In step 1 of each analysis it was shown that individual differences in pre-induction sad mood accounted for 10% of variance in the eventual severity of the laboratory-induced mood, F change $(1, 44) = 5.06$, $p < .05$. In the first analysis, the combination of full-scale RSQ and RRQ Rumination contributed an additional 11% of variance in mood severity, F change $(2, 42) = 2.88$, $p = .07$. Again, examination of standardized beta weights indicated that only RSQ Rumination significantly predicted the severity of the induced sad mood t $(45) = 2.27$, $p < .05$, uniquely accounting for 10% of variance in the dependent variable. In the second analysis, RSQ subfactor scores were entered as a block at step 2 after initial control of pre-induction mood, and contributed an additional 12% of variance in mood severity, F change $(2, 42) = 3.33$, $p < .05$. Examination of standardized beta weights in the final model showed that only RSQ Self-Focus was a significant predictor of induced-mood severity, t $(45) = 2.35$, $p < .05$, uniquely contributing 10% of the variance.

In the analyses predicting mood duration from self-reported ruminative style, both post-induction sad mood and the eventual severity of the induced mood could logically be expected to directly influence the time needed for mood to return below baseline. Given the high correlation between these variables ($r = .86$), it was not appropriate to control for both post-induction mood and eventual severity. The decision was made to control post-induction mood in the following

analyses because it was measured at the same time for all participants. Table 8

summarizes the results of this set of analyses. Post-induction mood, entered at

the first step of each analysis, accounted for 10% of variance in the duration of

the induced mood, $\underline{F}$ change $(1, 44) = 4.93$, $\underline{p} < .05$. In the first analysis, the

combination of RRQ and RSQ rumination scores failed to significantly add to the

predictive model, $\underline{F}$ change $(2, 42) = 1.13$, $\underline{ns}$. It should be noted, however, that

RRQ Rumination unexpectedly demonstrated a stronger relationship with mood

duration than did RSQ Rumination, possibly reflecting a specific predictive

relationship between ruminative process and the duration of sad mood episodes.

In the second analysis, RSQ subfactor scores similarly failed to predict mood

duration, $\underline{F}$ change $(2, 42) = 1.26$, $\underline{ns}$. It should be noted that, though the

relationships of RSQ Self-Focus and Symptom-Focus with mood duration were

not statistically significant, they were opposite in direction. It is possible that the

failure of full-scale RSQ Rumination to predict mood duration may have been

due, at least in part, to these opposing relationships cancelling each other out.

Hypothesis 5: Laboratory-Measured Rumination Predicts Severity and Duration

of Induced Dysphoric Mood

A similar set of hierarchical multiple regression analyses was conducted to

assess the prediction of mood severity and duration from occurrent ruminative

thought as measured in the laboratory. In addition to permitting an evaluation of

Response Styles Theory, these analyses assessed the predictive validity of self-

and symptom-focused subtypes of ruminative thought. As in the previous set of

analyses, it was hypothesized not only that overall ruminative thought would

Table 8

Multiple Regression Analyses Separately Predicting Duration of Induced Sad

Mood from Self–Reported Rumination and from Rumination Subfactors (N=46)

Step	ΔR^2	std β	final β	sr^2
1. Post-Induction Sad Mood	0.10*	0.32*	0.25	0.05
2. RSQ Rumination	0.05		0.07	0.00
RRQ Rumination			0.18	0.02
Total Adjusted R^2 =	0.09			
1. Post-Induction Sad Mood	0.10*	0.32*	0.26	0.06
2. RSQ Self-Focus	0.05		0.29	0.05
RSQ Symptom-Focus			-0.15	0.01
Total Adjusted R^2 =	0.09			

Note.   std β = standardized beta weight for the variable when first entered into

the regression; final β = standardized beta weight for the variable in the final

regression equation; sr^2 = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model

* p< .05.   ** p < .01.   *** p< .001.

predict mood severity and duration, but that symptom-focused rumination would be a stronger predictor than self-focus. Further, it was expected that any such predictive relationship would be true only with ruminative thinking, and not with non-ruminative negative thoughts. An examination of the distributions of the study variables for this subsample revealed moderate positive skewness in self-focus, symptom-focus and non-ruminative index ratios. All were successfully corrected with square-root transformation before inclusion in the analysis.

Table 9 summarizes two hierarchical multiple regression analyses predicting mood severity first from overall rumination, and then from the two rumination subtypes. Recall from the two previous analyses that pre-induction sad mood accounted for 10% of variance in eventual mood severity, $\underline{F}$ change (1, 44) = 5.06, $\underline{p}$ < .05. Index ratio of negative, non-ruminative thoughts, entered at step 2, accounted for an additional 11% of variance in episode severity, $\underline{F}$ change (1, 43) = 5.87, $\underline{p}$ < .05. In the first analysis, overall ruminative thought predicted an additional 11% of variance in the severity of the induced mood, $\underline{F}$ change (1, 42) = 6.64, $\underline{p}$ < .05. In the second analysis, the combination of both subtype index ratios predicted 26% of variance beyond pre-induction mood and non-ruminative thoughts, $\underline{F}$ change (2, 41) = 10.23, $\underline{p}$ < .001. Examination of standardized beta weights in the final regression model indicated that of the two rumination subtypes, only symptom-focused rumination was a significant predictor of mood severity, $\underline{t}$ (45) = 4.51, $\underline{p}$ < .001, accounting for the full 26% of variance.

Table 9

Hierarchical Regression Analyses Separately Predicting Severity of Induced Sad

Mood from Index of Overall Rumination and from Rumination Subtype Indices

(N=46)

Step	ΔR^2	std β	final β	sr^2
1. Pre-Induction Sad Mood	0.10*	0.32*	0.35*	0.12
2. Non-Ruminative Index (sqrt)	0.11*	0.33*	0.29*	0.08
3. Full Rumination Index	0.11*		0.33*	0.11
Total Adjusted R^2 =	0.27			
1. Pre-Induction Sad Mood	0.10*	0.32*	0.34**	0.14
2. Non-Ruminative Index (sqrt)	0.11*	0.33*	0.28*	0.08
3. Self-Focus Index (sqrt)	0.26***		-0.04	0.00
Symptom-Focus Index (sqrt)			0.52***	0.26
Total Adjusted R^2 =	0.42			

Note. std β = standardized beta weight for the variable when first entered into

the regression; final β = standardized beta weight for the variable in the final

regression equation; sr^2 = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model

* p< .05.   ** p < .01.   *** p< .001.

With regard to duration of mood episode, as illustrated in Table 10, recall that post-induction sad mood accounted for 10% of variance in duration of the induced mood, $\underline{F}$ change $(1, 44) = 4.93$, $\underline{p} < .05$. Index of negative non-ruminative thoughts did not significantly contribute to prediction when added to the model at step 2, $\underline{F}$ change $(1, 43) = 0.54$, $\underline{ns}$. In the first analysis, the index of overall rumination similarly was found not to predict mood duration, $\underline{F}$ change $(1, 42) = 1.86$, $\underline{ns}$. In the second analysis, simultaneous entry of rumination subtype indices was also not predictive of mood duration, $\underline{F}$ change $(2, 41) = 1.91$, $\underline{ns}$. Examination of standardized beta weights in the final regression model, however, showed a near-significant trend for symptom-focused rumination in predicting duration of the induced sad mood, $\underline{t}$ $(45) = 1.96$, $\underline{p} = .06$, uniquely contributing 8% of variance in mood duration.

Hypothesis 6: Self-Reported Ruminative Style and Actual Rumination Predict Vulnerability to Onset of Dysphoric Mood

One final series of analyses sought to establish whether the risk associated with a ruminative response style could be extended to include vulnerability to the onset of dysphoric mood. The first set of hierarchical logistic regression analyses evaluated the ability of self-reported ruminative response style to predict whether an individual became dysphoric in response to the musical induction. A second set of analyses similarly assessed whether occurrent ruminative response, as measured in the laboratory, was predictive of a dysphoric response to the mood induction. The dependent variable for these

Table 10

<u>Hierarchical Regression Analyses Separately Predicting Duration of Induced Sad Mood from Index of Overall Rumination and from Rumination Subtype Indices (N=46)</u>

Step	$\Delta \underline{R}^2$	std $\underline{\beta}$	final $\underline{\beta}$	$\underline{sr}^2$
1. Post-Induction Sad Mood	0.10*	0.32*	0.20	0.03
2. Non-Ruminative Index (sqrt)	0.01	0.11	0.11	0.01
3. Full Rumination Index	0.04		0.22	0.04
Total Adjusted. $\underline{R}^2$ =	0.09			
1. Post-Induction Sad Mood	0.10*	0.32*	0.10	0.01
2. Non-Ruminative Index (sqrt)	0.01	0.11	0.13	0.01
3. Self-Focus Index (sqrt)	0.08		-0.02	0.00
Symptom-Focus Index (sqrt)			0.33	0.08
Total Adjusted $\underline{R}^2$ =	0.11			

<u>Note.</u>   std $\underline{\beta}$ = standardized beta weight for the variable when first entered into the regression; final $\underline{\beta}$ = standardized beta weight for the variable in the final regression equation; $\underline{sr}^2$ = squared semi-partial correlation with DV, representing proportion of variance uniquely attributable to the variable in the final model

* $\underline{p}$< .05.   ** $\underline{p}$ < .01.   *** $\underline{p}$< .001.

analyses was whether participants' sad mood status exceeded the midpoint (75)

of the analog scale at any time after the mood induction. Since sad mood at the

outset of the experiment would logically influence the ease with which an

individual's mood could be pushed over the threshold by the induction, pre-

induction mood was statistically controlled in these analyses at the first step.

Only those Time 2 participants who began the session below the threshold for

sad mood were included in these analyses (N=89). It should be noted that the

initial set of analyses using questionnaire scores as the predictor is based, in

part, on the assumption that ruminative response began during the musical

induction and in fact was responsible for the outcome of the musical induction

intervention. The second set of analyses predicting induction success from

actual ruminative responses is based on the further assumption that ruminative

response measured post-induction is reflective of rumination taking place during

the 5-minute induction period itself.

Results of these analyses for self-reported rumination and rumination

subfactors can be seen in Table 11. Evaluation of assumptions for logistic

regression revealed that all relevant variables were normally distributed. As

anticipated, pre-induction mood level was predictive of successful mood

induction, χ^2 (1, $\underline{N}$=89) = 9.45, $\underline{p}$ < .01. The combination of RSQ and RRQ

rumination scales, however, did not significantly improve the predictive power of

the model when entered at the second step of the analysis, model improvement

χ^2 (2, $\underline{N}$=89) = 1.69, $\underline{ns}$. The same held true for the self-focus and symptom-

Table 11

Hierarchical Logistic Regression Analyses Separately Predicting Onset of
Induced Sad Mood from Self-Reported Rumination and from Rumination
Subfactors (N=89)

Step		$\underline{B}$	Wald
1.	Pre-Induction Sadness	.03	6.63*
2.	RSQ Rumination	.02	0.94
	RRQ Rumination	.02	0.17
1.	Pre-Induction Sadness	.03	6.67**
2.	RSQ Self-Focus	.01	0.02
	RSQ Symptom-Focus	.07	0.92

Note. df = 1 for all Wald statistics; $\underline{B}$ = regression coefficient in final logistic
regression model

* $\underline{p}$ < .05.   ** $\underline{p}$ < .01.   *** $\underline{p}$ < .001

focus subfactors, model improvement χ^2 (2, $\underline{N}$=89) = 2.08, $\underline{ns}$.

Repeating these analyses using indices of laboratory-measured ruminative thought as the predictor variables (Table 12), however, presented a different picture. Note that all thought index ratios underwent a square-root transformation to correct moderate positive skewness. After entry of pre-induction mood, the index ratio of non-ruminative negative thoughts was again entered to evaluate the relative value of ruminative thinking to overall cognitive negativity, but it did not improve the predictive value of the regression model, model improvement χ^2 (1, $\underline{N}$=89) = 2.58, $\underline{ns}$. Subsequent addition of full rumination index ratio did, however, improve prediction of onset of dysphoric mood, model improvement χ^2 (1, $\underline{N}$=89) = 5.71, $\underline{p}$ < .05. The resultant regression model predicted onset of dysphoric mood in 71.9% of cases. In the second analysis, simultaneous addition of self- and symptom-focused rumination indices to the regression also improved prediction of mood induction, model improvement χ^2 (2, $\underline{N}$=89) = 7.45, $\underline{p}$ < .05; however it should be pointed out that $\underline{B}$ coefficients for the two regression subtype indices only approached significance in the final regression model (both $\underline{p}$ = .09). This model correctly predicted onset of dysphoric mood in 74.2% of cases.

<div align="center">Discussion</div>

Criterion Validity of RSQ Rumination

The primary purpose of Study 1 was to establish whether self-reported

Table 12

Hierarchical Logistic Regression Analyses Separately Predicting Onset of

Induced Sad Mood from Index of Overall Rumination and from Rumination

Subtype Indices (N=89)

Step		$\underline{B}$	Wald
1.	Pre-Induction Mood	0.03	7.22**
2.	Non-Ruminative Index (sqrt)	1.44	1.02
3.	Full Rumination Index (sqrt)	3.19	5.30*
1.	Pre-Induction Mood	0.03	6.54*
2.	Non-Ruminative Index (sqrt)	1.30	0.81
3.	Self Focus Index (sqrt)	2.93	2.93
	Symp Focus Index (sqrt)	2.58	2.86

Note. df = 1 for all Wald statistics; $\underline{B}$ = regression coefficient in final logistic

regression model

* $\underline{p}$ < .05.   ** $\underline{p}$ < .01.   *** $\underline{p}$ < .001

ruminative response style, as measured by RSQ Rumination, in fact predicts the

ruminative thought content when individuals are experiencing sad mood.

Consistent with the main hypotheses, full-scale RSQ Rumination score was

predictive of the proportion of overall ruminative thought content reported during

the induced sad mood. Specifically, the squared semi-partial correlation

coefficients in the final model ($\underline{sr}^2$), which represent the proportion of predicted

variance in the DV with all other IVs partialled out of the DV, showed that RSQ

Rumination uniquely accounted for 20% of variance in occurrent rumination in

the laboratory. After full-scale RSQ Rumination score was added to the

regression model at step 2, the predictive value of Time 1 BDI decreased from

16% ($\Delta\underline{R}^2$) to only 2% (final model $\underline{sr}^2$). The remaining 14% of variance in

occurrent ruminative content was therefore accounted for by variance shared

between RSQ Rumination and Time 1 BDI. This finding concurs with previous

evidence using state versions of the RSQ (Just & Alloy, 1997; Nolen-Hoeksema,

Morrow & Fredrickson, 1993) and information-processing approaches (e.g.,

Siegle, Steinhauer, Carter & Thase, 2000), of the criterion validity of self-reported

ruminative style. The present findings, however, are more compelling because

they demonstrate concordance with actual ruminative response measured in an

open-ended (non-endorsement) manner.

In this, the first investigation of the criterion-related validity of self- and

symptom-focused subtypes of self-reported rumination, the Self-Focus subfactor

of RSQ was found to uniquely predict its counterpart as measured in the context

of an induced sad mood state (5% unique variance plus 6% shared variance with

concurrent BDI score). The results for RSQ Symptom-Focus were less encouraging, however. The combination of RSQ Self- and Symptom-Focus subfactors contributed a total of 15% of variance in symptom-focused rumination in the laboratory; however, only 4% was uniquely attributable to RSQ Symptom-Focus. Another 3% was uniquely related to RSQ Self-Focus, and the remaining 8% was the result of shared variance between the two RSQ subfactors. Thus these findings provided only weak support for criterion-related validity of the Symptom-Focus subfactor of the RSQ measure.

It is also important to note that in all three of these analyses a substantial proportion of variance in laboratory rumination was explained by variance shared between the RSQ and concurrent BDI score. This finding is consistent with previous evidence (Kasch, Klein & Lara, 2001; Nolen-Hoeksema, Parker & Larson, 1994) indicating that RSQ scores are influenced by concurrent mood state. These results suggest that concordance between self-report and occurrent ruminative response is determined in part by the degree of similarity between mood at the time of self-report and mood at the time actual rumination is measured.

Accuracy of Self-Reported Ruminative Style

It was also hypothesized that a trait-like tendency to reflect on one's personality, motives and behaviour would improve the accuracy of self-reported ruminative style. Previous research (e.g., Musson & Alloy, 1988) has established that trait-like self-preoccupation increases accuracy of self-report in depressed individuals. There was, in fact, a near-significant moderator effect for RRQ

Reflection, suggesting that trait-like self-reflection contributes to the accuracy of self-reported response style. It should not come as a surprise that this moderator effect was small, given that a variety of additional cognitive factors such as memory and demand characteristics have been implicated in the accuracy of self-report (e.g., Glass & Arnkoff, 1982; 1997). Previous research (e.g., Evans & Hollon, 1988; Kasch, Klein & Lara, 2001) has also indicated that mood at the time of self-report influences self-report accuracy when this mood differs from the mood state being investigated. The same may have been true in the present study, however this could not be assessed since the BDI was not re-administered at Time 2.

Predictive Validity of Self-Reported Ruminative Style

The final set of hypotheses in the study related to the predictive validity of both self-reported and actual ruminative response, in terms of their relationship with mood outcomes. The only previous study to relate these specific RSQ subfactors to mood outcomes (Bagby & Parker, 2001) failed to find any correlation in a clinically-depressed sample. In the present analyses, full-scale RSQ Rumination and RSQ Self-Focus were each found to be prospectively predictive of the severity of the induced sad mood, when baseline mood was controlled. Contrary to hypothesis, RSQ Symptom-Focus failed to predict any of the three mood outcomes. At first glance, this finding appears to contradict Nolen-Hoeksema's (1993) emphasis on the causal primacy of focus on symptoms; however, a later analysis showed that laboratory-measured focus on symptoms, and not self, was predictive of mood severity, in support of Response

Styles Theory. Given that RSQ Symptom-Focus predicted a relatively small proportion of occurent symptom-focused thoughts in the laboratory, it is perhaps not surprising that the chain of prediction fell short in connecting RSQ Symptom-Focus with mood severity. In sum, then, these findings do provide support for the theory in that ruminative response, and in particular symptom-focused rumination, was in fact predictive of at least the severity of the induced mood episode.

Rumination Versus Negativity of Thought

As stated in the introduction, to truly establish the causal importance of ruminative thinking style on mood outcomes, it must be demonstrated that such relationships are due to the ruminative content and process of these thoughts, and not simply to their negative valence. If the predictive value of ruminative thoughts were a function only of their negative valence, no additional predictive contribution would be expected when entered after non-ruminative negative thoughts. Though not all of the relationships were statistically significant, in each analysis ruminative thoughts and non-ruminative thoughts contributed separate variance in the prediction of mood outcomes, and in one case the unique contribution by ruminative thoughts was much larger. This demonstrates that although general negativity of thought is itself related to mood outcome, the ruminative content of negative thoughts adds to their predictive value. Unfortunately the cross-sectional nature of these relationships prevents assessment of the unique causal value of ruminative thoughts.

Performance of RRQ Rumination

The Rumination scale of the Rumination-Reflection Questionnaire (RRQ), included as a point of comparison in the validity analyses, showed initial promise in the present study. Zero-order correlations with RSQ Rumination and its subfactors were in the moderate range, and its correlation with concurrent BDI was on par with or greater than those for the RSQ scores. RRQ Rumination was also modestly correlated with all three ruminative thought ratios. Once RSQ Rumination and concurrent mood were statistically controlled, however, RRQ Rumination demonstrated consistently poor predictive effects. RRQ Rumination, it should be noted again, is not intended as a measure of ruminative response to sad mood, but of a general day-to-day tendency toward ruminative thinking. As such, strong predictive relationships were not expected; however, given its significant correlation with RSQ Rumination, BDI scores and ruminative thought index ratios, and its apparent suitability for capturing ruminative process, the scale's almost complete lack of predictive value was surprising. The results of the hierarchical regression analyses effectively demonstrated that the aforementioned correlations between RRQ Rumination and thought index ratios was entirely attributable to shared variance with BDI and/or RSQ Rumination. There are, however, at least three additional factors that contributed to the relatively poor showing of RRQ Rumination in the present study. First, the definitions of rumination used to design the thought coding system were derived specifically from Nolen-Hoeksema's (1991) conceptualization of ruminative response style and items from the RSQ Rumination scale itself, potentially

biasing this relationship. Second, RRQ Rumination is distinctive in that the

wording of scale items presents ruminative thinking as inherently undesirable,

whereas the RSQ leaves this judgement up to the respondent. An individual who

sees rumination as an effective and desirable response to sad mood may be less

likely to endorse such negatively-framed items despite frequent engagement in

ruminative thinking. Finally, given the possibility that RRQ Rumination is better

suited to capturing ruminative process, it is possible that its predictive value

would have been more apparent had an index measure of occurent ruminative

process been included in the design. Nonetheless, future designs of self-report

ruminative response measures may benefit from item design similar to that found

in RRQ Rumination in order to more effectively capture the ruminative process

component.

Summary

The main purpose of this study was to evaluate the criterion-related and

predictive validity of full scale RSQ Rumination and its subfactors. The results

have provided compelling, though preliminary, evidence of concordance between

self-reported ruminative response style and occurent ruminative thought in a

subclinical student sample. In terms of the predictive validity of the RSQ

instrument, the present findings demonstrated that full-scale RSQ Rumination

and RSQ Self-Focus scores are predictive of the severity of a future dysphoric

mood episode. RSQ Symptom-Focus did not show predictive validity, and none

of the RSQ scores predicted onset or duration of dysphoric mood.

A secondary aim of this study was to assess the construct validity of the

ruminative response itself, accomplished by examining the relationship between occurrent rumination during the mood episode and the onset, severity and duration of that episode. Full-scale RSQ Rumination was predictive of the severity and onset, but not the duration, of the induced sad mood. Symptom-focused ruminative thoughts were predictive of severity and duration (near-significant), but not onset of the dysphoric mood. There was no support for the construct validity of self-focused ruminative thought. This pattern of findings is, however, compatible with Nolen-Hoeksema's (1991) assertion of the relative importance of symptom-focus in the ruminative response.

A key design limitation of the laboratory component of Study 1 was that while it captured ruminative content, it was very limited in its ability to assess occurrent ruminative process and its relationship to what is reported on the RSQ measure. Unfortunately RRQ Rumination, which may be a better measure of ruminative process, was unable to predict mood outcomes once RSQ Rumination and concurrent mood were statistically controlled. Ruminative process, however, is theoretically considered to be even more important than content in determining the causal impact of ruminative response (Ingram, Miranda & Segal, 1998; Nolen-Hoeksema, 1991). This study was also limited to assessing the criterion-related validity of the RSQ at the sub-clinical level. Increasing research attention in recent years, however, has focused on ruminative response at the level of clinical depression (Lara, Klein & Kasch, 2000; Nolen-Hoeksema, 2000; Schmaling et al., 2002). Study 2 was undertaken to assess whether the relationship between self-reported ruminative style and

actual cognitive response to dysphoric mood generalizes to clinically-depressed states, and extended the investigation to include prediction of both the content and process of rumination.

Study Two

The main purpose of the second study was to assess the criterion-related validity of self-reported rumination in individuals experiencing a major depressive episode. Judges' ratings of both the content and style of thinking evidenced in transcribed interviews conducted with clinically-depressed outpatients were compared with RSQ Rumination scores measured several months earlier at intake assessment. The main hypothesis once again was that self-reported rumination and rumination subtypes would be predictive of ruminative process and relevant ruminative content in the context of the interview. A variety of secondary hypotheses were tested regarding relationships between rumination and cognitive variables such as perceived coping ability. Judgements were also made of participants' opinions of the controllability and desirability of ruminative response. Finally, the construct validity of Response Styles Theory itself was evaluated by assessing the value of occurrent ruminative content and process in the prediction of mood outcomes. The design of this study was adapted from Lyubomirsky and colleagues' (1999) content analysis of 'think-aloud' ruminations.

Method

Participants

For inclusion into this study, participants were required to have received a primary DSM-IV diagnosis of major depressive disorder at intake. A list of

potential participants was compiled from an existing research database by a

research assistant in the Mood Disorders Program of the Health Sciences Centre

in Winnipeg. Each had previously consented to participating in a larger clinical

study and had been assessed and diagnosed by psychiatry department staff

within the previous nine months (range = 1.1 months to 8.4 months, mean = 6.1)

Diagnoses had been based upon a variety of sources, including clinical interview,

interview of a family member and consultation with the referring physician. The

majority of diagnoses (23 of 28) utilized the Structured Clinical Interview for

DSM-IV (SCID; First, Spitzer, Gibbon & Williams, 1995). No data are available

regarding the treatments undertaken by participants during the period between

Time 1 and the clinical interview.

Ninety potential participants were contacted by mail (see Appendix R) by

Dr. Murray Enns, medical director of the Mood Disorders Program. This

procedure was followed in order to maintain the confidentiality of patients until

they had consented to participation in the present study (by return telephone call

to the experimenter). The letter briefly outlined the nature of the study, including

the condition that the experimenter would require access to previously gathered

research data, and explained that participants would be paid an honorarium of

$25.00. Inclusion in the present analyses required current major depressive

episode as measured by self-report questionnaire administered immediately prior

to our interview.

A total of 31 individuals responded to the letter and attended their

scheduled appointments with the experimenter. Three of these no longer met

criteria for major depressive disorder at the time of the study, and though

interviews were conducted with these individuals, they were not included in the

present analyses. The final sample consisted of 7 male and 21 female clinically

depressed outpatients, ranging in age from 23 to 62 (mean = 43.0 years). This

number was considerably smaller than expected, given the large number of

invited participants. Such small sample size limits the power of the analyses to

detect effects. This issue is described in more detail in the General Discussion.

Materials

Time 1 questionnaire package. As part of the Mood Disorders research

program all participants had previously completed a large booklet of

questionnaires, including the BDI and RSQ Rumination. The RSQ questionnaire

used in this research program was the 21-item version used by Bagby and

colleagues (Bagby & Parker, 2001; Bagby, Parker & Cox, 1999). This

questionnaire differs from the 22-item original only in the omission of item 13

(Think "Why do I have problems other people don't have?") (see Appendix A).

Internal consistency for the full RSQ in the present study was very strong (alpha

= .91), similar to previous findings with clinical samples (e.g., Kuehner & Weber,

1999). Internal consistency of Time 1 BDI was also excellent (alpha = .89)

Assessment of current diagnostic status at time 2. The Inventory to

Diagnose Depression (IDD; Zimmerman, Coryell, Corenthal & Wilson, 1986) was

administered immediately prior to the interview to confirm presence of a clinical

depression episode (see Appendix S for sample items). The IDD is a self-report

measure designed for this purpose, composed of 22 items assessing symptoms

of depression and an additional 16 items assessing impact of depression on

psychosocial functioning and quality of life. An SPSS syntax program (see

Appendix T) was designed to score IDD data and determine whether DSM-IV

diagnostic criteria were currently met. Psychometric analyses by the scale's

authors (Zimmerman et al., 1986) demonstrated that summary scores on the

symptom portion of the IDD correlated strongly with the Hamilton Rating Scale

for Depression (r = .80) and the BDI (r = .87). The authors found that sensitivity

and specificity of diagnosis compared with the Schedule for Affective Disorders

and Schizophrenia (SADS; Endicott & Spitzer, 1978) were also quite favourable

(86.1% and 79.2% respectively).

The Beck Depression Inventory was also re-administered at Time 2 as a

measure of the severity of the present depressive episode. Internal consistency

of Time 2 BDI scores was excellent (alpha = .92).

Clinical interview. The audio-recorded portion of the interview session

began with a series of general questions exploring the individual's history of

depression, the impact of depression on their functioning, and their perceived

ability to control or prevent depressed moods. An open-ended question then

allowed participants to describe report their typical response to the early stages

of sad or lonely episodes. When needed, a more specific prompt suggested a

variety of possible responses, including taking action to change the difficult

situation, spending time thinking about ways to change the situation or to

understand why they are feeling sad or doing something to take their minds away

from the problem.

The second section of the interview more specifically evaluated participants' tendency toward ruminative thinking. Clinical experience and a recent empirical finding (Thomsen, Mehlsen, Christensen & Zachariae, 2003) suggest that depressed individuals tend to have difficulty falling asleep at night because of "racing thoughts". As a convenient means of probing for a tendency to experience depressive ruminations, participants were asked about the presence of sleep difficulties and were asked in an open-ended manner for their explanation for these difficulties. If no sleep impairment was reported, a follow-up question asked participants if they found there were other times during their current depressed episode in which they found themselves preoccupied with thoughts, mental images or memories. In each case where ruminative thinking was acknowledged, participants were asked whether these thoughts tended to be repetitive in nature, whether the thoughts were intentional versus intrusive and whether they found such thinking styles were helpful or detrimental to their mood state. The complete interview script can be found in Appendix U.

After all interviews had been completed, they were transcribed for coding purposes. A sample interview transcript is provided in Appendix V. The coding procedure utilized in this study was based on the scheme developed by Lyubomirsky and colleagues (1999). A team of six honours level psychology students served, along with the experimenter, as coders for the interview transcripts. A coding manual (see Appendix W) was adapted from the original manual developed for the above study (S. Lyubomirsky, personal

communication, 2000). Four sections asked judges to assess (1) the general

qualities of the interviewee's presentation (e.g., affective valence, depressed

mood, mood optimism, thought organization); (2) interviewees' perceived control

over moods and life events; (3) presence and degree of ruminative coping; and

(4) controllability and desirability of rumination.

Two additional questions addressed process issues related to rumination.

Because Nolen-Hoeksema has not specifically defined ruminative process as it

applies to Response Styles Theory, it was necessary to create a

conceptualization of ruminative process for measurement purposes. In addition

to repetitive patterns in cognition, depressed patients often report that their

negative thinking tends to branch off from the original distressing topic to a

variety of other negative, but only marginally related, issues. In therapy,

depressive cognition (as reflected in speech) often appears tangential and

somewhat disorganized. This observation gave rise to the concept of 'spreading

activation' of negative affective and schematic structures described by Ingram,

Miranda and Segal (1998). Thus, the coding system specifically asked judges to

assess both repetitiveness and degree of tangential and disorganized structure

as evidenced in interview responses.

Coders received detailed instruction on the Response Styles Theory, and

were provided with the same printed background materials used by judges in

Study 1. Over the course of three training sessions, judges practiced with the

coding manual using three transcripts collected in interviews with participants

who no longer met criteria for a major depressive episode. These were not used

in the statistical analyses. Unlike the procedure used in Study 1, all judges

coded all 28 of the usable interview transcripts. Prior to reliability evaluation or

statistical analysis, judges were asked their opinions of using categorical coding

(e.g., Item8b) versus 8-point Likert-scale coding (e.g., Item 8) for items where

both approaches were used. The judges unanimously felt that the Likert items

allowed them to more easily and accurately capture their impressions of each

criterion. For this reason, only the Likert items were coded and used in the

statistical analyses. Likert scales were anchored from 0 = "not at all" to 7 =

"extremely" or "very frequently".

Scores used in the analyses for each coding item represent the average of

the seven judges' scores for that item. This approach was taken, in contrast with

the Study 1 procedure of using the experimenter's own codes in the data

analyses, because as the interviewer the experimenter had additional knowledge

of participants' physical and non-verbal presentation not available to the coders

from the transcripts. This information might potentially have biased the

experimenter's coding in ways that could have confounded study results.

Intraclass correlations coefficients (ICC) indicating the inter-rater reliability for

each interview item are displayed in Table 13. ICCs for most items were very

good, on par with those of Lyubomirsky and colleagues (1999). None was

judged too low for inclusion in the present analyses.

Procedure

Participants were seen one at a time in a private office within the

Psychiatry department. At the outset of the interview session, all participants

Table 13

Intraclass Correlation Coefficients (ICC) and Descriptive Statistics for Major

Interview Coding Items (N=28)

Item		ICC*	M	(SD)
1.	Negative tone?	.88	5.21	(1.03)
3.	How depressed?	.90	5.03	(1.48)
5.	Organized / Clear?	.86	3.71	(1.78)
6.	Managing mood?	.84	2.64	(1.50)
7.	Cope with problems?	.87	2.31	(1.36)
8.	Extent of rumination?	.75	3.54	(2.08)
9b.	Symptom rumination?	.65	4.82	(1.42)
9c.	Self-focus rumination?	.76	4.43	(1.32)
10.	Control of ruminations?	.91	2.39	(2.71)
11.	Is rumination helpful?	.83	2.04	(2.81)
12.	Ruminative process?	.76	5.43	(1.91)

Note. * all p < .001

were asked to sign a consent form outlining the nature and purpose of the study,

their rights as a research participant and giving permission to use diagnostic and

questionnaire data from the original Mood Disorders research program (see

Appendix X). Participants then completed a small questionnaire packet

comprised of the BDI and IDD to assess both presence and severity of a current

major depressive episode.

Interviews were conducted following the pre-arranged script, and were

completed regardless of questionnaire screening results. Each patient interview

began with a brief period of conversation aimed at acclimatizing participants,

explaining the study, answering any questions and developing a degree of

comfort and rapport. A brief disclaimer clarified the non-therapeutic nature of the

interview and explained the need for audio recording and was followed by the

clinical interview itself. At the end of the interview, the true purpose of the study

was explained in the form of a brief letter (see Appendix Y) provided to each

participant in a sealed envelope accompanied by the cash honorarium. This

letter also explained that participants could call the experimenter to withdraw

their data from the study if for any reason they wished to do so, with no impact on

current or future treatment at the Mood Disorders Clinic. No such requests were

made.

<div align="center">Results</div>

All assumptions for multiple regression analysis were met and no

univariate outliers were found (all $z < 3.00$). Tests of the Mahalanobis distance

for residuals ($p < .001$) revealed no multivariate outliers.

Time 2 Interview Coding Items: Descriptive Statistics

Table 13 displays the descriptive statistics for each interview coding item used in the present analyses. Mean scores indicated that coders were able to detect a high degree of negativity and depressed mood among interviewees, as well as poor perceived ability to cope with problems and manage moods. Variables related to the tendency toward ruminative content were somewhat lower than would be expected if ruminative style is seen as a vulnerability factor for depressive episodes, near the middle of the scoring range. It appeared that there was more evidence of ruminative process among the interviews, however. Also, contrary to Nolen-Hoeksema's (1993) argument that rumination is seen by the individual as both intentional and desirable, scores for these items were very much at the lower end of the scale for these clinically depressed patients.

Factor Structure of the RSQ Rumination Scale

As in Study 1, in order to increase comparability of RSQ subfactor results to previous findings, the intention was to apply the pre-established factor structure of Bagby and Parker (2001) to the present data. Unlike Study 1, however, the sample size in this study was too small to permit exploratory factor analysis. The decision was nonetheless made to create RSQ subfactors using the pre-established factor structure reported by Bagby and Parker (2001), again to facilitate comparison to previous findings. Cronbach's Alpha internal consistency coefficients for Self- and Symptom-Focus subscales in the present sample were .83 and .85, respectively. The 17 items that loaded on the two factors, plus four non-loading items, made up the 21-item version of the RSQ that

was administered to the clinical participants as part of the Mood Disorders

Research Program. Item distributions for the two subscales are indicated in

Appendix A.

Descriptive Statistics and Correlations Among Self-Report Variables

Table 14 displays Pearson correlations among Time 1 and Time 2

questionnaire variables. RSQ subfactor scores in the present study were similar

in magnitude to those previously reported for a clinically-depressed sample

(Bagby et al., 1999). Mean-item score for the full RSQ in the present sample

(2.75) is nearly identical to previous findings (e.g., Kuehner & Weber, 1999) in

treatment-seeking clinically-depressed outpatients. The correlation between the

RSQ subfactor scores was stronger in the present sample (r = .61) than

previously reported (e.g., Bagby & Parker, 2001, r = .39) but very similar to that

found in Study 1. Correlations between RSQ and concurrent BDI scores were on

par with previous reports (e.g., Cox, Enns & Taylor, 2001). BDI score was more

strongly correlated with RSQ Symptom-Focus than with RSQ Self-Focus, also

consistent with Cox and colleagues (2001).

Prediction of Time 2 Mood From RSQ Rumination and Subfactor Scores

Several studies have examined the relationship between self-reported

ruminative style and episode course among clinically-depressed individuals

(Bagby et al., 1999; Lara, Klein & Kasch, 2000; Kuehner & Weber, 1999; Nolen-

Hoeksema, 2000). Only one study, however (Nolen-Hoeksema, 2000), has found

that RSQ Rumination measured in clinically-depressed individuals was predictive

of the severity of depressed mood at follow-up when initial severity of mood was

Table 14

Descriptive Statistics and Pearson Correlations for Time 1 and Time 2

Questionnaire Variables (N=28)

	M	(SD)	2	3	4	5
1. T1 BDI	26.91	(7.70)	.33	.47*	.44*	.50**
2. T2 BDI	26.28	(11.69)		.24	.22	.25
3. T1 RSQ-Rum	57.82	(11.86)			.90**	.87**
4. T1 RSQ (self)	23.96	(5.65)				.61**
5. T1 RSQ (symp)	23.96	(5.32)				

Note. T1 = Time 1; T2 = Time 2; BDI = Beck Depression Inventory;

RSQ-Rum = Response Styles Questionnaire (Rumination Scale); RSQ (self) =

self-focus subfactor; RSQ (symp) = symptom-focus subfactor

* p < .05, two-tailed. ** p < .01, two-tailed.

controlled. To compare the predictive validity of self-reported ruminative style to these previous findings, two hierarchical regression analyses were performed, predicting Time 2 BDI scores from full RSQ Rumination, and then from Self- and Symptom-Focus subfactor scores, controlling for initial BDI scores at step 1 of each analysis. Time 1 BDI score contributed 11% of variance in follow-up BDI scores, though this prediction only approached significance, F change $(1, 26) = 3.21$, $p = .08$. Consistent with most previous findings, RSQ Rumination, was not predictive of Time 2 depressed mood, F change $(1, 25) = 0.26$, ns. Similarly, the combination of RSQ Rumination subfactor scores in the second analysis was also not predictive of Time 2 depressed mood, F change $(2, 24) = 0.15$, ns.

Correlations Between Questionnaire and Interview Rating Variables

Table 15 illustrates Pearson correlations between the various Time 1 and Time 2 questionnaire variables and mean item scores for interview dimensions. As hypothesized, RSQ Rumination was significantly correlated with overall extent of interview rumination, but also similarly correlated with self-focused rumination. The two RSQ subfactors were most strongly correlated with their interview counterparts. Of additional interest in the study was the relationship between RSQ scores and evidence of ruminative process (i.e., repetitiveness, tangentiality) as well as participants' opinions of the controllability and desirability of ruminative response. There were surprisingly few significant correlations, however, between self-reported rumination and these interview variables. In

Table 15

Correlations Between Questionnaire and Interview Coding Variables (N=28)

	T1 BDI	T2 BDI	RSQ-Rum	RSQ(self)	RSQ(symp)
Negative tone?	.14	.67**	.09	.13	.13
How depressed?	.10	.69**	.09	.05	.10
Organized / Clear?	-.14	-.05	-.30	-.13	-.38*
Managing mood?	.08	-.16	.45*	.40*	.32
Cope with problems?	-.06	-.69**	-.01	.00	.00
Extent of Rumination?	.33	.55**	.46*	.48*	.33
Self-Focus Rumination?	.35	.34	.36	.43*	.21
Symptom Rumination?	.28	.31	.51**	.41*	.55**
Control of Ruminations?	-.23	-.38*	-.29	-.39*	-.12
Is Rumination Helpful?	-.27	-.46*	-.23	-.37	-.08
Ruminative Process?	-.28	.12	-.27	-.16	-.33

Note: T1 = Time 1; T2 = Time 2; BDI = Beck Depression Inventory; RSQ-Rum =
Response Styles Questionnaire (Rumination Scale); RSQ (self) = self-focus
subscale; RSQ (symp) = symptom-focus subscale.

* $p < .05$, two-tailed. ** $p < .01$, two-tailed.

terms of ruminative process variables, only symptom-focused rumination was related to judges' impressions of a lack of clarity and organization in thinking. None of the self-report scores were related to repetitive process. Self-focused rumination was related to less perceived control over ruminations and was marginally related to lower perceived benefit of rumination ($\underline{p}$ = .05); however, RSQ Rumination and the self-focus subfactor were related to greater perceived control over depressed mood.

Hypothesis 1: Self-Reported Ruminative Response Style Predicts Judges' Impressionistic Ratings of Overall Ruminative Content in Clinical Interview

The main hypotheses for the clinical interview study again related to the criterion-related validity of RSQ Rumination and its subfactors. It was hypothesized that RSQ Rumination would predict judges' ratings of ruminative content and process in interview transcripts. To assess these hypotheses, hierarchical multiple regression analyses were conducted as in Study 1. Concurrent mood effects on Time 1 questionnaire responses were again statistically controlled by entering Time 1 BDI score at the first step of each regression analysis. Due to the large number of analyses that follow, only those analyses that yielded significant or near-significant findings are summarized in table form. All others are described only in text. Table 16 presents a hierarchical multiple regression analysis evaluating prediction of overall ruminative content in the interview (Item 8). Time 1 depressed mood contributed 11% of variance in interview rumination, though this contribution only approached significance, $\underline{F}$ change (1, 26) = 3.25, $\underline{p}$ = .08. At the second step, full-scale RSQ was shown to

Table 16

Hierarchical Multiple Regression Analysis Predicting Overall Ruminative Content

in Clinical Interview from Full-Scale RSQ Rumination (N=28)

Step	$\Delta \underline{R}^2$	std $\underline{\beta}$	final $\underline{\beta}$	$\underline{sr}^2$
1. Time 1 BDI	0.11	0.33	0.15	0.02
2. RSQ Rumination	0.12		0.39	0.12
Total Adjusted. $\underline{R}^2$ =	0.17			

Note. std $\underline{\beta}$ = standardized beta weight for the variable when first entered into the

regression; final $\underline{\beta}$ = standardized beta weight for the variable in the final

regression equation; $\underline{sr}^2$ = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model

* $\underline{p}$< .05.   ** $\underline{p}$ < .01.   *** $\underline{p}$< .001.

uniquely contribute an additional 12% of variance in interview rumination, though this contribution was also only marginally significant, F change (1, 25) = 3.87, p = .06.

Hypothesis 2: Self- and Symptom-Focus Subfactors of RSQ Rumination are Predictive of Relevant Subtypes of Ruminative Content in the Clinical Interview

As in Study 1, it was predicted that self-reported RSQ Self- and Symptom-Focus subfactors would be predictive of judges' perceptions of these same tendencies in the course of the clinical interview. A hierarchical multiple regression analysis predicting self-focused content (Item 9c) from RSQ subfactor scores is displayed in Table 17. Time 1 BDI score contributed 12% of variance in self-focused ruminative content in the interview, though this effect only approached significance, F change (1, 26) = 3.59, p = .07. RSQ Self- and Symptom-Focus subfactors entered simultaneously at step 2 did not significantly add to prediction of self-focused rumination, F change (2, 24) = 1.67, ns. Beta weights in the final model, however, indicate that RSQ Self-Focus was a marginally-significant predictor, t (27) = 2.00, p = .06, and uniquely contributed 11% of variance in interview self-focus.

Table 18 displays a similar regression analysis predicting symptom-focused interview rumination (Item 9b). Once again, depressed mood at the time of self-report was not predictive, F change (1, 26) = 2.28, ns. Simultaneous entry of RSQ subfactor scores at step 2 contributed 23% of variance in symptom-focused interview content, F change (2, 24) = 3.92, p < .05. Final-model beta weights indicate that only RSQ Symptom-Focus was a significant predictor of its

Table 17

Hierarchical Multiple Regression Analysis Predicting Self-Focused Ruminative

Content in Clinical Interview from RSQ Rumination Subfactors (N=28)

Step	ΔR^2	std β	final β	sr^2
1. Time 1 BDI	0.12	0.35	0.25	0.04
2. RSQ Self-Focus	0.11		0.42	0.11
RSQ Symptom-Focus			-0.17	0.02
Total Adjusted R^2 =	0.13			

Note. std β = standardized beta weight for the variable when first entered into the

regression; final β = standardized beta weight for the variable in the final

regression equation; sr^2 = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model

* $p < .05$.   ** $p < .01$.   *** $p < .001$.

Table 18

Hierarchical Multiple Regression Analysis Predicting Symptom-Focused

Ruminative Content in Clinical Interview from RSQ Rumination Subfactors

(N=28)

Step	ΔR^2	std β	final β	sr^2
1. Time 1 BDI	0.08	0.28	-0.01	0.00
2. RSQ Self-Focus	0.23*		0.12	0.01
RSQ Symptom-Focus			0.47*	0.11
Total Adjusted R^2 =	0.22			

Note. std β = standardized beta weight for the variable when first entered into the

regression; final β = standardized beta weight for the variable in the final

regression equation; sr^2 = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model

* p< .05.   ** p < .01.   *** p< .001.

interview counterpart, t (27) = 2.10, p < .05, uniquely contributing 11% of

variance in interview symptom-focus. An additional 11% was the result of shared

variance with RSQ Self-Focus.

Hypothesis 3: Self-Report Rumination Scores are Predictive of Judges' Ratings

of General Ruminative Process in the Clinical Interview

The RSQ questionnaire does not expressly assess ruminative process

during sad mood episodes; however, it is both theoretically and empirically

important to discover whether scores on the questionnaire are predictive of a

ruminative style of cognitive process. It was hypothesized, in accordance with

Response Styles Theory, that higher RSQ scores would predict repetitive,

disorganized and tangential patterns in respondents' thinking, again controlling

for effects of concurrent depressed mood on self-report. The first set of

analyses, summarized in Table 19, measured prediction of organization and

clarity of thought (Item 5: "Extent that thinking seemed organized and clear as

opposed to rambling, tangential, off topic") from full-scale RSQ and RSQ

subfactors. The regression model for full-scale RSQ was non-significant, F model

(2, 25) = 1.27, ns. The model predicting organization of thought from RSQ

subfactors was similarly non-significant, F model (3, 24) = 1.58, ns. Examination

of standardized beta weights in the latter model, however, indicated a marginally-

significant inverse relationship with RSQ Symptom-Focus, t (27) = 2.00, p = .06,

such that a stronger reported symptom-focusing style predicted less organization

and clarity of thought in the interview (unique contribution = 14% of variance).

Table 19

Hierarchical Multiple Regression Analyses Separately Predicting Judges' Ratings

of Organization and Clarity of Thought in Clinical Interviews, from RSQ

Rumination and from its Subfactors (N=28)

Step	ΔR^2	std β	final β	sr^2
1. Time 1 BDI	0.02	-0.14	0.00	0.00
2. RSQ Rumination	0.07		-0.31	0.07
Total Adjusted R^2 =	0.02			
1. Time 1 BDI	0.02	-0.14	0.04	0.00
2. RSQ Self-Focus	0.15		0.15	0.01
RSQ Symptom-Focus			-0.50	0.14
Total Adjusted R^2 =	0.06			

Note. std β = standardized beta weight for the variable when first entered into the

regression; final β = standardized beta weight for the variable in the final

regression equation; sr^2 = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model

* $p < .05$.   ** $p < .01$.   *** $p < .001$.

A similar series of analyses was conducted on judges' impressions of repetitive thinking (Item 12: "To what extent did the person demonstrate a tendency to think about the same things repeatedly") as the dependent variable. The regression using full-scale RSQ score, controlling for concurrent mood, was non-significant, F model (2, 25) = 1.43, ns. RSQ subfactors were similarly non-predictive of repetitive thinking in the interview, F model (3, 24) = 1.23, ns.

Hypothesis 4: Ruminative Response is Intentional and Perceived as Helpful in Improving Depressed Moods

Response Styles Theory posits that rumination is an intentional, though misguided effort to gain the insight and understanding needed to break out of a sad mood state (Nolen-Hoeksema, 1991). Papageorgiou and Wells (2001) have found that among several positive beliefs about the value of rumination is the sense that it gives the individual greater control over his or her moods/problems. It was therefore hypothesized that higher RSQ scores would be predictive of a tendency to report higher perceived control over depressed mood (Item 6), over life stressors (Item 7), over ruminative thinking (Item 10) and a greater perceived benefit of ruminative response (Item 11).

Table 20 presents a pair of hierarchical multiple regression analyses predicting judges' ratings of perceived control over sad or depressed mood (Item 6), from full RSQ and then from RSQ subfactor scores. At step 1 of each analysis, Time 1 concurrent depressed mood was not a significant predictor, F change (1, 26) = 0.17, ns. In the first analysis, full-scale RSQ accounted for 22%

Table 20

Hierarchical Multiple Regression Analyses Separately Predicting Judges' Ratings of Perceived Control Over Depressed Mood, from RSQ Rumination and from its Subfactors (N=28)

Step	$\Delta \underline{R}^2$	std $\underline{\beta}$	final $\underline{\beta}$	$\underline{sr}^2$
1. Time 1 BDI	0.01	0.08	-0.17	0.02
2. RSQ Rumination	0.22*		0.53*	0.22
Total Adjusted $\underline{R}^2$ =	0.16			
1. Time 1 BDI	0.01	0.08	-0.17	0.02
2. RSQ Self-Focus	0.19		0.37	0.08
RSQ Symptom-Focus			0.18	0.02
Total Adjusted $\underline{R}^2$ =	0.09			

Note. std $\underline{\beta}$ = standardized beta weight for the variable when first entered into the regression; final $\underline{\beta}$ = standardized beta weight for the variable in the final regression equation; $\underline{sr}^2$ = squared semi-partial correlation with DV, representing proportion of variance uniquely attributable to the variable in the final model

* $\underline{p}$< .05.   ** $\underline{p}$ < .01.   *** $\underline{p}$< .001.

of variance in judges' impressions of perceived control over moods, F change $(1, 25) = 7.10$, $p < .05$. In the follow-up analysis, the combined RSQ subfactors showed only a near-significant predictive trend, F change $(2, 25) = 2.57$, $p = .08$. Neither variable, however, was a significant predictor in the final model.

Table 21 summarizes two regression analyses predicting judges' ratings of perceived control over ruminations (Item 10), from full RSQ and from RSQ subfactor scores, controlling for depressed mood at the time of self-report. The first analysis, evaluating full-scale RSQ as a predictor, was non-significant, F model $(2, 25) = 1.35$, ns. The follow-up analysis, with the combined RSQ sub-factors entered as predictors at step 2, was also non-significant, F model $(3, 24) = 1.81$, ns. The inverse beta weight for RSQ Self-Focus in this model, however, was marginally significant, t $(27) = 1.95$, $p = .06$, indicating that a stronger self-reported tendency toward self-focused rumination is predictive of less perceived control over ruminations (unique contribution to variance = 13%).

Table 22 presents a set of regression analyses predicting perceived benefit of ruminative thinking (Item 11). The first analysis, with full-scale RSQ as the predictor, failed to attain significance, F model $(2, 25) = 1.20$, ns. Similarly, the regression model for RSQ sub-factors was non-significant, F model $(3, 24) = 2.08$, ns. Once again, however, the inverse beta weight for RSQ Self-Focus in the final model was marginally significant, t $(27) = 1.97$, $p = .06$, suggesting that higher reported self-focusing style is predictive of less perceived benefit of rumination (unique contribution = 13% of variance).

Table 21

Hierarchical Multiple Regression Analyses Separately Predicting Judges' Ratings of Perceived Control Over Ruminations, from RSQ Rumination and from its Subfactors (N=28)

Step	ΔR^2	std β	final β	sr^2
1. Time 1 BDI	0.05	-0.23	-0.12	0.01
2. RSQ Rumination	0.04		-0.24	0.04
Total Adjusted R^2 =	0.03			
1. Time 1 BDI	0.05	-0.23	-0.14	0.01
2. RSQ Self-Focus	0.13		-0.46	0.13
RSQ Symptom-Focus			0.23	0.03
Total Adjusted R^2 =	0.08			

Note. std β = standardized beta weight for the variable when first entered into the regression; final β = standardized beta weight for the variable in the final regression equation; sr^2 = squared semi-partial correlation with DV, representing proportion of variance uniquely attributable to the variable in the final model

* $p < .05$.   ** $p < .01$.   *** $p < .001$.

Table 22

<u>Multiple Regression Analyses Separately Predicting Judges' Ratings of</u>

<u>Perceived Benefit of Rumination, from RSQ Rumination and from its Subfactors</u>

<u>(N=28)</u>

Step	$\Delta \underline{R}^2$	std $\underline{\beta}$	final $\underline{\beta}$	$\underline{sr}^2$
1. Time 1 BDI	0.07	-0.27	-0.21	0.03
2. RSQ Rumination	0.01		-0.14	0.01
Total Adjusted $\underline{R}^2$ =	0.02			
1. Time 1 BDI	0.07	-0.27	-0.22	0.03
2. RSQ Self-Focus	0.13		-0.46	0.13
RSQ Symptom-Focus			0.31	0.05
Total Adjusted $\underline{R}^2$ =	0.11			

<u>Note.</u> std $\underline{\beta}$ = standardized beta weight for the variable when first entered into the regression; final $\underline{\beta}$ = standardized beta weight for the variable in the final regression equation; $\underline{sr}^2$ = squared semi-partial correlation with DV, representing proportion of variance uniquely attributable to the variable in the final model

* $\underline{p}$< .05.   ** $\underline{p}$ < .01.   *** $\underline{p}$< .001.

A final series of analyses measured prediction of judges' impressions of perceived ability to deal with life stressors (Item 7). The first model, with RSQ full-scale as the predictor variable and controlling concurrent depressed mood, was non-predictive, F model (2, 25) = 0.08, ns. The second model, with RSQ subfactors as predictors, was similarly non-predictive, F model (3, 24) = 0.05, ns.

Hypothesis 5: Judges' Impressions of Ruminative Content and Process are Predictive of Time 2 Depression Severity

The construct validity of ruminative response was assessed in a series of hierarchical multiple regression analyses predicting Time 2 BDI scores from judges' ratings of ruminative content (Items 8, 9b and 9c) and ruminative process (Items 5 and 12). Note that each of the following analyses is based on the assumption that ruminative content and process evidenced in the clinical interview is representative of those same cognitive tendencies as they occurred during the period since initial completion of study questionnaires. For each of the four analyses that follow, Time 1 BDI was controlled at step 1 and contributed 11% of variance in Time 2 BDI scores, though this effect only approached significance, F change (1, 26) = 3.26, p = .08. In Table 23, the first of two analyses shows that judges' scores for overall ruminative content (Item 8), when entered at step 2 of the regression, contributed an additional 20% to variance in Time 2 depressed mood, F change (1, 25) = 7.38, p < .05. In the second analysis, Self- and Symptom-Focus scores (Items 9c and 9b respectively) were entered simultaneously at step 2, but did not add significantly to prediction, F change (2, 24) = 2.45, ns. Beta weights in the final regression model, however,

Table 23

Multiple Regression Analyses Separately Predicting Time 2 Depression Severity,

from Judges' Ratings of Ruminative Content in Clinical Interviews (N=28)

Step	ΔR^2	std β	final β	sr^2
1. Time 1 BDI	0.11	0.33	0.12	0.01
2. Full Rumination score	0.20*		0.50*	0.20
Total Adjusted R^2 =	0.26			
1. Time 1 BDI	0.11	0.33	0.29	0.08
2. Self-Focus score	0.15		0.31	0.09
Symptom-Focus score			0.19	0.03
Total Adjusted R^2 =	0.17			

Note. std β = standardized beta weight for the variable when first entered into the

regression; final β = standardized beta weight for the variable in the final

regression equation; sr^2 = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model; Full

Rumination score = mean judges' rating for interview item 8; Self-Focus score =

mean judges' rating for interview item 9c; Symptom-Focus score = mean judges'

rating for interview item 9b

* $p< .05$.   ** $p < .01$.   *** $p< .001$.

indicated that Self-Focus content score was a marginally significant predictor of

Time 2 BDI, $\underline{t}$ (27) = 1.76, $\underline{p}$ =.09, and uniquely contributed 9% of variance in the

dependent variable.

Table 24 similarly summarizes two regression analyses predicting Time 2

BDI scores from the two ruminative process variables, again controlling for initial

BDI score. In the first analysis, judges' ratings of the organization of interview

thoughts (Item 5) were entered in the regression model at step 2, but did not

contribute significantly to prediction, $\underline{F}$ change (1, 25) = 0.02, $\underline{ns}$. A similar

regression analysis for repetitiveness of thought process (Item 12) also showed

no significant predictive value when baseline depressed mood was controlled, $\underline{F}$

change (1, 25) = 1.25, $\underline{ns}$.

<div align="center">Discussion</div>

Criterion Validity of Self-Reported Ruminative Style

Though neither Response Styles Theory nor the Response Styles

Questionnaire were specifically intended to be applied to clinical depression,

researchers have increasingly investigated the role of the rumination construct in

the onset and course of clinically depressed states (e.g., Lara, Klein & Kasch,

2000; Nolen-Hoeksema, 2000; Schmaling et al., 2002). The primary purpose of

Study 2 was to assess the criterion-related validity of the RSQ and its Self- and

Symptom-Focus subfactors when applied to clinical depression. As

hypothesized, full-scale RSQ scores measured at Time 1 predicted judges'

impressions of ruminative thought content within the context of interviews with

clinically-depressed outpatients. Though the effect was statistically only

Table 24

Multiple Regression Analyses Separately Predicting Time 2 Depression Severity,

from Judges' Ratings of Repetition and Organization of Thought (Ruminative

Process) in Clinical Interviews (N=28)

Step	ΔR^2	std β	final β	sr^2
1. Time 1 BDI	0.11	0.33	0.33	0.11
2. Organization score	0.00		-0.03	0.00
Total Adjusted R^2 =	0.04			
1. Time 1 BDI	0.11	0.33	0.38	0.14
2. Repetitiveness score	0.04		0.21	0.04
Total Adjusted R^2 =	0.09			

Note. std β = standardized beta weight for the variable when first entered into the

regression; final β = standardized beta weight for the variable in the final

regression equation; sr^2 = squared semi-partial correlation with DV, representing

proportion of variance uniquely attributable to the variable in the final model;

Organization score = mean judges' rating for interview item 5; Repetitiveness

score = mean judges' rating for interview item 12

* $p < .05$.   ** $p < .01$.   *** $p < .001$.

marginally significant, full-scale RSQ score uniquely predicted 12% of variance in overall ruminative content in the interview, and variance shared with concurrent BDI score contributed an additional 9%. Similar examinations of the criterion validity of RSQ Self- and Symptom-Focus subfactors also found that each subfactor score was uniquely predictive of its counterpart as evidenced within the interview, though prediction in the case of RSQ Self-Focus only approached significance.

Comparing these findings with those of Study 1, the concordance between RSQ Symptom-Focus and occurrent symptom-focused thought content was much stronger within the clinical sample. As suggested by Glass and Arnkoff's (1997) critique of self-report instruments, RSQ respondents should be limited in their ability to report on their thought processes in a mood state that differs from the one they are currently experiencing. This may be especially true in the case of symptom-related thoughts. Accuracy of reporting a self-focusing tendency may be better since such thoughts are reflective of general self-esteem, which to a great extent transcends current mood. RSQ respondents in the clinical study were already depressed at the time of self-report, and so the resultant accuracy in reporting symptom-focused style likely led to a stronger concordance with what was actually seen in the interviews.

Prediction of Ruminative Processes from Self-Report

The second series of analyses extended the examination of RSQ criterion validity to include its relationship to ruminative process as evidenced in the context of an interview with clinically-depressed outpatients. None of the RSQ

scores was able to predict a repetitive pattern in participants' thinking. RSQ

Symptom-Focus alone was predictive of poorer organization and clarity of

thought, however, uniquely contributing 14% of variance in the process variable.

Though this finding is promising, the generally poor prediction of ruminative

process by RSQ scores is important to consider, given theoretical assertions of

the causal primacy of ruminative process (e.g., Nolen-Hoeksema, 1993). There

are a few possible explanations for this outcome. First, the relatively small

degree of observed concordance between RSQ and these indicators of

ruminative process may be attributable to the fact that the RSQ is not adequately

equipped to assess ruminative process, but only the content of ruminative

thought in the domains specified by the author. If this is the case, the implication

is that scores on the RSQ do not adequately capture all (and arguably the most

causally relevant) facets of the rumination construct. It may be more appropriate,

for both theoretical and now empirical reasons, for future researchers to develop

and test measures of rumination that incorporate both content and process, in

order to more fully judge the theoretical value of the ruminative response

construct. Elements of the study design may also have impacted on prediction of

ruminative process. For example, the judges may have failed to accurately

and/or sufficiently detect ruminative process as defined by the coding system,

though strong intraclass correlations on the relevant coding items seem to

dispute this interpretation. Alternatively, it is possible that the coding system

failed to adequately conceptualize ruminative process. Unfortunately, in forming

this conceptualization, there was little theoretical elaboration of ruminative

process from which to draw. Instead, the coding definition was based primarily on a generic usage of the word 'rumination'.

<u>Predictive Value of RSQ Rumination in Clinical Depression</u>

Consistent with most previous studies in which RSQ Rumination has been used to predict follow-up mood severity when administered to clinically-depressed individuals (with the exception of Nolen-Hoeksema, 2000), RSQ Rumination was not predictive of Time 2 depressed mood when baseline mood was statistically controlled. Comparison of findings across these studies is difficult, however, since each used different approaches to measuring diagnostic status and depression severity. These studies also differed in terms of treatment intervention and length of the follow-up period, though most were in the six-month to one-year range, similar to the current sample. Additional research with greater methodological consistency will be required before firm conclusions can be drawn regarding the predictive value of self-reported ruminative style among depressed patients.

Comparison of these clinical sample findings to the predictive validity analyses in Study 1, however, may be illustrative of the pitfalls that may be inherent in the use of the RSQ in a longitudinal clinical study. As discussed previously, any successful treatment intervention undertaken subsequent to RSQ administration is likely to directly impact on the cognitive response to depressed mood. Even if self-report at Time 1 was in fact an accurate assessment of previous and/or current ruminative style, cognitive activity subsequent to measurement may have been quite different as a result of the treatment

intervention. Studies 1 and 2 also differed greatly in terms of the time lag between RSQ administration and measurement of mood outcome. In a previous clinical study with no intervening treatment (Kasch, Klein & Lara, 2001), test-retest reliability correlation for RSQ Rumination at six months was only 0.36, suggesting that Time 1 RSQ in the present clinical study may have only modestly represented actual ruminative response before and during the follow-up interview. Thus it was not entirely surprising to find a lack of predictive validity for Time 1 RSQ scores.

Perceived Controllability and Value of Ruminative Response

Ruminative response style has been described by its author (Nolen-Hoeksema, 1991) as a misguided attempt to correct a sad mood state by finding solutions to one's problems and to gain improved personal insight. Thus the individual sees the ruminative response as desirable, intentional and effective in helping to improve mood states. The third and final purpose of this study was to investigate beliefs about the utility and controllability of ruminative thinking, and to determine whether and how RSQ scores are able to predict these beliefs. Higher RSQ Self-Focus scores were moderately predictive of lower perceptions of both the controllability and benefit of ruminative thinking, whereas the opposite was true of RSQ Symptom-Focus (though this latter relationship was not statistically significant). To the extent that scores on these scales translate into actual ruminative thinking, it appears that ruminative focus on symptoms is seen as both more controllable and more helpful than is focus on aspects of self.

Given the above results it was surprising to find that higher scores on the

overall RSQ instrument were strongly predictive of a greater perception of one's ability to control sad or depressed moods. Closer examination of Table 20 indicates that this latter finding was primarily due to a relationship between perceived mood controllability and RSQ Self-Focus. An explanation for this apparent contradiction in findings may be found in the way the relevant interview questions were posed. In interview question 6, participants were asked about their usual ability to manage sad moods during times when they are not particularly depressed, whereas questions 9 and 11 asked about the controllability and benefit of ruminative thinking currently, when they are in a clinically-depressed state. Seen from this perspective, the results suggest that people who reported a stronger tendency toward self-focus on the RSQ seem to feel that at the initial, pre-clinical stages of a sad mood, focusing on the self and the reasons for their sadness is beneficial (and therefore intentional) as a means of preventing decline into clinically-depressed states. However, they feel that once they find themselves in a more serious clinically depressed episode rumination is less controllable and detrimental to their mood. This set of findings suggests that Response Styles Theory may not fully generalize to clinically-depressed states, at least in terms of the motivation to ruminate.

The fact that RSQ subfactors were found to have opposing relationships to the perceived benefit and controllability of ruminative thinking raises a very important issue for future rumination research. Using only the full-scale RSQ in this study would have led to the conclusion that the questionnaire scores are unrelated to perceptions of the controllability and benefit of ruminative response

(see Tables 21 and 22). The follow-up analyses looking separately at RSQ Self-

and Symptom-Focus subfactors, however, demonstrated that opposing

relationships with these subfactors cancelled each other out, and that in fact

RSQ Self-Focus did significantly predict lower perceived benefit and

controllability of rumination. This supports the assertion previously made by

Conway and colleagues (2000) that future rumination research should consider

rumination subtypes separately.

Construct Validity of Ruminative Response in a Clinical Sample

The final set of analyses in Study 2 sought to evaluate the construct

validity of ruminative response style by measuring the ability of ruminative

content and process in the clinical interview to predict Time 2 depression

severity, when baseline mood was statistically controlled. Consistent with

Response Styles Theory, overall ruminative content in interviews uniquely

predicted 20% of variance in Time 2 depressed mood. Variance shared between

ruminative content and baseline BDI scores accounted for an additional 10% of

variance. Self-Focused ruminative content also was a marginal predictor of Time

2 depressed mood, contributing 9% of variance. Symptom-Focused content was

not predictive, contrary to Nolen-Hoeksema's (1991) emphasis on causal

importance of focus on symptoms. Similarly, neither organization nor

repetitiveness of thought, as indicators of ruminative process, was predictive of

mood outcome. The findings lend at least partial support for the construct validity

of Response Styles Theory at the clinical level, though further investigation will

be warranted regarding the relative importance of rumination subtypes and of

ruminative process in determining the course of a depressed mood episode.

General Discussion

Despite the widespread use of the RSQ Rumination questionnaire in

depression vulnerability research, studies published to date have failed to

adequately establish whether self-reported ruminative response style translates

into actual use of such a style during periods of sad mood. Research utilizing

both laboratory induction and self-report have been generally supportive of the

theorized effect of rumination on mood. It has been asserted, however (e.g.,

Bagby et al., 1999; Roberts et al., 1998), that criterion-related validation of self-

reported response styles, such as by live measurement of occurrent ruminative

thought, is needed in order to validate the future use of the RSQ in research.

The main purpose of the present research was to assess the criterion-related

validity of the RSQ Rumination instrument, including the Self- and Symptom-

Focus subfactors previously uncovered by Bagby and Parker (2001) and by Cox,

Enns and Taylor (2001). The results of this research suggest that, despite the

many cognitive limitations to the validity of self-report questionnaires in general

(e.g., introspective capability, long-term memory, mood bias), scores on the

Rumination scale of the RSQ do in fact predict a tendency toward ruminative

thought content. There was also some evidence for the prediction of ruminative

process among the clinically depressed sample.

With regard to RSQ subfactors, both were found to uniquely predict their

counterparts among the clinically depressed sample; in the case of the induced

sad mood in Study 1, only RSQ Self-Focus could be uniquely linked to its

counterpart as measured in the laboratory. Somewhat surprisingly, there also

was some evidence of a link between RSQ Symptom-Focus scores and

ruminative process in the clinically-depressed sample, despite the fact that the

RSQ does not specifically target thought process. Consistent with Response

Styles Theory, Study 2 found partial support for the assertion that rumination is

an intentional response seen as beneficial in managing moods; however, only

RSQ Symptom-Focus was predictive of such an opinion, and only as part of a

statistically near-significant trend. RSQ Self-Focus was significantly related to

quite the opposite opinion of ruminative thinking.

With respect to the predictive validity of self-reported ruminative style,

assessed in the first study, both full-scale RSQ and Self-Focus subfactor scores

were predictive of the eventual severity of the induced sad mood. This finding,

though a promising sign of the validity of the RSQ measure, contradicts Nolen-

Hoeksema's theoretical assertion that focus on symptoms is of primary causal

importance. RSQ scores were not significantly predictive of either the duration of

induced mood or vulnerability to the mood induction (onset of sad mood), nor did

they predict Time 2 severity in the clinical study.

Follow-up investigations of the relationship between mood outcomes and

occurrent rumination also provided mixed support for the theory, though in both

studies overall ruminative content was in fact predictive of at least the severity of

the mood episode. In terms of rumination subtypes, findings at the subclinical

level (Study 1) were mostly consistent with the theory, showing a much stronger

relationship between symptom focus and both severity and duration of the

induced mood (though this latter effect only approached significance). Analyses

of the predictive value of ruminative process at the clinical level, however, failed

to support the model. Again it should be pointed out that the Response Styles

Theory was designed to account for the impact of ruminative response on

subclinical sad mood episodes, and that at the subclinical level, the theory was

well supported. Further investigation of the relative importance of Self- and

Symptom-Focussed rumination at the clinical level will need to be undertaken, to

assess whether in fact the two types of rumination play different roles once mood

has reached the clinical level. It should be noted also that the causal significance

of all of these relationships is unclear given their cross-sectional nature.

Issues Related to Use of BDI in Rumination Research

Because some authors (e.g., Just & Alloy, 1997) have suggested that

current mood may unduly impact responses to the RSQ measure, and thus affect

the concordance between questionnaire scores and actual ruminative response,

both of the present studies included a measure of concurrent mood at the time of

self-report. Because the Beck Depression Inventory is typically the measure of

choice for sad or depressed mood, the present research followed this practice in

order to preserve comparability to previous findings. The use of the BDI for this

purpose, however, may be problematic for rumination research. There is

relatively direct item overlap between the RSQ and BDI measures. RSQ items

such as "Think about how sad I feel" and ""Think 'Why can't I get going?'" on the

RSQ are very similar to BDI items such as "I feel sad" and "It takes extra effort to

get started at doing something". Clearly the RSQ items noted above are worded

with the intention of measuring cognitive focus on those symptoms, rather than

the mere existence of those symptoms, but it is difficult to know whether

respondents can accurately make that distinction. Such content overlap has

previously led to the suggestion that RSQ Rumination may, in part, represent a

proxy measure of depressed mood (Roberts et al., 1998).

In response to this criticism, Treynor, Gonzalez and Nolen-Hoeksema

(2003) recently redesigned RSQ Rumination, removing all items that appeared to

overlap in content with the BDI. In their reanalysis of a previously published

dataset (from Nolen-Hoeksema, Larson & Grayson, 1999), factor analyses of the

remaining 10 items revealed two 5-item subfactors. The first, labelled

"Reflection", was interpreted by the authors as "a purposeful turning inward to

engage in cognitive problem solving to alleviate one's depressive symptoms" (p.

256). This subfactor showed small but significant correlations with BDI (r = .12

and .15). The second subfactor was labelled "Brooding", and was interpreted as

"a passive comparison of one's current situation with some unachieved standard"

(p. 256) and resembles the maladaptive type of rumination intended by

Response Styles Theory. Despite the removal of symptom-like items from the

RSQ, however, the correlation between the Brooding subfactor and BDI was on

par with those often found with the original RSQ Rumination scale (r = .44).

The fact that removal of obvious symptom-related item content from RSQ

Rumination did not appreciably decrease the correlation between the two

measures suggests that there is additional conceptual overlap between BDI and

RSQ Rumination. It is important to remember that the BDI and similar scales are

measures of the full symptom cluster of clinical depression, and not just of depressed mood, though this is often how the BDI is used by researchers. Several items on the BDI tap cognitive symptoms that could be conceptualized as reflecting ruminative thinking (e.g., Item 6: "I feel that I am being punished"; Item 8: "I blame myself for everything that happens"; Item 13: "I can't make decisions at all anymore"; Item 16: "I wake up several hours earlier than I used to and cannot get back to sleep"). Both of the present studies found that indicators of occurrent ruminative thinking were predicted to a significant degree by both unique variance in the RSQ scores and variance shared between the BDI and RSQ.

This finding has important implications for future prospective studies of rumination and mood outcomes. The BDI and similar full-spectrum clinical measures such as the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960) and the Inventory to Diagnose Depression (IDD; Zimmerman et al., 1986) have often been used to control baseline mood in prospective rumination outcome studies (e.g., Nolan, Roberts & Gotlib, 1998; Nolen-Hoeksema, 2000 Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Parker & Larson, 1994). The present results and those by Treynor and colleagues (2003) suggest that the BDI may in fact be a proxy measure of rumination, and that using BDI or a similar full-spectrum measure of depression to control baseline mood actually removes meaningful variance related to rumination. This would be expected to result in over-conservative estimates of effects. Clearly the removal of RSQ symptom-related items does not solve the difficulty of overlapping variance with the BDI.

Perhaps more importantly, in their efforts to achieve methodological and statistical purity, Treynor and colleagues (2003) may have jeopardized the theoretical utility of the rumination measure. After all, two of the keystones of Response Styles Theory are that rumination is triggered by awareness of a sad mood state, and that rumination on one's symptoms is of primary causal importance to mood outcomes (Nolen-Hoeksema, 1991). Having eliminated all items relating to rumination on symptoms, it now seems impossible to test the theory. It would be more appropriate to restore the original RSQ item content, and instead use a purer measure of depressed mood (i.e., sadness) that does not include cognitive content that might overlap conceptually with rumination[2].

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[2] To test this idea, the hierarchical regression analysis predicting ruminative content of clinical interviews from RSQ Rumination scores (see Table 16) was repeated, controlling this time only for BDI item #1 (sad mood). In this case, sad mood was not predictive, and RSQ Rumination accounted for 20% of variance in the dependent variable, F change $(1, 24) = 6.14$, $p < .05$. This substantial improvement in the relationship between RSQ and interview rumination suggests that controlling for full BDI score in the original analysis removed meaningful variance from the RSQ score and artificially deflated estimation of its predictive value. Due to statistical limitations of a single-item measure of mood, however, and the desire to maintain comparability of findings to previous studies, the original analyses were preserved.

Significance of the Findings

The present research provides the most direct evidence to date of the criterion-related validity of the RSQ measure because of improved measurement of ruminative thinking. Thought-listing and think-aloud procedures are generally considered superior to traditional endorsement-type measures because they almost entirely eliminate the biasing effects of recall and provide a more rich sampling of cognitive activity (Cacioppo, von Hippel & Ernst, 1997; Davison, Vogel & Coffman, 1997). The potentially biasing effect of demand characteristics (Glass & Arnkoff, 1997) in the measurement of rumination were virtually eliminated, since no leading cues (such as endorsement-style checklists) were used to elicit responses. In response to past criticisms of the relationship between RSQ and measures of depressed mood (e.g., Conway, Csank, Holm & Blake, 2000; Cox, Enns & Taylor, 2001; Roberts et al., 1998), the present research provided evidence that RSQ scores directly and uniquely predict occurrent ruminative response above and beyond the influence of concurrent mood. Such empirical support for the criterion-related validity of the RSQ lends credence to past research findings and validates its future use in the study of this important vulnerability factor.

A straightforward correlation between RSQ score and laboratory rumination might have been sufficient for the purposes of establishing the criterion-related validity of the RSQ measure. Given the controversy surrounding the fact that as a supposed trait measure the RSQ is sometimes highly correlated with concurrent depressed mood, however, it was important to establish that a

substantial portion of the relationship between RSQ and actual rumination was independent of mood influence. The present research clearly demonstrated that this is in fact the case, providing an even stronger case for the criterion-related validity of the RSQ than could be derived from a simple correlation coefficient.

This research also represents the first evidence of the criterion validity of the empirically-derived Self- and Symptom-Focus subfactors of RSQ Rumination. The investigation of these separate subfactors of the RSQ is important because it permits assessment of a key element of Response Styles Theory, that ruminative focus on mood symptoms is of primary causal significance in affecting mood outcomes. Empirical derivation and replication of these subfactors by Bagby and Parker (2001), Cox, Enns and Taylor, (2001) and again in the present research provides convincing evidence of the bi-dimensional nature of the RSQ measure. The present research carried this branch of rumination research further by providing at least preliminary evidence of the criterion-related validity of these two subfactors, in both subclinical and clinically-depressed samples. Furthermore, this research suggests that these two subtypes of rumination are independently and in some cases differentially related to mood outcome and to opinions of the value of ruminative response style. In fact, evidence from the clinical study disputes Nolen-Hoeksema's (1993) claim that rumination is seen by the ruminator as an intentional and beneficial response to sad mood by demonstrating that this is true only in relation to Symptom-Focused rumination and not to Self-Focus. A greater understanding of the unique effects of focusing on aspects of the self, as opposed to symptoms and their implications, may

provide researchers with a greater understanding of the mechanisms underlying

the maintenance and intensification of depressive episodes (Bagby et al., 1999).

This knowledge would have important clinical implications as well, for both the

disruption of mood-maintaining cognitive processes and prevention of future

depressive episodes.

In investigating the predictive validity of RSQ Rumination and its two

subfactors, the present research was also the first to consider the possibility that

the causal impact of ruminative thinking is due only to the fact of its general

negative valence, and has little to do specifically with ruminative content. By

including an index of non-ruminative negative thoughts in regression analyses, it

was in fact shown that ruminative content contributes independently to the

relationship between ruminative thoughts and mood outcomes.

Limitations of this Research

The primary limitation of this research was the artificial nature of the

situational contexts in which ruminative response was measured. The results

clearly indicated that ruminative thinking can be elicited and measured in

university laboratory or in an interview situation, but certainly these are only

approximations of the cognitive activity that takes place when the person is alone

with his or her thoughts. Lyubomirsky and colleagues (1999) pointed out that our

actual, internal experience of thoughts is likely to be relatively disorganized and

incoherent, and an often image-based form. This shortcoming was most

pronounced in the student study. The brain's effort to make sense of the natural

cognitive flow and to translate it to a coherent, verbal form therefore introduces a

degree of error to self-report. It was impossible for participants to provide a truly complete record of all thought content, due to the inherent limitations of having to write them. Participants were therefore left to decide for themselves what was important enough or relevant enough to put on paper. For example, there was a surprising lack of repetition in the thought records, leaving one to conclude that participants may have intentionally filtered these out of their reports. The more spontaneously-generated verbal information collected in the clinical interview study was perhaps less impacted by this self-editing process, but both approaches could only represent a very rough approximation of the participant's actual internal thought process during an episode of sad mood.

Along a similar line, the induced mood in Study 1 can only be considered an analog of a mood state that develops spontaneously and which is allowed to follow its natural course. It is difficult, if not impossible, to know exactly how the experience of a laboratory-induced mood compares to the real thing, and how this difference may be related to the occurrence of ruminative thinking. It could be argued, however, that the artificiality of the induced mood episode is likely to have brought out less than the otherwise naturally-occurring degree of ruminative thinking. Also, because the induced mood could be clearly attributed to the external demands of the study, participants who endorsed a tendency to ruminate on the future implications of depressed mood (symptom-focused rumination) or to attribute sad mood to personal faults or shortcomings (self-focused rumination) are less likely to have done so in this context. The artificiality of the induced mood, therefore, may have in fact reduced the size of the

observed effects.

One potential limitation specific to Study 1 was the intentional reduction of distracting cues in the laboratory environment. Response styles theory (e.g., Nolen-Hoeksema, Morrow & Fredrickson, 1993) suggests that even so-called 'distracters' have a spontaneous tendency to begin ruminating in response to a sad mood, before they engage the distracting response. The laboratory setting, however, would likely have interfered with natural efforts toward cognitive distraction and entirely precluded behavioural distraction. Therefore, those who reported relatively low rumination scores, due to healthy or unhealthy tendencies to distract in response to sad mood, may have engaged in more rumination than they would have in the natural setting.

Also, while the present research separately investigated the intensification of a sad mood and the presence of rumination at the clinical level, it did not follow the development of a clinically-depressed state from its earliest emergence. The ideal rumination study would permit observation of the development of a major depressive episode in previously-healthy individuals, with ongoing, open-ended diary recording of cognitions that could be compared against pre-morbid self-report.

Another limitation common to both studies was the lack of control for past history of major depressive episodes. Previous research (e.g., Roberts et al., 1998) has shown that previously-depressed individuals have higher scores on the RSQ. This may represent a characterological vulnerability factor, but could alternatively represent a scar from previous depressive experiences. Someone

who has experienced a traumatic or life-altering clinical depression in the past, or who is afraid of succumbing to a known genetic predisposition, may interpret the item content and the Likert scales of a questionnaire like the RSQ very differently from someone with no past experience of clinical depression. In either case, it may be important to control not only for concurrent mood at time of self- report (e.g., Just & Alloy, 1997) but also for past history and even family history of depression. Unfortunately the limited sample sizes, especially in the clinical study, precluded such control.

One limitation of the clinical study of potential relevance was the unknown impact of treatment effects during the often several-month period between self-report and the clinical interview. As noted in the introduction, both medication and psychotherapy impact the cognitive processes that are seen to underlie depressive moods. Without adequate control for these potential effects, it is possible that the measured concordance between RSQ scores and both ruminative content and process was adversely impacted.

A common problem in clinical research, small sample size may have limited the potential in the clinical study to detect some of the smaller effect sizes. A computer program called GPOWER (Faul & Erdfelter, 1992) was used to determine the necessary N to achieve 80% power with three predictor variables, the largest number of predictors used in the clinical study. For large effect size, an N = 30 was sufficient, very nearly achieved in the clinical sample. Medium and small effect sizes, however, would have required 77 and 550 participants, respectively, and neither was practical given the available resources. Several of

the regression findings in the clinical sample, however, approached significance, suggesting that with a larger sample the results of the clinical study could have been improved. The present research, however, provided a number of important, if preliminary findings that point to the importance of further research in this area.

Finally, it should be noted that current limitations to statistical modelling techniques generally limit the validity of cognitive vulnerability research. Vulnerability theories such as Response Styles Theory hypothesize a reciprocal causal relationship between mood and cognitive processes. Nolen-Hoeksema (1991) hypothesized that sad mood triggers ruminative thinking, which in turn cycles back to increase the intensity of the mood, and so on. Lyubomirsky and colleagues (1999) made the important observation that currently available statistical techniques are not equipped to measure bi-directional, dynamic processes such as this. The models that are created through widely-used regression or latent variable techniques represent only static snapshots, failing to capture the dynamic nature of the casual process being measured.

Future Directions

More than ten years after it first emerged, Response Styles Theory, and more specifically ruminative response style, remains a very active area of research. The two main investigative directions in recent years have related to the clinical phenomenology of ruminative response and the mechanisms that motivate and maintain this response. Despite the fact that Response Styles Theory did not originally discuss the development and course of clinically-

depressed episodes (Nolen-Hoeksema, 1991), it is clear that the greatest value of any vulnerability model is in its clinical implications. Unfortunately, the clinical research to date has relied solely on a measure that was designed for measurement of sub-clinical cognitive processes. Despite the current finding that RSQ is predictive of ruminative thinking at the clinical level, it may fail to capture key aspects of the cognitive activity of the clinically-depressed or formerly-depressed individual. One possible example of this is the aforementioned issue of possible catastrophic misinterpretation of early depressive symptoms by a formerly depressed person, fearing the potential for being hospitalised, attempting suicide or alienating friends and family. The individual who has never experienced serious depression may not evidence such a ruminative thought. Therefore an important potential avenue for future clinical research may be the development of a self-report rumination measure specifically intended for use in studying the ruminative processes of currently- and formerly-depressed individuals.

A second key direction for research, emerging directly from the present work, is more in-depth investigation of the separate and possibly interactive effects of self- versus symptom-focused rumination. Contrary to Response Styles Theory, Study 1 found that only self-focused attention was a prospective predictor of the severity of the induced sad mood. Consistent with the aforementioned 'depression scar' concept, depressive symptoms may not be especially troubling to a never-depressed person who is less prone to catastrophically over-interpreting his or her sad mood symptoms, and therefore

may not have the depressogenic impact hypothesized by the theory. In these cases, depressive vulnerability may arise solely from the activation of sad memories and negative self-schema (i.e., self-focused rumination). For the previously-depressed individual, alternatively, symptoms may trigger fears of becoming severely depressed again, and so symptom-focused rumination may be more causally relevant in such individuals. Additionally, as noted by Bagby, Parker and Cox (1999), we do not yet know of the temporal or interactive relationships between self- and symptom-focused ruminations (e.g., does symptom-focused rumination emerge earlier, intensifying or prolonging depressed mood to the point that the individual begins examining the self for explanations?). These potentially important unanswered questions warrant further investigation of the separate roles of rumination subtypes with both clinical and subclinical samples.

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Appendix A:

Response Styles Questionnaire - Rumination (RSQ-Rum)
(with subfactor labels added in boldface)

RSQ - Rum

<u>Instructions</u>: People think and do many different things when the 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, <u>NOT</u> what you think you should do.

	Almost Never	Sometimes	Often	Almost Always
1. Think about how alone you feel. **(SELF)**	1	2	3	4
2. Think "I won't be able to do my job/work because I feel so badly. **(SYMP)**	1	2	3	4
3. Think about your feelings of fatigue and achiness. **(SYMP)**	1	2	3	4
4. Think about how hard it is to concentrate. **(SYMP)**	1	2	3	4
5. Think about how passive and unmotivated you feel. **(SYMP)**	1	2	3	4
6. Analyze recent events to try to understand why you are depressed.	1	2	3	4
7. Think about how you don't seem to feel anything anymore. **(SYMP)**	1	2	3	4
8. Think "Why can't I get going?" **(SYMP)**	1	2	3	4
9. Think "Why do I always react this way?"	1	2	3	4
10. Go away by yourself and think about why you feel this way. **(SELF)**	1	2	3	4

11. Write down what you are   1   2   3   4
    thinking about and analyze it.

12. Think about a recent situation,   1   2   3   4
    wishing it had gone better.
    (SELF)

13. Think "Why do I have problems   1   2   3   4
    other people don't have?"
    (not in clinical version)

14. Think about how sad you feel.   1   2   3   4
    (SYMP)

15. Think about all your   1   2   3   4
    shortcomings, faults & mistakes.
    (SELF)

16. Think about how you don't feel   1   2   3   4
    up to doing anything. **(SYMP)**

17. Analyze your personality and try 1   2   3   4
    to understand why you are
    depressed. **(SELF)**

18. Go someplace alone to think   1   2   3   4
    about your feelings. **(SELF)**

19. Think about how angry you are   1   2   3   4
    with yourself. **(SELF)**

20. Listen to sad music. **(SELF)**   1   2   3   4

21. Isolate yourself and think about 1   2   3   4
    the reasons why you feel sad.
    (SELF)

22. Try to understand yourself by   1   2   3   4
    focusing on your depressed
    feelings.

Appendix B:

Rumination-Reflection Questionnaire (RRQ)
(Items 1-12 Rumination; 13-24 Reflection)

RRQ

Instructions: For each of the statements located on the next two pages, please indicate your level of agreement or disagreement by circling one of the scale categories to the right of each statement. Use the scale as shown below:

Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5

1. My attention is often focused on aspects of myself I wish I'd stop thinking about   1 2 3 4 5

2. I always seem to be "re-hashing" in my mind recent things I've said or done   1 2 3 4 5

3. Some times it is hard for me to shut off thoughts about myself   1 2 3 4 5

4. Long after an argument or disagreement is over with, my thoughts keep going back to what happened   1 2 3 4 5

5. I tend to "ruminate" or dwell over things that happen to me for a really long time afterward   1 2 3 4 5

6. I don't waste time re-thinking things that are over and done with   1 2 3 4 5

7. Often I'm playing back over in my mind how I acted in a past situation   1 2 3 4 5

8. I often find myself re-evaluating something I've done   1 2 3 4 5

9. I never ruminate or dwell on myself for very long   1 2 3 4 5

10. It is easy for me to put unwanted thoughts out of my mind   1 2 3 4 5

11. I often reflect on episodes in my life that I should no longer concern myself with   1 2 3 4 5

12. I spend a great deal of time thinking back over my embarrassing or disappointing moments   1 2 3 4 5

13. Philosophical or abstract thinking doesn't appeal to me that much   1 2 3 4 5

14. I'm not really a meditative type of person   1 2 3 4 5

15. I love exploring my "inner" self   1 2 3 4 5

16. My attitudes and feelings about things fascinate me   1 2 3 4 5

17. I don't really care for introspective or self-reflective thinking   1 2 3 4 5

18. I love analyzing why I do things   1 2 3 4 5

19. People often say I'm a "deep", introspective type of person   1 2 3 4 5

20. I don't care much for self-analysis   1 2 3 4 5

21. I'm very self-inquisitive by nature   1 2 3 4 5

22. I love to meditate on the nature and meaning of things   1 2 3 4 5

23. I often love to look at my life in philosophical ways   1 2 3 4 5

24. Contemplating myself isn't my idea of fun   1 2 3 4 5

Appendix C:

Beck Depression Inventory (sample items)

This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the letter (a, b, c, or d) next to the one statement in each group which BEST describes the way you have been feeling IN THE PAST TWO WEEKS, INCLUDING TODAY. If several statements within a group seem to apply equally well, circle each one. BE SURE TO READ ALL THE STATEMENTS IN EACH GROUP BEFORE MAKING YOUR CHOICE.

1. a) I do not feel sad.
    b) I feel sad.
    c) I am sad all the time and I can't snap out of it.
    d) I am so sad or unhappy that I can't stand it.

4. a) I get as much satisfaction out of things as I used to.
    b) I don't enjoy things the way I used to.
    c) I don't get real satisfaction out of anything anymore.
    d) I am dissatisfied or bored with anything.

9. a) I don't have any thoughts of killing myself.
    b) I have thoughts of killing myself, but I would not carry them out.
    c) I would like to kill myself.
    d) I would kill myself if I had the chance.

10. a) I don't cry anymore than usual.
    b) I cry now more than I used to.
    c) I cry all the time now.
    d) I used to be able to cry, but now I can't cry even though I want to.

12. a) I have not lost interest in other people.
    b) I am less interested in other people than I used to be.
    c) I have lost most of my interest in other people.
    d) I have lost all of my interest in other people.

18. a) My appetite is no worse than usual.
    b) My appetite is not as good as it used to be.
    c) My appetite is much worse now.
    d) I have no appetite at all anymore.

Appendix D:

Coping Inventory for Stressful Situations (CISS)

CISS

Instructions: The following are ways people react to various difficult, stressful or upsetting situations. Please circle a number from 1 to 5 for each item. Indicate how much you engage in these types of activities when you encounter a difficult, stressful or upsetting situation.

	Not at All				Very Much
1. Schedule my time better **(Task)**	1	2	3	4	5
2. Focus on the problem and see how I can solve it **(T)**	1	2	3	4	5
3. Think about all the good times I've had **(Avoidance)**	1	2	3	4	5
4. Try to be with other people **(A)**	1	2	3	4	5
5. Blame myself for procrastinating **(Emotion)**	1	2	3	4	5
6. Do what I think best **(T)**	1	2	3	4	5
7. Preoccupied with aches and pains **(E)**	1	2	3	4	5
8. Blame myself for having gotten into this situation **(E)**	1	2	3	4	5
9. Window shop **(A)**	1	2	3	4	5
10. Outline my priorities **(T)**	1	2	3	4	5
11. Try to go to sleep **(A)**	1	2	3	4	5
12. Treat myself to a favorite food or snack **(A)**	1	2	3	4	5
13. Feel anxious about not being able to cope **(E)**	1	2	3	4	5
14. Become very tense **(E)**	1	2	3	4	5
15. Think about how I have solved similar problems **(T)**	1	2	3	4	5
16. Tell myself that it is really not happening to me **(E)**	1	2	3	4	5
17. Blame myself for being too emotional about the situation **(E)**	1	2	3	4	5
18. Go out for a snack or meal **(A)**	1	2	3	4	5
19. Become very upset **(E)**	1	2	3	4	5
20. Buy myself something **(A)**	1	2	3	4	5
21. Determine a course of action and follow it **(T)**	1	2	3	4	5
22. Blame myself for not knowing what to do **(E)**	1	2	3	4	5

	Not at All				Very Much
23. Go to a party **(A)**	1	2	3	4	5
24. Work to understand the situation **(T)**	1	2	3	4	5
25. "Freeze" and don't know what to do **(E)**	1	2	3	4	5
26. Take corrective action immediately **(T)**	1	2	3	4	5
27. Think about the event and learn from my mistakes **(T)**	1	2	3	4	5
28. Wish that I could change what had happened or how I felt **(E)**	1	2	3	4	5
29. Visit a friend **(A)**	1	2	3	4	5
30. Worry about what I am going to do **(E)**	1	2	3	4	5
31. Spend time with a special person **(A)**	1	2	3	4	5
32. Go for a walk **(A)**	1	2	3	4	5
33. Tell myself that it will never happen again **(E)**	1	2	3	4	5
34. Focus on my general inadequacies **(E)**	1	2	3	4	5
35. Talk to someone whose advice I value **(A)**	1	2	3	4	5
36. Analyze the problem before reacting **(T)**	1	2	3	4	5
37. Phone a friend **(A)**	1	2	3	4	5
38. Get angry **(E)**	1	2	3	4	5
39. Adjust my priorities **(T)**	1	2	3	4	5
40. See a movie **(A)**	1	2	3	4	5
41. Get control of the situation **(T)**	1	2	3	4	5
42. Make an extra effort to get things done **(T)**	1	2	3	4	5
43. Come up with several different solutions to the problem **(T)**	1	2	3	4	5
44. Take time off and get away from the situation **(A)**	1	2	3	4	5
45. Take it out on other people **(E)**	1	2	3	4	5
46. Use the situation to prove that I can do it **(T)**	1	2	3	4	5
47. Try to be organized so I can be on top of the situation **(T)**	1	2	3	4	5
48. Watch TV **(A)**	1	2	3	4	5

Appendix E:

Evaluation of Others Questionnaire (EOOQ)

EOOQ

Listed below are a number of words that can be used to describe people. In the space provided, please indicate how you think people in general rate on these characteristics, using a scale from 0 to 10. A "0" would mean that you think most people have none of the characteristics described by the word. A "10" would mean that you think people in general have a very great amount of this characteristic. A "5" would mean a moderate amount.

____ Charming

____ Sad

____ Kind

____ Creative

____ Good sense of humour

____ Hypocritical

____ Friendly

____ Trustworthy

____ Phony

____ Sad

____ Attractive

____ Shy

____ Anxious

____ Cruel

____ Fun to be with

____ Intelligent

____ Happy with themselves

____ Hardworking

____ Happy with their lives

____ Good-looking

____ Ethical

____ Competent

____ Efficient

____ Conceited

____ Moody

____ Knowledgeable

____ Dishonest

____ Likable

____ Depressed

____ Helpful

____ Easy to get along with

____ Selfish

____ Loving

____ Psychologically healthy

Appendix F:

Sample From Thought and Mood Recording Booklet

(Post1)

Happy |--|-----------| Sad /2 9

Nervous |-------------------|--------------------------------------| Calm 5 5

Record Stream of Thoughts in Space Below:

- PISSED OFF. ①

- MY FRIEND DIED 4 MONTHS AGO. ②

- I ONLY GOT TO SEE HIM ONCE AFTER HE ③
  GOT BACK. / THEN HE DIED. ④

- EVERYONE LIKED HIM / ALWAYS SMILING. ⑤ ⑥

- . . . . NOTHING. ⑦

- CAN'T STOP DWELLING ON MY FRIEND. ⑧

Total = 8

Appendix G:

Background Information on Rumination Provided to Coders (both studies)

Introduction to Rumination Theory

Originally intended to account for higher rates of depression among the female population, Nolen-Hoeksema's (1991; Nolen-Hoeksema & Morrow, 1993) response-styles theory proposes that a tendency to respond to periods of mild dysphoria by dwelling on one's depressive symptoms and on the meaning and implications of those symptoms is likely to prolong and even exacerbate that mood state. This response is seen by the author as a conscious and intentional but dysfunctional attempt to gain insight and search for solutions (Lyubomirsky, Caldwell & Nolen-Hoeksema, 1998). Ruminators become so engaged by this introspective process that they fail to take constructive action to correct the problematic situation. Others, according to the author, respond more adaptively by distracting themselves with pleasurable activities, thus alleviating their mood so that they may take necessary action to correct the distressing situation.

Alternate Definition (Lyubomirsky, Caldwell & Nolen-Hoeksema, 1998):

"…thinking about how sad, apathetic and tired one feels, wondering about the causes of one's depressive symptoms and worrying about their implications"

Examples of Ruminative Thinking:

(Nolen-Hoeksema, 1993):
- worrying that spouse (friends, others) might reject you because you're depressed
- wonder whether you are going to have another sleepless night

(Nolen-Hoeksema & Davis, 1999):
- "I'm a wreck"
- "I can't cope"
- "What's wrong with me?"

(Lyubomirsky & Nolen-Hoeksema, 1995):
- "I am ruining my life"

(Nolen-Hoeksema, Morrow & Fredrickson, 1993 – from questionnaire):
- "I just don't feel like doing anything"
- "I can't get my work done when I'm thinking this way"
- "Why do I react this way?"
- "Why can't I handle things better?"
- "Why can't I be satisfied with the way things are?"
- talk to others about how I'm feeling

***NOTE: coders were also provided with a copy of the RSQ Rumination Questionnaire, with items separated into self- and symptoms focus factors

Appendix H:

Thought Record Coding Manual

CODING MANUAL - STUDENT RUMINATION STUDY
Instructions to Coders

In this study, groups of intro psychology students were asked to make a continuous record of their moods and thoughts following the induction of a sad mood. Your task in this coding project will be to examine these lists of thoughts and classify them along the following dimensions:

A) Coding Thought VALENCE

Thoughts which might have a specific valence include descriptions, memories, mental images or self-descriptions which seem to be characteristic of a **clearly** positive or negative frame of mind or emotional state or that might normally be expected to make the person feel more happy or more sad as a result of having that thought. Alternatively, the thought unit may actually be a description or label of a positive or negative emotional state. Examples:

- **POSITIVE THOUGHTS:**
- I feel <u>happy</u> (content, satisfied, relaxed, at peace)
- I did <u>really well</u> on that psychology test yesterday
- I'm going to go home and watch my <u>favorite</u> TV show

- **NEGATIVE THOUGHTS:**
- I feel <u>sad</u> (confused, nervous, annoyed, bored)
- I'm sure I <u>failed</u> that psych test yesterday
- I'm <u>dreading</u> having to go to work tonight
- <u>what the hell</u> is this point of this study anyway?

Any thought which cannot be categorized as **clearly** positive or negative in nature should be classified as <u>neutral</u>.

If you find yourself AT ALL trying to decide whether a thought is positive or negative, or think that "it depends", then code it as NEUTRAL!! Thoughts like "I am tired" or "I am hungry" are not clearly negative states in the sense that they may be related to an emotional response. If however, the thought is "I am really hungry" or "I am super tired" then the person is clearly trying to indicate a strong feeling and these should be coded as negative.

B) Coding Thought CONTENT

Whether or not a thought is ruminative in nature, and specifically what kind of ruminative though (self- or symptom-focused) will be based upon your understanding of the Nolen-Hoeksema definitions of these concepts. Examples:

- **SELF-EVALUATIVE THOUGHTS** (code Se) include:

- evaluation of some personal trait or quality
- **references to self-performance in a past, present or future situation**
- references to own physical or personality trait
-   self-analysis
-   thoughts about a past event which went wrong or was upsetting (Not technically self-evaluative, but fits into the theory we are testing)

<u>Examples</u>:

-   "I am a good musician"
-   "why am I always so depressed?"
-   "I don't like myself"
-   "I really blew that test yesterday"
-   "I'm not very good in social situations"

- **SYMPTOM-FOCUSED THOUGHTS** (code Sy):

- reference current or past emotional experience (e.g., sad, depressed, down, blue, tearful, weepy, bored, uninterested, indecisive, happy, nervous, worried, jubilant)
- reference to a physical state <u>related to an emotional experience</u> (e.g., unmotivated, drained, empty, can't sleep, restless, tired, lacking energy, relaxed, goose bumps)
-   thoughts relating to possible implications of the emotional state (e.g., "how am I going to get any work done?", "will I ever get over this?"

<u>NOTE</u>: the symptom focused category is only to be used in cases of emotional symptoms or physical symptoms *related to such an emotional state*. So thoughts such as "I have an itchy foot" or "I am hungry" are <u>not</u> symptom focused. "I am tired" or "I am relaxed" are not symptom focused <u>unless</u> you can clearly related them to an explicitly stated emotional state.

POTENTIAL SOURCES OF CONFUSION:

a) one potentially confusing type of thought will be those that begin with "I feel...". These may be self- or symptom-focused depending on the content. For example: "I feel like an idiot" or "I feel stupid" are <u>self-evaluative</u>, whereas "I feel sad (embarrassed/ashamed/happy/nervous)" are examples of symptom focus.

b) when the person is describing aspects of the self, it may be helpful to think of self-evaluative thoughts as references to TRAITS, whereas references to STATES are symptoms focused. For example, "I feel sad" is describing a current STATE, while "I tend to be an emotional person" describes a TRAIT.

<u>The Coding Sheet:</u>

Each page of the student package will be coded on a separate coding sheet. Each sheet can accommodate up to 22 thoughts (the maximum found in the records). Each booklet contains 8 pages of thoughts (page 3 contains no thoughts and should be ignored).

For each thought you encounter, you will first decide whether it is positive, negative or neutral in valence. Then determine whether the thought is Se, Sy or "other" and make a "✓" in the appropriate box. For each thought their should only be ONE mark made in the appropriate row on the sheet.

<u>CAUTION:</u> one very big potential problem is neglecting to move down to the next row before coding the next thought. The result will be two marks in the same row and all subsequent thoughts will be coded in the wrong rows. This will wreak havoc with both the reliability and data entry. I'll leave it up to you to find a method that helps you to avoid such errors. **COUNT THE NUMBER OF THOUGHTS BEFORE TURNING TO THE NEXT PAGE**

Student Study Coding System: Quick Reference

Thought Valence:
Any thought which cannot be categorized as **clearly** positive or negative in nature should be classified as <u>neutral</u>. If you even have to think about it, or think "it depends", then code it <u>neutral</u>.

- **POSITIVE THOUGHTS:**
- I feel <u>happy</u> (content, satisfied, relaxed, at peace)
- I did <u>really well</u> on that psychology test yesterday
- I'm going to go home and watch my <u>favorite</u> TV show

- **NEGATIVE THOUGHTS:**
- I feel <u>sad</u> (confused, nervous, annoyed, bored)
- I'm sure I <u>failed</u> that psych test yesterday
- I'm <u>dreading</u> having to go to work tonight
- <u>what the hell</u> is this point of this study anyway?

Ruminative Thoughts:

- **SELF-EVALUATIVE THOUGHTS** (Se): evaluation or analysis of the self OR describes a <u>past or present</u> event that the person wishes had gone better
- "I am a good musician"
- "why am I always so depressed?"
- "I don't like myself"
- "I really blew that test yesterday"
- "I'm not very good in social situations"

- **SYMPTOM-FOCUSED THOUGHTS** (Sy): any reference to current or past emotional state, any physical state *related* to an emotional state or thought about the possible implications of that emotional state (e.g., "how am I going to get any work done?", "will I ever get over this?")

<u>Any physical symptom must be clearly related to an explicitly stated emotional state.</u>

Any other thought is classified as "other"

Appendix J:

Sample Thought Record Coding Sheet

Booklet # : __63__   Page#: __3__   Coded by: __Paul__

ITEM	POSITIVE			NEGATIVE			NEUTRAL		
	Se	Sy	Other	Se	Sy	Other	Se	Sy	Other
1					✓				
2						✓			
3						✓			
4						✓			
5			✓						
6			✓						
7									✓
8						✓			
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

Appendix K:

Student Consent Form (Time 1)

The study you are participating in today is intended to examine the relationships among mood, thinking styles and attitudes. You will be asked to complete several questionnaires related to these topics.

By signing below, I acknowledge that I have read and understand the following:

1)   I understand that my participation in this research is purely voluntary, and as such it is my right to withdraw at any time with no loss of credit or fear of penalty.

2)   The information I provide will be entirely anonymous and will be made available only to the experimenter and certain faculty members in the department of psychology supervising this research (not my instructor). Any reporting of results will be made in group form only.

Name (print)   Date

Signature   Student Number

Appendix L:

Participant Information Form (Time 1 & 2)

Please provide the following personal data before we begin:

Date of Birth: ____ / ____ / ____   (be sure to follow the format shown)
              MM   DD   YY

Sex: (M or F):

First three digits of postal code:

Appendix M:

Student Consent Form (Time 2)

You will be participating in research examining the effect of music on your mood and on your thinking style. You will first be asked to listen to a passage of music. Afterward you will keep a continuous record of your thoughts and periodically you will be asked to record your current mood. This recording period will last approximately 15 minutes.

By signing below, I acknowledge that I have read and understand the following:

1) I understand that my participation in this research is purely voluntary, and as such it is my right to withdraw at any time with no fear of penalty.

2) The information I provide will be entirely anonymous and will be made available only to the experimenter and certain faculty members in the department of psychology supervising this research (not my instructor). Any reporting of results will be made in group form only.

_____   _____
Name (print)   Date

_____   _____
Signature   Student Number

Appendix N :

Script of Instructions for Mood Induction Procedure
and Thought and Mood Recording

Instructions and Practice Session

As you now know, the purpose of this study is to examine the effect that music has on your mood and on the kinds of thoughts you experience. This experiment will involve first listening quietly to a short piece of classical music. I will be asking you to try your best to put yourself into a particular kind of mood as suggested by the qualities of the music. Once you have listened to the music, I will ask you, over a period of about 15 minutes, to make a continuous written record of all the thoughts, feelings and mental images that run through your mind.

Keeping track of your thoughts is not something we are usually used to doing, so we are going to begin by practicing this for about 5 minutes, before we get started with the real thing. I want to be certain that you are completely practiced and comfortable with what you have to do.

We will only be practicing at this point, so if you have any questions or problems please raise your hand and I will try to answer them. I want to be completely sure that you understand what to do, so please don't be shy. Once we begin the real recording later, there can be no interruptions.

(OVERHEAD of sample recording sheet)

At the top of the page, you will see two horizontal lines, the first with the words "happy" and "sad" at either end, and the second with "nervous" and "calm". What I would like you to do right now is to indicate for me how you are feeling <u>right now</u>, by drawing a slash through each line at the point that corresponds to your mood (**demonstrate on overhead)**. And then stop. Any questions??

I will be asking you to record your mood both before and after we listen to the music. Please understand that the music will not affect everyone in the same way, so I would like you to be as honest as possible about any mood changes that might be caused by the music. Don't respond the way you think I might want you to respond.

Once you have recorded your feelings, you will be asked, in the space below, to make a continuous recording of anything and everything that runs through your mind. Include whatever information is in your awareness from moment to moment. This might include descriptions of mental images, ideas, memories, feelings, fantasies, plans, sensations, observations, daydreams or even objects that catch your attention. Use pointform to list each of the thoughts, images, etc. that you experience as they come to you.

(demonstrate on overhead)

Please don't be concerned with spelling, punctuation, grammar, neatness or even whether your think a particular thought is important enough to record, as long as the end result is readable. Use the space wisely, since you will be writing for 2 minutes on each page. If you do run out of space, just continue <u>on the back of the page you were working on</u>.

After each two-minute interval, I will quickly flash the room lights off and on, like so **(demonstrate)**. This is your signal to stop writing, turn to the next page in the booklet, record your present mood once again, and then continue recording your thoughts.

Remember that every precaution has been take to make your responses in this study absolutely anonymous. Your consent form is separate from the questionnaire package and there is no identifying information of any kind in the questionnaire package. It is important that you be completely comfortable in reporting anything that comes to mind in an honest and complete manner. Please try not to censor yourself because you are afraid of what someone else might think, because there will be no way for anyone to identify you from the responses you provide. Please begin. Again, this time we are only practicing, so feel free to ask any questions you might have. It is very important that you understand what it is you need to do.

<u>(count 2 minutes)</u>   **DIM LIGHTS BRIEFLY**

Please stop and turn the page.

<u>(count 2 minutes)</u>   **DIM LIGHTS BRIEFLY**

Please stop, and turn the page. Please once again indicate how you are feeling RIGHT NOW at the top of the page. Once you are done rating your moods, turn the page once again, without recording anything, and turn the booklet over, so that you are looking at the blank back of the page. Are there any final questions before we begin??

GO TO MUSIC/INDUCTION INSTRUCTIONS

Musical Induction Instructions:

For the next five minutes I will ask you to quietly listen to a piece of classical music, through the headphones on the table in front of you. Please place the headphones on your head so they are comfortable.

clarify play button and volume control

This is a very quiet piece of music, so I have turned the volume up quite high. It will take several seconds for the music to begin. Once the music begins, feel free to adjust the volume control to a comfortable level.

The purpose of this part of the study is to cause you to feel a degree of sad mood. I want you to listen to the music with focused attention. Saturate yourself in the sad feeling and atmosphere being expressed in the music. Try as hard as you can to get yourself into a sad state of mind. People use a variety of techniques to do this, and you will have to find a technique that is most effective for you.

Again, just sit quietly and immerse yourself in the sadness of this piece of music. Using the mouse pointer, press the play button now.

> **play music – 5 minutes, 20 seconds**

Actual Thought Recording Session:

Please turn the booklet over once again, and record how you are feeling RIGHT NOW, then record the stream of your thoughts, feelings and mental images as before. Remember that punctuation, grammar, spelling and neatness are not important here. Please begin.

> **Wait two minutes – DIM LIGHTS BRIEFLY**

Please stop writing and continue on the next page.

> **Repeat this procedure, until a total of 6 post-inductions have been taken**

Please stop. Please once again turn to the next page and indicate how you are feeling RIGHT NOW at the top of the page. Once you have done so, you can stop, because we are done with the thought recording portion of the experiment.

I'm now going to play one more short piece of music, and this time I would like you to try to feel the happy, light-hearted spirit of the song, much as you just did with the earlier piece of music.

> **Play Chopin- Minute Waltz – length 1:43**

Now, please turn the booklet over again and record how you are feeling RIGHT NOW at the top of the page.

> **END OF EXPERIMENT – DISTRIBUTE COUNSELING LISTS**

Appendix P:

Student Participant Counselling Information Sheet

Student Participant Counselling Information Sheet

The research you have participated in today dealt with a number of sensitive emotional issues, and it is not unusual for people to experience a degree of depressed or anxious mood as a result.

If you need to talk to someone about how you are feeling now or at any time in the future, listed below are the numbers for free counselling services:

Psychological Services Centre (U of M):   474-9222

U of M Counselling Service: 474-8592

U of M Peer Advisors: (drop-in, University Centre)

Klinic Crisis Line: 786-8686

Thank you for your time in participating in this study. Unfortunately at the present time it is impossible for me to provide you with more details regarding the purpose and findings of this research, but a more detailed informational handout will be made available to you in class later in the term.

Appendix Q:

Study One Debriefing Handout

Earlier in the term, you participated in the (*name and name*) experiments. In the first your answered questionnaires related to mood, thinking styles and attitudes about people. In the second, which took place in the psychology laboratory, you listened to a piece of classical music and made a continuous record of your thoughts and feelings. At the time it was not explained to you that these studies were related. In fact both experiments were part of a larger study related to the thinking styles of individuals experiencing depressed mood.

Unfortunately it is often necessary to give incomplete information to research participants, since awareness of the goals of the research might influence your responses and make them invalid. Now that you have completed the study, however, I can give you a more detailed explanation of the purpose of my research.

This research serves two purposes: first, we are seeking a greater understanding of how thinking styles in depressed people may prolong and intensify depressed mood. Second, we will be comparing the kinds of thoughts you reported on the earlier questionnaires to the actual thoughts you reported later when your were feeling sad.

There is a recent theory that suggests that when some individuals start feeling down, maybe because of some minor setback in life, they have a tendency to dwell on these sad feelings and what they might mean about them as a person. They spend so much time think about these things and not actually working to solve the problem that their depressed mood lasts much longer and becomes more severe.

By asking you to reflect on your own thoughts when experiencing a mild level of depressed mood, I have been able to gain an understanding of the kinds of thinking styles that may leave people vulnerable to serious depression.

It is my hope that through the help of yourself and your classmates we can begin to learn more about how depression works so that we can work on better preventions and treatments.

I would like to thank you for taking the time to participate in this research. Unfortunately it will be 2 to 3 months before preliminary results are available. If you have any questions or concerns about this project or your participation in it, feel free to contact Paul Freeman and 474-8746.

Appendix R:

Letter of Invitation to Participate in Clinical Interview Study

(Date)

Dear M:

You were recently seen for an assessment by the Mood Disorders Program. At that time, you completed a package of questionnaires for research purposes.

I am writing now to make you aware of a research project being conducted by Mr. Paul Freeman, a graduate student with the Department of Psychology at the University of Manitoba. The purpose of this research is to gain a deeper understanding of the experience of clinical depression, specifically how it affects the kinds of thoughts you experience and the impact it has on the individual's daily functioning.

Participation in this study requires a 45 to 60 minute interview and completion of one or two questionnaires relating to your current depression symptoms. This study will take place at the PsycHealth Centre. In exchange for your time you will receive an honorarium of $25.00, and parking or bus fare will be provided free of charge if needed.

As part of this new study, the researcher will also require information collected by clinic staff during your original assessment, including diagnostic information and data from the questionnaire package you completed. By agreeing to participate in this study, you would be consenting to have this information released to Mr. Freeman.

If you are interested in participating in this research project, you may contact Mr. Freeman at 474-8659, or by e-mail at freeman@cc.umanitoba.ca. You are under no obligation to participate and your refusal to do so will have no impact on your future medical care at the Health Sciences Centre.

Sincerely,

Murray W. Enns, M.D.
Medical Director, Mood Disorders Program

Appendix T:

Inventory to Diagnose Depression (IDD)
Sample Items

Symptoms Section (items 1-22):

INSTRUCTIONS: This questionnaire is about how you have been feeling <u>during</u> <u>the past week</u>. After each question there are 5 statements (numbered0-4). Read all statements carefully. Then decide which one best describes how you have been feeling. Choose only one statement per group. If more than one statement in a group applies to you, choose the one with the highest number.

1)   During the past week, have you been feeling sad or depressed?
     0   No, not at all
     1   Yes, a little bit
     2   Yes, I have felt sad or depressed most of the time
     3   Yes, I have been very sad or depressed nearly all the time
     4   Yes, I have been extremely depressed nearly all the time

6)   How many days in the past 2 weeks have you gotten less pleasure from your usual activities?
     0   No days
     1   A few days
     2   About half the days
     3   Nearly every day
     4   Every day

13)   During the past week, have you been thinking about killing yourself?
     0   Not at all
     1   Yes, I had a fleeting thought about killing myself
     2   Yes, several times I thought about killing myself, but I would not act in these thoughts
     3   Yes, I have been seriously thinking about killing myself
     4   Yes, I have thought of a specific plan for killing myself

22)   During the past week, have you been feeling pessimistic or hopeless about the future?
     0   No, not at all
     1   Yes, I have occasionally felt a little pessimistic about the future
     2   Yes, I have often felt pessimistic about the future
     3   Yes, I have been feeling very pessimistic about the future most of the time
     4   Yes, I have been feeling that there is no hope for the future

Life Impairment Section (items 23-29):

INSTRUCTIONS: Indicate below how much symptoms of depression have interfered with, or caused difficulties in, the following areas of your life during the past week (circle DNA [does not apply] if you are not married or have a boyfriend/girlfriend).

---

0 = no difficulty   1 = mild difficulty   2 = moderate difficulty
    3 = marked difficulty   4 = extreme difficulty

During the PAST WEEK, how much difficulty have symptoms of depression caused in your...

23. usual daily responsibilities..0 1 2 3 4

24. relationship with husband, wife, boyfriend, girlfriend or lover.........DNA 0 1 2 3 4

Level of Distress Section (items 30-38):

INSTRUCTIONS: Indicate below your level of satisfaction with the following areas of your life (circle DNA [does not apply] if you are not married or have a boyfriend/girlfriend).

---

0 = very satisfied   1 = mostly satisfied   2 = equally satisfied/dissatisfied
    3 = mostly dissatisfied   4 = very dissatisfied

During the PAST WEEK how satisfied have you been with your...

30. usual daily responsibilities (at a paid job, at home, or at school)...........0 1 2 3 4

33. participation and enjoyment in leisure and recreation activities.............0 1 2 3 4

Appendix S:

SPSS Syntax for Determining Depression Diagnosis from IDD Questionnaire

comment "command syntax for determining depression diagnosis with IDD".

compute fidddiag = 0.
compute fidd_a=0.
compute fidd_s1 = 0.
compute fidd_s2=0.
compute fidd_s3=0.
compute fidd_s4=0.
compute fidd_s5=0.
compute fidd_s6=0.
compute fidd_s7=0.
compute fidd_s8=0.
compute fidd_s9=0.

comment "the following sections determine status of DSM symptoms 1 and 2".
IF (fidd01 ge 2 and fidd02 ge 3) fidd_s1 =1.
EXECUTE.

IF ((fidd03 ge 3 and fidd04 ge 3) or (fidd05 ge 3 and fidd06 ge 3)) fidd_s2 = 1.
EXECUTE.

comment "this section will test whether criterion "A" of DSM is met (mood,
pleasure or interest impaired)".
IF fidd_s1= 1 or fidd_s2 = 1 fidd_a = 1.
EXECUTE .

comment "the following sections determine status of DSM symptoms 3 to 9".
IF (fidd16 ge 2 or fidd17 ge 2 or fidd18 ge 2 or fidd19 ge 2) fidd_s3 = 1 .
EXECUTE .

IF (fidd20 ge 2 or fidd21 ge 2) fidd_s4 = 1 .
EXECUTE .

IF (fidd08 ge 2 or fidd09 ge 2) fidd_s5 = 1 .
EXECUTE .

IF (fidd07 ge 2) fidd_s6 = 1 .
EXECUTE .

IF (fidd10 ge 2 or fidd11 ge 2) fidd_s7 = 1 .
EXECUTE .

```
IF (fidd14 ge 2 or fidd15 ge 2) fidd_s8 = 1 .
EXECUTE .

IF (fidd12 ge 2 or fidd13 ge 2) fidd_s9 = 1 .
EXECUTE .

comment "this section checks level of impairment from IDD 23 to 27 - two must
be scored 2 or higher".
RECODE
  fidd23 fidd24 fidd25 fidd26 fidd27
  (0 thru 1=0) (2 thru 4=1)  INTO  fiddimp1 fiddimp2 fiddimp3 fiddimp4 fiddimp5.
EXECUTE .

IF (fiddimp1 + fiddimp2 + fiddimp3 + fiddimp4 + fiddimp5) ge 2 fidd_imp = 1 .
EXECUTE .

comment "this section checks level of distress for IDD 30 to 36 - two must be
scored 2 or higher".
RECODE
  fidd30 fidd31 fidd32 fidd33 fidd34 fidd35 fidd36
  (0 thru 1=0) (2 thru 4=1)  INTO  fidddis1 fidddis2 fidddis3 fidddis4 fidddis5
fidddis6 fidddis7.
EXECUTE .

IF (fidddis1 + fidddis2 + fidddis3 + fidddis4 +fidddis5 + fidddis6 + fidddis7) ge 2
fidd_dis = 1 .
EXECUTE .

comment "this section determines diagnosis: 5 or more symptoms, one of which
is crit A, plus impairment OR distress".
IF (fidd_s1 + fidd_s2 + fidd_s3 + fidd_s4 + fidd_s5 + fidd_s6 + fidd_s7 + fidd_s8
+
  fidd_s9) ge 5 and fidd_a =1 and (fidd_dis = 1 or fidd_imp = 1) fidddiag = 1.
EXECUTE .
```

Appendix U:

Clinical Interview Script

Clinical Study Interview Form

Preamble/Disclaimer:

"As I explained to you by telephone, the purpose of this interview is to gain a deeper understanding of the experience of clinical depression, specifically how it affects you emotionally, how it affects the kinds of thoughts you experience, and the impact it has on your daily functioning.

"Before we get started with the interview, I must remind you once again that I am a student researcher with the psychology department at the University of Manitoba, and I am not qualified to provide any form of therapy or advice to you. If at any time during or after this interview you feel upset or want to speak to someone professionally about your depression, I would encourage you to contact your regular therapist or physician as soon as possible. If you feel it is necessary that you speak to someone immediately, I will escort you to the emergency department, where you can ask to see the psychiatrist on-call.

"As I explained over the telephone, this interview will be tape recorded, so that I may transcribe your answers for research purposes at a later time.

"So once again, I cannot answer any questions or provide any sort of advice. My purpose is only to gather information about you and your experience of depression. Do you have any questions or concerns before we begin?"

(YES) -answer only those questions related to the purposes or procedures of the study. For any medical questions, the individual should be told to consult with their regular physician. - continue with consent form

(NO) "Just take a moment then to read and sign this consent form, and then we can get started."

Section A: General Questions about History of Problem

1. "I would like to begin by asking you some general questions about the history of your depression. First of all, is this the first time in your life when you have felt so depressed that it significantly interfered with your life or led you to seek professional help?"

(YES - go to #2)

(NO) "How many times have experienced an episode of depression in the past?"
        (go to #2)

2. "How long has your current depressive episode been happening?"

3. "Why do you think you are depressed (referring to the current episode)?" (Prompt: "Would you say that this current episode is related to some specific event or loss in your life, or is it a chronic problem with no particular trigger?")

4. "Tell me what impact you think your depression has had on your life" (Prompt: on your work/school, family, relationships, your opinion of yourself)

4. "What do you think keeps you feeling this way?" (Prompt: What prevents you from moving past your depression and enjoying life again?)

5. "During those periods when you have not been feeling particularly depressed, when something bad happens, or you start feeling kind of sad, how much do you think you are usually able to improve your mood or prevent yourself from becoming very depressed?"

6. "How do you respond to these sad or lonely feelings so that you might prevent yourself from becoming truly depressed." (Prompt: some people like to take some sort of action to change the bad situation, some spend time thinking about ways to change the situation or understand why they are feeling sad, and others might just do something to take their minds off of the problem. Do any of these techniques sound like what you do when you begin to feel sad?)

7. "Overall, to what extent do you generally feel equipped to cope with the stresses and responsibilities of daily life (on a scale of 0% to 100%)?"

8. (If applicable, not chronic) "If I had asked you that question during the most recent time in your life when you were not depressed, how do you think you would have responded?"

Section B: Questions Related to Thoughts

7. "Quite often depressed individuals report that they have a great deal of difficulty falling asleep at night, or that they wake up often during the night. Would you say this is true for you?"

(NO - Go to # 10)

(YES) "Is this generally a problem for you, or only during periods when you are feeling depressed?"
- if GENERAL, go to # 10
- if WHEN DEPRESSED, go to #8

8. "Are you aware of a specific reason for your sleep difficulty?" (Prompt: well, for example, do you just not feel tired, do you feel physically anxious, is your mind occupied?)
- allow open-ended response to this item.
- if pre-occupation with thoughts or related response is given (go to #9) (otherwise, go to # 10)

9. When you are lying there in bed, not able to fall asleep, what kinds of things do you find are running through your mind? (Prompt: "Are there specific thoughts, memories, images, fears, plans, ideas...")

If necessary, say: "Tell me about those". Leave this as open-ended as possible.

10. "During this current period of feeling depressed, have there been any times that you can recall where found yourself pre-occupied with thoughts, mental images, or memories?"

11. Isolate up to three specific cognitive contents. For each, ask:
"Do find this is very repetitive, so that you think about it over and over again during the night, or not really?"

"Is this something that you consciously try or want to think about, or is it the kind of thing that just keeps coming to mind, no matter how hard you try to shut it out?

Appendix V:

Sample Clinical Interview Transcript

Client # 906

I just want to start off by finding out if this current episode of depression that you are experiencing is the first. Has this happened before?

Yeh.

Would you say it's a history of repeated episodes or is it sort of a long-term chronic thing? How would you describe it?

Um. Probably, I…I'd say more chronic.

OK. I'm assuming you mean chronic in that there have been more severe episodes?

Yeh.

OK. How long would you say this has been going on?

Well, being diagnosed with it, knowing for sure it was depression, happened in …that was probably…um…um…probably six years.

Do you think it went back much beyond that?

I think so, yeh.

I'm going to guess that your current episode is one of the more severe episodes within a long-term chronic level of depression? Where do you put yourself right now?

Right now, it's kind of leveled off, I think.

So it's the usual level then?

Probably, yes. Maybe just a little bit up– definitely not severe.

Why do you think you're depressed?

Why? …Um…I don't know…I guess…um…I guess because I don't feel good about myself and…um…and there have been a lot of external stressors that have, um, contributed…um…I've always had that…I never feel good enough and will never measure up or…

Any idea why that is? Why you feel that way?

Um...I'm not sure, I guess...um... just from work I've done and, and talking. I'm sure a lot of it comes from childhood, but, um... part of it's just my personality too, um...you know...I'm a perfectionist, and I like things done right...um...

Nothing's ever quite good enough, is that what you're saying?

Yeh. And I tend to be over-responsible...um...and take a lot of responsibility for things I shouldn't be.

I want to get an idea of what you feel the impact that the depression has had on your life.

Um...It's...it's...I don't even know how to describe it. It's been such a...such a change...so much so that I don't...I'm still at the point where I don't trust myself not to slip into another bad episode...it feels like...it's sort of like...um...not being able to make permanent plans, like not having any long-term goals, or um...it's almost self-defeating in some ways, you know? The way you go about sort of living..um...I mean, it's affected everything...you know...my work, ...um...my relationships...um...

So you're not feeling committed to relationships, is that what you mean?

Um...no, it's not that. I have...um...ironically, I have a..a...I tend to be, you know, pretty gullible, I know. I trust people...but, too much...but that...I think I'm learning not to trust people. Um, I mean I've...I've been married...I've been married twenty-three years so we have a pretty strong relationship...um...but there are things in the relationship as well that, you know, are concerns for me, but um...well, I mean, my first episode with depression, I was teaching full-time, and I was under quite a lot of stress...outside stressors with..um..my son mainly. But I started to do some drinking as well, and, uh...After it sort of came to a head, I had a couple of weeks..um..at home, and I wasn't given the choice about going back to school full-time...um... I was offered one day or no days. That was sort of a first experience of how people tend to view it and..um.. you know, I..I was told directly that there was a concern for the safety of the children and that...that really hurt because I'm...I'm...I'm a pretty mild-mannered, gentle person, and that...um...I mean, it's like..I don't know there's so many different areas...everywhere I look it's like always black...you know..like wanting to hide yourself from the world. Being embarrassed to show your face. Not wanting to see other people...um...I mean, people want to believe that the stigma is not there anymore, but..it certainly is still. And, um...

Related to that, what impact do you think being depressed has had on your opinion of yourself?

It hasn't helped, that's for sure. Um, Um…It's just…It's made it worst. It's um…you know I see myself as a defective human being and um…I know a lot of times it just feels that there's…there's nothing that's going to make it better – ever. Like, you know, I've done a lot of work You know, I've been in a lot of groups and tried to work on changing my thought patterns and…and still…I can still get to the point where I still have problems with the same..same negative thoughts..you know? Where something trivial might happen and I've got myself in spin for two days this week thinking the same kind of…you know…thoughts. You know, that people would be better off without me, and that I'm just a burden to everybody and, you know? And it's..it's frightening that that has much power.

What do you think you should address? What stops you from breaking out of it and getting on with your life?

I don't know…If I had the answer to that…

Well, maybe you can answer it on a more general level. Do you think, is it primarily external circumstances, do you think it's primarily something to do with you? Where do you think the difficulty lies in breaking out of it?

I think it's probably more to do with me. With those same thoughts. In that they haven't changed, regardless of what's been happening on the outside. Um…Like I say, I've been working on a lot of them and, um…but it does seem that they..they never completely disappear. Now whether it's because it's more comfortable to think like that. I've been thinking like that for so long..um..whether it's fear…whether it's um…a matter of forgiveness, or..probably all of those things.

So you think it's primarily within you? Thinking back to periods when you haven't been particularly depressed. When something bad happened or you started feeling kind of sad, how much do you think you were usually able to improve your mood, so that you didn't become more depressed?

Um….I seem to be able to do it better now um…so…I don't know…

Maybe you've just gotten better at it over time?

Um…possibly…I mean…that, and probably that there are a lot of..um…um…restraints and the fact that um…I'm constantly around other people now, whereas before I had more time to myself and I think…and um…I think the

fact that, you know, one of the people I'm around happens to be my son, makes me stop and not go that extra step or whatever, so it kind of helps to put the brakes on things. Um...I don't know if I answered your question or not...

Well, let me try to rephrase a little bit. How long ago would you have to look back to a period of time when you were feeling relatively OK. Not necessarily on the top of the world, but, relatively speaking, things weren't so bad.

Um...(long pause) Probably...I'm going to say probably a couple of weeks ago, but...maybe things have sort of just..they're sort of moving along.

Ok, well, during periods when you're not feeling all that bad, if you start feeling a little bit sad because of some set back, or you're feeling lonely, or maybe, what might you normally do to try to prevent yourself from becoming more and more depressed because of it?

Um....Well, one of the things I can try to do again, this time...I've been trying to keep up my walking. Um.. and even though it's hard to get motivated to do it, at least every second day trying to get out for a walk. So, that's one thing...um. I have, um, definitely not been turning to alcohol, so that's another positive. Um...I guess I'm trying to tell myself too that it's normal to have setbacks, and, you know. It hasn't, you know...It hasn't totally stopped you and..and..sort of looked at the fact that I can sort of get out of it quicker, and try to look at the positive. Part of that, instead of dwelling on the fact that it's happening again.

That's what you would normally do? Dwell on the fact that it's happening again and become depressed again? Is that what you mean? OK. Right now, say within the last week or so, to what extent do you generally feel able to deal with just normal day-to-day stress? Let's say on a scale of 0 to 100%?

Um...I would say about 70%.

OK. Is there a time when that's been better? When you were more able to deal with it?

Probably. It's hard to identify a time, though.

I don't need a specific, I was just wondering you know, where would you have rated yourself on that scale at your best time?

Probably not an awful lot higher...maybe 10% more

Ok. I'm going to change tracks a little bit. You sort of alluded to this to some degree, well, only back a little bit. Quite often depressed people will report that they have difficulty falling asleep. Would that be true of you?

Um…most of the time that…that's not true because I've been so tired by the time I get to bed…um.

Well, now when you say "by the time", does that mean you're staying up quite late to make yourself tired, or is it just normal daily routine?

Just normal…um..I have more of a problem with waking up and then not being able to get back to sleep.

Do you have any particular idea why you can't get back to sleep?

Um…Most of the times when that happens it's just because my mind starts racing. It just starts thinking about all kinds of things and, um, it doesn't want to stop. Sometimes there seems to be no reason at all, its just…I can't get back to sleep.

Can you give me maybe a few specifics of the kinds of thoughts that might run through your head like that?

Um..Well, I mean..it could be specific worries about what's happening. Yeh, my son is the big concern right now because he's…he's um…on parole living at a half-way house and mostly at our place. Um..I'm..I'm really frightened for him in a very protective mode right now with him. You know…my daughter's pretty stressed out. She's got a lot going on at university and planning to get married next uh, next year. And things just aren't being settled. And you know, I'm subbing this year, and, you know, I won't get called for three or four days, and right away I'll think that it's, that I've done something wrong…that they don't like me…that it's, you know….I don't know..all kinds of things.

When this happens, and your thought are racing as you said, do your thoughts tend to be the same few thoughts that are circling over and over again, or is it sort of a long series of different thoughts?

Um…It can be both ways. It can be a lot of different ones, or it can be the same ones. And typically when they're the same ones, they're going back to some really old tapes, you know…

That's an interesting word for it. Is that tapes as in sort of running through your head?

Yeh.

OK. Do you ever find when this happens, are there ever any cases when you were consciously trying to think about these things maybe to try to find a solution or an understanding of the problem? Or is it really just intrusive, things that you can't stop?

I think it's more intrusive.

OK. do you ever get the sense that it's helping? Even if you're not really doing it on purpose? That it's helping you to maybe get an understanding or a better grip on the problem? Or does it make you feel worse? Or what impact do you think it has?

I think it really makes me feel worse, you know...You feel more out of control. They just keep rolling in and you feel it. You can't see any solution to anything. It's not always at night that those things happen, but often it is.

End of interview.

Appendix W:

Clinical Transcript Coding Manual

Clinical Study: Interview Transcript Coding Manual

<u>**General Impressions**</u>

In this first section, in which we want to measure the overall qualities of the interview, try to base your judgements not only on statements that are directly relevant to the characteristic being measured, but on the general tone of all answers given to the interviewer's questions.
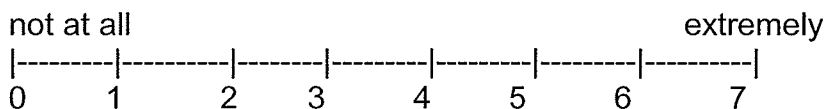
1.   How <u>negative</u> is the general tone of this interview?

not at all   extremely
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7
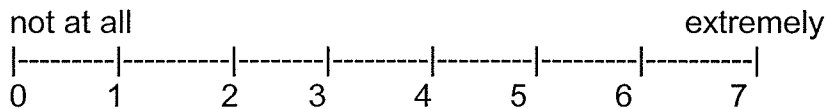
2.   How <u>positive</u> is the general tone of this interview?

not at all   extremely
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7
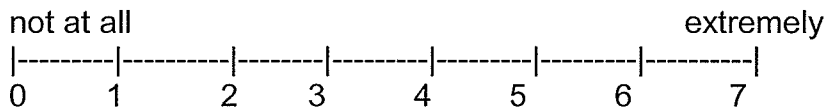
3.   How <u>depressed</u> do you think this person was at the time of the interview?

not at all   extremely
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7

4.   How <u>optimistic</u> do you think this person was at the time of the interview?

not at all   extremely
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7
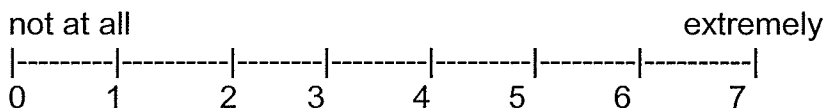
5.   To what extent did this person's thinking seem organized and clear (as opposed to rambling, tangential, off topic)?

not at all   extremely clear
|---------|----------|--------|---------|---------|---------|----------|

0   1   2   3   4   5   6   7
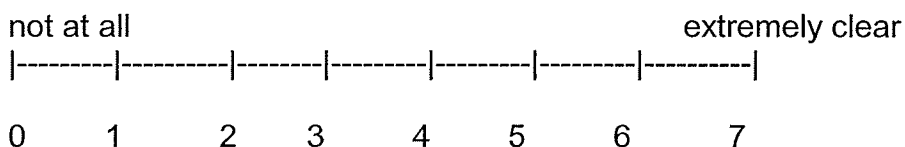
For this item, look for direct statements that may indicate that the person has become confused, lost or forgotten the poin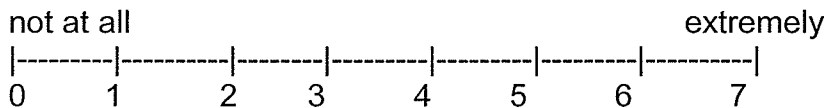t he or she was trying to make (e.g., "what was the question again?"). You should also assess the degree to which the person's responses to questions make sense to you as you read, and whether or not they seem to actually answer the question that was asked.
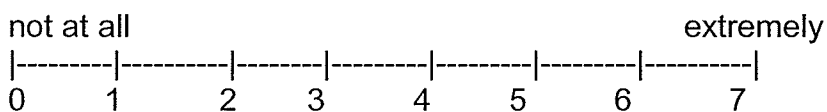
Perceived Control

Once again, though some of the interviewer's questions may be directly relevant to the following topics, try to base your impressions on the responses given throughout the interview.

For the following two items, look for statements that seem indicative a sense of or a lack of perceived control. For example, if the person seems to attribute his or her problems to external, uncontrollable (e.g., bad luck, illness, depression due to chemical imbalance, abusive history, behaviour of others, etc), then the person would be rated as having little perceived control over mood and/or problems.

6.   To what extent does this person feel able to manage or control his or her depressed mood?

```
not at all                                              extremely
|---------|----------|--------|---------|---------|---------|----------|
0         1          2        3         4         5         6          7
```

7.   To what extent does this person feel able to control/deal with problems in his or her life?

```
not at all                                              extremely
|---------|----------|--------|---------|---------|---------|----------|
0         1          2        3         4         5         6          7
```

## Presence & Degree of Ruminative Coping

For all of the following items relating specifically to ruminative thinking, refer to the attached materials which describe and provide examples of this type of thinking.

You will find that certain questions asked near the end of the interview are specifically designed to assess the use of ruminative thinking, especially that

experienced at night when the person tries to sleep.

These responses should of course be considered in your ratings for the following items, but you should also consider statements and ways of responding elsewhere in the interview which may or may not be indicative of a ruminative style, possibly in other situations and at other times of day. Again, it is important to consider the <u>entire</u> interview when making your ratings.

8.   To what extent does this person tend to display a ruminative style in coping with sad mood episodes and upsetting events?

not at all   extremely
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7
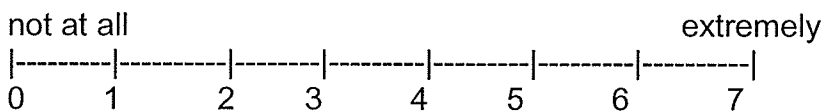
8b.   To what extent does this person tend to display a ruminative style in coping with sad mood episodes and upsetting events?

0 =   no indication of a ruminative style

1 =   some tendency to ruminate (possibly in combination with other coping strategies, such as distraction, active problem solving, seeking help from others)

2 =   seems to use rumination almost exclusively and frequently

Focus of Ruminative Thinking

9.   When this person does ruminate, which of the following seems to be the <u>main</u> focus of ruminations (circle ONE only)?

1 =   depressive symptoms and their possible impact on life (e.g., work, family, friends, future)

2 =   "what feeling depressed means about me as a person" (e.g., self-analysis, self-criticism)

3 =   devising active solutions to the problem or situation that has caused the depressed mood

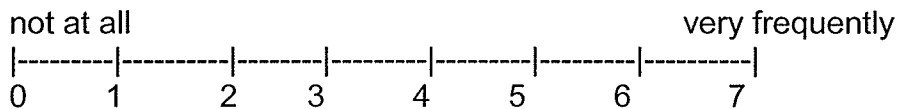9 =   not applicable (no sign of ruminative thinking)

9b.   To what extent did this person tend to talk about his or her feelings and
       the impact that feeling depressed might have on his or her life (e.g., work,
       family, friends, future)?

not at all   very frequently
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7
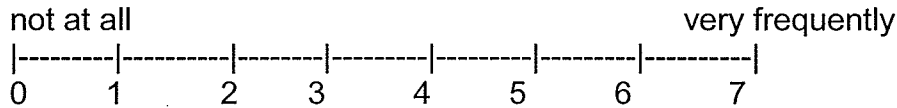
9c.   To what extent did this person tend to talk about personal characteristics
       which might be causing, maintaining or intensifying depressed moods
       (e.g., self-analysis, self-criticism, self- blame)?

not at all   very frequently
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7
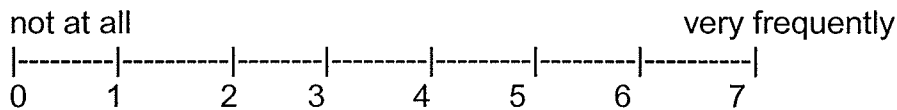
9d.   To what extent did this person tend to talk about conscious efforts to find
       solutions to the problems that might be contributing to the depressed
       mood?

not at all   very frequently
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7

Desirability and Impact of Rumination

10.   How much control does this person feel over their ruminations, and over
       their thinking in general?

not at all   extremely
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7
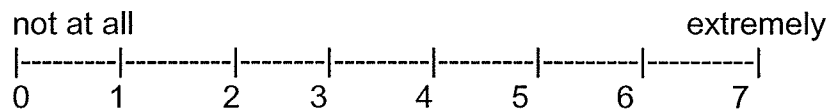
9 = not applicable (no rumination)

10b.   How much control does this person feel over their ruminations, and over their thinking in general?

0 =   rumination seems completely automatic and unintentional (i.e., cannot control)

1 =   expresses a combination of both intentional and non-intentional rumination (i.e., sometimes ruminates intentionally or sometimes able to shut it off when desired)

2 =   rumination seems entirely intentional (i.e., purposeful use of rumination as means of coping or solving problems)

9 =   not applicable (no sign of ruminative thinking)

11.   When this person does ruminate, to what extent does he or she feel this kind of thinking is helpful in reducing feelings of depression?

not at all   extremely
|---------|----------|--------|---------|---------|---------|---------|
0   1   2   3   4   5   6   7
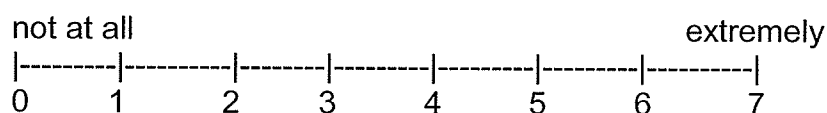
9 = not applicable (no sign of rumination)

11b.   When this person does ruminate, to what extent does he or she feel this kind of thinking is helpful in reducing feelings of depression?

0 = not at all helpful / makes problems or mood worse

1 = uncertain or ambivalent (e.g., sometimes helps, sometimes not)

2 = feels ruminative thinking is usually helpful

9 = not applicable (no sign of ruminative thinking)

12.   During the interview, to what extent did the person demonstrate a
        tendency to think about the same things repeatedly (e.g., ruminate about a
        particular event, problem, feeling, personal flaw or issue)?

not at all   extremely
|---------|----------|--------|---------|---------|---------|----------|
0   1   2   3   4   5   6   7
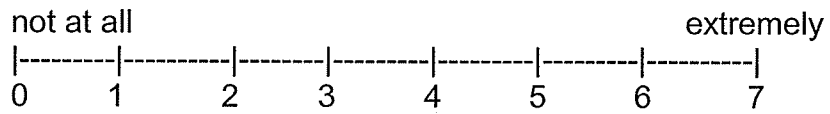
Appendix X:

Clinical Study Consent Form

Thank you for taking the time to participate in this research project, examining the impact of clinical depression on the kinds of thoughts one experiences and on an individual's daily functioning.

This study is being conducted by psychology researchers from the University of Manitoba with the cooperation of Mood Disorders Clinic of the Health Sciences Centre.

This study should take no longer than one hour to complete. You will be asked to answer a series of questions related to your ability to recall life events and thoughts.

Your responses in this study will be tape recorded so that we may analyze your responses in detail. All data that you provide will be completely confidential, and stored in a secure place in accordance with hospital policy. Once all data have been entered into the computer in coded format, all written and tape recorded materials will be destroyed by the experimenter.

Your decision to participate (or not participate) will in no way affect your future treatment at the Health Sciences Centre.

If at any time during the study you feel upset or uncomfortable, you are free to discontinue this interview. This session is for research purposes only, and the interviewer is not qualified to offer any form of therapeutic intervention. If you are concerned about how you are feeling, you may wish to contact your usual physician or a supportive friend or family member.

Once again we thank you for taking the time to participate in this research.

I have read and understand the above information and consent to participating in this research.

_____   _____
Name (print)   Date

_____
Signature

Appendix Y:

Clinical Study Debriefing Letter

First of all, I would like to thank you for taking the time to participate in this research. Now that you have completed the study, I can give you a more detailed explanation of the purpose of my research.

There is a recent theory that suggests that when some individuals start feeling down, maybe because of some minor setback in life, they have a tendency to dwell on these sad feelings and what they might mean about them as a person. They spend so much time think about these things and not actually working to solve the problem that their depressed mood lasts much longer and becomes more severe.

Unfortunately much of the research on this theory, though it has been generally supportive, has been conducted mostly with university students, and never with truly depressed people.

By asking you to reflect on your own thoughts in general, and specifically your thoughts about being depressed, I have been able to gain an understanding of your thinking styles during depressed episodes.

It is my hope that through the help of yourself and other people suffering from depression we can begin to learn more about how depression works so that we can work on better preventions and treatments.

Once again, thank you for taking the time to help us in this research, though I recognize at times this may have been painful for you, we hope that the information we gather will help us to better understand how depression develops and is maintained.

Do you have any questions for me?