COPING WITH NEGATIVE REPETITIVE THOUGHT: AN INVESTIGATION OF MINDFULNESS AND SELF-MANAGEMENT SKILLS IN RELATION TO WORRY AND RUMINATION

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Coping with Negative Repetitive Thought: An Investigation of Mindfulness and Self-Management Skills in relation to Worry and Rumination

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Abstract

Extensive comorbidity exists between anxiety and mood disorders (Noyes, 2001). Forms of negative repetitive thought, such as worry and rumination, have been considered unifying constructs of both disorders. Current research has examined the efficacy of mindfulness and self-management based therapies on depression and anxiety disorders (Kuyken, Byford, Taylor, Watkins, Holden, White et al., 2008; Wright, Barlow, Turner, & Bancroft, 2003), however, limited research has examined the facets of mindfulness and self-management in relation to the negative repetitive thought styles of worry and rumination. Examining these relationships will aid in identifying potential therapeutic mechanisms for negative repetitive thought patterns. Study 1 examined mindfulness and self-management, and their constituent facets, in relation to rumination and worry in an undergraduate sample, and Study 2 examined the relationships between these constructs in a clinical sample. As expected, worry was highly related to rumination, and mindfulness was highly related to self-management in both samples. Results from these two studies also revealed that mindfulness, unlike self-management, is independently related to both worry and rumination. In terms of the individual facets of mindfulness, only acceptance without judgment was significantly related to worry and rumination in both samples. These results, and their implications, are discussed.

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List of Abbreviations

PSWQ	Penn State Worry Questionnaire
RRS-B	Rumination Response Scales – Brooding
KIMS	Kentucky Inventory of Mindfulness Skills
KIMS-Obs	Kentucky Inventory of Mindfulness Skills – Observe Subscale
KIMS-Des	Kentucky Inventory of Mindfulness Skills – Describe Subscale
KIMS-Aware	Kentucky Inventory of Mindfulness Skills – Act with Awareness Subscale
KIMS-Accept	Kentucky Inventory of Mindfulness Skills – Accept without Judgment Subscale
SCMS	Self-Control Self-Management Scale
SMS	Self-Monitoring Subscale
SES	Self-Evaluation Subscale
SRS	Self-Reinforcement Subscale
DASS-21	Depression Anxiety Stress Scales-21
DASS-21-A	Depression Anxiety Stress Scales-21-Anxiety Subscale
DASS-21-D	Depression Anxiety Stress Scales-21-Depression Subscale
DASS-21-S	Depression Anxiety Stress Scales-21-Stress Subscale
MCSD	Marlowe-Crowne Social Desirability Scale

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Coping with Negative Repetitive Thought: An Investigation of Mindfulness and Self-Management Skills in relation to Worry and Rumination

Recurrent negative thinking patterns have been found to have an adverse impact on mood and an individual's functioning (Watkins, 2008). Specifically, rumination and worry are maladaptive repetitive thought styles that cause vulnerability to anxiety and mood disorders (Segerstrom, Tsao, Alden, & Craske, 2000). Although worry is primarily associated with anxiety disorders, such as generalized anxiety disorder, and rumination to depressive disorders, such as major depressive disorder (American Psychological Association, 2000), the reverse has also been demonstrated (Nolen-Hoeksema, 2000; Starcevic, 1995). According to the Canadian Community Health Survey, which was conducted by Health Canada to provide cross-sectional estimates of health status for 133 health regions across Canada, approximately 8% of adults in Canada will experience anxiety or depression at some point in their lives (Statistics Canada, 2002). Additionally, approximately 5% will experience anxiety or depression in a given year (Statistics Canada, 2002). Furthermore, many anxiety disorders have consistently been found to be co-morbid with depressive disorders (Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). The National Comorbidity Survey, the first nationally representative mental health survey in the United States, (Kessler, DuPoint, Berglund, & Wittchen, 1999) revealed that the majority of individuals with generalized anxiety disorder at 12 months (58.1%) also met the criteria for major depressive disorder. The high prevalence of these two disorders, and their unifying association with negative repetitive thought patterns, warrants research aimed at understanding this commonality and its implications for treatment. Research must target therapeutic mechanisms that are being incorporated

into current treatments for these disorders, namely, self-management and mindfulness skills, and examine how these constructs relate to the unifying constructs of worry and rumination. Moreover, investigating these relationships in separate clinical and non-clinical populations, and examining individuals who range on a continuum of functioning levels, can aid in developing more accurate models of recurrent negative thinking and intervention.

The constructs of mindfulness and self-management have been associated with maintaining ones' well-being. Recently, aspects of mindfulness and self-management have been integrated into the cognitive behavioral therapy model for the treatment of anxiety and depressive disorders (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Wright et al., 2003). Current research has examined the efficacy of mindfulness and self-management based therapies for anxiety and mood disorders (Kuyken et al., 2008; Wright et al., 2003), however, limited research has examined the common cognitive vulnerability factors of these disorders with the underlying facets of mindfulness and self-management. The investigation of these unifying constructs can facilitate the understanding of the extensive comorbidity between anxiety and depression. Furthermore, investigating repetitive thought in association to the specific facets of mindfulness and self-management can inform practice and theory for the treatment of worry and rumination.

Repetitive Thought

Extensive research has been devoted to examining the overlap between anxiety and mood disorders. According to the tripartite model of emotion, there is a broad mood factor, namely, negative affect that is operational in both anxiety and depression (Watson, Clark, & Carey, 1988). Research has shown that the repetitive thought patterns of worry

and rumination exhibit similar correlational patterns with negative affect, and independent relationships with negative affect when controlling for the other (Short & Mezo, 2009). These results unify the construct of negative repetitive thought in the development of anxiety and depression. Therefore, the specific type of mental activity, recurrent negative thinking, is a critical factor and a unifying construct in the development of anxiety and depressive states.

Negative repetitive thoughts are universal cognitive processes that cause vulnerability to mood and anxiety disorders. While repetitive thought can have some constructive consequences, such as adaptive preparation and uptake of health-promoting behaviours, it has been well documented that negative repetitive self-focused thought results in negative consequences (Watkins, 2008). For example, repetitive thought concerning upsetting events has been found to predict psychological distress (Nolen-Hoeksema, 1991). The specific repetitive thought patterns of rumination and worry have been found to be a predisposing factor for anxiety and mood disorders and therefore provide insight into the co-occurrence of these two disorders (Segerstrom et al., 2000).

Worry in the Context of Anxiety

Chronic worry is commonly defined as a chain of thoughts that are relatively uncontrollable, negative affect-laden, and whose outcome is uncertain (Borkovec, Robinson, Pruzinsky, & DePree, 1983). Worry has primarily been studied in the context of generalized anxiety disorder and is a defining feature of this disorder. Moreover, research strongly supports the notion that the cognitive process of worry is a vulnerability factor for generalized anxiety disorder (Starcevic, Berle, Milicevic, Hannan, Lamplugh, & Eslick, 2007). Chronic worry has also been found to be a dimension of many other

anxiety disorders, such as social phobia, panic disorder, and obsessive-compulsive disorder (Starcevic et al., 2007). Specifically, Barlow and DiNardo (1991) proposed that worry is a fundamental characteristic of all anxiety disorders, with the possible exception of simple phobias. Even so, studies have found that levels of pathological worry are greater in generalized anxiety disorder patients, than those suffering from other anxiety disorders (Chelminski & Zimmerman, 2003).

Theoretical approaches to maladaptive worry include worry as a form of avoidance (Borkovek & Inz, 1991), and worry in association to the intolerance of uncertainty (Dugas, Gagnon, Ladouceur, Freeston, 1998). Specifically, Borkovec and Inz (1991) speculated that the basic function of worry in generalized anxiety disorder is for avoidance of affect in emotional experiences. Thus, an individual would avoid somatic anxiety by engaging in higher levels of conceptual activity. Research has found that generalized anxiety disorder and worry are correlated with experiential avoidance. This phenomenon occurs when a person negatively evaluates, and is unwilling to experience, their bodily sensations, emotions, thoughts, and memories, and engages in behaviours to control or escape these experiences (Roemer, Salters, Raffa, & Orsillo, 2005). These results support the theory that worry is an internal avoidance strategy. Alternatively, Dugas and colleagues (1998) constructed a conceptual model representing intolerance of uncertainty as a pivotal component of worry and the development of generalized anxiety disorder. In the empirical investigations supporting these two theories, both avoidance and intolerance of uncertainty have been significantly related to worry and deemed to be critical factors in distinguishing individuals with generalized anxiety disorder from non-

clinical participants (Dugas et al., 1998; Roemer et al., 2005). In sum, research strongly supports the maladaptive outcomes of worry, specifically psychological distress.

Rumination in the Context of Depression

The cognitive process of rumination is related to negative affect and involves self-focused attention on past events (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Thus, like worry, the repetitive thought style of rumination also leads to unconstructive consequences and is a cognitive vulnerability factor to psychopathology (Goring & Papageorgiou, 2008). Nolen-Hoeksema and colleagues proposed the most influential conceptualization of rumination within the Response Styles Theory of Depression (Nolen-Hoeksema, 1991). Within this conceptual framework, it is proposed that a ruminative response to negative events prolongs depressive episodes over time. This type of behavioural response is unlike a distraction response, which focuses attention to other activities rather than being preoccupied with the past (Nolen-Hoeksema, Morrow, & Fredrickson, 1993). Moreover, a ruminative response style predicts depressive episodes (Nolen-Hoeksema, 2000). Based on findings from current factor analyses examining this conceptualization of rumination, the main aspects of this construct consist of reflection and brooding (Treynor et al., 2003). Reflection is neutrally affect-laden and can be defined as engaging in contemplation and attempting to overcome problems and difficulties. The cognitive style of brooding is negatively affect laden and concerns self-criticism and moody pondering (Treynor et al., 2003). While reflection has been found to be more self-focused and brooding more symptom-focused, both have been found to be associated with depression (Rude, Maestas, & Neff, 2007).

The role that rumination plays as a predisposing factor for negative affective states

is well supported. Empirical evidence supports the Response Styles Theory of Depression and it has been found that rumination prolongs depressed mood, even when controlling for initial levels of depression (Nolen-Hoeksema et al., 1993). Additional research has found that rumination can also predict depressive episodes (Nolen-Hoeksema, 2000). In one study, individuals who endorsed a ruminative response to distress before the Loma Prieta Earthquake, which struck the Santa Cruz mountains in 1989, were more likely to show elevated depressive symptoms immediately after the earthquake and on follow-up measures (Nolen-Hoeksema & Morrow, 1991). Thus, rumination has maladaptive properties and is related to the maintenance of psychological distress.

Comparisons of Worry and Rumination in the Context of Anxiety and Depression

The literature regarding repetitive thought strongly supports the similarities between rumination and worry, however, the degree of overlap between the two constructs is undetermined. The negative thought patterns of worry and rumination have been differentiated on the temporal basis of their content, namely, that worrying focuses on future events, while rumination is concerned with past events (Watkins, Moulds, & Mackintosh, 2005). This particular study by Watkins and colleagues (2005) investigated hypothesized factors that would differ between worry and rumination. However, the results of this study indicated that while worry and rumination differed on temporal content, they did not differ on any other variables, such as the extent to which the thoughts were verbal or visual, or the extent to which were related to problem solving. A factor analysis examining the items of measures of worry and rumination resulted in a four-factor solution that accounted for 50.35% of the variance: (1) tendency to worry, (2) tendency to analyze feelings/self, (3) dwelling on negative feelings, and (4) absence of

worry (Goring & Papageorgiou, 2008). The first and fourth factor contained all items from a measure of worry, while the second and third factor contained items from a measure of rumination. Therefore, worry and rumination items loaded on separate factors. These findings suggest that, although the factors were correlated with each other and with a measure of depression and anxiety, rumination and worry are separate constructs.

While rumination and worry have been found to be independent cognitive activities, much of the current research examining repetitive thought processes has investigated the association of the two constructs. For example, rumination and worry also share common elements, such as repetitive thoughts focused on negative events (Segerstrom et al., 2000). Moreover, these cognitive processes have been found to be common mediators between psychological distress and personality dispositions, namely perfectionism and neuroticism (O'Connor, O'Connor, & Marshall, 2007; Roelofs, Huibers, Peeters, Arntz, & van Os, 2008). Both worry and rumination have been described as repetitive and unproductive, and have been found to amplify anxiety and depression, respectively (Segerstrom et al., 2000). Research has shown that worry is related to both anxiety and depression, and similarly, rumination is related to both anxiety and depressive disorders (Starcevic, 1995; Nolen-Hoeksema, 2000). Furthermore, these findings suggest that recurrent negative thinking patterns may contribute to co-existing anxious and depressive states. The comparisons found between rumination and worry support the claim that the two involve the same processes, but differ in content. Nonetheless, the extent to which rumination and worry differ is still not clearly understood. Understanding the similarities and differences between worry and rumination can aid in refining the concepts of these unifying constructs, developing models of negative repetitive thought in

psychopathology, and developing effective interventions. One way to further investigate the comparisons between chronic worry and rumination is to examine these behaviours in relation to other constructs, specifically, multi-faceted therapeutic mechanisms.

In sum, both worry and rumination are self-focused negative thought processes and are associated with general negative affect. Moreover, these negative repetitive thought patterns are common correlates from which anxious and depressive states develop. Thus, it is critical to examine these thought patterns in relation to wellness promoting behaviours that are composed of different facets and can relate differentially to anxiety and depression.

Therapeutic Mechanisms

The constructs of mindfulness and self-management have been associated with ameliorating psychological distress and maintaining ones' well-being. Furthermore, they are suggested therapeutic mechanisms for the treatment of anxious and depressive states. To fully understand mechanisms of change in treatment, it is important to examine these variables in relation to the common vulnerability factors of psychological distress, i.e., worry and ruminative states. Insight into how these mechanisms are related to features of psychopathology can aid in explaining psychological distress phenomena and targeting areas for intervention. Research has shown that when mindfulness and self-management processes are incorporated into models of empirically based therapy, it results in positive outcomes for clients (Forman, Herbert, Moitra, Yeomans, & Geller, 2007).

Mindfulness

The therapeutic process of mindfulness has been defined as a way of directing attention so that one is attentive and aware of current stimuli in an accepting and non-

judgmental way (Brown & Ryan, 2003). Mindfulness is considered a multi-faceted construct. Baer, Smith, and Allen (2004) thought mindfulness comprised four skills: (1) observing internal and external stimuli, (2) describing internal and external stimuli, (3) acting with awareness, and (4) acceptance without judgment. The technique of mindfulness originated from Eastern meditation traditions (Kabat-Zinn, Lipworth, & Burney, 1985), however, in recent decades it has become incorporated into many mental health interventions used for various medical and psychological complaints (Hayes, Strosahl, & Wilson, 1999).

Mindfulness and Depression. Mindfulness training has been incorporated into models of cognitive-behavioural therapy, such as Mindfulness-Based Cognitive Therapy (Segal, Williams, & Teasdale, 2002). This intervention instructs patients to recognize and disengage from thoughts characterized by ruminative thinking and instead develop a new mindset centered on acceptance (Teasdale, Segal, & Williams, 1995). The recurrence of major depressive episodes is a serious issue in treatment for depression, with rates as high as 80%. Mindfulness-Based Cognitive Therapy was developed by Segal et al. (2002) as a training program designed to prevent symptom recurrence in depression, and thus, reduce relapse rates. The majority of studies investigating Mindfulness-Based Cognitive Therapy randomly assigned clinical patients to either a treatment group of Mindfulness-Based Cognitive Therapy plus treatment as usual, or a control group consisting of solely treatment as usual. For example Teasdale, Segal, Williams, Ridgeway, Soulsby, and Lau (2000) examined 105 depressed patients with three or more previous depressive episodes, and found that Mindfulness-Based Cognitive Therapy significantly reduced risk of recurrence as compared to the patients' current treatment. Another study by Teasdale,

Moore, Hayhurst, Pope, Williams, and Segal (2002) also used this design and found that relapse was significantly lower in the treatment as usual plus Mindfulness-Based Cognitive Therapy group than the treatment as usual only group.

Another intervention that incorporates mindfulness training is Acceptance and Commitment Therapy (Hayes et al., 1999). Acceptance and Commitment Therapy targets problems by teaching skills such as committed action and acceptance, as opposed to experiential avoidance (Hayes et al., 2006). Studies have found that Acceptance and Commitment Therapy is an efficacious intervention for the reduction of symptoms and treatment of depression (Forman et al., 2007). Mindfulness-Based Cognitive Therapy and Acceptance and Commitment Therapy are considered "third wave" behaviour therapies as they acknowledge the important role of both behaviour and cognitions. These interventions highlight the importance of targeting the process of thinking itself, rather than concentrating on controlling one's thoughts (Hayes, 2004).

Mindfulness and Anxiety. Mindfulness-Based Cognitive Therapy has also recently been examined as a potential treatment for anxiety. One study found that Mindfulness-Based Cognitive Therapy is a potentially effective treatment for anxiety and ameliorates symptoms of anxiety (Evans, Ferrando, Findler, Stowell, Smart, & Haglin, 2008). However, as with any treatment protocol, more research is needed to substantiate Mindfulness-Based Cognitive Therapy as an empirically supported treatment for anxiety and mood disorders.

Randomized control trials have also been employed to examine the effectiveness of Acceptance and Commitment Therapy with anxiety disorders (Forman et al., 2007). Results indicated that Acceptance and Commitment Therapy is a viable and disseminable

intervention for the treatment of anxiety. Furthermore, its effectiveness was found to be equivalent to the most current accepted approaches of intervention for anxiety, i.e., cognitive therapies.

Mindfulness, Rumination, and Worry. Previous research supports a negative correlation between rumination and mindfulness skills (Brown & Ryan, 2003). Rude and colleagues (2007) suggested that, based on the mindfulness literature, the unconstructive qualities of rumination may not be due to attention on negative events. Rather, they found that the criticizing and judgmental component of ruminative thought is the explanatory construct related to psychological distress (Rude et al, 2007). In particular, it was found that when the items of the Ruminative Response Scale (Nolen- Hoeksema & Marow, 1991) were reconstructed to be less judgmental, the scale no longer correlated as highly with measures of depression. This study provides insight into the theoretical conceptualizations between the constructs of mindfulness and negative thought. Research is warranted in order to empirically evaluate these proposed associations and their implications for treatment. Unfortunately, the literature examining mindfulness skills in relation to worry is insufficient. Research has found that mindfulness training is successful in alleviating symptoms of worry (Roemer, Orsillo, & Salter-Pedneault, 2008), however, to our knowledge no research has examined the individual facets of mindfulness with the cognitive process of worry.

Self-Management

Self-management, as described by Kanfer (1970) and Bandura's (1991) model, is a pattern of awareness where consciousness is focused on one's behaviour and surroundings. Self-management comprises three facets: self-monitoring, self-evaluation,

(Wright et al., 2003), and to facilitate lifestyle changes, such as exercising and quitting smoking (Barlow et al., 2000).

Self-Management, Depression and Anxiety. Self-management skills have been examined through unidimensional measures, such as the Self-Control Questionnaire (SCQ; Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981) and the Frequency of Self-Reinforcement Questionnaire (FSRQ; Heiby, 1982) and negatively correlate with depression severity, depression frequency, and anxiety (Mezo & Heiby, 2004). Furthermore, self-change skills such as self-management have been incorporated into treatments for psychological distress through the use of therapies derived from self-management and self-regulation models of behaviour. The general effectiveness for self-management programs in the area of psychological distress is well established. When a community-based Chronic Disease Self-Management Course was implemented in a sample of patients with a range of chronic disease, such as depression, patients showed enhanced efficacy, greater use of cognitive behavioural techniques, and improvements in psychological well being (Wright et al., 2003). Additionally, randomized clinical control trials have shown that the incorporation of a self-management program to assist people with arthritis in the United Kingdom resulted in improvements in depressed and anxious moods (Barlow et al., 2000). Finally, a meta-analytic investigation of self-regulatory interventions found that, compared to no intervention, self-regulatory interventions revealed a small but significant effect (Febbraro & Clum, 1998). Furthermore, this small effect size suggests that self-management techniques may be more effective paired with other interventions. In this conception, self-management could also aid in patients improvement of commitment to therapy.

Some researchers have also examined the individual skills of self-management in relation to therapeutic outcomes. In Febbraro and Clum's (1998) meta-analytic investigation of the effectiveness of self-regulatory components, it was found that self-monitoring plus other components of self-management are more effective than self-monitoring alone. These results highlight the importance of the employment of all skills of self-management when using this model for self-change.

Self-Management, Rumination, and Worry. The majority of research investigating self-management skills in a therapeutic context does not examine the underlying elements of these complaints. One possible reason for this gap in the literature is that until recently, a measure of self-management skills that accessed self-monitoring, self-evaluation, and self-reinforcement, according to Kanfer and Bandura's model, did not exist (Mezo, 2009). However, some studies have examined general measures of self-regulation with rumination and worry. One study found that individuals who do not use self-regulation to attain goals engage in higher rates of rumination (Jones, Papadakis, Hogan, & Strauman, 2009). In another study involving high school students, self-regulation was negatively associated with worry (Malpass, O'Neil, & Hocevar, 1999). Further research is needed to fully understand how self-management skills independently operate with rumination and worry. Overall, there is a gap in the literature where the facets of self-management are not examined in relation to the negative thought processes of worry and rumination.

Association between Mindfulness and Self-Management

Research that examines integrative models relating mindfulness to self-management has only recently begun. The constructs of mindfulness and self-management have both been associated with psychological wellness. Specifically,

Current Investigation

Practical Implications

Worry and rumination are maladaptive behaviours that are related to both anxiety and depressive states, and occur in high rates in clinical samples and the general population (Segerstrom et al., 2000). Mindfulness has been adopted as a therapeutic tool that is successful in treating anxiety and depression. Likewise, self-management skills have been incorporated into treatment regimes for the direct treatment of psychological distress and to aid in intervention success. Thus, it is important to know how the facets of mindfulness and self-management are associated with worry and rumination. Examining multi-faceted measures of mindfulness and self-management in relation to repetitive thought can aid in accomplishing this task.

Limited research has examined the relation of mindfulness and self-management to the dimensions underlying anxiety and depression, such as worry and rumination. Rumination and worry can contribute to the development and maintenance of anxiety and mood disorders, thus, identifying these relationships can target mechanisms of change in anxiety and depressive disorders. This study will examine worry and rumination in relation to potential therapeutic mechanisms, and their constituent facets. Moreover, research has shown that worry and rumination occur in the general population (Calmes & Roberts, 2007) and these behaviours can range from mild to extreme intensity. Therefore, this investigation will examine these constructs in both a high and low functioning population. It is important to examine worry and rumination in the general population, discrete from clinical populations, to assess their characteristics across groups of differing functioning levels.

Overall, the current investigation is necessary in order to provide further theoretical and practical contributions for treatment and interventions in disorders that involve worry and ruminative thought patterns. Clarifying the similarities and differences between worry and rumination, and examining their associations with mindfulness and self-management skills are important in order to develop more accurate cognitive models of recurrent negative thinking and to develop systematic clinical interventions. Moreover, it can begin to reveal what clinical treatments and areas of intervention can be effective for anxiety or depression, and co-morbid anxiety and depressive states.

Aims and Hypotheses

The purpose of the current investigation is to examine underlying dimensions, specifically repetitive thought, operating within anxious and depressive states. To our knowledge, no study to date has examined both of these unconstructive behaviours in relation to mindfulness and self-management together. This investigation will address this gap in the literature and examine these behaviours in university students and in individuals who are seeking mental health treatment. More specifically, two studies will be conducted: Study 1 will target a high functioning population consisting of undergraduate students, and Study 2 will assess a lower-functioning clinical population of patients from a mental health outpatient clinic. Therefore, the aims of this research are to further examine the relationships between (1) worry and rumination, and (2) mindfulness and self-management, and to provide preliminary results on the associations of (3) worry and rumination, in relation to mindfulness and self-management, and their individual facets in both a non-clinical and clinical sample.

The sample for this study is undergraduate university students, recruited from Memorial University of Newfoundland, in St. John's, Newfoundland and Labrador. Participant recruitment commenced in introductory Psychology classes in the Winter 2008/2009 semester, and continued through to the Fall 2009/2010 semester. The sample was comprised of 410 undergraduate students (301 women and 109 men), ranging in age from 18 - 45 ($M = 20.12$, $SD = 3.68$). The participants in this sample predominately identified as White (96%). Using G*Power 3.0.10 (Faul, Erdfelder, Lang, & Buchner, 2007) as a guideline, an a priori power analysis for multiple regression, with an alpha set at .05, was conducted. A total sample size of $N = 89$ was needed to detect a medium effect, and a total sample size of $N = 40$ was needed to detect a large effect. Therefore, a sample of 410 is more than sufficient to confidently examine the relationships between the pertinent constructs of this study.

Measures

To evaluate the relationships between negative repetitive thought, mindfulness, and self-management, a number of reliable and valid instruments were employed. All instruments were completed in the same data collection period, thus, all constructs were measured concurrently. Self-report instruments in this study included: a measure of worry, rumination, mindfulness, self-management, anxiety, depression, and stress, social desirability, and a demographic information form.

Demographic Information Form. The Demographic Information Form (Appendix A) was developed for this study to capture the distribution of demographic characteristics in the study sample. Participants were asked to provide information including their age,

gender, ethnicity, marital status, number of children, education, religious affiliation, employment status, and annual income.

Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). The PSWQ (Appendix B) is a 16-item unidimensional measure of chronic worry (Meyer et al., 1990). Participants rate items on a one to five point Likert scale ranging from 'not at all typical of me' to 'very typical of me' (e.g., 'As soon as I finish one task, I start to worry about everything else I have to do'). Higher scores indicate higher levels of worry and a cut-off of greater than 40 indicates pathological worry (Meyer et al., 1990). Studies support the reliability and validity of the PSWQ. The test-retest reliability of the Penn State Worry Questionnaire has been found to be high, with correlations ranging from .74 to .93 and re-test periods ranging from two to 10 weeks (Molina & Borkovec, 1994). Overall, internal consistency has been found to range from .80 to .95 (Brown, Anthony, & Barlow, 1992). Validity of the PSWQ has also been supported. The PSWQ has been found to correlate highly, and in the predicted direction, with measures of anxiety, depression, and other measures of worry (Segerstrom et al., 2000; van Rijsoort, Emmelkamp, & Vervaeke, 1999).

Ruminative Response Scales- Brooding (RRS-B; Treynor et al., 2003). Rumination was assessed using a 5-item version of the Rumination Response Scale (RRS) that was developed by Nolen-Hoeksema and Marrow (1991). This instrument was created to exclude items of the RRS that have been found to measure depressive symptomology, rather than rumination, in order to eliminate conceptual overlap (Treynor et al., 2003) (Appendix C). It includes the five items of the Brooding subscale of the RRS. The Brooding subscale measures preoccupation with depressing, morbid, or painful memories

or thoughts (e.g., 'Think "Why do I always react this way?"'). The items are rated on a Likert scale, ranging from zero (almost never) to three (almost always), with higher scores indicating higher levels of rumination. The psychometric properties of the RRS-B are well established. The correlation between a self-report and interview format version of the RRS-B has been found to be high, $r = .90$, revealing high alternate forms reliability (Treynor et al., 2003). Internal consistency has been found to be high, $\alpha = .90$, while test-re-test reliability is high, over a one-year time span, $r = .71$ (Treynor et al., 2003). Moreover, the RRS-B has been found to correlate strongly with measures of depression, which supports high convergent validity (Treynor et al., 2003)

Kentucky Inventory of Mindfulness Skills (KIMS; Baer et al., 2004). The KIMS (Appendix D) is a 39-item measure of trait mindfulness and is composed of four subscales. The subscales include Observing (e.g., 'I notice changes in my body, such as whether my breathing slows down or speeds up'), Describing (e.g., 'I'm good at thinking of words that express my perceptions, such as how things taste, smell, or sound'), Acting with Awareness (e.g., 'When I'm doing something, I'm only focused on what I'm doing nothing else), and Accepting without Judgment (e.g., 'I believe that some of my thoughts are abnormal or bad and I shouldn't think that way'; reversed scored; Baer et al., 2004). Participants rate their responses on a five-point Likert scale, ranging from one (never true) to five (always true), and higher scores indicate higher levels of mindfulness. The reliability and validity of the KIMS has been established. Test-retest reliability over a 14 to 17 day period has been found to be high for the Observe, Describe, Act with Awareness, and Accept without Judgment subscales ($r = .65, .81, .86, .83$, respectively; Baer et al., 2004). Internal consistency for the Observe, Describe, Act with Awareness,

and Accept without Judgment subscales has also been found to be high, α = .91, .84, .83, and .87, respectively (Baer et al., 2004). Many studies have also shown strong support for validity of the KIMS. For example, the Observe, Describe, Act With Awareness, and Accept without Judgment subscales correlate as expected to the Mindful Attention Awareness Scale (Baer et al, 2004; Brown & Ryan, 2003).

Self-Control Self-Management Scale (SCMS; Mezo, 2009). The SCMS is a 16 item self-report measure of self-management skills, comprised of three subscales with items assessing each of the three facets of self-management: Self-Monitoring Subscale (SMS; e.g., 'When I am working towards something, it gets all of my attention'), Self-Evaluation Subscale (SES; e.g., 'I make sure to track my progress regularly when I am working on a goal'), and Self-Reinforcement Subscale (SRS; e.g., 'I congratulate myself when I make some progress; Appendix E). Participants are asked to report how well the items describe them on a six-point Likert scale (zero = very undescriptive of me, five = very descriptive of me). Higher ratings indicate higher levels of self-management skills. Evidence supports the psychometric properties of the SCMS. The SCMS has been found to have high internal consistency for the SCMS total score, and SMS, SES, and SRS subscales, with alphas of .81, .74, .75, and .78, respectively (Mezo, 2009). Test-retest reliabilities have been found to range from r = .62 - .65 for the overall scale and subscales (Mezo, 2009). The validity of the SCMS has also been demonstrated. The SCMS scale and subscales correlate strongly with the Self-Control Questionnaire (Rehm et al., 1981) and the Self-Control Schedule (Rosenbaum, 1980) with correlations ranging from r = .30 - .65 (Mezo, 2009).

Depression Anxiety Stress Scales (DASS-21; Antony, Bieling, Cox, Enna, & Swinson, 1998). The DASS-21 is a 21 item self-report measure that yields three factors: Depression, Anxiety, and Stress (Appendix F). Participants were asked to report the frequency and severity of any negative emotions they had experienced over the previous week on a four-point likert scale (zero = did not apply to me at all, three = applied to me very much). Higher ratings indicate higher levels of depression, anxiety, and stress. Evidence supports the psychometric properties of the DASS-21. Specifically, the Depression subscale correlates strongly with the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Anxiety subscale correlates strongly with the Beck Anxiety Inventory (Beck & Steer, 1990).

Marlowe-Crowne Social Desirability Scale (MCSD; Crowne & Marlowe, 1960). The MCSD measures individuals' need of approval. It is included in this study as a measure of social desirability, with the purpose to control for response bias (Appendix G). A low correlation with the MCSD indicates that the scores are not biased in a socially desirable manner. The measure consists of 33 true-false items (e.g., 'I like to gossip at times'). The MCSD supports high test-retest reliability, $r = .88$ over a one-month time period (Crowne & Marlowe, 1960), and has been found to have internal consistency ranging from 0.73 - 0.88. The MCSD has also been found to correlate highly with other measures of social desirability (Crowne & Marlowe, 1960).

Procedure

Ethical consent for the current study was approved by the Interdisciplinary Committee on Ethics in Human Research at Memorial University of Newfoundland. Participants were recruited from university introductory psychology classes, specifically

Psychology 1000 and Psychology 1001. A researcher visited each class and verbally informed the students of the opportunity to be involved in research that investigates 'how people think and feel about things' (Appendix H). All classes were presented with an incentive to participate in the study, which consisted of either: (1) a draw for one $50, or five $10 gift certificates for a local mall, or (2) two percent bonus marks towards their final grade. The participants were advised that their participation was entirely voluntary and that their names would not appear on any forms or in any reports. Participants were also informed that they maintain the right to withdraw from the study at any time without penalty. If the students had any concerns related to the study, a researcher was available for further clarification prior to the start of the study. The students were informed of a room and scheduled time to attend, if they wished to participate.

Participants either completed the questionnaire battery through a secured website or completed hard copies. Participants who completed the hard copies were given an envelope containing two consent forms (Appendix I), one to keep as an information letter, and the battery of questionnaires for completion. Both the envelopes and the questionnaires were numbered. The questionnaires were randomized to control for carry-over effects. The demographic information sheet always appeared at the front of the battery and should not have biased participant responses due to the fact that the questions contained on it did not relate to any items in the questionnaire battery. Participants were instructed to hand the researcher a completed informed consent form before the start of the study, to maintain anonymity. They were informed that they were under no obligation to continue the study if they experienced discomfort or anxiety during any part of the study, or if they felt uncomfortable to do so. The study took approximately 40 minutes to

complete. Consent forms were collected and stored separately from the questionnaires, and all data were stored in a locked filing cabinet. Before leaving, the participants had the opportunity to ask the researchers any questions they had. Participants were then thanked for their time and participation in the study and advised that in the event they felt any psychological distress after completing the questionnaires, that they please contact the University Counselling Centre. Moreover, in the event of extreme distress, they were asked to call the Health and Community Services Crisis line where a counsellor would be available to speak with them immediately. The students were also provided with a website that could be accessed to view a synopsis of the study's results. These procedures, and the above-mentioned resources, were also presented to participants who completed the questionnaire packet on the web.

Results

Descriptive Statistics and Reliability of Study Instruments

The scale characteristics of the measures of negative repetitive thought and therapeutic mechanisms were investigated in the non-clinical sample. The descriptive statistics and reliability estimates for all measures in this study are presented in Table 1.

Table 1

Descriptive statistics and reliability estimates of the Penn State Worry Questionnaire (PSWQ), the Ruminative Response Scales- Brooding (RRS-B), the Kentucky Inventory of Mindfulness Skills (KIMS), the Self-Control and Self-Management Scale (SCMS), the Depression Anxiety Stress Scales-21, and the Marlowe Crowne Social Desirability Scale, in a non-clinical sample (N = 410)

	Mean	SD	Range	Coefficient alpha
PSWQ	52.17	16.19	16 - 80	.95
RRS-B	11.95	3.23	5 - 20	.77
KIMS	121.61	14.27	79 - 179	.82
SCMS	53.03	10.94	15 - 77	.85
DASS-21-D	4.69	4.42	0 - 21	.88
DASS-21-A	4.46	3.96	0 – 18	.77
DASS-21-S	6.75	4.49	0 - 20	.84
MCSD	17.06	4.93	3 - 29	.68

Note. PSWQ: Penn State Worry Questionnaire (Myer et al., 1990). RRS-B: Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). KIMS: Kentucky Inventory of Mindfulness Skills (Baer, Smith, & Allen, 2004). SCMS: Self-Control and Self-Management Scale (SCMS; Mezo, 2009). DASS-21-D = Depression Anxiety and Stress Scales-21- Depression Subscale; DASS-21-A = Depression Anxiety and Stress Scales-21- Anxiety Subscale; DASS-21-S = Depression Anxiety and Stress Scales-21-Stress Subscale (Antony et al., 1998). MCSD: Marlowe and Crowne Social Desirability Scale (Crowne & Marlowe, 1960).

Independent-samples t-tests indicated that scores on the study instruments did not significantly differ based on the participants' incentive to participate (draw versus bonus marks) or the method of presentation of the questionnaire battery (paper versus online); t (408) = .63 – 1.80, p's > .05. Moreover, none of the participants obtained scores on the MCSD greater than three standard deviations above the sample mean. Given that this criterion is a commonly employed cut-off to identify social desirability (Crowne & Marlowe, 1960), all participants were retained for analysis. Based on a five-point classification system (i.e., Normal – Mild – Moderate – Severe – Extremely Severe), the mean scores for the Depression, Anxiety, and Stress subscales of the DASS-21 are all in the Normal severity category (Anthony et al., 1998). These findings support the

classification of a non-clinical sample as characterized by decreased levels of psychological distress.

The internal consistencies of the measures were estimated using coefficient alphas, and are all above the acceptable threshold of .70, with the exception of the MCSD, which had an alpha of .68 (Nunnally, 1978). It is important to note that the MCSD was employed as a measure to control for social desirability, and not to measure any of the pertinent constructs of the current study. Thus, results presented using the study instruments measuring the main constructs can be interpreted with confidence as these measures were found to support high reliability in this sample.

Relationships between Worry, Rumination, Mindfulness, and Self-Management, and Measures of Psychological Distress

The relationships between the study measures and measures of psychological distress were examined and are presented in Table 2. The PSWQ and the RRS obtained moderate to high positive correlations with measures of depression, anxiety, and stress. The KIMS and the SCMS obtained low to moderate negative correlations with measures of depression, anxiety, and stress. All relationships were significant and in the expected direction.

Table 2

Bivariate correlations of the Penn State Worry Questionnaire, the Ruminative Response Scale-Brooding (RRS-B), the Kentucky Inventory of Mindfulness Skills (KIMS), and the Self-Management and Self-Control Scale (SCMS), with the Depression Anxiety Stress Scales-21 (DASS-21), in a non-clinical sample (N = 410)

	DASS-21-D	DASS-21-A	DASS-21-S
PSWQ	.38*	.39*	.51*
RRS-B	.51*	.44*	.50*
KIMS	-.41*	-.22*	-.34*
SCMS	-.42*	-.20*	-.24*

Note. PSWQ: Penn State Worry Questionnaire (Myer et al., 1990). RRS-B: Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). KIMS: Kentucky Inventory of Mindfulness Skills (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale (SCMS; Mezo, 2009). DASS-21-D = Depression Anxiety and Stress Scales-21- Depression Subscale; DASS-21-A = Depression Anxiety and Stress Scales-21- Anxiety Subscale; DASS-21-S = Depression Anxiety and Stress Scales-21-Stress Subscale (Antony et al., 1998).

*$p < .05$

Relationships between Worry and Rumination

Bivariate correlations between the measures of negative repetitive thought, that is the RRS-B and the PSWQ, were as predicted ($r = .53$, $p < .05$). Specifically, worry was positively and strongly related to ruminative thought. These results provide further support of the strong relationship between the negative repetitive thought patterns of worry and rumination in a non-clinical sample.

Relationships between Self-Management and Mindfulness

To examine the relationships between mindfulness skills and self-management skills, bivariate correlational analysis was first employed (see Table 3). A moderate positive correlation was found between the total scales of the KIMS and the SCMS. The subscales of the SCMS and the KIMS obtained low to moderate correlations, with the exceptions of the SES and the Observe Subscale of the KIMS, and the SRS and the

Accept without Judgment subscale of the KIMS. These subscales reveal no relationship in the respective facets of mindfulness and self-management.

Table 3

Bivariate correlations among the Self-Management and Self-Control Scale (SCMS) and the Kentucky Inventory of Mindfulness Skills (KIMS), in a non-clinical sample (N = 410)

	SCMS	SMS	SES	SRS
KIMS	.49*	.43*	.49*	.24*
KIMSObs	.18*	.18*	.02	.22*
KIMSDes	.30*	.23*	.30*	.18*
KIMSAware	.44*	.45*	.43*	.15*
KIMSAccept	.22*	.15*	.40*	-.02

Note: KIMS = Kentucky Inventory of Mindfulness Skills; Obs = Observe Subscale; Des = Describe Subscale; Aware = Act with Awareness Subscale; Accept = Accept without Judgment Subscale (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale; SMS = Self-Monitoring Subscale; SES = Self-Evaluating Subscale; SRS = Self-Reinforcing Subscale (SCMS; Mezo, 2009).

*$p < .05$

Next, the independent relationships of self-management skills to mindfulness were investigated (see Table 4). The independent contributions of the facets of self-management to the construct of mindfulness were examined by employing simple regression and semi-partial correlational analyses. Overall, self-management skills were a significant predictor of mindfulness and accounted for 29% of the variance. When examining the separate facets of self-management, the SMS and the SES obtained low and moderate semi-partial correlations, respectively, while the SRS did not significantly overlap with the construct of mindfulness.

Table 4

Regression Coefficients and semi-partial correlations for the Self-Monitoring (SMS), Self-Evaluation (SES), and Self-Reinforcing (SRS) Subscales of the Self-Management and Self-Control Scale (SCMS), predicting the Kentucky Inventory of Mindfulness Skills (KIMS), in a non-clinical sample (N = 410)

	Semi-partial *r*	sr^2
	KIMS	
SMS	.21*	.04*
SES	.33*	.11*
SRS	.01	.00

Note: KIMS = Kentucky Inventory of Mindfulness Skills; (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale; SMS = Self-Monitoring Subscale; SES = Self-Evaluating Subscale; SRS = Self-Reinforcing Subscale (SCMS; Mezo, 2009).

*$p < .05$

Relationships between the Therapeutic Mechanisms and Negative Repetitive Thought

The bivariate correlations between mindfulness and self-management, and their constituent facets, in relation to worry and rumination were examined (see Table 5).

Table 5

Bivariate correlations among the Kentucky Inventory of Mindfulness Skills (KIMS), the Self-Management and Self-Control Scale (SCMS), the Penn State Worry Questionnaire, and the Ruminative Response Scale-Brooding (RRS-B), in a non-clinical sample (N = 410)

	KIMS					SCMS			
	KIMS	Obs	Des	Aware	Accept	SCMS	SMS	SES	SRS
PSWQ	-.37*	.04	-.17*	-.29*	-.44*	-.11*	-.05	-.18*	-.03

RRS-B	-.33*	.24*	-.16*	-.30*	-.58*	-.13*	-.06	-.33*	.07

Note. PSWQ = Penn State Worry Questionnaire (Myer et al., 1990). RRS-B = Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). KIMS = Kentucky Inventory of Mindfulness Skills; Obs = Observe Subscale; Des = Describe Subscale; Aware = Act with Awareness Subscale; Accept = Accept without Judgment Subscale (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale; SMS = Self-Monitoring Subscale; SES = Self-Evaluating Subscale; SRS = Self-Reinforcing Subscale (SCMS; Mezo, 2009).

*$p < .05$

When the measures of negative repetitive thought were correlated with the KIMS, both the PSWQ and the RRS obtained a moderate negative correlation with the KIMS total score. However, the correlations of the PSWQ and the RRS, with the KIMS subscales are more mixed. The PSWQ correlated moderately with the Act with Awareness and Accept without Judgment Subscales, but to a lesser extent with the Observe and Describe Subscales. The RRS obtained low to high correlations with all subscales of the KIMS.

Self-management skills, as measured by the total scale and subscales of the SCMS, correlated weakly with measures of worry and rumination, with the exception of the SES and the RRS. That is, the SES obtained a moderate negative correlation with the RRS.

Mindfulness and Self-Management as Predictors of Negative Repetitive Thought

Mindfulness and self-management were examined as unique predictors of worry and rumination using simple regression analyses and by calculating semi-partial correlations, which are presented in Table 6. Overall, the therapeutic mechanisms were a significant predictor of rumination and accounted for 11% of the variance. The

therapeutic mechanisms were also a significant predictor of worry and accounted for 15% of the variance. Only the KIMS emerged as a significant independent predictor compared to the SCMS, for both rumination and worry. These findings are as expected considering the low correlations calculated between the measures of negative repetitive thought and the SCMS.

Table 6

Regression Coefficients and semi-partial correlations for the Self-Management and Self-Control Scale (SCMS) and the Kentucky Inventory of Mindfulness Skills (KIMS), predicting the Ruminative Response Scale-Brooding (RRS-B), and the Penn State Worry Questionnaire, in a non-clinical sample (N = 410)

	Semi-partial *r*	sr^2
	RRS-B	
KIMS	-.31*	.10*
SCMS	.03	.00
	PSWQ	
KIMS	-.37*	.14*
SCMS	.09	.01

Note. RRS-B: Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). PSWQ: Penn State Worry Questionnaire (Myer et al., 1990). KIMS: Kentucky Inventory of Mindfulness Skills (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale (SCMS; Mezo, 2009).

*$p < .05$

Independent Contributions of the Facets of Mindfulness to Negative Repetitive Thought

Semi-partial correlations reflect the independent contributions of the facets of mindfulness to rumination and worry (see Table 7). Two simple regression analyses were

conducted by (1) entering the KIMS subscales as the predictors and the PSWQ as the criterion, and (2) entering the KIMS subscales as the predictors and the RRS as the criterion. The KIMS Accept without Judgment Subscales emerged as a significant independent contributor to both the RRS and the PSWQ, revealing low to moderate semi-partial correlations. Low semi-partial correlations were found between the KIMS Describe subscales and the RRS, and the KIMS Act with Awareness subscale and the PSWQ.

Table 7

Semi-partial correlations among the subscales of the Kentucky Inventory of Mindfulness Skills (KIMS), and the Penn State Worry Questionnaire and the Ruminative Response Scale-Brooding (RRS-B), in a non-clinical sample (N = 410)

	KIMS			
	OBS	DES	AWARE	ACCEPT
PSWQ	-.08*	-.06	-.11*	-.35*
RRS-B	.09*	-.11*	-.06	-.43*

Note. PSWQ = Penn State Worry Questionnaire (Myer et al., 1990). RRS-B = Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). KIMS = Kentucky Inventory of Mindfulness Skills; Obs = Observe Subscale; Des = Describe Subscale; Aware = Act with Awareness Subscale; Accept = Accept without Judgment Subscale (Baer et al., 2004).

*$p < .05$

Study 2

Method

Participants

The participants for this study consisted of individuals from a clinical setting, recruited from the START Clinic at St. Clare's Hospital, in St. John's, Newfoundland and Labrador. The clinic provides short-term assessment and treatment to patients. Individuals from this outpatient clinic, who agreed to complete the battery of questionnaires, were included in the study. Participants included 20 adults (13 women and 7 men) and ranged in age from 20 - 55 years ($M = 35.00$, $SD = 10.32$). The participants in this sample predominately identified as White (95%). Primary diagnoses within this sample were anxiety and mood disorders and included major depressive disorder, recurrent ($n = 8$; 40%), generalized anxiety disorder ($n = 4$; 20%), dysthymia ($n = 3$; 15%), social phobia ($n = 2$; 10%), panic disorder without agoraphobia ($n = 1$; 5%), bipolar II disorder ($n = 1$; 5%), and adjustment disorder with depressed mood ($n = 1$; 5%). Using G*Power 3.0.10 (Faul et al., 2007) as a guideline, an a priori power analysis for multiple regression, with an alpha set at .05, was conducted. A total sample size of $N = 89$ is needed in order to achieve a medium effect, and a total sample size of $N = 40$ is needed for a large effect. Thus, it should be noted that due to the small sample size of 20 participants employed in this study, findings are exploratory and should be interpreted with caution.

Measures

Study 2 employed the same measures as in Study 1, with one exception; the patient's psychiatrist or psychologist completed a diagnostic profile form (Appendix J) regarding the patient's diagnoses. This form provided information such as the number of weeks in treatment and the patient's diagnoses according to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition, text revised (American Psychiatric Association, 2000).

Procedure

The Human Investigation Committee approved ethical consent for the current study. The START Clinic provides rapid access and brief therapy to individuals referred by family physicians, the emergency room, and consultation liaison services; thus, patients enter in a crisis condition. The patient's clinician determined when the individual was at an appropriate level of competency to participate in the study, and then presented them with an initial contact script (Appendix K). The patient was verbally informed of the study's purpose, and that, if they did not decide or decided to participate, it would not affect their clinical care in any way. If the patient decided to participate in the study, they were asked to complete a consent form (Appendix L) that was stored separately from the client's data. If the participants had any concerns related to the study, their clinician was available for further clarification prior to the start of the study. The patient's clinician completed the participant's diagnostic profile form.

Participants were given an envelope containing the battery of questionnaires. Both the envelopes and the questionnaires were numbered, and the questionnaires were placed in a randomized order to control for carry-over effects. The demographic information sheet always appeared at the start of the battery. Participants were informed that they were under no obligation to continue the study if they experienced discomfort or anxiety, or if they felt uncomfortable to do so. The study took approximately 40 minutes to complete. Consent forms were stored separately from the questionnaires, and all data was stored in a locked filing cabinet. Participants were thanked for their time and participation in the study and advised that in the event they felt any psychological distress after completing the questionnaires, that they please discuss it with their clinician.

Results

Descriptive Statistics and Reliability of Study Instruments

The scale characteristics of the measures of negative repetitive thought and therapeutic mechanisms were investigated in the clinical sample. The descriptive statistics and reliability estimates of the measures employed in this study are presented in Table 8. All participants were included in the analyses of this study as none obtained scores on the MCSD greater than three standard deviations above the sample mean. Furthermore, given the small size of the current sample ($N = 20$), there is a higher likelihood of statistical non-significance even for large effects, and thus it is imperative to consider effect size when interpreting the results of this study.

Table 8

Descriptive statistics and reliability estimates of the Penn State Worry Questionnaire (PSWQ), the Ruminative Response Scales- Brooding (RRS-B), the Kentucky Inventory of Mindfulness Skills (KIMS), the Self-Control and Self-Management Scale (SCMS), the Depression Anxiety Stress Scales-21, and the Marlowe Crowne Social Desirability Scale, in a clinical sample (N = 20)

	Mean	SD	Range	Coefficient alpha
PSWQ	65.05	12.68	31 - 80	.92
RRS-B	14.85	2.91	9 - 20	.65
KIMS	113.15	20.21	73 - 148	.92
SCMS	41.90	11.29	14 - 57	.78
DASS-21-D	9.90	6.39	1 - 21	.93
DASS-21-A	8.20	5.78	1 - 21	.86
DASS-21-S	10.95	6.30	1 - 21	.91

MCSD	14.05	5.03	6 - 24	.78

Note. PSWQ: Penn State Worry Questionnaire (Myer et al., 1990). RRS-B: Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). KIMS: Kentucky Inventory of Mindfulness Skills (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale (SCMS; Mezo, 2009). DASS-21-D = Depression Anxiety and Stress Scales-21- Depression Subscale; DASS-21-A = Depression Anxiety and Stress Scales-21- Anxiety Subscale; DASS-21-S = Depression Anxiety and Stress Scales-21-Stress Subscale (Antony et al., 1998). MCSD: Marlowe and Crowne Social Desirability Scale (Crowne & Marlowe, 1960).

Employing a five-point classification system (i.e., Normal – Mild – Moderate – Severe – Extremely Severe), the mean scores for the Depression and Stress subscales of the DASS-21 are all in the Moderate severity category, and the mean score of the Anxiety subscale is in the Severe severity category (Anthony et al., 1998). Therefore, this sample is characterized by increased levels of psychological distress and supports the classification of a clinical sample.

The reliabilities, evaluated by internal consistencies, of the measures were estimated using coefficient alphas, and are all above the acceptable threshold of .70, with the exception of the RRS-B (Nunnally, 1978). However, many authors have noted that if a scale is comprised of fewer than 20 items, as seen in the RRS-B, the acceptable lower bound may be decreased to .60 (Nunnally, 1987; Holden, Fekken, & Cotton, 1991). Therefore, the study instruments are considered to be sufficiently reliable in this sample.

Relationships between Worry, Rumination, Mindfulness, and Self-Management, and Measures of Psychological Distress

The relationships between the study instruments and measures of psychological distress were examined (see Table 9). All measures obtained low to high correlations in the predicted direction with measures of depression, anxiety, and stress.

Table 9

Bivariate correlations of the Penn State Worry Questionnaire, the Ruminative Response Scale-Brooding (RRS-B), the Kentucky Inventory of Mindfulness Skills (KIMS), and the Self-Management and Self-Control Scale (SCMS), with the Depression Anxiety Stress Scales-21 (DASS-21), in a clinical sample (N = 20)

	DASS-21-D	DASS-21-A	DASS-21-S
PSWQ	.36	.24	.44
RRS-B	.42	.25	.60*
KIMS	-.57*	-.52*	-.76*
SCMS	-.40	-.26	-.32

Note. PSWQ: Penn State Worry Questionnaire (Myer et al., 1990). RRS-B: Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). KIMS: Kentucky Inventory of Mindfulness Skills (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale (SCMS; Mezo, 2009). DASS-21-D = Depression Anxiety and Stress Scales-21- Depression Subscale; DASS-21-A = Depression Anxiety and Stress Scales-21- Anxiety Subscale; DASS-21-S = Depression Anxiety and Stress Scales-21-Stress Subscale (Antony et al., 1998).

*$p < .05$

Relationships between Worry and Rumination

Bivariate correlations between the measures of negative repetitive thought, that is the RRS-B and the PSWQ, were as predicted ($r = .54$, $p < .05$). Specifically, worry was positively and strongly related to ruminative thought. These results provide further support of the strong relationship between the negative repetitive thought patterns of worry and rumination in a clinical sample.

Relationships between Mindfulness and Self-Management

Bivariate correlational analysis examined the relationships between mindfulness and self-management skills (see Table 10). A high positive correlation was found between the total scales of the KIMS and the SCMS. The subscales of the SCMS and the KIMS obtained low to high correlations. However, the SES and the Observe subscale of the KIMS attained an analogous inconsistency by revealing a low negative correlation.

Table 10

Bivariate correlations among the Self-Management and Self-Control Scale (SCMS) and Kentucky Inventory of Mindfulness Skills (KIMS), in a clinical sample (N = 20)

	SCMS	SMS	SES	SRS
KIMS	.54*	.52*	.10	.39
KIMSObs	.28	.48*	-.20	.17
KIMSDes	.52*	.37	.25	.39
KIMSAware	.50*	.51*	.15	.28
KIMSAccept	.22	.12	.04	.26

Note: KIMS = Kentucky Inventory of Mindfulness Skills; Obs = Observe Subscale; Des = Describe Subscale; Aware = Act with Awareness Subscale; Accept = Accept without Judgment Subscale (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale; SMS = Self-Monitoring Subscale; SES = Self-Evaluating Subscale; SRS = Self-Reinforcing Subscale (SCMS; Mezo, 2009).

*$p < .05$

Regression and semi-partial correlational analyses investigated the independent relationships of the constructs of self-management and mindfulness in a clinical sample (see Table 11). Specifically, the independent contributions of the facets of self-management to the construct of mindfulness were examined. As expected, self-management skills in general were a significant predictor of mindfulness, accounting for 35% of the variance. In particular, the SMS and the SRS obtained a moderate and low

semi-partial correlation, respectively, while the SES did not significantly overlap with the construct of mindfulness.

Table 11

Regression Coefficients and semi-partial correlations for the Self-Monitoring (SMS), Self-Evaluation (SES), and Self-Reinforcing (SRS) Subscales of the Self-Management and Self-Control Scale (SCMS), predicting the Kentucky Inventory of Mindfulness Skills (KIMS), in a clinical sample (N = 20)

	Semi-partial *r*	sr^2
	KIMS	
SMS	.43*	.18*
SES	.02	.00
SRS	.28	.08

Note: KIMS = Kentucky Inventory of Mindfulness Skills; (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale; SMS = Self-Monitoring Subscale; SES = Self-Evaluating Subscale; SRS = Self-Reinforcing Subscale (SCMS; Mezo, 2009).

*$p < .05$

Relationships between the Therapeutic Mechanisms and Negative Repetitive Thought

The bivariate correlations between mindfulness and self-management, and their constituent facets, in relation to worry and rumination were examined (see Table 12).

Table 12

Bivariate correlations among the Self-Management and Self-Control Scale (SCMS), Kentucky Inventory of Mindfulness Skills (KIMS), Ruminative Response Scale-Brooding (RRS-B), and Penn State Worry Questionnaire, in a clinical sample (N = 20)

	KIMS					SCMS			
	KIMS	Obs	Des	Aware	Accept	SCMS	SMS	SES	SRS
PSWQ	-.43	-.15	-.42	-.27	-.38	-.10	.15	-.11	-.28
RRS-B	-.73*	-.32	-.52*	-.66*	-.58*	-.27	-.10	-.11	-.33

Note. PSWQ = Penn State Worry Questionnaire (Myer et al., 1990). RRS-B = Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). KIMS = Kentucky Inventory of Mindfulness Skills; Obs = Observe Subscale; Des = Describe Subscale; Aware = Act with Awareness Subscale; Accept = Accept without Judgment Subscale (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale; SMS = Self-Monitoring Subscale; SES = Self-Evaluating Subscale; SRS = Self-Reinforcing Subscale (SCMS; Mezo, 2009).

*$p < .05$

Mindfulness skills were examined in relation to worry and rumination by employing bivariate correlational analysis. Low to moderate correlations were obtained between the PSWQ and the total scale and subscales of the KIMS. Moderate to high correlations were obtained between the RRS and the KIMS total scale and subscales. The RRS obtained low to high correlations with the total scale and all subscales of the KIMS.

Self-management skills, as measured by the total scale and subscales of the SCMS, obtained low correlations with measures of worry and rumination, with the exception of the SRS and the RRS obtaining a moderate correlation.

Mindfulness and Self-Management as Predictors of Negative Repetitive Thought

Simple regression analyses and semi-partial correlational analyses were employed to examine mindfulness and self-management as unique predictors of rumination and worry (see Table 13). The KIMS emerged as a significant independent predictor of negative repetitive thought styles, accounting for 55% and 21% of the variance in the RRS and PSWQ, respectively. The KIMS did not account for significant independent

variance in the SCMS, which is as expected in view of the low correlations calculated between negative repetitive thought and the SCMS.

Table 13

Regression Coefficients and semi-partial correlations for the Self-Management and Self-Control Scale (SCMS) and the Kentucky Inventory of Mindfulness Skills (KIMS), predicting the Ruminative Response Scale-Brooding (RRS-B), and the Penn State Worry Questionnaire, in a clinical sample (N = 20)

	Semi-partial *r*	sr^2
	RRS	
KIMS	-.69*	.48*
SCMS	.14	.02
	PSWQ	
KIMS	-.44*	.19*
SCMS	.15	.02

Note. PSWQ: Penn State Worry Questionnaire (Myer et al., 1990). RRS-B: Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). KIMS: Kentucky Inventory of Mindfulness Skills (Baer et al., 2004). SCMS: Self-Control and Self-Management Scale (SCMS; Mezo, 2009).

*$p < .05$

Independent Contributions of the Facets of Mindfulness to Negative Repetitive Thought

The independent contributions of the facets of mindfulness and self-management with rumination and worry were examined through semi-partial correlational analysis (see Table 14). Two simple regression analyses were conducted by employing the same procedure as described in Study 1. The Describe and Accept without Judgment Subscales of the KIMS, emerged as significant independent predictors of the PSWQ, revealing

medium effect sizes. A low semi-partial correlation was obtained between the Act with Awareness Subscale of the KIMS and the PSWQ. The Observe Subscale of the KIMS was not an independent predictor of the PSWQ or the RRS. Furthermore, the remaining subscales of the KIMS obtained low semi-partial correlations with the RRS.

Table 14

Semi-partial correlations among the subscales of the Kentucky Inventory of Mindfulness Skills (KIMS), and the Ruminative Response Scale-Brooding (RRS-B) and the Penn State Worry Questionnaire, in a clinical sample (N = 20)

	KIMS			
	OBS	DES	AWARE	ACCEPT
PSWQ	-.04	-.32	-.12	-.31
RRS-B	.03	-.23	-.18	-.29

Note. PSWQ = Penn State Worry Questionnaire (Myer et al., 1990). RRS-B = Ruminative Response Scales – Brooding Subscale (Treynor et al., 2003). KIMS = Kentucky Inventory of Mindfulness Skills; Obs = Observe Subscale; Des = Describe Subscale; Aware = Act with Awareness Subscale; Accept = Accept without Judgment Subscale (Baer et al., 2004).

*$p < .05$

Discussion

The purpose of the two studies reported here was to examine the relationships between the negative repetitive thought processes of rumination and worry in relation to the therapeutic mechanisms of self-management and mindfulness. Cognitive models of anxiety and depression have emphasized the negative repetitive thought styles of rumination and worry as common vulnerability factors (Dugas et al., 1998; Nolen-

Hoeksema, 1991). The association between these two disorders warrants research aimed at developing more accurate models of intervention that focus on modifying this pervasive style of thought. Specifically, aspects of mindfulness and self-management have been integrated into the cognitive behavioural therapy model for the treatment of anxiety and depression (e.g., Hayes et al., 2006; Wright et al., 2003). These therapeutic mechanisms share common elements, such as non-judgmental present-moment awareness, which are incompatible with worry and rumination. Current research has examined the efficacy of mindfulness and self-management based therapies with anxiety and depressive disorders (Kuyken et al, 2008; Wright et al., 2003), however, to our knowledge no study has examined the independent contributions of the underlying facets of mindfulness and self-management to worry and rumination. Additionally, while mindfulness and self-management are associated constructs, there are distinctions between the two, and thus it is important to examine whether each has a unique relationship to worry and rumination.

The hypothesized relationships were examined in a non-clinical sample of undergraduate students in Study 1, and then in a clinical sample of patients from an outpatient clinic in Study 2. Examining these constructs in two different samples lends to the ecological validity of this investigation. From the analyses conducted in these two studies, it was observed that (1) the negative repetitive thought constructs of worry and rumination were strongly related in both the non-clinical and clinical sample, (2) the therapeutic mechanisms of mindfulness and self-management were strongly related in both the non-clinical and clinical sample, however, the independent contributions of self-management skills to mindfulness were not consistent in the two samples, (3)

mindfulness, but not self-management, was a unique predictor of rumination and worry in both the non-clinical and clinical sample, and (4) the Acceptance without Judgment facet of mindfulness significantly and independently contributed to worry and rumination, in both the non-clinical and clinical sample.

The first aim of this investigation was to examine the relationships between (1) worry and rumination, and (2) mindfulness and self-management in a non-clinical and clinical sample. Previous research has indicated that worry and rumination are both styles of negative repetitive thought that are correlated to psychopathology, and to one another (Goring & Papageorgiou, 2008). The results of the current study are consistent with these findings. That is, worry and rumination were strongly related, such that high levels of worry were associated with high levels of rumination, in both the non-clinical and clinical sample. Furthermore, high levels of worry and rumination were associated with high levels of psychopathology, specifically depression, anxiety, and stress. These results support the claim that worry and rumination may mediate the link between anxiety and depression (Goring & Papageorgiou, 2008). As well, the association between these two negative thought styles is robust in both high-functioning (i.e., non-clinical) and low-functioning (i.e., clinical) populations.

The therapeutic mechanisms of mindfulness skills and self-management skills were also strongly related, such that high levels of mindfulness skills were associated with high levels of self-management skills, in both the non-clinical and clinical sample. Additionally, these therapeutic skills were negatively related to psychopathology, namely, depression, anxiety, and stress. That is, higher levels of mindfulness and self-management skills were associated with lower levels of psychological distress. These results are as

expected and provide support that mindfulness and self-management are related to one another and are associated with maintaining ones' well-being (Hayes et al., 2006; Wright et al., 2003). While much research supports that these skills are successful when incorporated into treatment protocols for anxiety and depression (Teasdale et al., 2000; Wright et al., 2003), the current findings demonstrate that the theoretical constructs underlying these treatments are strongly related.

In order to fully understand the associations between the underlying facets of these therapeutic mechanisms, self-management skills were investigated in relation to mindfulness. The association between self-management skills and mindfulness has not been researched extensively. In applied research, Gregg et al. (2007) found that incorporating mindfulness skills into the treatment for diabetes led to improvement in self-monitoring of the illness. Furthermore, preliminary research examining the independent contributions of self-management skills to mindfulness, based on self-report instruments designed to measure these constructs, indicated that each facet of self-management had a significant relationship with mindfulness. In particular, self-evaluation revealed a low independent relationship to mindfulness, and self-monitoring and self-reinforcing revealed a moderate independent relationship to mindfulness (Short et al., 2008). The results of the current investigation indicated that there was a low and moderate relationship between self-monitoring and mindfulness in the non-clinical and clinical samples respectively. However, there were inconsistencies between the two samples for the relationships of self-evaluation and mindfulness, and self-reinforcement and mindfulness. Specifically, in the non-clinical sample there was a moderate independent relationship between self-evaluation and mindfulness, but no independent

relationship between self-reinforcement and mindfulness. Conversely, in the clinical sample there was a low independent relationship between self-reinforcement and mindfulness, but no independent relationship between self-evaluation and mindfulness.

The consistent finding that there was a positive relationship between self-monitoring and mindfulness skills, where increased levels of self-monitoring were related to increased levels of mindfulness, supports the theory underlying the development of the measure of self-management employed in this investigation. The development of the self-monitoring subscale of the Self-Control and Self-Management Scale (SCMS; Mezo, 2009) included mindful, undivided attention content. Additionally, some items were designed to represent item content of the Mindful Attention Awareness Scale (Brown & Ryan, 2003), which is a measure of mindfulness not employed in this investigation. Therefore, it is theoretically consistent that self-monitoring, which involves monitoring the stimulus in ones' environment and thus engaging in awareness of the present-moment, would be associated with the attentive present-moment awareness of mindfulness.

The fact that there are less consistent findings found between self-evaluation and mindfulness, and self-reinforcement and mindfulness, may reveal that self-management skills and mindfulness exhibit different relationships in high-functioning or non-clinical populations, compared to low-functioning or clinical populations. If so, then the results of this investigation provide insight into how these skills can promote wellness in non-clinical populations or for treatment in clinical populations. It is important to consider the small sample size employed in the clinical samples of both the preliminary study conducted by Short et al. (2008) and Study 2 of the current investigation when interpreting these findings. It is possible that with a larger sample size, and a more

representative sample of the population, the relationships between the facets of self-management and mindfulness could change. It is also important to recognize that although these relationships are independent of the other facets of self-management, there could be other related variables influencing the relationships between self-evaluation and mindfulness, and self-reinforcement and mindfulness that this investigation has not taken into account. Thus, the results of this investigation reveal that the facets of self-management are largely related to mindfulness, but they are not the same constructs. Future research should examine these relationships in a larger clinical sample in order to provide further insight into integrative models relating self-management skills to mindfulness.

Overall, the results discussed thus far confirm much previous research and provide insight into the associations between worry and rumination, and mindfulness and self-management. Furthermore, it provides evidence that the study instruments are operating as expected in the respective samples.

A secondary aim of the current investigation was to explore the independent relationships of the therapeutic mechanisms, and their constituent facets, to negative repetitive thought. Research has indicated that the repetitive style of negative thinking, such as that found in worry and rumination, has an adverse impact on mood and is related to many mood and anxiety disorders. Some investigators argue that this pervasive negative thinking style should be modified in treatments for depression and anxiety, rather than the actual content of the thought (Segal et al., 2002). Therefore, for treatment purposes, it is informative to examine how these therapeutic techniques are related to worry and rumination.

The bivariate correlations of mindfulness, self-management, and their constituent facets, were examined in relation to negative repetitive thought. With the exception of the relationship between the Observe facet of mindfulness and worry in the non-clinical sample, mindfulness and its facets largely revealed moderate to high relationships with negative repetitive thought. Conversely, self-management overall revealed low relationships with negative repetitive thought, therefore suggesting that self-management skills do not play an important role in the treatment of pervasive negative thoughts.

To further explore this premise, self-management and mindfulness were examined as predictors of negative repetitive thought. According to these results, the therapeutic mechanisms together were predictive of worry and rumination in both the non-clinical and clinical sample. However, when self-management and mindfulness were examined as unique predictors, only mindfulness had a significant independent relationship with worry and rumination. This finding was consistent in both the non-clinical and the clinical sample, and is not surprising considering the low correlations found between self-management and worry, and self-management and rumination. These results suggest that although self-management is negatively related to psychopathology, as seen in the significant correlations found between self-management and anxiety and self-management and depression, it is not specifically related to the negative repetitive thinking style of these disorders. Instead, self-management may be efficacious in treating anxiety and mood disorders because of its association with other components of the disorders, such as catastrophic thoughts, maladaptive behaviours, or physiological symptoms. These findings correspond to previous studies that have found self-management interventions to have a strong effect for agoraphobia and phobic anxiety,

and a smaller effect for disorders defined by worry and rumination, such as in generalized anxiety disorder (Febbraro & Clum, 1998). Future research should be designed to further elucidate the empirical question of what aspects of anxiety and depression does self-management skills target in intervention.

The constituting facets of the therapeutic mechanisms were examined in relation to negative repetitive thought in order to determine the underlying relationships between these constructs. Given that self-management did not reveal a unique relationship with either construct of negative repetitive thought, only the facets of mindfulness were examined independently with worry and rumination. The results revealed that the Accept without Judgment facet of mindfulness was consistently related to worry and rumination in both the clinical and non-clinical sample. This result indicates that acceptance without judgment is an important aspect of mindfulness treatment for worry and ruminative thought. On the other hand, there were inconsistencies in the independent contributions of the Act with Awareness and Describe facets of mindfulness to worry and rumination. That is, the Act with Awareness facet of mindfulness had a low independent contribution to worry in the non-clinical sample and a low independent contribution to worry and rumination in the clinical sample. Moreover, the Act with Awareness facet had no independent contribution to rumination in the non-clinical sample. These results may indicate that the Act with Awareness facet of mindfulness is not related to rumination in high-functioning or non-clinical samples, but is related to rumination once ruminative thought has reached clinical levels. Further research should investigate these relationships in other non-clinical samples to examine if these associations replicate. The Describe facet of mindfulness had a low independent contribution to rumination and no

independent contribution to worry in the non-clinical sample, but had low to moderate independent contributions to rumination and worry, respectively, in the clinical sample. These results suggest that the Describe facet of mindfulness is only related to negative repetitive thought once psychopathology has reached clinical levels. The Observe facet of mindfulness did not have a significant independent contribution to negative repetitive thought in either sample.

Overall, it appears that some facets of mindfulness are more important than others with respect to negative repetitive thought. In particular, accepting without judgment, and to a lesser extent describe and acting with awareness, are significant skills or facets of mindfulness with respect to pervasive negative cognitions of anxiety and mood disorders. These findings are consistent with the literature, which suggests that in mindfulness training observation of the stimuli in ones' environment alone is not sufficient for treatment of psychopathology (Hayes et al., 2006). Evidently, adopting a non-judgmental frame of mind is imperative in employing mindfulness as an effective treatment for psychological distress.

These findings provide insight into the alleviation and treatment of negative repetitive thought by the development of mindfulness skills in non-clinical and clinical samples, and thus further elucidate the cognitive processes underlying anxiety and depressive disorders. This research is considered exploratory and these relationships have not been examined in previous literature, thus, these findings cannot provide conclusive evidence for the independent associations of mindfulness skills to negative repetitive thought. Future research should aim to replicate the findings of the current investigation in other non-clinical and clinical samples.

Strengths and Limitations

The current studies are of a non-experimental design, therefore, the purpose of this investigation was to examine the relationships between these constructs. The design of this study provides high external validity, relative to an experimental design. The objective of Study 1 was to explore the relationships between the pertinent constructs in a high-functioning sample, while Study 2 was designed to examine these relationships in a low-functioning sample. Thus, the results of this study are generalizable to both non-clinical and clinical populations. Examining these constructs in two different samples is also beneficial because treatment occurs at the clinical level. Intervention begins when psychological distress reaches levels that force an individual to seek treatment. Thus, it is important to examine the relationships of mindfulness and self-management skills to negative repetitive thought in both high and low functioning populations.

A further strength of the current investigation is that a very large sample size was employed in Study 1, which decreased the chance of a Type II error and increased the power of the statistical analyses for detecting an existing effect. Moreover, when examining traits that vary among individuals, it is important to get a large sample size to capture the large variability found within the trait, which was achieved in the non-clinical sample. Unfortunately, a large sample size was not obtained in the clinical sample, thus, future research should examine the relationships between these constructs in a large clinical sample. The measures selected for this investigation are also an area of strength. Due to the fact that self-report instruments were employed to examine the constructs of interest, a measure of social desirability was included in order to control for response bias and therefore increase confidence in the current findings. Additionally, the same

measures were employed in both studies, which allows for more direct comparisons of the relationships between the two samples. Multi-faceted measures, as opposed to unidimensional measures, of mindfulness and self-management were also utilized, which allowed for a more extensive examination of the therapeutic mechanisms and their constituent facets.

Possible limitations of the current study include the use of a single modality, namely, self-report as the main measurement tool. However, as previously mentioned, social desirability was examined in order to rule out response bias. Furthermore, while this investigation employed measures with well-established psychometric properties, only one modality was used to examine each construct. Utilizing other modalities to examine negative repetitive thought and the therapeutic mechanisms would aid in assessing the entire construct. Moreover, as previously mentioned the clinical sample employed in Study 2 consisted of a small sample size of 20 participants. Small sample sizes can often lead to ostensible relationships that are not well representative of the entire population.

Another limitation lies in the fact that participants self-selected into the sample, and the characteristics associated with self-selection may be related to the outcome variables. While this is a limitation, a random sample would have required resources and time that were not available in the context of this study. A final limitation is the low internal consistencies found for the Marlowe-Crowne Social Desirability Scale (MCSD) in Study 1 and the Ruminative Response Scales- Brooding Subscale (RRS-B) in Study 2. Although the internal consistencies for these measures are below the commonly acceptable threshold of .70 (Nunnally, 1978), the RRS-B is comprised of fewer than 20 items and many authors have suggested that the acceptable lower bound may be

decreased to .60 based on this condition (Holden, Fekken, & Cotton, 1991; Nunnally, 1987). Furthermore, the MCSD was employed solely as a measure of social desirability and does not measure any of the pertinent constructs of the current investigation. Therefore, the low internal consistency of the MSCD should not compromise the relationships revealed in this investigation.

Future Directions

The results of the current study lead to much future research. Future studies should be designed to examine the current study's hypotheses via other modalities, beyond self-report, to measure the constructs. Employing multiple modalities of a construct, such as observational data and physiological measures of distress, would better assess the entire construct. Another area of future research would be to utilize an experimental design to examine the relationships between these constructs. Specifically, a worry and rumination induction paradigm could be employed and participants could complete instruments measuring the therapeutic mechanisms during pervasive negative thinking states. Furthermore, although the results of Study 1 examined an undergraduate sample and may relate to the general public, future research will need to examine a community population to further increase external validity of this study. These relationships should also be investigated in a larger clinical sample than the one employed in Study 2 in order to examine a more representative sample, and to avoid the risk of a restricted range for measures of negative repetitive thought and the therapeutic mechanisms.

Additional areas of future research could include the exploration of these relationships in relation to gender. It is important to examine gender differences in these

variables because research supports robust gender effects, namely that females experience higher levels of rumination and depression (Nolen-Hoeksema & Marrow, 1999). Furthermore, according to Canadian Community Health Survey (Statistics Canada, 2002), twice as many women as men are diagnosed with an anxiety or depressive disorder. Therefore, it would be interesting to examine if gender moderates any of the relationships found in the current investigation. In addition, as unique relationships between the facets of mindfulness and worry and mindfulness and rumination are identified, attention may focus on examining whether the subsets of these tools can be used in theory and practice to effectively treat worry and rumination. Empirically dismantling a therapy can aid in reducing cost of treatment and time in therapy for patients. Finally, although self-management was not strongly related to the negative repetitive thought feature of anxiety and depression, future research should examine what aspects of anxiety and depressive disorders are related to self-management, considering self-management is an evidence-based intervention for treating these disorders.

Conclusion

This investigation independently examined the facets of mindfulness and self-management skills in relation to the negative repetitive cognitions of worry and rumination, in a non-clinical and clinical sample. Our results provide essential empirical research due to the fact that, to our knowledge, no study to date has examined these relationships in either population. Both chronic worry and ruminative thought have been found to worsen the symptoms of anxiety and depression (Segerstrom et al., 2000), and thus it is important to study treatments related to these disorders in order to improve

treatment outcomes, provide empirical evidence to validate existing treatments, and to further understand the constructs underlying the disorders.

This investigation demonstrates empirical support for several conclusions, such as (1) worry and rumination are subtypes of negative repetitive thought that are positively related to measures of psychological distress and highly related to each other, (2) mindfulness and self-management are therapeutic mechanisms that are related to decreased levels of psychological distress and are associated with one another, particularly with respect to self-monitoring, (3) the construct of mindfulness is largely associated with decreased levels of negative repetitive thought and specifically the concept of acceptance without judgment is related to worry and rumination in non-clinical and clinical populations, and (4) the construct of self-management is not largely associated with decreased levels of negative repetitive thought, but is related to decreased levels of psychopathology.

Overall, this research suggests some treatment directions for further discussion. Specifically, mindfulness may be a more effective treatment of negative repetitive thoughts because it focuses on letting ones' thoughts occur as opposed to trying to control maladaptive cognitions (Hayes, 2004). Thus, an individual suffering from negative repetitive thought learns to accept their thoughts without judgment, which as seen in the current investigation, has a significant relationship to decreased levels of worry and rumination. On the other hand, self-management is a more active process that involves self-control, and thus while it may be efficacious in treating other aspects of anxiety and depression, it appears to be less related to decreased levels of worry and rumination. Furthermore, it should be noted that due to the exploratory nature of the current

investigation, the results presented should be interpreted with caution until replication of these findings is observed.

In sum, this examination has provided insight and understanding regarding the unifying constructs operating within anxious and depressive states, specifically worry and rumination. These results have provided further understanding of the possible influences to the comorbidity found between these two disorders, and insight into the underlying mechanisms of the treatments for negative repetitive thought.

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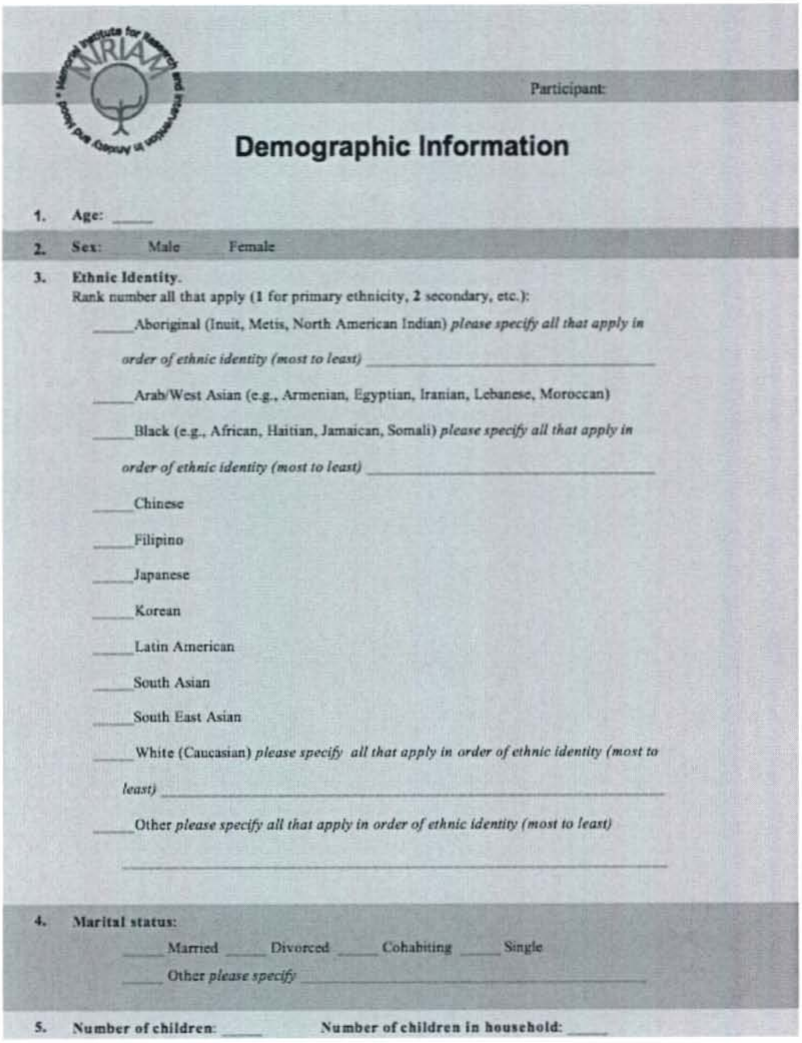
Appendix A

Demographic Information Form



Participant:

Demographic Information

1. **Age:** _____

2. **Sex:** Male Female

3. **Ethnic Identity.**
Rank number all that apply (1 for primary ethnicity, 2 secondary, etc.):

_____Aboriginal (Inuit, Metis, North American Indian) *please specify all that apply in order of ethnic identity (most to least)* _____

_____Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)

_____Black (e.g., African, Haitian, Jamaican, Somali) *please specify all that apply in order of ethnic identity (most to least)* _____

_____Chinese

_____Filipino

_____Japanese

_____Korean

_____Latin American

_____South Asian

_____South East Asian

_____White (Caucasian) *please specify all that apply in order of ethnic identity (most to least)* _____

_____Other *please specify all that apply in order of ethnic identity (most to least)*

_____

4. **Marital status:**

_____Married _____ Divorced _____ Cohabiting _____ Single

_____ Other *please specify* _____

5. **Number of children:** _____ **Number of children in household:** _____

6. **Highest education level attained:**

_____ Grade 8 or less

_____ Completed a business, trade, or vocational school instead of High School

_____ High School Graduate

_____ Completed a business, trade, or vocational school after High School

_____ Graduated university with a bachelor's degree (B.A., B.Sc., B.Ed., etc.)

_____ Post-baccalaureate graduate education or professional programme (M.A, M.Sc., Ph.D., M.B.A, M.D., LL.B., etc.)

7. **Religious affiliation:**

_____ Agnostic/Atheist _____ Buddhist _____ Hindu _____ Jewish

_____ Muslim _____ Protestant _____ Roman Catholic

_____ Other *please specify* _____

8. **Employment Status:**

_____ Work at home

_____ Employed outside of home

_____ Unemployed

If employed outside of home, current job title: _____

9. **Estimated annual family income:**

_____ $0 - $36,378

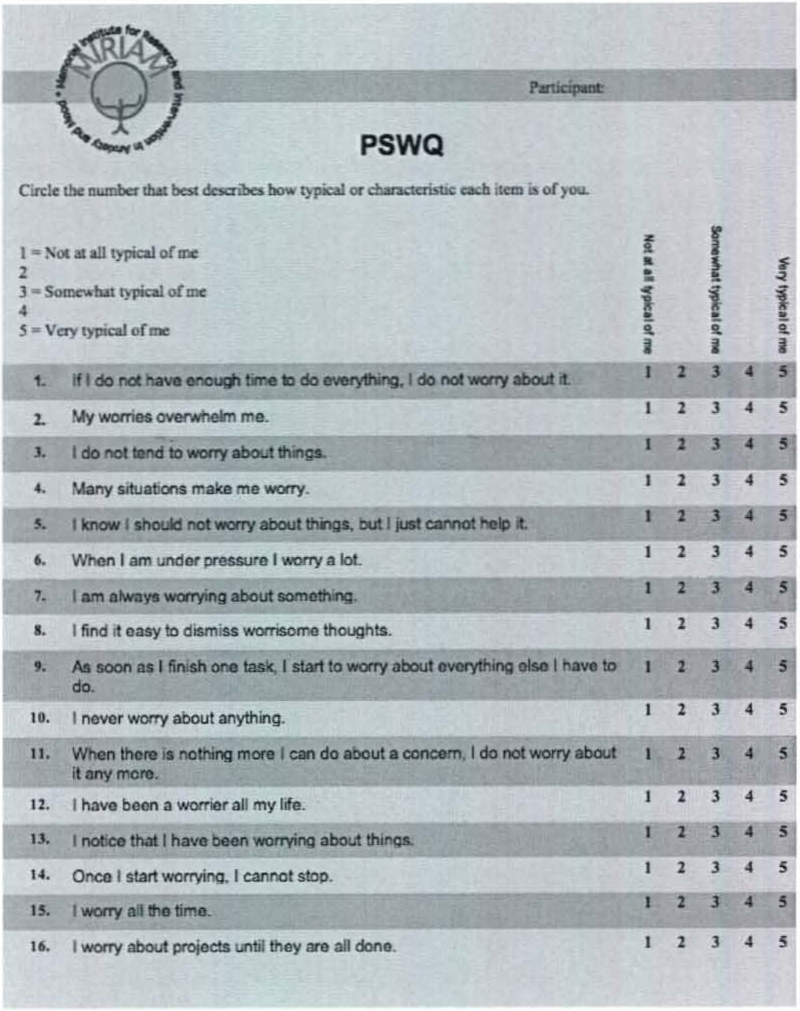
_____ $36, 379 - $72, 756

_____ $72,757 - $118,285

_____ over $118,286

Appendix B

Penn State Worry Questionnaire



Participant:

PSWQ

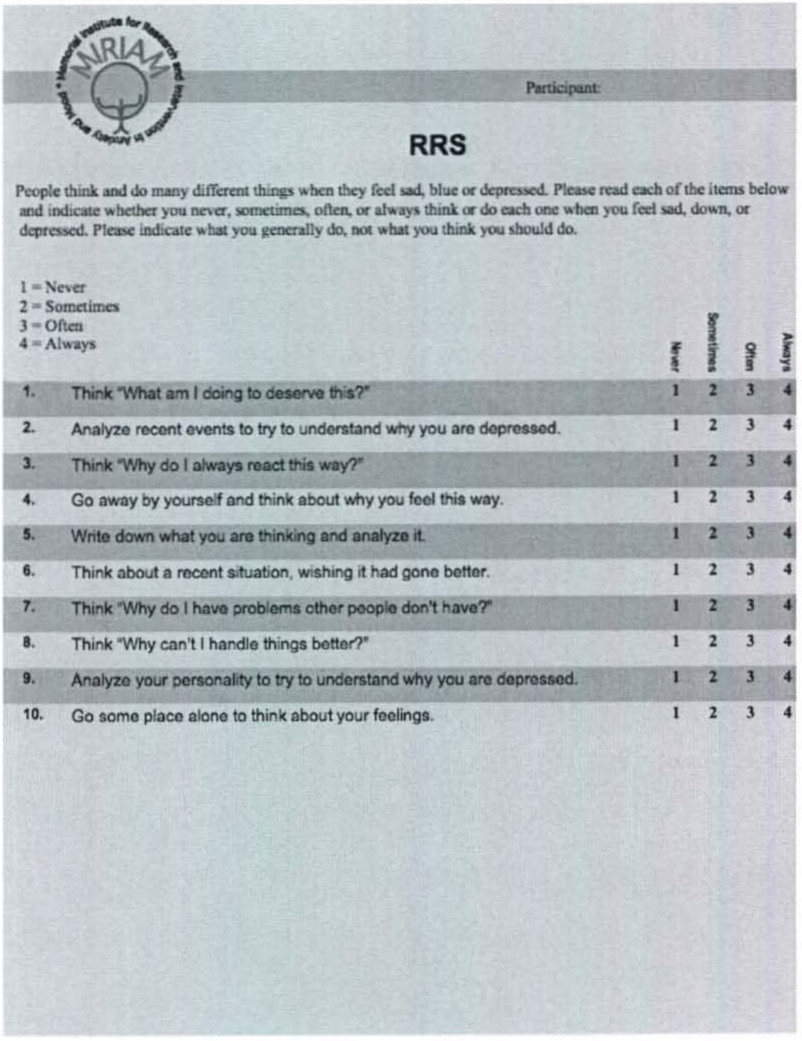
Circle the number that best describes how typical or characteristic each item is of you.

1 = Not at all typical of me
2
3 = Somewhat typical of me
4
5 = Very typical of me

		Not at all typical of me		Somewhat typical of me		Very typical of me
1.	If I do not have enough time to do everything, I do not worry about it.	1	2	3	4	5
2.	My worries overwhelm me.	1	2	3	4	5
3.	I do not tend to worry about things.	1	2	3	4	5
4.	Many situations make me worry.	1	2	3	4	5
5.	I know I should not worry about things, but I just cannot help it.	1	2	3	4	5
6.	When I am under pressure I worry a lot.	1	2	3	4	5
7.	I am always worrying about something.	1	2	3	4	5
8.	I find it easy to dismiss worrisome thoughts.	1	2	3	4	5
9.	As soon as I finish one task, I start to worry about everything else I have to do.	1	2	3	4	5
10.	I never worry about anything.	1	2	3	4	5
11.	When there is nothing more I can do about a concern, I do not worry about it any more.	1	2	3	4	5
12.	I have been a worrier all my life.	1	2	3	4	5
13.	I notice that I have been worrying about things.	1	2	3	4	5
14.	Once I start worrying, I cannot stop.	1	2	3	4	5
15.	I worry all the time.	1	2	3	4	5
16.	I worry about projects until they are all done.	1	2	3	4	5

Appendix C

Rumination Response Scale-Brooding and Reflection



Participant:

RRS

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

1 = Never
2 = Sometimes
3 = Often
4 = Always

		Never	Sometimes	Often	Always
1.	Think "What am I doing to deserve this?"	1	2	3	4
2.	Analyze recent events to try to understand why you are depressed.	1	2	3	4
3.	Think "Why do I always react this way?"	1	2	3	4
4.	Go away by yourself and think about why you feel this way.	1	2	3	4
5.	Write down what you are thinking and analyze it.	1	2	3	4
6.	Think about a recent situation, wishing it had gone better.	1	2	3	4
7.	Think "Why do I have problems other people don't have?"	1	2	3	4
8.	Think "Why can't I handle things better?"	1	2	3	4
9.	Analyze your personality to try to understand why you are depressed.	1	2	3	4
10.	Go some place alone to think about your feelings.	1	2	3	4

Appendix D

Kentucky Inventory of Mindfulness Skills

Participant:

KIMS

For each statement below, please circle the number that most accurately represents what is generally true for you.

1 = Never or very rarely true
2 = Rarely true
3 = Sometimes true
4 = Often true
5 = Very often or always true

		Never true	Rarely true	Sometimes true	Often true	Always true
1.	I notice changes in my body, such as whether my breathing slows down or speeds up.	1	2	3	4	5
2.	I'm good at finding the words to describe my feelings.	1	2	3	4	5
3.	When I do things, my mind wanders off and I'm easily distracted.	1	2	3	4	5
4.	I criticize myself for having irrational or inappropriate emotions.	1	2	3	4	5
5.	I pay attention to whether my muscles are tense or relaxed.	1	2	3	4	5
6.	I can easily put my beliefs, opinions, and expectations into words.	1	2	3	4	5
7.	When I'm doing something, I'm only focused on what I'm doing, nothing else.	1	2	3	4	5
8.	I tend to evaluate whether my perceptions are right or wrong.	1	2	3	4	5
9.	When I'm walking, I deliberately notice the sensations of my body moving.	1	2	3	4	5
10.	I'm good at thinking of words to express my perceptions, such as how things taste, smell, or sound.	1	2	3	4	5
11.	I drive on "automatic pilot" without paying attention to what I'm doing.	1	2	3	4	5
12.	I tell myself that I shouldn't be feeling the way I'm feeling.	1	2	3	4	5
13.	When I take a shower or a bath, I stay alert to the sensations of water on my body.	1	2	3	4	5
14.	It's hard for me to find the words to describe what I'm thinking.	1	2	3	4	5
15.	When I'm reading, I focus all my attention on what I'm reading.	1	2	3	4	5
16.	I believe some of my thoughts are abnormal or bad and I shouldn't think that way.	1	2	3	4	5
17.	I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.	1	2	3	4	5
18.	I have trouble thinking of the right words to express how I feel about things.	1	2	3	4	5

		Never true	Rarely true	Sometimes true	Often true	Always true
19.	When I do things, I get totally wrapped up in them and don't think about anything else.	1	2	3	4	5
20.	I make judgments about whether my thoughts are good or bad.	1	2	3	4	5
21.	I pay attention to sensations, such as the wind in my hair or sun on my face.	1	2	3	4	5
22.	When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.	1	2	3	4	5
23.	I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.	1	2	3	4	5
24.	I tend to make judgments about how worthwhile or worthless my experiences are.	1	2	3	4	5
25.	I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.	1	2	3	4	5
26.	Even when I'm feeling terribly upset, I can find a way to put it into words.	1	2	3	4	5
27.	When I'm doing chores, such as cleaning or laundry, I tend to daydream or think of other things.	1	2	3	4	5
28.	I tell myself that I shouldn't be thinking the way I'm thinking.	1	2	3	4	5
29.	I notice the smells and aromas of things.	1	2	3	4	5
30.	I intentionally stay aware of my feelings.	1	2	3	4	5
31.	I tend to do several things at once rather than focusing on one thing at a time.	1	2	3	4	5
32.	I think some of my emotions are bad or inappropriate and I shouldn't feel them.	1	2	3	4	5
33.	I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.	1	2	3	4	5
34.	My natural tendency is to put my experiences into words.	1	2	3	4	5
35.	When I'm working on something, part of my mind is occupied with other topics, such as what I'll be doing later, or things I'd rather be doing.	1	2	3	4	5
36.	I disapprove of myself when I have irrational ideas.	1	2	3	4	5
37.	I pay attention to how my emotions affect my thoughts and behaviour.	1	2	3	4	5
38.	I get completely absorbed in what I'm doing, so that all my attention is focused on it.	1	2	3	4	5
39.	I notice when my moods begin to change.	1	2	3	4	5

Appendix E

Self-Control Self-Management Scale

Participant:

SCMS

Please read each of the following statements and rate how well each statement describes you, using the following scale:

0 = Very undescriptive of me
1 = Somewhat/mostly undescriptive of me
2 = A little undescriptive of me
3 = A little descriptive of me
4 = Somewhat/mostly descriptive of me
5 = Very descriptive of me

		Very undescriptive of me	Mostly undescriptive of me	A little undescriptive of me	A little descriptive of me	Mostly descriptive of me	Very descriptive of me
1.	When I work toward something, it gets all my attention.	0	1	2	3	4	5
2.	The goals I achieve do not mean much to me.	0	1	2	3	4	5
3.	I become very aware of what I am doing when I am working towards a goal.	0	1	2	3	4	5
4.	I get myself through hard things by planning to enjoy myself afterwards.	0	1	2	3	4	5
5.	I know I can track my behaviour when working towards a goal.	0	1	2	3	4	5
6.	When I set important goals for myself, I usually do not achieve them.	0	1	2	3	4	5
7.	When I do something right, I take time to enjoy the feeling.	0	1	2	3	4	5
8.	I pay close attention to my thoughts when I am working on something hard.	0	1	2	3	4	5
9.	I silently praise myself even when others do not praise me.	0	1	2	3	4	5
10.	I do not seem capable of making clear plans for most problems that come up in my life.	0	1	2	3	4	5
11.	I make sure to track my progress regularly when I am working on a goal.	0	1	2	3	4	5
12.	The standards I set for myself are unclear and make it hard for me to judge how I am doing on a task.	0	1	2	3	4	5
13.	I congratulate myself when I make some progress.	0	1	2	3	4	5
14.	I keep focused on tasks I need to do even if I do not like them.	0	1	2	3	4	5
15.	I have learned that it is useless to make plans.	0	1	2	3	4	5
16.	I give myself something special when I make some progress.	0	1	2	3	4	5

Appendix F

Depression Anxiety and Stress Scales-21

Participant:

DASS - 21

Please read each statement and circle a number 0, 1, 2 or 3 that indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

0 = Did not apply to me at all
1 = Applied to me to some degree, or some of the time
2 = Applied to me to a considerable degree, or a good part of time
3 = Applied to me very much, or most of the time

		Not at all	To some degree	To a considerable degree	Very much
1.	I found it hard to wind down.	0	1	2	3
2.	I was aware of dryness of my mouth.	0	1	2	3
3.	I couldn't seem to experience any positive feeling at all.	0	1	2	3
4.	I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion).	0	1	2	3
5.	I found it difficult to work up the initiative to do things.	0	1	2	3
6.	I tended to over-react to situations.	0	1	2	3
7.	I experienced trembling (e.g., in the hands).	0	1	2	3
8.	I felt that I was using a lot of nervous energy.	0	1	2	3
9.	I was worried about situations in which I might panic and make a fool of myself.	0	1	2	3
10.	I felt that I had nothing to look forward to.	0	1	2	3
11.	I found myself getting agitated.	0	1	2	3
12.	I found it difficult to relax.	0	1	2	3
13.	I felt down-hearted and blue.	0	1	2	3
14.	I was intolerant of anything that kept me from getting on with what I was doing.	0	1	2	3
15.	I felt I was close to panic.	0	1	2	3
16.	I was unable to become enthusiastic about anything.	0	1	2	3
17.	I felt I wasn't worth much as a person.	0	1	2	3
18.	I felt that I was rather touchy.	0	1	2	3
19.	I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat).	0	1	2	3
20.	I felt scared without any good reason.	0	1	2	3
21.	I felt that life was meaningless.	0	1	2	3

Appendix G

Marlowe Crowne Social Desirability Scale

Participant:

MCSD

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is *true* or *false* as it pertains to your personally.

1 = True
2 = False

		True	False
1.	Before voting I thoroughly investigate the qualifications of all the candidates.	1	2
2.	I never hesitate to go out of my way to help someone in trouble.	1	2
3.	It is sometimes hard for me to go on with my work if I am not encouraged.	1	2
4.	I have never intensely disliked anyone.	1	2
5.	On occasion I have had doubts about my ability to succeed in life.	1	2
6.	I sometimes feel resentful when I don't get my way.	1	2
7.	I am always careful about my manner of dress.	1	2
8.	My table manners at home are as good as when I eat out in a restaurant.	1	2
9.	If I could get into a movie without paying and be sure I was not seen, I would probably do it.	1	2
10.	On a few occasions, I have given up doing something because I thought too little of my ability.	1	2
11.	I like to gossip at times.	1	2
12.	There have been times when I felt like rebelling against people in authority even though I knew they were right.	1	2
13.	No matter who I'm talking to, I'm always a good listener.	1	2
14.	I can remember "playing sick" to get out of something.	1	2
15.	There have been occasions when I took advantage of someone.	1	2
16.	I'm always willing to admit it when I make a mistake.	1	2
17.	I always try to practice what I preach.	1	2
18.	I don't find it particularly difficult to get along with loud mouthed, obnoxious people.	1	2
19.	I sometimes try to get even rather than forgive and forget.	1	2

		True	False
20.	When I don't know something I don't at all mind admitting it.	1	2
21.	I am always courteous, even to people who are disagreeable.	1	2
22.	At times I have really insisted on having things my own way.	1	2
23.	There have been occasions when I felt like smashing things.	1	2
24.	I would never think of letting someone else be punished for my wrong-doings.	1	2
25.	I never resent being asked to return a favor.	1	2
26.	I have never been irked when people expressed ideas very different from my own.	1	2
27.	I never make a long trip without checking the safety of my car.	1	2
28.	There have been times when I was quite jealous of the good fortune of others.	1	2
29.	I have almost never felt the urge to tell someone off.	1	2
30.	I am sometimes irritated by people who ask favors of me.	1	2
31.	I have never felt that I was punished without cause.	1	2
32.	I sometimes think when people have a misfortune they only got what they deserved.	1	2
33.	I have never deliberately said something that hurt someone's feelings.	1	2

Appendix H

Undergraduate Initial Contact Script

Classroom Script for Draw

My name is _____, and I am working on research with other undergraduate and graduate students, under the supervision of Dr. Peter Mezo of the psychology department. We are currently conducting a study on thoughts and feelings. We are looking for participants to complete self-report measures on these constructs, which will take approximately 40 minutes to complete.

If you are not interested in being a participant in this study, please feel free to leave. Your participation in this study is entirely voluntary, and you will receive no penalty for non-participation. Those who complete the study will have their name entered into a draw for a chance to win one $50 gift certificate, or one of five $10 gift certificates for the Avalon Mall. Thank you very much for your time.

Classroom Script for Two Percent Bonus Marks

My name is _____, and I am working on research with other undergraduate and graduate students, under the supervision of Dr. Peter Mezo of the psychology department. We are currently conducting a study on thoughts and feelings. We are looking for participants to complete self-report measures on these constructs, which will take approximately 40 minutes to complete.

If you are not interested in being a participant in this study, please feel free to leave. Your participation in this study is entirely voluntary, and you will receive no penalty for non-participation. Those who complete the study will receive a two percent bonus towards their final grade in this course. Thank you very much for your time.

Appendix J

Clinical Diagnostic Profile Form

Participant Number:_____

WEEKS IN TREATMENT TO DATE: _____

Diagnostic Profile Form

Axis I:	Diagnostic Code	DSM-IV Name
Principal Diagnosis:	___ ___ ___ . ___ ___	_____
Additional Diagnosis:	___ ___ ___ . ___ ___	_____
Additional Diagnosis:	___ ___ ___ . ___ ___	_____
Additional Diagnosis:	___ ___ ___ . ___ ___	_____
Axis II:	Diagnostic Code	DSM-IV Name
	___ ___ ___ . ___ ___	_____
	___ ___ ___ . ___ ___	_____
Axis III:	ICD-10-CM Code	ICD-10-CM Name
	___ ___ ___ . ___ ___	_____
	___ ___ ___ . ___ ___	_____

Axis IV: (*check all that apply)*

_____ Problems with primary support group *Specify* _____

_____ Problems related to the social environment *Specify* _____

_____ Educational problems *Specify* _____

_____ Occupational problems *Specify* _____

_____ Housing problems *Specify* _____

_____ Economic problems *Specify* _____

_____ Problems with access to health care services *Specify* _____

_____ Problems related to interaction with the legal system/crime *Specify* _____

_____ Other psychosocial and environmental problems *Specify* _____

Axis V: Global Assessment of Functioning Scale

Current Score: ___ ___ ___

Appendix K

Clinical Initial Contact Script

INITIAL CONTACT SCRIPT

PROJECT TITLE: Investigating behaviours and thoughts in anxiety and depression

INVESTIGATOR(S): Dr. Peter Mezo, Dr. Terrence Callanan, Dr. Tanis Adey, Dr. Deirdre MacLaughlin

I am inviting you to take part in a research study. It is up to you to decide whether to be in the study or not. I'll briefly explain what the study is for. Please feel free to ask me any questions you might have.

This research study is examining different types of Cognitive Behavioural Therapy strategies for anxiety and depression. These strategies help people think and act in more helpful ways. By better understanding how these strategies work, it is hoped that even more effective strategies can be developed in the future. Participating in this study will make it possible to improve services for people with anxiety and depression.

If you decide to participate in this study, it will involve you filling out some questionnaires here today. If you decide not to participate, it will not affect your clinical care in any way. Would you like to hear more about this study?

Appendix L

Clinical Informed Consent Form

Faculty of Medicine, Schools of Nursing and Pharmacy of Memorial University of Newfoundland; Eastern Health; Dr. H. Bliss Murphy Cancer Centre

Consent to Take Part in Health Research

TITLE: Investigating behaviours and thoughts in anxiety and depression

INVESTIGATOR(S): Dr. Peter Mezo, Dr. Terrence Callanan, Dr. Tanis Adey, Dr. Deirdre MacLaughlin

You have been invited to take part in a research study. It is up to you to decide whether to be in the study or not. Before you decide, you need to understand what the study is for, what risks you might take and what benefits you might receive. This consent form explains the study.

The researchers will:

- **discuss the study with you**
- **answer your questions**
- **keep confidential any information which could identify you personally**
- **be available during the study to deal with problems and answer questions**

If you decide not to take part or to leave the study this will not affect your normal treatment.

1. **Introduction/Background:**
   The way we think and act has been found to have a large effect on how we feel. These findings have supported the development of Cognitive Behavioural Therapies. This study will look more closely at how helpful thinking interferes with anxiety and depression. More specifically, this study is looking at Cognitive Behavioural Therapy strategies with the goal of making new strategies that can be helpful in the future.

2. **Purpose of study:**
   This research study is examining different types of Cognitive Behavioural Therapy strategies for anxiety and depression. These strategies help people think and act in more helpful ways. This study will continue investigating how these strategies compare to each other and how they relate to anxiety and depression.

3. **Description of the study procedures and tests:**
   If you decide to participate in this study, you will be asked to fill out 9 questionnaires. Your mental health professional will be there to help you with any questions while you complete the questionnaires in the clinic.

4. **Length of time:**
   It usually takes between 50 to 60 minutes to fill out the 9 questionnaires.

 Initials: _____

5. **Possible risks and discomforts:**
There is a slight risk of possible mild discomfort involved in answering some of the questions. This risk is uncommon. You can stop answering these questions at any time. If you become upset when reading any of the questions on these forms, please tell your mental health professional. He or she will be able to answer any questions you might have.

6. **Benefits:**

It is not known whether this study will benefit you.

7. **Liability statement:**

Signing this form gives us your consent to be in this study. It tells us that you understand the information about the research study. When you sign this form, you do not give up your legal rights. Researchers or agencies involved in this research study still have their legal and professional responsibilities.

8. **Confidentiality:**

Information obtained from the questionnaires you fill out is strictly confidential. These questionnaires will be kept in secure files in locked file cabinets in the Department of Psychology Clinic, Memorial University of Newfoundland. Names or identifying information will never be associated with presentations, reports, or articles using this data.

The questionnaires that you fill out will be assigned a code. Your name will not be associated with the questionnaires once this code has been assigned. The information collected on these questionnaires might be re-analyzed at a later time as part of a future study; however, your responses will remain anonymous.

No one will have access to identifying information other than your mental health professional and a clinic clerical staff member.

9. **Questions:**

If you have any questions about taking part in this study, you can meet with the investigators who are in charge of the study at this institution. These people are:

Dr. Terrence Callanan, Phone: (709) 777-6650
Dr. Tanis Adey, Phone: (709) 777-5111
Dr. Deirdre MacLaughlin, Phone: (709) 777-5278
Dr. Peter Mezo, Phone: (709) 737-4345

Or you can talk to someone who is not involved with the study at all, but can advise you on your rights as a participant in a research study. This person can be reached through:

Office of the Human Investigation Committee (HIC) at 709-777-6974
Email: hic@mun.ca

 Initials: _____

Signature Page

Study title: Investigating behaviours and thoughts in anxiety and depression

Name of principal investigator: Dr. Peter Mezo

To be filled out and signed by the participant:

	Please check as appropriate:
I have read the consent [and information sheet].	Yes { } No { }
I have had the opportunity to ask questions/to discuss this study.	Yes { } No { }
I have received satisfactory answers to all of my questions.	Yes { } No { }
I have received enough information about the study.	Yes { } No { }
I understand that I am free to withdraw from the study	Yes { } No { }
• at any time • without having to give a reason • without affecting my clinical care	
I understand that it is my choice to be in the study and that I may not benefit.	Yes { } No { }
I agree to take part in this study.	Yes { } No { }

_____ _____

Signature of participant Date

_____ _____

Signature of witness Date

To be signed by the investigator:

I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

_____ _____

Signature of investigator/mental health professional Date

Telephone number: _____