

Domain Specificity of Rumination and the Depressive Affect Mediator

by

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Abstract

This study presents a preliminary investigation of rumination and its relationship with depression using a pilot sample of 196 first-year university students. The study achieved two aims. The first was to use confirmatory factor analysis (CFA) to test the domain specificity of the Multi Domain Rumination Scale (MDRS; Martin, 1999). The MDRS is a measure of rumination over stressful social and academic events. The second aim was to use structural equation modeling (SEM) to test a model in which increased depressive affect, as measured by the Beck Depression Inventory (BDI; Beck, et al., 1961) and the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendell, 1980), reduces the domain specificity of rumination and increases its severity. This model was contrasted with a model in which the causal direction between rumination and depressive affect was reversed and rumination increased depressive affect. Confirmatory factor analyses supported the domain specificity of rumination as measured by the MDRS ($\chi^2(263, N = 198) = 737.73, p < .000; CFI = .96, NFI = .93$). The SEM model in which depression leads to more severe, more global ruminations fit the data well ($\chi^2(6, N = 198) = 91.6, p < .000; CFI = .97, NFI = .97$). The SEM model in which rumination causes depressive affect also fits the data ($\chi^2(5, N = 198) = 115.24, p < .000; CFI = .96$ and the $NFI = .96$) but fits no better than the first model. Findings provide an alternative perspective to cognitive theories in which rumination leads to depression. /

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Dedication

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CHAPTER 1

Introduction

Increased self-awareness through self-focus has long been advocated as a therapeutic contributor to psychological health, development, and maturity (Trapnell & Campbell, 1999). Unfortunately, self-focus can be taken too far. When self-focus increases to become rumination, or “repetitive focus on oneself” (Watkins & Brown, 2002, p. 400), it can have a paradoxical effect on psychological well-being. Several studies have demonstrated that rumination is associated with a broad range of psychopathology, particularly with severe and long-lasting periods of depression (Ingram, 1990; Nolen-Hoeksema, 2000; Trapnell & Campbell, 1999).

Since Nolen-Hoeksema’s (1991) seminal work on ruminative response styles, researchers have studied rumination extensively in the context of depression. Significant empirical evidence supports the association between engaging in rumination and more frequent and severe depressive episodes (Just & Alloy, 1997; Nolen-Hoeksema, 1991, 2000). Despite evidence that for depressive populations, rumination exacerbates depression, in non-depressed samples rumination in and of itself is not supported as a risk factor for depression (Just & Alloy, 1997; Nolen-Hoeksema, 1991, 2000). For example, Nolen-Hoeksema and Lyubomirsky (1995) stated, “in nondysphoric participants, self-focused attention or rumination does not induce depressed mood” (p. 176). Thus, the nature of the link between rumination and the onset of depression has not been resolved in current research and the following questions persist: Is there a threshold level of rumination, after which self-focused attention becomes maladaptive? Are there specific patterns of rumination that lead to depression?

Limited understanding of the depression-rumination relationship may be due in part to previous studies approaching rumination as a global construct or entity, and limited investigation of potential domain specificity or heterogeneity of rumination. For example, in Nolen-Hoeksema's (1991) Response Styles Questionnaire (RSQ) depressive rumination is a global construct involving generalized, repetitive and negative focus on stressful events. Thus, in current measures such as the RSQ, there is no differentiation between potentially distinct domains of rumination (such as social rumination and academic rumination). Results of the RSQ may therefore represent assumed or inflated correlations between these domains. Additionally, rumination research has been limited to populations with active depressive episodes or histories of depression. Therefore, previous studies may have confounded measures of rumination with depression. As Segerstrom, Stanton, Alden, and Shortridge (2003) stated, "a large literature has demonstrated the effects of different forms of repetitive thought on psychological well-being but has offered little insight into why (different) forms of ruminative thought have (distinct) effects" (p. 919). The authors proposed that rumination researchers "should pursue more varied forms of repetitive thought" (p. 919).

Understanding of the potential domain specificity of rumination may lead to greater consistency in the definition of the rumination construct. Additionally, examination of the relationship between depression and the domain specificity of rumination may lead to improved understanding of vulnerability to depression in non-depressed samples. If non-depressed individuals tend to ruminate in a domain specific fashion and depressed individuals tend to ruminate in a global fashion across multiple domains, changes in rumination from specific to global may signal the onset of

depression. The current study tests a domain specific model of rumination in a general sample of university students using the Multi-Domain Rumination Scale (MDRS; Martin, 1999). The MDRS measures academic and social rumination as distinct domains. If assessment tools, such as the MDRS, can capture change in the structure and domain specificity of rumination, and associate this change with depression, these tools may add to the list of valid clinical indices of depression.

This study extends the work of Just, Abramson, and Alloy (1997), who identified that the association between rumination in depressed and non-depressed individuals was marginally significant. When non-depressed individuals were assessed for rumination and later re-assessed during depressive episodes, there was limited predictive validity for ruminative tendencies between states (Just & Alloy, 1997). In the current study semantic network theories (Bower, 1981) and self-theories (Markus, Cross, & Wurf, 1990) are used to suggest that the limited statistical relationship between rumination in depressed and non-depressed individuals is the result of fundamental structural differences in rumination between these groups. This study presents the argument that depressive affect mediates the structure of the ruminative construct: negative emotion as experienced during depression causes rumination to generalize and become global (in the present study, global rumination is conceptualized as ruminating broadly, across multiple domains). Alternatively, rumination in the absence of depression demonstrates domain specificity. In other words, the nature of ruminations in terms of globality and severity fluctuates with depression level. The current study uses structural equation modeling to test the hypothesis that negative affect associated with depression mediates the globality of rumination.

Theoretical Support for Depressive Mediation of Rumination

Rumination theorists have suggested that when depressed persons ruminate, their focus on negative mood increases the activation of negative memory networks (Just & Alloy, 1997; Lyubomirsky & Nolen-Hoeksema, 1995), consequently increasing or exaggerating depression. If this is the case, then we should also see increases in rumination creating dysphoria in non-depressed individuals. However, the research thus far has not found a significant relationship between depressive affect and rumination in non-depressed samples. In the current study, it is argued that rumination does not cause negative cognitive networking characteristic of depression. Rather, the hypothesis presented here is that global, cross-domain rumination occurs in the context of negative mood. Rumination may exacerbate depressed mood, but this mood precedes and mediates the structure and the consequences of rumination.

Findings of Just and Alloy (1997) and Lyubomirsky and Nolen-Hoeksema (1995) indicate that rumination in non-depressed samples has only moderate predictive validity for rumination by depressed groups. These findings are consistent with the idea that the structure of rumination varies as a function of emotionality, as posited by semantic network theory (Bower, 1981). "According to semantic network theory, a negative mood activates a network of negative memories, enhancing accessibility and probability of retrieval of these memories, as well as the retrieval of negative beliefs and schemas about the self and the world" (Lyubomirsky & Nolen-Hoeksema, 1995, p. 177).

Support for domain specificity in rumination among non-depressed persons may also be drawn from self-theories (Bong & Clark, 1999; Markus & Nurious, 1986).

"Content analyses of ruminators' ruminations suggest that many of these thoughts reflect

an uncertainty over whether important situations will be manageable or controllable” (Nolen-Hoeksema, 2000, p. 504). Self-efficacy research has demonstrated that individuals’ sense of control or efficacy is context specific (Markus, et al., 1990). Thus, if individuals feel certain about outcomes in some aspects of their lives but not others, it is likely that they will demonstrate corresponding differential or domain specific rumination.

Consider the experience of a first year undergraduate student at a prestigious university. The student may demonstrate significantly greater self-focused concern and fear about academic outcomes than social skills or athletic performance. This self-directed concern satisfies the rumination construct as defined by Nolen-Hoeksema (1991, 2000), but does not necessarily indicate depression. Previous research has not addressed the potential domain specificity of rumination, nor the potential relation between domain specificity and depression.

Research Objectives

This study presents a preliminary investigation of the psychometric properties of the MDRS using a pilot sample of university students. The current study also introduces a new theoretical perspective on the structure of rumination, and its relationship with depression. It is important to note that this study is considered a pilot investigation. The ultimate goal of this work is to justify future research wherein this new theoretical perspective is tested using large samples of heterogeneous students, who are assessed for rumination using the MDRS and other validated measures.

There are two primary objectives in the current study. The first goal was to validate the use of the MDRS as a measure of domain specific rumination. Of particular

interest was the demonstration of discriminant and convergent validity of the social and academic rumination subscales of the MDRS. It was predicted that the MDRS subscales would discriminate in non-depressed participants and would converge with participants experiencing high negative affect associated with depression. The development of valid tools for assessing the depression-rumination relationship is important because it may clarify the operational definition of rumination and its relationship to depression. Davey (1993; as cited in Osman, et al., 2001) stated, “a useful diagnostic instrument for the measurement of worry will probably result from a scale which *combines* the frequency and intensity of the act of worrying and also identifies the domains on which worrying is concentrated” (p. 55). Thus, measurement tools that assess different domains of rumination in the context of depression may determine whether depressive affect leads to a greater relationship between domains, making rumination appear global.

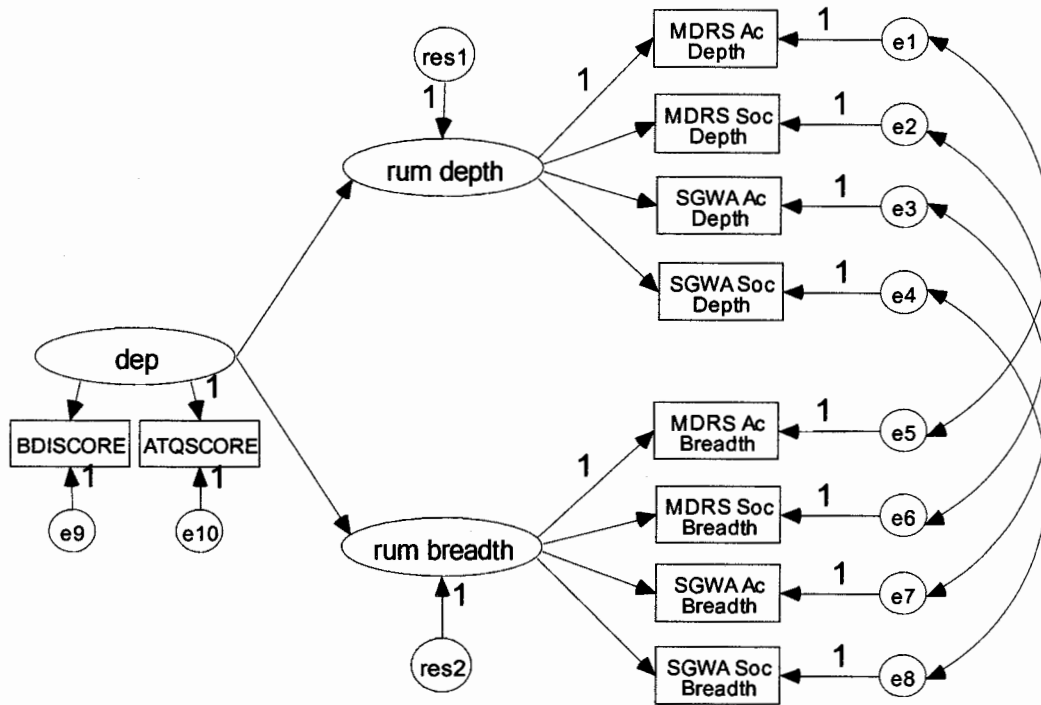
The second goal was to test a theoretical model of the influence of depressive affect on the domain specificity of students’ ruminations using theory-based structural equation modeling. The current study drew on a pre-existing data set from a larger study of 196 undergraduate students from the University of Notre Dame. To evaluate the domain specificity of participants’ ruminations, scores on the MDRS and Self-Generated Worry Adjectives – Academic and Social Subscales (SGWA; Martin, 1999) were assessed. To assess students’ levels of depressive affect, scores on the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendell, 1980) were analyzed.

In this study, structural equation analysis is applied to three models. The first is a confirmatory factor analysis model that investigates the convergent and discriminant

validity of social and academic rumination in terms of severity and globality. The second analysis, a full structural model, postulates that depression has a causal influence on rumination scores and on the severity and globality of social and academic ruminations. Specifically, the second model examines whether poor discriminant validity between rumination domains could be attributed to depression. The third and final model is a full structural model in which the causal direction between rumination and depressive affect is reversed such that rumination causes depressive affect.

Figure 1 represents the hypothesized model of the relation between depression and domain-specific rumination. The circles depict latent domains of depression, severity of rumination, and globality of rumination. Severity of rumination is defined by the latent variable, “depth” and globality of rumination is defined by the latent variable, “breadth.” The boxes represent mean questionnaire scores. Social and academic rumination variables are operationalized by scores on the MDRS and SGWA subscales. Depression is operationalized by scores on the BDI and ATQ. To support the hypothesized relations between depression and rumination, the path coefficients from depression to each of the rumination domains should be significant and positive, and the paths from each latent construct to measures of the other latent construct should be zero. In this model, depression is expected to increase the convergent validity between social and academic rumination.

Figure 1: Hypothesized Model of Depression’s Influence on Domain Specific Rumination



Higher scores on depression indices are expected to lead to greater correlation between rumination measures. The presence of depression is also expected to lead to higher scores on the MDRS and SGWA. To investigate the convergent and discriminant validity of the MDRS a confirmatory factor analysis is performed and the goodness of fit of the model to the data was assessed.

Evidence of depression’s role in the domain specificity of rumination may change how both researchers and clinicians approach the rumination construct. Generalized rumination in clients may signal onset of a major depressive episode, thus assisting clinicians with the timing of interventions for depression. Moreover, if the theoretical model of depressive mediation of rumination is supported by analyses in this preliminary

study, it will justify subsequent examination of this effect in larger populations, and comparison of depressed and non-depressed groups.

Hypotheses

1. To validate the MDRS and SGWA, factor analytic methods are applied to questionnaire data. It is expected that MDRS and SGWA data will be consistent with two distinct domains of rumination: social and academic.
2. It is expected that the present data will be consistent with the theoretical model in which higher depression scores lead to greater severity (depth) and globality (breadth) of social and academic ruminations. The influence of depression on severity and globality of rumination is tested through regression analyses and structural equation modeling.

The next chapter presents a literature review, which expands the argument that depression leads to more generalized and more severe ruminations. Current findings from rumination research are evaluated according to information processing and semantic network theories.

CHAPTER 2

Literature Review

This chapter provides a review of the literature related to the current study. First, definitions of rumination and clarification of the rumination construct are presented. This is followed by an exploration of relevant theories and research studies, which provide support for domain specific rumination and illustrate the relations between rumination and depression. A critical review of traditional theories of rumination and depression is also presented. Finally, methodological limitations of past rumination research, and the methodological contributions of the current study, are discussed. The literature presented explains theoretical foundations for the assertion that depression influences the domain specificity of rumination and that measures of generalized, global rumination may be good clinical indicators of depressive symptomology.

Defining the Rumination Construct

It is important to define rumination and distinguish the rumination construct from other self-awareness constructs (Spasojevic & Alloy, 2001). Rumination has been conceptualized in various ways. For the purposes of this study, rumination is defined as “repetitive focusing on oneself and the nature and implications of negative feelings” (Watkins & Brown, 2002, p. 400). This definition is distinct from general tendencies to self-focus such as narcissism (Nolen-Hoeksema, 1991) and from private self-consciousness such as shyness (Spasojevic & Alloy, 2001), which do not limit the construct to focusing on negative emotions.

In the present study, the distinction is also made between dysphoric rumination and non-dysphoric rumination. Non-dysphoric rumination will be used to refer to

rumination by individuals who are not depressed. Alternatively, dysphoric or depressive rumination is defined as rumination by people with depression. This type of rumination is considered to be consistent with Nolen-Hoeksema's (1991) original conception of rumination as a generalized, persistent self-focus in response to emotional distress. Trapnell and Campbell (1999) described rumination in the context of depression as providing a "conception of self-attentiveness motivated by perceived threats, losses, or injustices to the self" (p. 297).

Consistent among almost all definitions of rumination is the assertion that it is a generalized tendency (Nolen-Hoeksema, 2000). The present study argues, however, that only rumination in conjunction with depression is a global or generalized tendency, whereas rumination in the absence of depression is domain-specific. Past research has not explored the possibility that depressive rumination and non-depressive rumination differ structurally.

This study qualifies Trapnell and Campbell's (2000) conclusion that rumination is a "general risk factor for maladjustment" (p. 299). It is suggested here that the content structure of rumination varies across contexts, and that risks for maladjustment and depression vary with the globality of an individual's rumination. Global rumination may be a risk factor for maladjustment or an indicator of depressive symptomology, whereas domain specific rumination may not. This argument is founded in several theories of cognition and rumination, which are explored in the next section.

Theoretical Supports for Domain-Specific Rumination

The hypothesis that depression mediates the structure of the rumination construct is drawn from self-theories (Markus, et al., 1990) and semantic network theories (Bower,

1981). These theories provide support for the assertion that negative emotion causes rumination to generalize across domains, whereas rumination in the absence of depression demonstrates domain specificity. The relevance of each theory to the present study is reviewed below. Additionally, biological perspectives on the relationship between rumination and depression are briefly explored through discussion of affective neuroscience research.

Self-Theories. Markus and Nurius (1986) presented a theory of the self-system, which asserted that individuals' comparisons of real to idealized selves demonstrate domain specificity (Bong & Clark, 1999; Markus, et al., 1990; Markus & Nurius, 1986; Pajares, 1996). Although Nolen-Hoeksema's (1991) research on rumination does not take this domain specificity into account, her definition of ruminative self-focus parallels that of self-focus theories, which "describe self-focusing as focusing on discrepancies between one's goals and current state" (Lyubomirsky & Nolen-Hoeksema, 1995, p. 178). If comparisons of real to idealized selves is a part of ruminative responding, it is possible that rumination also demonstrates domain specificity and that individuals may ruminate more about some aspects of their lives than others. The current study incorporates the requirements for self-focus as identified by Nolen-Hoeksema (1991, 2000) and self-focus theorists by asking participants to complete the SGWA, which requires focusing on what they are afraid they will become and on the severity of their associated fears.

Semantic Network Theory. According to Bower's (1981) semantic network theory, memory storage is closely linked to, and influenced by, mood. All memories are stored with associations to the mood an individual was in during encoding, and are believed to be interconnected in "memory networks" with other memories associated

with the same mood (Bower, 1981). Thus, when an individual falls into a given emotional state, the memory networks associated with these emotions are triggered. Negative mood, for example, precipitates a network-like cognitive reaction, creating retrieval of generalized negative thoughts and memories. Lyubomirsky and Nolen-Hoeksema (1995) state that, “according to semantic network theory, a negative mood activates a network of negative memories, enhancing accessibility and probability of retrieval of those memories, as well as the retrieval of negative beliefs and schemas about the self” (p. 177). It is possible then, that rumination in the absence of depressive mood does not increase activation of negative networks. As such, the pervasive effects of negative networking, which contribute to globality of rumination in depressed samples, may not be evidenced in normal samples. Instead, non-depressed individuals may display domain-specific rumination patterns reflected in activation of specific networks.

Mood-congruence research has provided significant support for semantic network theory via empirical evidence of the influence of mood states on memory (Bower, Gilligan, & Monteiro, 1981; Varner & Ellis, 1998). Selective processing and recall of information is supported as being “affectively consistent with one’s current mood state at the expense of information that is not related to one’s current mood” (Varner & Ellis, 1998, p. 939). Bishop, Dalgleish, and Yule (2004) demonstrated that higher levels of depression led to more biased recall of negative information in a sample of depressed children, whereas lower levels of depression were associated with more accurate memory of both negative and positive information. Interestingly, the authors found that biased recall of negative information was not evident only for clinical samples; biased memory appeared in the context of sub-clinical depressive or dysphoric affect. Thus, it is

reasonable to expect evidence of biased networking for sub-clinical populations, including the sample in the current study.

Affective Neuroscience. Affective neuroscience is a “subdiscipline of the biobehavioural sciences that examines the underlying neural bases of mood and emotion (Davidson, Pizzagalli, Nitschke, & Putnam, 2002, p. 545). This area of research has helped generate new understanding of the brain circuitry and chemistry underlying depressive disorders. For example, the prefrontal cortex and the amygdala have been linked to the onset of depression (Davidson, et al., 2002; Drevets, 1998; LeDoux, 2000). Depressed individuals demonstrate hypoactivation in certain regions of prefrontal cortex (PFC), which may lead to “perseveration of negative affect” (Davidson, et al., 2002, p. 549) due to the interconnectivity of the prefrontal cortex with other regions such as the amygdala.

Davidson, et al. (2002) stated,

“hypoactivation in regions of the PFC with which the amygdala is interconnected may result in a decrease in the regulatory influence on the amygdala...This might be expressed phenomenologically as perseveration of negative affect and rumination” (p. 562).

This information is consistent with the hypothesis of the present study in suggesting that depression is a problem of emotion regulation that is consistent with global rumination, but not with the presumably more regulated domain specific rumination. Affective neuroscience research implies that neurophysiological problems among interconnected brain structures may lead to pervasive problems, causing

depressive affect and rumination. Neurophysiology reminds us that the emotional dysregulation of depression may enable dysregulated, global ruminative thinking.

Traditional Theories of Rumination and Depression

The assertion in the present study that depression leads to more severe, more global rumination challenges traditional theories of the interaction between depression and rumination. Therefore, in conducting this study, it is important that these traditional theories be considered.

Cognitive Behavioural Theory. Beck's (1963) cognitive behavioural theory is particularly relevant to the present discussion of interactions among ruminative cognitions and depressive affect. Generally, cognitive theorists posit an association between depression and the dysfunctional cognition characteristic of rumination during depression (Beck, 1995; Haaga, Dyck, & Ernst, 1991). The cognitive model "hypothesizes that people's emotions and behaviors are influenced by their perception of events" (Beck, 1995, p. 14). Beck (1995) asserted that individuals' perceptions are expressed through certain cognitions or "automatic thoughts," which lead to emotion via activation of pre-existing "core beliefs," or global schemata. Further, automatic thoughts are credited for physiological and mood state changes such as the emergence of depressed affect (Beck, 1995). In other words, we feel depressed because of dysfunctional thoughts. As Haaga, et al. (1991) stated, "dysfunctional beliefs are diatheses for depression" (p. 216).

The majority of rumination research is consistent with cognitive theory in suggesting that rumination gives rise to, or mediates, depression (Nolen-Hoeksema, 1991). The majority of rumination researchers would assert that ruminative thoughts lead

to a depressive emotional state, and that an individuals' "emotional response is mediated by their perception of the situation" (Beck, 1995, p. 14). This assertion contrasts with the hypothesis in the current study, which argues that depressed affect may also influence perceptions of certain situations.

Significant empirical support exists for the cognitive theory assertion that depressed people think more negatively about themselves (Haaga, et al., 1991), demonstrate greater discrepancy between real and idealized selves (Hewstone, Hooper, & Miller, 1981), and are more hopeless about future outcomes than non-depressed individuals (Abramson, Garber, Edwards, & Seligman, 1987; Hamilton & Abramson, 1983). However, cognitive theory researchers have not found empirical evidence to explain the origins of these dysfunctional or dysphoric cognitions (Haaga, et al., 1991). The "causal hypothesis" in cognitive theory asserts that the onset of depressive affect is a product of maladaptive cognitions. However, Beidel and Turner (1986; as cited in Haaga, et al., 1991) suggested that the causal nature of depressive beliefs and cognitive schemas for the onset of depression "can never be empirically determined, but must be accepted on faith alone" (p. 184). Haaga, et al. (1991) argues that cognitive theory's causal hypothesis is poorly founded, and suggests that there is an "important challenge for research on cognitive theory.... For dysfunctional beliefs to have documented validity as a causal construct, they must be capable of measurement and demonstrably present before an episode of depression" (p. 226).

We are thus left with an important discrepancy in cognitive theory. Although the theory posits that maladaptive beliefs and schemas provide a diathesis or vulnerability to the onset of depression, providing empirical proof for this assertion has proven difficult

(Haaga, et al., 1991). Moreover, numerous cognitive theorists have found that dysfunctional beliefs are state dependent features of depression (Haaga, et al., 1991). In a four-month longitudinal study, Hammen, Marks, deMayo, and Mayol (1985) found no evidence of negative self-schema predisposing non-depressed participants to the development, or onset of depression.

Haaga, et al. (1991) concluded that, “a fully adequate test of the onset hypothesis is difficult to devise” (p. 227). The authors suggest that refinement of the causal hypothesis is necessary. This refinement is partially addressed in the present study, which challenges the causal hypothesis by proposing that the spreading or globalization of dysfunctional thought patterns, such as ruminative focus on negative events, across content domains may be a result, not a cause of, depression.

Response Style Theory. Although response style theorists acknowledge that depressed mood may exist prior to the emergence of rumination, they do not consider rumination to be a symptom of dysphoria. Moreover, response style theory does not consider that generalized rumination may be caused by the negative cognitive networking associated with depression. Response style theory asserts that depressive affect may be present prior to ruminative thinking, while simultaneously crediting rumination for an individual’s shift from less severe depressive symptomology to major depressive episodes (Lyubomirsky & Nolen-Hoeksema, 1995). Response style theorists suggest that depressive rumination exacerbates negative thinking patterns by drawing an individual’s attention to their negative mood and negative thoughts (Nolen-Hoeksema, 1991). As Lyubomirsky and Nolen-Hoeksema (1995) state, “depressed mood activates negative thoughts, but rumination brings these thoughts to the attention of the person” (p. 177).

However, as information processing and semantic network theories suggest, the presence of negative or depressed affect alone causes negative generalized thinking patterns (Bower, 1981).

Nolen-Hoeksema (1991) suggests that, “ruminative focusing on oneself and one’s mood is not inherently depressing” (p. 571). Lyubomirsky and Nolen-Hoeksema (1995) later argue that “rumination in the absence of dysphoria (is) not associated with negatively biased thinking or poor problem solving, supporting the claim that rumination exacerbates depressogenic thinking and interferes with problem solving by enhancing the effects of dysphoria on cognition and information processing” (p. 187).

The current study extends Nolen-Hoeksema’s (1991) assertion that “self-focusing alone may not be enough to increase peoples’ access to negative cognitions” (p. 574). Self-focusing when depressed, however, may create a kind of rumination that is global and one-sidedly negative in nature. This kind of rumination would not lead to productive problem solving and self-regulation. Instead of conceptualizing the rumination-depression relationship as ruminating about depression, as is presented by Nolen-Hoeksema, it may be more appropriate to conceptualize depression as producing a global and homogeneously negative rumination. In essence, rumination in a depressive context can become dysregulated.

Measures of rumination in the absence of depression lack strong predictive validity for rumination in depressed persons (Just, et al., 2001; Kasch, Klein, & Lara, 2001). Just and Alloy (1997) found that non-depressed individuals’ rumination was correlated with their later ruminations during depressive episodes at $r = .23, p < .09$. These results convey a very moderate and marginally significant correlative relationship

between depressed and non-depressed ruminations. As Just and Alloy (1997) stated, this association between trait (non-dysphoric) and state (dysphoric) rumination scores “was only marginally significant” (p. 227). Just and Alloy (1997) also found that “a general ruminative style is correlated with the likelihood and severity of depression” (p. 227). I would qualify this conclusion, however, by suggesting that generalized ruminative responding results from depression. I would also extend Just and Alloy’s findings that, “distraction (effortful attempts by individuals to reduce rumination and divert their thoughts) and rumination were not mutually exclusive in this study and may not be in daily life” (p. 228). Thus, depressed people may be able to engage in distraction in some domains more so than in others. The coexistence of rumination and distraction may be characteristic of a more regulated, “domain-specific rumination” than global rumination. In a non-depressed state, individuals may ruminate about some things but not others.

Nolen-Hoeksema (2001) concludes, “whether self-focusing actually mediates important features of depression, including the course of depression, is not clear from existing studies” (p. 572). Empirical evidence does not wholly support rumination as a risk factor for depression (Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema, 2000). However, theoretical and empirical support exists for depression as a cause of negative cognitions and as having a relationship with rumination. Therefore, it may be appropriate to suggest that although rumination in and of itself may not be a risk factor for depression, rumination is a risk factor for more prolonged, severe depression. Rather than being a mediator of depression, unregulated, global, and negative rumination may in fact be an indicator of the severity of depression.

A distinction between rumination and depression is not operationalized in current rumination measures. Existing measures may in fact confound different dimensions and domains of rumination with each other and may confound rumination with depression (Kasch, et al., 2001; Roberts, Gilboa, & Gotlib, 1998). Methodological limitations in current measures of rumination are examined in the next section.

Methodological Issues in Rumination Research

Confounded Measures of Rumination. Just and Alloy's (1997) position that, "correlational, field, longitudinal, and experimental studies provide evidence that ruminative behaviour is highly associated with depression, and with increases in both the severity and duration of depression" (p. 222) is based on Nolen-Hoeksema's (1991) conception of rumination as a generalized dispositional behaviour. Nolen-Hoeksema (1991, 2000) defined and operationalized rumination through response style theory and the Response Style Questionnaire - Rumination Scale, respectively, as a generalized behaviour that occurred in response to depression. There are two limitations to this approach. First, Nolen-Hoeksema's (1991) response style theory does not accommodate investigation into whether, or the degree to which, rumination is domain-specific. The RSQ Rumination Scale cannot determine whether individuals ruminate about specific aspects of their lives, or only in specific contexts. Moreover, much of the RSQ Rumination Scale based research only assesses rumination in depressed samples. Thus, depression may confound measures of rumination. The current study proposes that individuals may indeed demonstrate rumination that occurs within a circumscribed content or content domain. This study also supports the examination of rumination in non-depressed individuals as a way to gain insight into the structure of rumination in the

absence of depression, thereby shedding light onto depression's influence on ruminative behaviour.

Recent studies suggest that scores on the RSQ Rumination Scale are influenced by mood state and clinical status. Kuehner and Weber (1999; as cited in Kasch, Klein, & Lara, 2001) found that individuals with major depressive disorder whose condition remained stable did not demonstrate higher RSQ stability scores across multiple assessments using the Rumination Scale than did patients who improved or deteriorated. These findings suggest that rumination may vary as a function of clinical status.

Roberts, et al. (1998) found that current mood state influences scores on the RSQ Rumination Scale. In three different groups of college students, individuals with a history of depression reported significantly higher scores on the RSQ Rumination Scale than did participants with no history of depression. This suggests that participants with remitted depression ruminate more severely than individuals who have never had a depressive episode. Moreover, individuals with higher levels of depressive symptoms at the time of testing reported greater rumination than participants with remitted depression, which indicates the influence of mood status or clinical history on reported rumination levels (Kasch, et al., 2001; Roberts, et al., 1998).

Tests of the stability of the RSQ Rumination Subscale have produced variable results. Nolen-Hoeksema, Parker, and Larson (1994) reported that the stability of the RSQ Rumination was .80 over a five-month period. Nolen-Hoeksema (2000) subsequently reported that the RSQ had a stability of .62 over a 12-month period. Kuehner and Weber (1999) found the 3-month stability of Rumination Subscale was .56. Just, et al. (2001) found that the stability of the Rumination Subscale was .47 over a 12-

month period. Lack of stability in RSQ Rumination Subscale scores within individuals implies that these individuals' rumination tendencies, as measured by the RSQ, vary. The samples in the above studies were comprised of individuals with existing or remitted depression. Therefore, this variability in RSQ scores may be attributed to varying levels of depressed affect in these individuals; it may be possible that the RSQ confounds ruminative behaviour and depressive symptomology.

In order to assess ruminative cognitions without confounding depression and rumination, there is a need for greater specificity in rumination research. Specifically, studies are needed that investigate rumination in populations with no history of depression as well as its relations with depression. The present study presents two measures of rumination, both of which allow assessment of ruminative thinking in distinct domains. The Multi-Domain Rumination Scale (MDRS; Martin, 1999), developed for use in the Notre Dame Faculty of First Year study (FYS), assesses the degree of rumination about stressful events in the distinct domains of academic and social performance. The MDRS is a modified version of the RSQ, which facilitates assessment of rumination in distinct domains. The Self-Generated Worry Adjectives – Academic and Social Subscales (SGWA; Martin, 1999) was developed to assess domain-specific concerns among university students. The instrument is unique in that it asks participants to self-generate the “items” for each domain; this is in contrast questionnaires on which participants are asked to endorse propositional statements imposed by the researcher. Allowing participants to construct their own content description for a domain of worry may increase the validity because it may more closely reflect actual concerns based on their own semantic networks. The SGWA allows idiosyncratic definitions of rumination

within each broad domain (e.g. social and academic), thus producing idiographic data. In contrast, the MDRS, with its prescribed definitions of rumination within each domain, produces a nomothetic data set.

Methodological Contributions of the Current Study

In order to support the validity of the MDRS and SGWA scales for use with student populations, past research on the content of student worries is considered. Additionally, structural equation modeling is presented as an important technique for advancing rumination research through exploration of research questions regarding complex relationships between rumination and depression.

Content of Undergraduate Concerns: What are Students Worrying About? To support the current investigation of distinct domains of social and academic rumination, it is important to consider findings from previous research on the types and patterns of undergraduate students' worry. Several studies have examined domains of worry among normative undergraduate samples. Osman, et al. (2001) developed the Student Worry Questionnaire-30 to measure domains of undergraduate students' concerns. The Student Worry Questionnaire-30 was administered to 350 undergraduates. Principal components analysis with oblimin rotation and confirmatory factor analysis supported the existence of multiple domains of student worry. Specifically, the authors found that undergraduate university and college students report worrisome thinking in six domains: financial-related concerns, significant others' well being, social adequacy, academic, and general anxiety.

Other studies have reported similar findings regarding type and number of undergraduate students' domains of worry for international student samples (Deressa &

Beavers, 1988; Parr, Bradley, & Bingi, 1992; Yi, Jun-Chih Giseala Lin, & Kishimoto, 2003). Yi, et al. (2003) found that international undergraduate students at American universities reported concerns in five domains: “academic, physical health, financial, vocational, and personal/social” (p. 334). The convergence of findings across studies and across student cultures supports the hypothesis that social rumination and academic rumination are distinct constructs.

Structural Equation Modeling. “Over the past two to three decades, structural equation modeling (SEM) has become a popular research tool in the social sciences, including psychology, management, economics, sociology, political science, marketing, and education” (Anderson, 1987, p. 49). The strengths of SEM include simultaneous assessment of various types of relations among variables, and rigorous examination and comparison of similarities among, and differences between, two or more groups of study participants (Anderson, 1987; DiLalla, 2004). Because structural equation models allow the analysis of an hypothesized set of relationships among numerous variables, and can test causal or mediational processes (DiLalla, 2004; Ullman, 2001), these models are useful in the systematic development and testing of theories in social and behavioural sciences (Mulaik, 1987). Thus, SEM provides a powerful methodological tool to bridge the gap between theory and research (Anderson, 1987).

Previous rumination studies have primarily employed analyses of variance and multivariate analyses of variance to test differences in rumination tendencies between depressed and non-depressed groups (Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema, 2000). Structural equation models have not been used to assess how changes in depression levels influence ruminative tendencies. Thus, the current study presents a

new methodological approach to the study of rumination, which facilitates testing of a domain-specific rumination theory, and the examination of potential mediational effects of depression on the structure of the rumination construct.

Clinical Application of Findings. Good self-knowledge is considered essential for healthy adjustment. Self-knowledge is demonstrative of psychological health, whereas “heightened self focus appears to be implicated in a remarkably broad range of psychopathology” (Trapnell & Campbell, 1999, p. 286). This appears paradoxical but may be explained by the mediational effects of depression on the outcomes of self-focus. If depression is found to mediate the change from domain specific to a more generalized or global ruminative style, it is possible that measures of rumination which delineate levels of globality may be useful clinical indicators of depression. Thus, this research may expand clinical indices of depression and allow for more accurate assessment of depressive symptoms and better timing of interventions.

CHAPTER 3

Method

This chapter presents information regarding methods employed in the current study. Specifically, the participants, measures, and data collection procedures are described.

Participants

As part of a larger study, 196 students from the University of Notre Dame's Faculty of First Year of Studies completed a battery of self-report measures. Prior to participant solicitation, this study was approved by the Notre Dame Human Subjects Committee and by the Dean of Notre Dame's Faculty of First Year Studies. Nine participants' questionnaires were discarded due to missing data, leaving 187 participants (111 females; 76 males), with an age range of 17 to 20 years ($M = 18.9$ years).

Measures

Multi-Domain Rumination Scale. The 30-item Multi-Domain Rumination Scale (MDRS; Martin, 1999), developed for use in the Notre Dame Faculty of First Year study, assesses the degree of rumination in the academic and social domains. Each of the social and academic subscales consists of 15 items, which are statements from the Response Styles Questionnaire (RSQ; Nolen-Hoeksema, 1991) that Martin (1999) reworded to reflect domain specific ruminations. The following is an example of instructions given for the academic subscale:

“Everyone who is in school experiences many stressful academic events, but some people think about them a lot and some very little. A stressful academic event could include getting a bad grade, receiving negative feedback on a paper, or not

understanding class material. We are interested in the degree to which you focus on or become preoccupied with particular kinds of thoughts in response to what you believe is a NEGATIVE ACADEMIC event in your life.”

Individuals indicate levels of rumination using a 10-point Likert scale that ranges from 0 = “I spend very little time doing this,” to 10 = “I do this all the time and I can’t seem to stop.” The MDRS also includes somatic indicators (not included in the Nolen-Hoeksema measure) such as loss of sleep due to the inability to inhibit rumination about either social or academic problems. See Appendix A for the full MDRS scale.

Beck Depression Inventory. The Beck Depression Inventory (BDI; Beck, et al., 1961) is a 21-item self-report measure of depressive symptoms and affect presented in a multiple-choice format. The items describe somatic, affective, social, and suicidal ideation symptoms. Scores range from 0 to 36, with higher scores indicating a greater number of depressive symptoms. In normal populations, extensive research has found that scores greater than 15 predict clinical diagnoses of mild depression (Oliver & Simmons, 1984). The BDI is an efficient and valid assessment tool with reported correlations of .68 and .71, respectively (Steer, Beck, & Riskind, 1987) with The Revised Hamilton Psychiatric Rating Scale for Depression (Hamilton, 1960) and the Beck Hopelessness Scale (Beck & Steer, 1988).

Automatic Thoughts Questionnaire. The Automatic Thoughts Questionnaire (ATQ; Hollon & Kendell, 1980) is a 60-item inventory designed to assess the existence and frequency of negative self-statements associated with depression. Individuals respond to statements such as “I am respected by my peers,” and “the world doesn’t like me” using a 5-point Likert scale (1 = “never” to 5 = “all the time”) based on how frequently

these thoughts occur to them. Research on both clinical and sub-clinical depressive populations has established the validity and reliability of the ATQ (Hollon & Kendall, 1980).

Self-Generated Worry Adjectives – Academic and Social Subscales (SGWA). This questionnaire, developed by Martin (2000) for use in the Notre Dame Faculty of First Year study, asks participants to generate five self-descriptive adjectives or phrases in four domains (social, academic, appearance, and athletic). The scale is titled “What I am afraid I might become,” and directs participants to “Write down 5 feared self-descriptive adjectives in each domain,” and then “Rate each adjective on how much you worry that it might be or might become true of you.” Participants indicate the severity of each concern using a 5-point Likert Scale that ranges from 1 = “a little worried” to 5 = “very worried.” The strength of this measure is that it allows respondents to define each domain in terms of their own experience by generating their own descriptions (e.g., “dumb,” “I will be lonely,” or “I’ll fail my courses”), in contrast with typical questionnaires in which the researcher generates propositional statements to which participants indicate their agreement/disagreement. Allowing participants to generate areas of worry themselves may increase the validity of domain-based rumination assessment.

Procedure

A random selection of students in the Notre Dame Faculty of First Year of Studies (FYS) were invited to participate in the present study through a letter from their Dean, which was followed up by a phone call from the FYS secretarial staff. If they agreed to participate, they were phoned by the research staff and given an appointment date for testing. All measures were administered in a Psychology Department research laboratory.

Students were presented with questionnaire packets, which were completed in paper and pencil format. All participants completed the Beck Depression Inventory first, in order to screen for severe depressive disorder. In order to control for order effects, subsequent questionnaires were presented in a variety of orders. All students received a \$5.00 reward for participation in the study. Total participation time was approximately one hour.

CHAPTER 4

Results

This chapter is divided into three major sections. The first section presents preliminary analyses. Specifically, descriptive statistics are presented for questionnaire data, and skewed distributions of the BDI and ATQ data are discussed. Additionally, creation of composite depth and breadth variables for the MDRS and SGWA is described. In this section, the results of exploratory factor analyses are detailed. The second section presents primary analyses of the predictive relationships between depression and rumination. Specifically, the final factor structure for the MDRS is presented. Regression and structural equation analyses are also detailed. The goodness of fit of the hypothesized model is discussed based on three different fit indices. In the final analysis section, a theoretical model in which ruminations predict depression is tested for goodness of fit to the present data, in order to challenge the hypothesized model.

Preliminary Analyses

Prior to the structural equation analyses, three sets of preliminary analyses were conducted. First, descriptive statistics, distributions, and normality of questionnaire scores and demographic information were computed. Descriptive Statistics for the BDI, ATQ, and the MDRS depth and breadth scores are presented in Table 1.

Table 1: Descriptive Statistics for Questionnaire Scores

Measure	M	SD	Min	Max	Skew
BDI	7.00	5.95	0.00	31.00	1.53
ATQ	42.39	21.90	15.00	125.00	1.50
MDRS Academic Depth	65.72	23.89	15.00	122.00	.24
MDRS Social Depth	69.07	26.64	15.00	141.00	.10
MDRS Academic Breadth	5.25	4.11	0.00	15.00	.50
MDRS Social Breadth	5.88	4.67	0.00	15.00	.33
SGWA Academic Depth	15.83	5.76	2.00	25.00	-.17
SGWA Social Depth	16.12	4.93	5.00	25.00	-.12
SGWA Academic Breadth	4.22	.73	3.00	5.00	-.38
SGWA Social Breadth	4.14	.92	1.00	5.00	-.96

Pearson's Coefficient of Skew ($Skew_p$) was used to assess the symmetry of distributions for the each score. The $Skew_p$ for BDI and ATQ scores are 1.53 and 1.5 respectively, which reveals a significant positive skew for both measures. Given the low incidence of depression relative to the population at large, this positive skew is an accurate representation of a non-clinical student population. The distribution of BDI and ATQ scores are presented in Figures 2 and 3, respectively.

Figure 2: BDI Distribution

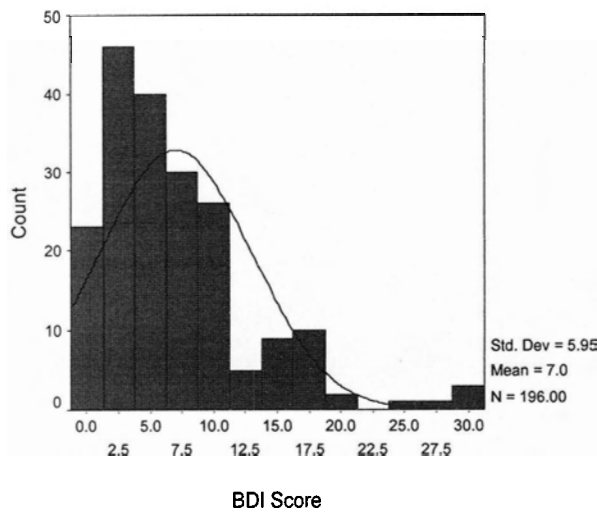
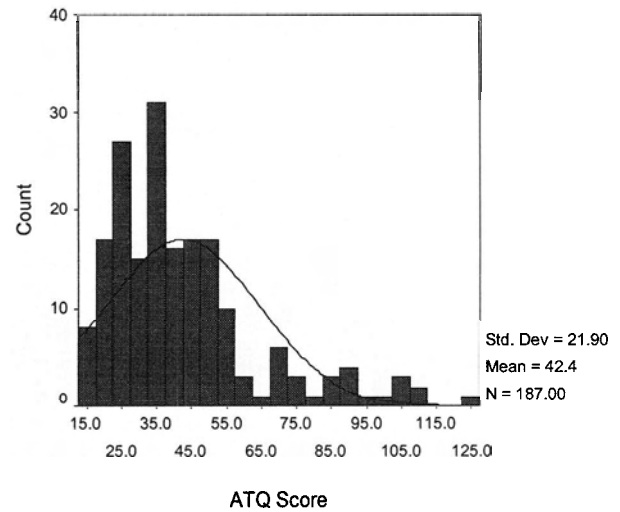


Figure 3: ATQ Distribution



Second, the MDRS and SGWA yielded several composite scores. Each person received a breadth score, indicating the globality of rumination (i.e., the number of different ruminations across social and academic domains). Each participant also received a depth score, indicating the severity of rumination in each of the social and academic domains. The MDRS subscale breadth score was calculated by counting the total number of items with scores greater than 6 for each participant. The MDRS depth score represented the total domain severity score. The SGWA depth score represented the summed severity scores for all adjectives listed within each domain. To calculate SGWA breadth scores, two raters independently tallied the number of distinct worries listed by each participant.

Third, correlations were run to examine the relationships among SGWA and MDRS scores. Correlation coefficients are presented in Table 2.

Table 2: Correlations

	BDI	ATQ	MDRS Ac Depth	MDRS Ac Breadth	MDRS Soc Depth	MDRS Soc Breadth	SGWA Ac Depth	SGWA Ac Breadth	SGWA Soc Depth
ATQ	.59**								
MDRS Ac Depth	.64**	.51**							
MDRS Ac Breadth	.65**	.47**	.93**						
MDRS Soc Depth	.52**	.45**	.73**	.67**					
MDRS Soc Breadth	.52**	.41**	.68**	.67**	.93**				
SGWA Ac Depth	-.30**	-.24**	-.26**	-.25**	-.22**	-.20**			
SGWA Ac Breadth	.01	.02	.09	.02	-.10	.04	-.21		
SGWA Soc Depth	-.39**	-.25**	-.34**	-.34**	-.43**	-.42**	.47**	.13	
SGWA Soc Breadth	-.12	.03	.00	-.02	.02	.02	-.02	-.08	.19*

NOTE: ** = $p \leq .001$; * = $p \leq .05$

As predicted, there was a significant positive correlation between BDI and ATQ scores ($r = .59, p < .001$), suggesting that both questionnaires represent the depressive affect construct. Academic and social MDRS severity scores correlated significantly ($r = .73, p < .001$), as did MDRS social and academic breadth scores ($r = .67, p < .001$). As predicted, higher BDI scores were associated with an increase in both the severity of ruminations and the number of categorical ruminations expressed by students. Greater levels of depressive affect were positively related to the globality or pervasiveness of both academic ($r = .65, p < .001$) and social ($r = .52, p < .001$) rumination, which provided support for the second hypothesis.

Results indicated that SGWA scores were not related to other measures as was anticipated. A negative relationship emerged between SGWA severity scores and MDRS severity scores in both social ($r = -.43, p < .001$) and academic ($r = -.26, p < .001$) domains. Similarly, SGWA breadth scores were not correlated with MDRS breadth scores in either social or academic domains. The SGWA was also negatively correlated with both the BDI and the ATQ. Consequently, SGWA data was removed from further analysis.

Principal Components Analysis. A principal components analysis was conducted to investigate the psychometric properties of the MDRS and to determine if rumination, as measured by the MDRS, is best represented as a single global factor or as two, domain specific, social and academic factors. Principal factors extraction with oblimin rotation was performed using SYSTAT 10.2 on item severity scores from the MDRS.

Principal components extraction with varimax rotation was performed on the 30 MDRS items. Five factors with eigenvalues greater than or equal to 1 were extracted. With

a cut-off of .30 for inclusion of a variable into the interpretation of a factor, only two variables loaded onto each of the fourth and fifth factors. No clear conceptual structure was represented by fourth and fifth factors. Therefore, principal factors extraction with varimax rotation was set for three factors and re-run. In the three-factor extraction, using a cut-off of .40 for inclusion of a variable into the interpretation of a factor, twelve of the 30 MDRS items (6 academic and 6 social) loaded onto the first factor, all academic items loaded onto the second factor, and all social items loaded onto the third factor. This three-factor solution resonated with the questionnaire structure of two underlying factors of social rumination and academic rumination, which were each components of a third, overarching factor: the general rumination construct.

Due to the loading pattern of social and academic variables onto two distinct factors, a final principal components analysis was conducted to determine whether a two-factor solution better explained the MDRS structure. Oblique rotation was requested due to the expected conceptual relationship (and the common variation along the third factor in the previous solution) between the two types of rumination as components of a general rumination construct.

Principal components extraction was set for two factors. With a cut-off of .40 for inclusion of a variable in the interpretation of a factor, the following five variables did not load on any factor: SOSLEEP (“losing sleep because you can't stop thinking about the stressful event”), SOTALKING (“talking about the stressful social event”), ACTALKING (“talking about the stressful academic event”), ACALWAYS (“thinking about how things like this always happen to you”), ACNOTOTH (thinking about why this kind of thing happens to you and not others”). These variables were removed from the data set and the

analysis was rerun. The final factor solution is presented in Table 3 (See Appendix B for a complete list of MDRS items). Variables are ordered and grouped by size of loading to facilitate interpretation.

Table 3: Factor Loadings, Communalities (h^2) and Percents of Variance for Principal Factors Extraction and Oblimen Rotation on MDRS Items (N = 187).

Item	Rotated Factor Pattern		h^2
	F_1	F_2	
SOFAULT	0.84	-0.06	.70
SOFUTURE	0.82	-0.04	.67
SONOTOTH	0.82	0.01	.67
SOLEADTO	0.81	-0.01	.65
SOIMPORT	0.80	-0.06	.65
SOMEANS	0.80	0.02	.64
SOALWAYS	0.79	0.03	.63
SOCOPEFU	0.74	-0.00	.54
SOREPLAY	0.71	0.09	.52
SOOTHERA	0.71	0.07	.50
SOCAUSES	0.69	-0.04	.48
SOFAULTS	0.66	0.14	.45
SOHANDLE	0.64	0.12	.43
ACFUTURE	-0.07	0.88	.77

Table 3 (continued).

Item	Rotated Factor Pattern		
	F_1	F_2	h^2
ACLEADTO	-0.01	0.83	.69
ACMEANS	-0.02	0.75	.56
ACOTHERA	0.04	0.74	.55
ACSLEEP	-0.13	0.72	.54
ACCAUSES	-0.05	0.69	.48
ACFAULTS	0.15	0.67	.46
ACIMPORT	0.04	0.66	.44
ACHANDLE	0.15	0.63	.42
ACCOPEFU	0.02	0.62	.39
ACFAULT	0.10	0.61	.38
ACREPLAY	0.22	0.53	.33
Percent of Variance	31.41	24.78	

The 2-factor solution resonated with the design structure of two underlying factors of social rumination and academic rumination. Items related to social rumination loaded on the first factor, whereas items related to academic rumination loaded on the second factor. This solution accounts for 56.2% of the overall variance, with Factors 1 and 2 explaining 31.4% and 24.8% of the variance, respectively. The correlation between the oblique factors was high, $r = .63$. This 2-factor solution defined the variables well.

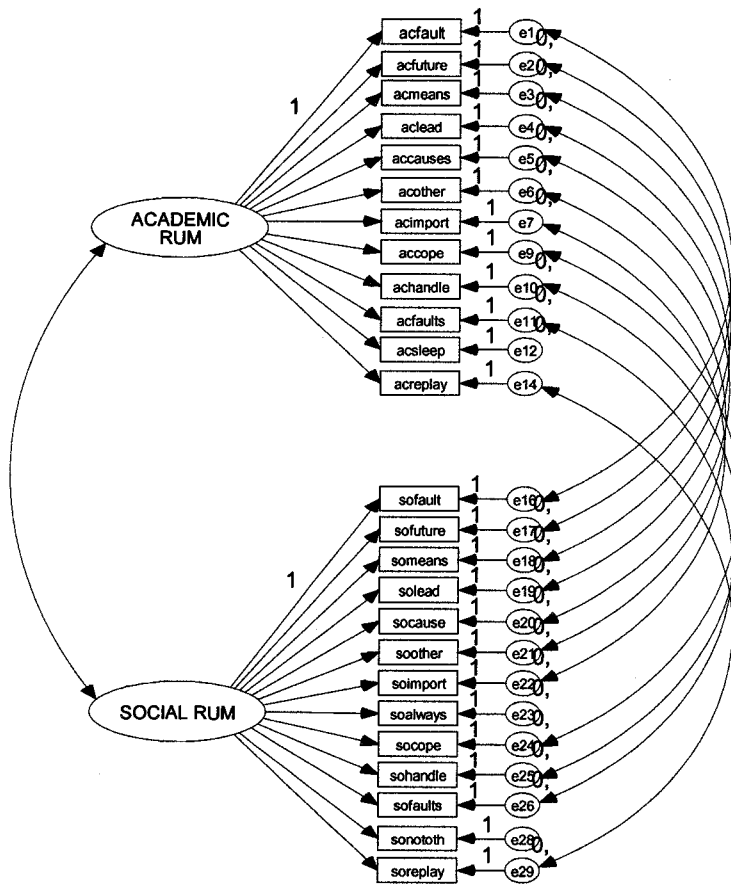
Communality values, presented in Table 1 tended to be high. For all variables, $h^2 > .30$, indicating that over 30% of each variable was accounted for by this solution.

Results of the principal component analyses for items on the MDRS provide a good theoretical framework for variable loadings and for the structure of the questionnaire. The pattern of loadings is meaningful, as social items load onto factor one and academic items load onto factor two. Moreover, this solution accounted for almost the same amount of variance as the three- and five-factor solutions. Therefore, this solution was accepted. These results support the assertion that rumination occurs in distinct social and academic domains.

Confirmatory Factor Analysis

After the five ill-fitting items were dropped from the MDRS scale, a confirmatory factor analysis was performed on the remaining 25 MDRS items using Analysis of Moment Structures (AMOS; Arbuckle, 1997) software. The hypothesized model is presented in Figure 4 where circles represent latent variables and rectangles represent measured variables. Absence of a line connecting variables implies no hypothesized direct effect. A two-factor model of social rumination and academic rumination was hypothesized. The thirteen Social MDRS variables serve as indicators of social rumination, whereas twelve Academic MDRS variables serve as indicators of academic rumination. The two factors were hypothesized to covary with one another as components of a general rumination construct.

Figure 4: MDRS Confirmatory Factor Analysis Model



Maximum likelihood estimation was employed to estimate all models. The independence model which tests the hypothesis that all variables are uncorrelated was rejected, $\chi^2(325, N = 198) = 10,869.39, p < .000$. Although the chi-square statistic was significant for the hypothesized model, $\chi^2(263, N = 198) = 737.73, p < .000$, this statistic is sensitive to sample size and normality of distribution (Hair, Anderson, Tatham, & Black, 1998; Ullman, 2001). Therefore, it is important to examine other goodness of fit measures, particularly when data are non-normally distributed. Support was found for the hypothesized model, using comparative fit index (CFI) = .96 and normative fit index

(NFI) = .93, which indicate that the proposed model is a significantly better fit than alternate (independence) models. Therefore, the confirmatory factor analysis indicates that the two-domain model is consistent with the data.

Reliability statistics were calculated for the MDRS using SPSS. For the 25-item questionnaire, the internal consistency (α) was 0.95 which indicates a coherent item set. The internal consistency (α) of the academic and social MDRS subscales were 0.91 and 0.94, respectively, indicating relatively coherent subscale item sets.

Regression Equations. Prior to conducting structural equation modeling, regression equations were conducted to determine whether a predictive relationship between depression and rumination exists. The presence of a relationship would justify proceeding to structural equation analyses.

A multiple regression analysis was performed to examine the relative importance of breadth and depth scores of social and academic rumination in predicting depression (Tabachnick & Fidell, 2001). Three regression equations with the MDRS data and listwise deletion were calculated for both depth and breadth scores. Data were entered in blocks in order that the change in R^2 could be assessed based on the introduction of each variable. In the first regression equation, breadth and severity scores for the academic MDRS subscale were regressed onto depression level as measured by BDI score. In the second regression equation, breadth and severity scores for the social MDRS scale were regressed onto ATQ score. Results for the first and second regression equations are presented in Table 4.

Table 4: Change in R^2 of MDRS Variables as Predictors of the BDI and ATQ by Domain

		Breadth Entered First			
		Academic Domain		Social Domain	
MDRS		BDI	ATQ	BDI	ATQ
	Breadth	.40***	.19***	.27***	.17***
	Depth	.01	.03**	.01	.03**
		Depth Entered First			
		Academic Domain		Social Domain	
MDRS		BDI	ATQ	BDI	ATQ
	Depth	.38***	.23	.26***	.20***
	Breadth	.03**	.00	.01	.00

Scores = R^2 increase for second step (incremental R^2)

NOTE: ** = $p \leq .05$; *** = $p \leq .001$

These results indicate that for the BDI, the pervasiveness of rumination was predictive of depression over and above the depth of rumination in the academic domain ($R^2 = .03$, $p < .001$), but not in the social domain. Depth of rumination was not predictive of BDI score over and above breadth of rumination. In accordance with the hypothesis in the current study, there appears to be a differential relationship between depression and each type of rumination. Not only do breadth and depth demonstrate different predictive relationships with depression, social and academic rumination were also differentially predictive of depression. Academic ruminations were slightly more predictive of BDI

score (R^2 Academic breadth = .40, $p < .001$; R^2 Social breadth = .27, $p < .001$; R^2 Academic depth = .38, $p < .001$; R^2 Social breadth = .26, $p < .001$). This result is not surprising, as the present student sample are attending an Ivy League university, and therefore academic concerns are more likely to be more pervasive than social concerns. These findings support the present theses that rumination is a multi-dimensional construct, and that domains of rumination contribute differentially to depression. Consideration of domain specificity is important when assessing rumination.

Subsequent to the regression of individual rumination scores on depression, social and academic breadth scores were combined to create a composite breadth variable. Social depth and academic depth scores were also combined to create a corresponding composite depth variable. Composite variables were then regressed onto depression level in a third and final regression equation. Results for regression onto BDI and ATQ scores are presented in Table 5.

Table 5: Change in R^2 for Composite MDRS Variables as Predictors of the BDI and ATQ by Domain

Breadth Entered First		
Academic and Social Composite Variable		
MDRS	BDI	ATQ
Breadth	.42***	.22***
Depth	.00	.03**
Depth Entered First		
Academic and Social Composite Variable		
MDRS	BDI	ATQ
Depth	.39***	.25***
Breadth	.03**	.00

Scores = R^2 increase for second step (incremental R^2)

NOTE: ** = $p \leq .05$; *** = $p \leq .001$

Results of composite depth and breadth variable regressions indicate that for the BDI, rumination breadth predicts depression over and above rumination depth (R^2 Breadth = .03, $p < .001$). However, for the ATQ, the opposite result was found; depth of ruminations were predictive of ATQ score over and above breadth of rumination (R^2 Depth = .03, $p < .001$). Differential findings between regression onto BDI and ATQ scores may be due to severity or incremental effects of depression. Depression as measured by the ATQ may not be as sensitive to the differences between severity and breadth of ruminations. Researchers have suggested that the ATQ measures part of the

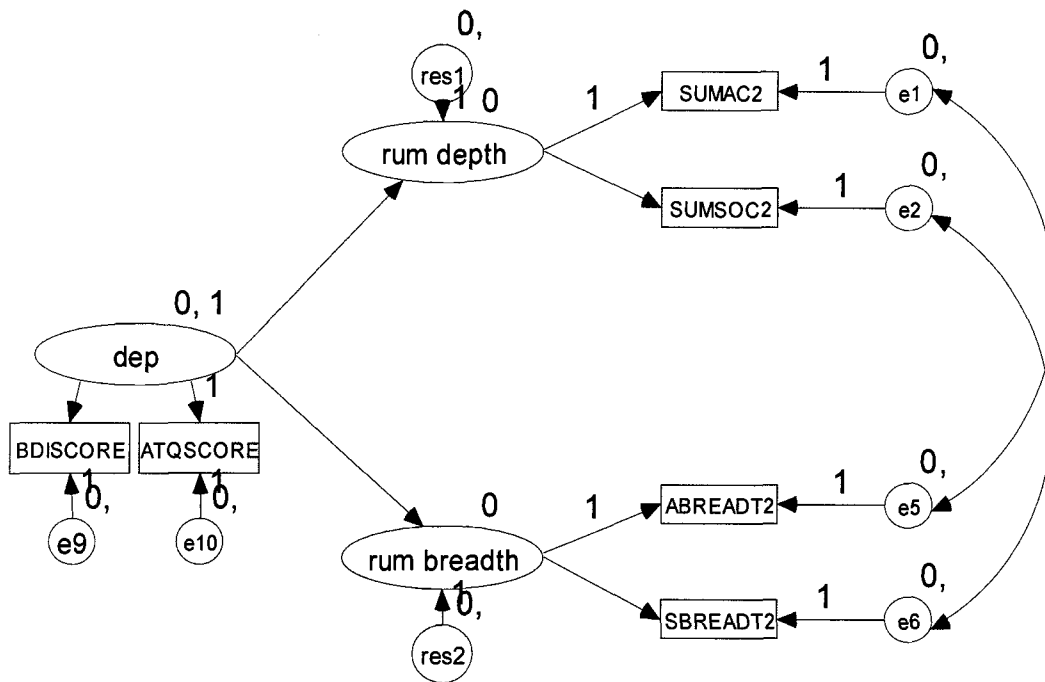
depression construct, but does not measure the general or overall depression construct, as does the BDI (Haaga, et al., 1991). These aspects of the ATQ are explored further in the next chapter.

Structural Equation Models of Depression and Domain Specific Rumination

The structural equation model presented in Figure 3 was constructed using AMOS and tested against the existing data. Relationships were examined between depression, a latent variable with two indicators (ATQ and BDI scores), depth of rumination, a latent variable with two indicators (MDRS Social Subscale Total Score and MDRS Academic Subscale Total Score), and breadth of rumination, a latent variable with two indicators (MDRS Social Subscale Globality Score and MDRS Academic Subscale Globality Score). The hypothesized model is presented in Figure 5.

Figure 5 illustrates the hypothesis that depression directly affects both depth and breadth of ruminations in social and academic domains. High levels of depression predict high levels of severity (depth) and globality (breadth) in social and academic ruminations. Additionally, the relationships between the severity and globality of ruminations and between social and academic ruminations, are mediated by depression. Paths of influence from each rumination construct to the measured variables for the other construct are not considered to be significantly different from zero, and are therefore excluded from the model.

Figure 5: Hypothesized Structural Equation Model



Model Estimation. Maximum likelihood estimation was employed for all models. Due to non-normal distribution of depression scores, goodness of fit was assessed using the χ^2 statistic as well as the CFI and NFI statistics. The independence model, in which depression and rumination variables were uncorrelated, was easily rejected with a significant chi-square ($\chi^2(21, N = 198) = 2607.94, p < .001$). However, support was found for the hypothesized model. Despite a significant chi-square ($\chi^2(6, N = 198) = 83.91, p < .001$) the hypothesized model provided a good fit to the data based on a CFI of .97 and a NFI of .97. The proposed model fit the data well both theoretically and empirically.

Analysis of direct effects revealed that depression was very strongly predictive of the pervasiveness or globality of rumination (standardized coefficient = 1.01) as

measured by individuals' total number of MDRS items with scores greater than 6.

Depression also led to greater severity of rumination (standardized coefficient = .95) as measured by MDRS subscale total scores.

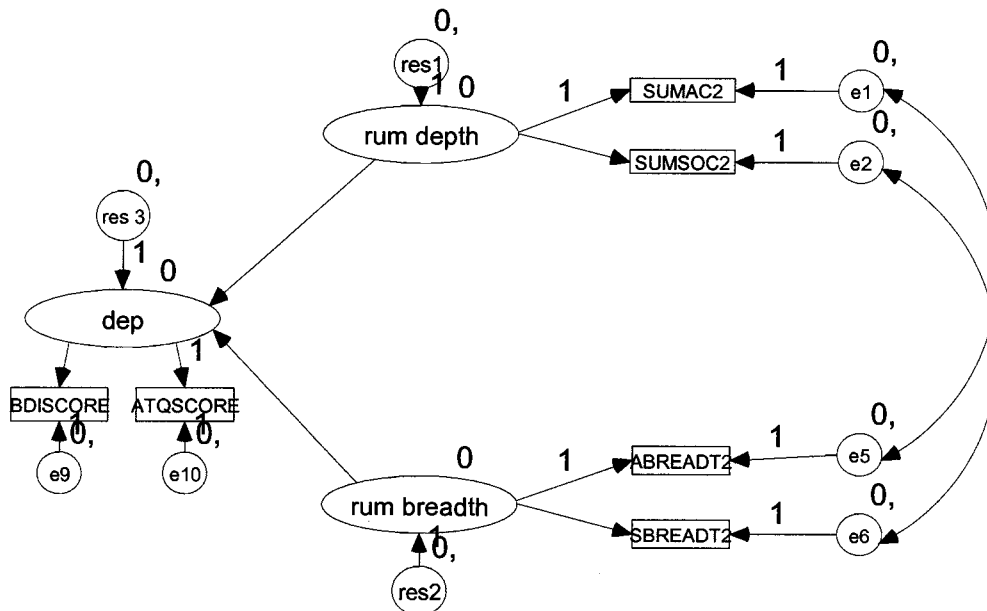
The high values of CFI and NFI, and the analysis of direct effects suggest that depression is highly predictive of both the severity and globality of rumination.

Depression is also a significant mediator of the relationship between the depth and breadth constructs.

Alternative Analyses

Alternative Structural Equation Model. To better appreciate the outcomes of the hypothesized model, a second structural equation model was created and tested to challenge the current hypothesis that depression is predictive of rumination. In this challenging model, the paths between rumination and depression were reversed such that rumination predicted depression (see Figure 6). This model is consistent with the cognitive theory hypothesis that thoughts mediate mood.

Figure 6: Alternative Structural Equation Model Based on Cognitive Behavioural Theory



Alternative Model Estimation. Maximum likelihood estimation was employed to estimate all models. Similar to the hypothesized model, the independence model was easily rejected, $\chi^2(21, N = 198) = 2607.94, p < .001$. However, support was found for the opposition model, $\chi^2(5, N = 198) = 115.24, p < .001$, based on the CFI = .96 and the NFI = .96. These results suggest that this alternative model, which is consistent with cognitive theory, is also acceptable for the present sample.

The goodness of fit for this competing model provides support for the traditional, cognitive behavioural perspective on the relations between depression and rumination. It is important to note, however, that the modeling presented here does not refute the idea that depression predicts domains of rumination. Rather, findings suggest that the potentially causal role of depression should be acknowledged, as the fit of the hypothesized model is as good as the alternative model. There is a strong direction of effect from depression to rumination variables.

CHAPTER 5

Discussion

This study presented an alternate perspective to cognitive theories of rumination by demonstrating the influence of depression on rumination. Confirmatory factor analyses of a new rumination measure, the Multi Domain Rumination Scale (MDRS), demonstrated domain specificity of the rumination construct. The introduction of this measure is significant to rumination research as it accommodates assessment of both the severity and globalty of ruminations, whereas previous, Likert-type rumination measures, such as Nolen-Hoeksema's (1991) Response Style Questionnaire - Rumination Scale, conflate severity and globalty by using scores that combine the *strength* of agreement with an item and the *number* of items endorsed.

Results provided some support for each of the current hypotheses. In regards to the first hypothesis, high consistency and meaning in the two factors produced by both principal components and confirmatory factor analyses support the MDRS as a tool that assesses distinct domains of social and academic rumination. The item loadings for MDRS factors are consistent with the intended domain specific structure of the questionnaire. These findings are also consistent with previous studies, which suggest that rumination is multidimensional and that social and academic rumination represent distinct constructs (Osman, et al., 2001; Segerstrom et al., 2003; Yi, et al., 2003).

Results of structural equation modeling indicated that the goodness of fit of the model in which depression leads to more severe and more global rumination is as good as the of fit of an alternative model, in which rumination causes more severe depression. This suggests that depression may have a causal role in the structure of an individual's

rumination. These findings provide an alternative perspective to cognitive theory, which posits that rumination, as a cognitive vulnerability, causes depression.

This is a significant conclusion, which may elucidate the rumination-depression interaction and support the acknowledgment the potentially causal role of depression in rumination. However, this does not necessarily diminish the influence of rumination on depression, particularly in light of the good fit of the alternative model. It is possible that there exists a bidirectional relationship between depression and rumination, wherein a cascading effect of the interaction between depressive affect and rumination occurs. Depression may lead to more severe and global ruminations, and rumination may in turn lead to deeper depression. Exploration of a potentially reciprocal relationship is beyond the scope of the present study, but should be explored in future depression research.

The lack of consistency among regression results may be explained in several ways. First, it is possible that depression as measured by the ATQ and BDI are different enough to account for variance in regression outcomes. Although the two measures demonstrated significant positive correlation in the present study ($r = .59, p < .001$), they measure depression in distinctly different ways (Haaga, et al., 1991). The BDI measures general depression, it has been used as an index of major depressive disorder, and it can accommodate more severe depression scores than the ATQ. The ATQ, however, only measures a cognitive component of depression in automatic thoughts, and it has been shown to represent less severe depressive symptoms (Haaga, et al., 1991). Therefore, the ATQ may be a more limited measure of depression, and one that is less sensitive to differences in the relationship between depression and different types of rumination, than measures such as the BDI.

Although researchers have suggested that the ATQ measures dysphoric affect or sub-clinical disorders, rather than depression (Haaga, et al., 1991), the ATQ was included as a measure of depression for the current, sub-clinical sample. In future research with clinical samples, however, depression should be operationalized by generalized indices that capture clinical depression symptomology.

A second reason for inconsistent regression results may be that this student population did not have enough individuals in the depressed range for consistent results to emerge. Support was found for the idea that the relationship between depression and rumination changes with the severity of depression. Individuals with more severe depression may demonstrate consistent ruminative patterns, whereas non-depressed individuals may demonstrate different “baseline” ruminative patterns. Additionally, stable patterns of globalized ruminative thought may only emerge as a result of major depression. Severity of ruminations may therefore emerge prior to global rumination. Thus, ATQ severity scores may only account for low levels of depression and less global rumination as compared to the BDI.

Seegerstrom et al. (2003) identified the potential multidimensional nature of rumination and the importance of this multidimensionality to the relationship between rumination and depression. The authors concluded that the relationship of rumination to depression is dependant on the rumination domain. Although cognitive theories predict that “repetitive thought about oneself or one’s world will affect emotional adjustment...the direction of this effect varies with the particular type of repetitive thought being examined, suggesting important differences in thought content and process” (Seegerstrom et al., 2003, p. 918).

Unfortunately, it is difficult to make further conclusions since this sample in relation to the measures did not provide sufficient “depression” to allow effects of depression on rumination to be revealed. There was a restricted range of depression and rumination scores, which meant that only minimal differences existed between “depressed” and “non-depressed” participants.

Limitations of the Current Study

The central limitation of this study is the design, in which both a new theoretical perspective, and a methodological tool are tested. This combination of theoretical and validation approach make the current arguments and the conclusions that follow, somewhat tautological. Validation of theory cannot be properly achieved if the measures used to operationalize the theory have not been validated. Similarly, it is inappropriate to validate measures using new theory, which has not been empirically or clinically substantiated. However, as previously stated, this is only a preliminary investigation into the possibility of domain specific rumination and its relationship with depression. Results are ultimately limited to supporting subsequent investigation into the depression-dependant structure of rumination, with stronger, more scientific research design.

Sample. The present sample has two major limitations. First, the sample size is less than two hundred, which is relatively small for conducting structural equation modeling. A sample size of two hundred is traditionally considered the minimum for structural equation analyses (Tabachnick & Fidell, 2001; Ullman, 2001), as covariances and correlations “are less stable when estimated from small samples” (Ullman, 2001, p. 659). Additionally, the hypothesized structural equation model is a simple measurement

model with few degrees of freedom. The small sample size and simplicity of the hypothesized model may have caused reduced power and effect sizes of outcomes.

Second, the distributions of the BDI and ATQ were positively skewed, which may have reduced the accuracy of the latent construct estimates. The non-normal shape of BDI and ATQ distributions (see Figures 2 and 3), although typical for the general population, may have reduced the accuracy of model estimation. The chi-squared statistic in structural equation modeling is sensitive to both sample size and normality of distribution. Therefore, it is possible that the chi-square underestimated the goodness of fit for the measurement models in this study.

Measures. The current study assessed the internal psychometric properties of the MDRS but did not take the next step of comparing it with other, validated measures of rumination. This would be difficult, however, as to my knowledge there are no other existing domain specific measures of rumination. It would have been interesting to compare the MDRS to its single domain parent measure, the RSQ-Rumination Scale. This would have allowed me to compare the predictive validity of the MDRS to the RSQ.

The second rumination measure, the SGWA, did not appear to correlate meaningfully with the other measures. This suggests that the SGWA may not be appropriate for rumination studies. While the SGWA provides important and useful qualitative information about the content and nature of undergraduate students' concerns, it does not appear to represent rumination in accordance with rumination research and theory. The psychometric properties of this measure should be tested in the context of other multi-domain measures of worry such as the Student Worry Questionnaire-30.

As discussed, the ATQ may have been limited to the assessment of a component of depressive affect, or a subclinical disorder such as dysphoric thought. In past research, the ATQ has failed to distinguish samples with major depression from heterogeneous samples (Haaga, et al., 1991; Kazdin, 1989). The BDI may also be problematic for assessing depression in this population. Deardoff and Funabiki (1985) found that only six out of thirty participants who scored higher than 10 on the BDI met diagnostic criteria for depression. Additionally, Tanaka-Matsumi and Kameoka (1986) stated that high BDI total scores for university students were not necessarily indicative of depression but of overall adjustment problems. In light of these and other similar findings, some methodologists argue against using samples selected based on high scores on self-report depression measures (Haaga, et al., 1991). Non-clinical samples with high scores on measures such as the BDI may be more appropriately described as having negative affectivity or dysphoria (Haaga, et al., 1991; Watson & Clark, 1984). On the other hand, clinical diagnoses may artificially dichotomize depression and exclude subclinical cases.

The present sample is a non-clinical sample, so the BDI and ATQ scores were appropriate in that they are more likely to detect sub-clinical depressive affect (Haaga, et al., 1991). Nonetheless, indicators of dysphoria in this sample are likely to present different results than would be found with a clinical sample (Beck, 1971; Haaga, et al., 1991).

Conclusions and Directions for Future Research

Sampling and Measurement. Four issues regarding sampling measurement must be addressed in future studies. First, validated measures of depressive disorder must be used in rumination research. This may prevent misinterpretation of results and potential

floor effects that the ATQ and BDI introduce, as they do not measure clinical depression as much as dysphoric affect.

Second, further work needs to be done on the development of measures that assess rumination with greater domain and context specificity. This study provides some support for the hypothesis that depression leads to more generalized ruminative styles. Thus, measures of rumination that delineate levels of globality could be used as clinical indicators of depression. “Unfortunately, the increased importance of the nature and influence of worry has not led to the development and systematic validation of multidimensional self-report scales that could be useful in the assessment of worry” (Osman, et al., 2001, p. 277). Such measures of rumination as the MDRS should be developed and administered concurrently with empirically and clinically validated depression indices because they seem to be highly related constructs.

Third, future depression-rumination research should include samples that are larger and heterogeneous in terms of clinical status. This study provided a very preliminary exploration of the depression-rumination relationship and justification for conducting similar research in larger samples. Studies with a larger, heterogeneous sample that compare clinical to normal samples should be conducted to determine MDRS reliability and the sensitivity to levels of depression. Goodness of fit of models with large depressed samples should be compared to models for non-depressed samples.

The present sample was good in that it selected a population in which the context was clearly specified and homogeneous; in this educational context, academic ruminations were expected to outweigh other domains of rumination, and they did. Further research on samples representing different diatheses may demonstrate greater

rumination in other domains. For example, samples of elite athletes may ruminate most strongly in athletic domains. If research shows that ruminations parallel environmental stressors, then the domain specificity of rumination will be further supported.

Finally, future studies of the depression-rumination relationship must use longitudinal designs in order to accurately test the nature of the relations between depression and rumination. Testing the chronological primacy of depression and the subsequent reciprocal influence of rumination cannot be done without longitudinal studies.

Theory and Clinical Applications. As discussed, several methodological factors limited the comparison of the current findings with response style theory (Nolen-Hoeksema, 1991) and cognitive behavioral theory (Beck, 1963). Future research needs to directly challenge the application of cognitive behavioral theory as an exploration of relations between depression and rumination. Appreciation of depression's influence on the structure of ruminative thoughts may contribute to the development of cognitive behavioral theory. Modifications to cognitive therapy, which acknowledge that depression may change the very nature of rumination, and provide a better understanding of the bi-directional influences of depression and rumination on each other, may contribute to improved clinical outcomes.

Acceptance of the theoretical perspective in this paper has some implications for the treatment of depression. It is possible that physiological effects of depression emerge before, and even underlie the cognitive effects of depression, such as rumination. Rumination may in fact be conceptualized as a symptom of physiological depression. This argument supports the adoption of a medical model, in which the treatment of

depression is separated into physiological and cognitive components. Treatment and stabilization of physiological or “primary” aspects of depression via medications and exercise therapy, for example, would precede treatment of cognitive, or “secondary” aspects of depression, such as ruminative thinking, via cognitive behavioural therapy.

It is important to note in closing that although data in the current study are consistent with the aforementioned theoretical perspective wherein depression influences rumination, these data are also consistent with the opposite direction of effect. Moreover, these data are not longitudinal, and cannot address the variable influence over time. Thus, further research is required to elucidate the paths of influence between latent depression and rumination constructs over time.

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Appendix A:

Multi-Domain Rumination Scale (MDRS; Martin, 1999)

Everyone who is in school experiences many stressful academic events, but some people think about them a lot and some very little. A stressful academic event could include, getting a bad grade, receiving negative feedback on a paper, or not understanding class material. We are interested in the degree to which you focus on or become preoccupied with particular kinds of thoughts in response to what you believe is a NEGATIVE ACADEMIC event in your life.

**When something bad or stressful happens in your ACADEMIC life
how much time do you spend . . .**

I spend very little time doing this	I do this Somewhat	I do this all the time & I can't seem to stop myself
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circle the number that best describes you.

1. Thinking about how the stressful event is all your fault. 0 2 3 4 5 6 7 8 9 10
2. Thinking about how the event will negatively affect your future. 0 2 3 4 5 6 7 8 9 10
3. Thinking about what the event means about you. 0 2 3 4 5 6 7 8 9 10
4. Thinking about how the cause of the event will lead to other negative things in your life. 0 2 3 4 5 6 7 8 9 10
5. Thinking about the causes of the stressful event. 0 2 3 4 5 6 7 8 9 10
6. Thinking about how the stressful event will affect other areas of your life. 0 2 3 4 5 6 7 8 9 10
7. Thinking about how important the stressful event is to you. 0 2 3 4 5 6 7 8 9 10
8. Thinking about how things like this always happen to you. 0 2 3 4 5 6 7 8 9 10
9. Thinking about what the event means about your ability to cope with events in the future. 0 2 3 4 5 6 7 8 9 10
10. Wondering why you can't handle this kind of thing without getting upset. 0 2 3 4 5 6 7 8 9 10
11. Thinking about all your shortcomings/ faults / mistakes. 0 2 3 4 5 6 7 8 9 10
12. Losing sleep because you can't stop thinking about the stressful event. 0 2 3 4 5 6 7 8 9 10
13. Thinking about why this kind of thing happens to you and not others. 0 2 3 4 5 6 7 8 9 10
14. Remembering and replaying the bad event over and over again in your head. 0 2 3 4 5 6 7 8 9 10
15. Talking about the stressful or bad event. 0 2 3 4 5 6 7 8 9 10

circle the number that best describes you.

Everyone experiences many stressful social events, but some people think about them a lot and some very little. A stressful social event could include having few friends, not being invited to a social gathering, being rejected by a romantic interest, or doing something socially inappropriate. We are interested in the degree to which you can become preoccupied with the NEGATIVE SOCIAL events in your life.

When something bad or stressful happens in your SOCIAL LIFE, how much time do you spend . . .

I spend very little time doing this	I do this Somewhat	I do this all the time & I can't seem to stop myself
---	-----------------------	---

circle the number that best describes you.

1. Thinking about how the stressful event is all your fault. 0 2 3 4 5 6 7 8 9 10
2. Thinking about how the event will negatively affect your future. 0 2 3 4 5 6 7 8 9 10
3. Thinking about what the event means about you. 0 2 3 4 5 6 7 8 9 10
4. Thinking about how the cause of the event will lead to other negative things in your life. 0 2 3 4 5 6 7 8 9 10
5. Thinking about the causes of the stressful event. 0 2 3 4 5 6 7 8 9 10
6. Thinking about how the stressful event will affect other areas of your life. 0 2 3 4 5 6 7 8 9 10
7. Thinking about how important the stressful event is to you. 0 2 3 4 5 6 7 8 9 10
8. Thinking about how things like this always happen to you. 0 2 3 4 5 6 7 8 9 10
9. Thinking about what the event means about your ability to cope with events in the future. 0 2 3 4 5 6 7 8 9 10
10. Wondering why you can't handle this kind of thing without getting upset. 0 2 3 4 5 6 7 8 9 10
11. Thinking about all your shortcomings/ faults / mistakes. 0 2 3 4 5 6 7 8 9 10
12. Losing sleep because you can't stop thinking about the stressful event. 0 2 3 4 5 6 7 8 9 10
13. Thinking about why this kind of thing happens to you and not others. 0 2 3 4 5 6 7 8 9 10
14. Remembering and replaying the bad event over and over again in your head. 0 2 3 4 5 6 7 8 9 10
15. Talking about the stressful or bad event. 0 2 3 4 5 6 7 8 9 10

circle the number that best describes you.

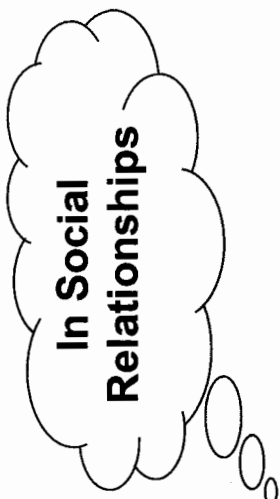
Appendix B: MDRS Variable Names

<i>SOFAULT:</i>	the stressful event is all your fault
<i>SOFUTURE:</i>	the stressful event will negatively affect your future
<i>SONOTOTH:</i>	thinking about why this kind of thing happens to you and not others
<i>SOLEADTO:</i>	thinking about how the cause of the event will lead to other negative things in your life
<i>SOIMPORT:</i>	thinking about how important the stressful event is to you.
<i>SOMEANS:</i>	thinking about what the event means about you.
<i>SOALWAYS:</i>	thinking about how things like this always happen to you
<i>SOCOPEFU:</i>	thinking about what the event means about your ability to cope with events in the future.
<i>SOREPLAY:</i>	remembering and replaying the bad event over and over again in your head.
<i>SOOTHERA</i>	thinking about how the stressful event will affect other areas of your life.
<i>SOCAUSES:</i>	thinking about causes of the stressful event.
<i>SOFAULTS:</i>	thinking about all your shortcomings/faults/mistakes.
<i>SOHANDLE:</i>	wondering why you can't handle this kind of thing without getting upset.
<i>ACFUTURE:</i>	thinking about how the stressful event will negatively affect your future.
<i>ACLEADTO:</i>	thinking about how the cause of the event will lead to other negative things in your life.
<i>ACMEANS:</i>	thinking about what the event means about you.
<i>ACOTHERA:</i>	thinking about how the stressful event will affect other areas of your life.
<i>ACSLEEP:</i>	losing sleep because you can't stop thinking about the stressful event.
<i>ACCAUSES:</i>	thinking about causes of the stressful event.
<i>ACFAULTS:</i>	thinking about all your shortcomings/faults/mistakes.
<i>ACIMPORT:</i>	thinking about how important the stressful event is to you.
<i>ACHANDLE:</i>	wondering why you can't handle this kind of thing without getting upset.
<i>ACCOPEFU:</i>	thinking about what the event means about your ability to cope with events in the future.
<i>ACFAULT:</i>	thinking about how the stressful event is all your fault.
<i>ACREPLAY:</i>	remembering and replaying the bad event over and over again in your head.

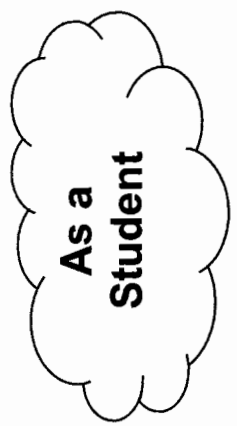
Appendix C:

Self-Generated Worry Adjectives (SGWA; Martin, 1999)

1.1	Very worried	5	4	3	2	1	a little worried
1.2	Very worried	5	4	3	2	1	a little worried
1.3	Very worried	5	4	3	2	1	a little worried
1.4	Very worried	5	4	3	2	1	a little worried
1.5	Very worried	5	4	3	2	1	a little worried



Very worried	5	4	3	2	1	a little worried	3.1
Very worried	5	4	3	2	1	a little worried	3.2
Very worried	5	4	3	2	1	a little worried	3.3
Very worried	5	4	3	2	1	a little worried	3.4
Very worried	5	4	3	2	1	a little worried	3.5



What I am afraid I might become

Write in 5 feared self-descriptive adjectives in each domain. Rate each adjective on how much you worry that it might be or become true of you.

2.1	Very worried	5	4	3	2	1	a little worried
2.2	Very worried	5	4	3	2	1	a little worried
2.3	Very worried	5	4	3	2	1	a little worried
2.4	Very worried	5	4	3	2	1	a little worried
2.5	Very worried	5	4	3	2	1	a little worried



Very worried	5	4	3	2	1	a little worried	4.1
Very worried	5	4	3	2	1	a little worried	4.2
Very worried	5	4	3	2	1	a little worried	4.3
Very worried	5	4	3	2	1	a little worried	4.4
Very worried	5	4	3	2	1	a little worried	4.5

