

The associations between depressive rumination subtypes and dysphoria:

Implications for depression

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## ABSTRACT

### The Associations between Depressive Rumination Subtypes and Dysphoria: Implications for Depression

Nathida Siriapaipant

Depressive rumination is repetitive thought about one's depressive symptoms, their causes, meanings, and potential consequences. Research has shown that depressive rumination is associated with dysphoria. Depressive rumination has been shown to consist of subtypes, with some subtypes being potentially less adaptive than others. Research using the Rumination on Sadness Scale (Conway, Csank, Holm, & Blake, 2000) has identified two rumination subtypes: meaning searching and repetitive thinking. Meaning searching reflects one's attempt to understand and find meaning in one's sadness, whereas repetitive thinking reflects repetitiveness and uncontrollability of one's thoughts on one's sadness. Two hypotheses were made. First, repetitive thinking, but not meaning searching, was hypothesized to lead to more dysphoria over time. Second, it was hypothesized that meaning searching would lead to more repetitive thinking, and repetitive thinking would lead to more meaning searching over time. Participants in this 2-year longitudinal study were 349 older adults who had recently retired. The findings did not support the first hypothesis. In contrast, findings indicated that dysphoria may lead to more repetitive thinking. As for the second hypothesis, meaning searching predicted increased repetitive thinking, and repetitive thinking led to more meaning searching a year later although these associations were not strong. These findings emerged when taking into account several factors related to dysphoria and depressive rumination, including neuroticism, control beliefs, age, and gender. Based on

these findings, it can be argued that depressive rumination might be more suitably conceptualized as a symptom of depression rather than a process that leads to more depression.

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### **Definition of Repetitive Thought**

Various types of thinking are characterized by their repetitive nature. Segerstrom, Stanton, Alden, and Shortridge (2003) defined repetitive thought as a “process of thinking attentively, repetitively, or frequently about oneself and one’s world” (p. 909). By this definition, the thought content is not of primary focus because the definition does not specify the particular content of repetitive thought. To be considered repetitive, a thought has to recur frequently enough, and individuals have to maintain attention to the thought. This definition is rather inclusive; many thoughts could be categorized as repetitive ones. One way to distinguish repetitive thought from other types of thought may have to do with the extent of thinking. To be considered repetitive, a thought should be quite occupying, recurring repeatedly and persistently at least for a period of time that is considered relatively long by the individual, and the time interval between each thought occurrence is relatively short. Implicit in this definition is the personal significance of the content of repetitive thought to the individual.

### **Characteristics that Determine the Unconstructiveness of Repetitive Thought**

Several types of repetitive thought, such as rumination, worry, and reflection, have been studied. Different repetitive thoughts are likely to be associated with different consequences. Some repetitive thoughts are related to more adaptive outcomes, whereas others are associated with more maladaptive consequences. Watkins (2008) reviewed experimental, cross-sectional, and longitudinal studies on repetitive thought and identified characteristics of repetitive thought that seemed to determine how constructive

or unconstructive repetitive thoughts may be. These characteristics are valence, intrapersonal and situational context, and level of construal. Watkins (2008) found that in terms of valence, when individuals' repetitive thought content is more negative, individuals are generally likely to experience more unconstructive consequences. Overall, when the content of repetitive thought is positive, individuals are less likely to experience negative affect. Nevertheless, there is a possibility that positive valence can contribute to hypomania or mania in some individuals.

The second characteristic identified by Watkins (2008) was intrapersonal and situational contexts, which are the conditions under which repetitive thought occurs. The intrapersonal context, or within-self context, includes individuals' dispositional traits, mood, and beliefs about self. For instance, the consequences of engaging in worry, which is defined as repetitive thought focused on potential negative events in the future (Borkovec, Robinson, Pruzinsky, & Dupree, 1983), are partly influenced by individuals' levels of anxiety. Those who are more anxious tend to experience more unconstructive consequences of worry than those who are less anxious (Watkins, 2008). The other type of context, which is the situational context, is the situation or environment in which the individuals are when they experience repetitive thoughts. For example, for individuals who are highly anxious about social interactions, they experience increased negative affect if they ruminate about their interactions in which they disclose personal information to others, but they experience a decrease in negative affect after thinking about their participation in small talk with others (Kashdan & Roberts, 2007).

Another factor identified by Watkins (2008) as a determinant of the constructiveness of repetitive thought is levels of construal of the repetitive thought.

High-level construals are abstract, decontextualized, and analytic, whereas low-level construals are concrete, specific and experiential. Examples of high-level construals include making inferences about global dispositions about oneself and others (e.g., being lazy), which implies consistency across situations, or looking at the “why” aspects of an action. In contrast, low-level construals may involve explaining another person’s actions in terms of the person’s current state (e.g., being tired), which varies across situations, or looking at the “how” aspects of the action (Watkins, 2008). It is the interaction between construal level and other characteristics, and not construal level alone, that may determine how unconstructive a repetitive thought is, such that more abstract, negative repetitive thoughts are likely to be unconstructive (Watkins, 2008). Kross, Ayduk, and Mischel (2005) also found that the impact of the level of abstractness of repetitive thought can be a function of perspective. Individuals who processed their negative emotions from their past interpersonal experiences in an abstract and distanced manner (i.e., from a third-person perspective) experienced less negative affect than those who processed their negative emotions concretely or abstractly but from the first-person perspective (Kross et al., 2005).

Apart from the characteristics identified by Watkins (2008) as contributing to the constructiveness of repetitive thought, individuals’ purpose in engaging in repetitive thought may also partially impact on the outcome. According to Segerstrom, Stanton, Alden, and Shortridge (2003), two main purposes of repetitive thought are searching and solving. A repetitive thought is considered having a searching purpose if the thought reflects the person’s looking for new ideas, attempting to generate options, and considering possibilities. A solving purpose entails improving certainty, increasing

predictability of outcomes, and finding solutions. Consequences of different purposes of repetitive thought seem to depend on the negativity of the thought. Segerstrom and colleagues (2003) found that among women who were at risk of developing breast cancer, those whose repetitive thought was less negative and was more of a searching purpose tended to have better overall mental health. However, when individuals reported more negative and more searching repetitive thoughts, they also reported more depressive symptoms.

### **Depressive Rumination**

One type of unconstructive repetitive thought that has been widely studied is depressive rumination. Nolen-Hoeksema (1991) defined depressive rumination as perseverative thinking about one's depressive symptoms, their causes, meaning, and consequences. Depressive rumination does not lead individuals to take a more active approach to solve their problems (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Based on Watkins' framework of repetitive thought characteristics, depressive rumination appears to possess several characteristics associated with unconstructive consequences.

First, in terms of content valence, depressive rumination is negative because it focuses on one's sadness and its causes and consequences. Second, with regard to intrapersonal context, depressive rumination is likely to be concurrent with some other negative attributes or constructs that are also related to depression, such as low self-esteem, self-criticism, and neediness (Ciesla & Roberts, 2007; Spasojevic & Alloy, 2001). It is also likely that situational context in which individuals ruminate about their sadness is negative, such as a stressful period of life. Indeed, individuals tend to report more depressive rumination when they perceive their situations as stressful, and there is

evidence indicating that high levels of stress and high levels of depressive rumination result in worse social dysfunction, such as perceiving oneself as less able to complete tasks or less able to enjoy typical daily activities (Morrison & O'Connor, 2004).

The third characteristic of depressive rumination in Watkins's (2008) framework is construal level. Depressive rumination may be either low or high in terms of construal level. Individuals may pay attention to particular depressive symptoms, or they may try to find out why they experience sadness. In sum, the characteristics of depressive rumination in Watkins's (2008) framework are that it has negative content, tends to be related to negative intrapersonal and situational contexts, and is possibly of high construal level. The implication is that depressive rumination is associated with unconstructive consequences.

It also seems implicit in theorizing that depressive rumination is done from the first-person perspective. Indeed, as it becomes clear below, depressive rumination measures are worded in the first-person perspective; for instance, "Think 'Why can't I handle things better'" (Nolen-Hoeksema & Morrow, 1991). As previously mentioned, Kross and colleagues (2005) found that when abstract repetitive thought is processed from the first-person perspective, it is associated with more negative affect. Therefore, depressive rumination is likely to be maladaptive. Lastly, with respect to purpose, Segerstrom and colleagues (2003) found that depressive rumination involves more searching rather problem-solving. As previously mentioned, searching is not harmful in itself, but its combination with negative valence, which is a basic characteristic of depressive rumination, has been associated with maladaptive consequences.

### **Response Styles Theory**

The most influential theory on rumination is the Response Styles Theory (RST) proposed by Nolen-Hoeksema (1991). Research on the Response Styles Theory has focused on identifying individual differences in engaging in depressive rumination. According to the Response Styles Theory, when individuals engage in rumination when they feel sad or depressed, rumination will in turn prolong and exacerbate their depressed mood (Nolen-Hoeksema, 1991; Nolen-Hoeksema et al., 2008). To assess rumination, Nolen-Hoeksema and Morrow (1991) developed a self-report measure called the Response Styles Questionnaire (RSQ). Individuals' tendency to engage in depressive rumination is measured with the subscale called the Ruminative Responses Scale (RRS), which consists of 22 items. Examples of the RRS items include "I think back to other times I have been depressed," "I think about how hard it is to concentrate," and "I go away by myself and think about why I feel this way." Respondents rate how frequently they experience each response, and a total depressive rumination score is derived.

### **Other Types of Rumination**

It should be noted that there are other types of rumination that are not necessarily defined in relation to depressed mood. The three other types of rumination considered here are goal-directed rumination, ruminative self-focus, and stress-reactive rumination. Goal-related rumination is defined by Martin and Tesser (1996) as "a class of conscious thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thoughts" (p. 1). According to Martin and Tesser (1996), individuals are expected to ruminate when they have not yet attained their goals or made sufficient progress towards their goals, and these ruminative thoughts can assume several forms, such as worry, regret, and anticipation. Martin, Tesser, and

McIntosh (1993) developed an individual difference measure of this goal-related rumination which includes items such as “When I have a problem, I tend to think about it a lot of the time” and “I often think about the future.” Martin and Tesser (1996) argued that goal-related rumination is potentially beneficial because it may help individuals keep track of their progress towards their goals. Watkins (2008) suggested that the consequences of this goal-related rumination can be constructive or unconstructive depending on whether the ruminative thoughts facilitate or interfere with individuals’ progress toward the goals that prompt these ruminative thoughts. In any case, goal-directed rumination seems distinct from depressive rumination.

Another type of rumination is identified in terms of its association with personality aspects, in particular neuroticism. Ruminative self-focus is defined by Trapnell and Campbell (1999) as self-focus that is driven by individuals’ perception of threats, losses, or injustices to them. This ruminative self-focus is distinguished from self-focus that is driven by intellectual curiosity and philosophical interest, which is labeled as reflection (Trapnell & Campbell, 1999). Ruminative self-focus is measured with items such as “I tend to ‘ruminate’ or dwell over things that happen to me for a really long time afterward,” “I often find myself reevaluating something I’ve done” and “Sometimes it is hard for me to shut off thoughts about myself.” Although Trapnell and Campbell’s (1999) definition of ruminative self-focus is not directly associated with depressed mood, their rumination measure is nonetheless positively correlated with depressive symptoms as well as other negative characteristics or states, such as neuroticism and negative affect. Thus, even though the items are not explicitly negative and inherently associated with



depressed mood, ruminative self-focus and depressive rumination may substantially overlap rather than be distinct from each other.

Another type of rumination is stress-reactive rumination defined by Robinson and Alloy (2003) as individuals' tendencies to focus on maladaptive thoughts about themselves after encountering a stressful life event. This tendency can be assessed with the Stress-Reactive Rumination Scale (SRRS; Robinson, 1997) that includes items such as "Think about how the stressful event was all your fault," "Think about what the occurrence of the stressor means about you," and "Think about how things like this always happen to you." Whereas Nolen-Hoeksema (1991) proposed that depressive rumination occurs in response to depressed mood and can worsen depressed mood, stress-reactive rumination was proposed as following a stressful life event and as not necessarily inducing sadness. Nonetheless, both depressive rumination and stress-reactive rumination seem to convey a sense of self-blame and a perception of being subjected to unpleasant situations that others do not experience. Consider, for instance, the RRS items "Think 'What am I doing to deserve this?'" and "Think 'Why do I have problems other people don't have?'" It was found that individuals who scored high on stress-reactive rumination and had high cognitive risk for depression (e.g., demonstrating pessimistic attributional styles and reporting more dysfunctional beliefs) were likely to suffer from more depressive symptoms more frequently and for a longer duration even after controlling for initial depressive symptoms and cognitive risk factors (Robinson & Alloy, 2003). Similar analyses showed that depressive rumination did not interact with cognitive risk factors in predicting depressive symptoms (Robinson & Alloy, 2003). However, the authors did not include both stress-reactive rumination and depressive rumination in the

same analyses; therefore, it is inconclusive whether stress-reactive rumination would still interact with risk for depression in predicting depressive symptoms when depressive rumination is controlled for.

### **Depressive Rumination and Dysphoria**

In this thesis, individuals are considered to experience dysphoria when they have higher scores on measures of depressive symptoms, whether or not these scores are indicative of clinical depression. Dysphoria is explicitly defined here so as to avoid any confusion because dysphoria has been conceptualized rather imprecisely and inconsistently in research (Starcevic, 2007).

Research has shown that individuals who engage in depressive rumination report more dysphoria. Thomsen (2006) reviewed 100 experimental, cross-sectional, and longitudinal studies on rumination and dysphoria. Experimental studies tend to have a repeated-measures design, in which half of the participants were already sad or depressed or would be induced to feel sad, and the other half would be a control sample. Then participants would be induced to either ruminate (e.g., think about certain aspects of themselves or their depressive symptoms) or engage in some distracting thought, such as thinking of Mona Lisa's smile (Thomsen, 2006). The findings from experimental studies have shown that individuals who were induced to ruminate showed an increase in sad mood in comparison to those who were distracted. This effect of rumination on mood is contingent on individuals already feeling sad (Thomsen, 2006).

Findings from cross-sectional studies also support the positive association between rumination and dysphoria. Cross-sectional studies tend to have either one of the following designs: (a) examining correlations between rumination and dysphoria in non-

clinical samples, or (b) comparing the relation between rumination and dysphoria between groups. For instance, individuals are divided into depressed and non-depressed groups, and their depressive rumination scores are compared. Another type of group comparison is conducted by identifying high ruminators and low ruminators, and comparing their depressive symptomatology (Thomsen, 2006). The findings from cross-sectional studies indicate that generally there is a positive association between rumination and dysphoria in both young and adult non-clinical samples (Rood, Roelofs, Bogels, Nolen-Hoeksema, & Schouten, 2009; Thomsen, 2006). However, compared to that of adult non-clinical samples, the association between depressive rumination and depressive symptoms may not be as strong in child samples and adult clinical samples (Thomsen, 2006).

The findings from longitudinal studies are not as clear as those from experimental and cross-sectional studies. For longitudinal studies, researchers typically measure individuals' initial levels of rumination and depressive symptoms, and measure these again after some time interval. Thomsen (2006) found that individuals who ruminate more subsequently experienced either the same or more depressive symptoms. The findings which indicated that rumination levels did not associate with more depression tended to be for studies with clinical samples, in particular in those in which participants received treatment. Thomsen (2006) suggested that more severe depression and treatment might be factors that make rumination become a less reliable predictor of depressive symptoms. In longitudinal studies with children and adolescent non-clinical samples, rumination was found to only modestly predict depressive symptoms when controlling for baseline levels of depression (Rood et al., 2009). Furthermore, due to the instability of

the effect sizes found, Rood and colleagues (2009) suggested that these findings should be interpreted with caution.

### **Limitations in Previous Studies on Depressive Rumination and Dysphoria**

In general, depressive rumination is associated with dysphoria. However, due to limitations in studies examining the relation between depressive rumination and dysphoria one cannot state that it is depressive rumination that leads to worsening of dysphoria. According to Nolen-Hoeksema's (1991) Response Styles Theory, a ruminative response leads to prolonged depressed mood. Given this theory, a longitudinal design is most suitable to test the effects of depressive rumination. Several longitudinal studies have been conducted, but they have some limitations which render their findings inconclusive. First, individuals' depressive symptoms at Time 1 (T1) should be taken into account when examining the relation between T1 depressive rumination effects on T2 depressive symptoms. Depression has been shown to remain relatively stable over time (Charman, 1994; Holsen, Kraft, & Vitterso, 2000; Lovibond, 1998); therefore, without controlling for its levels at T1, it is not possible to conclude whether the depressive symptoms at T2 results from T1 depressive rumination or whether symptoms simply are stable over time. However, baseline depression has not always been taken into account. For example, Broderick and Korteland (2004) did not control for initial depressive symptoms when examining whether adolescents' T1 depressive rumination predicted their T2 depressive symptoms.

Another limitation is to not take into account the influence of T2 depressive rumination on T2 dysphoria. Depressive rumination appears to be relatively stable over time (Bagby, Rector, Bacchiochi, & McBride, 2004), and cross-sectionally it is positively

correlated with depressive symptoms (Rood et al., 2009; Thomsen, 2006). Thus, by not controlling for T2 depressive rumination, it is not possible to conclude that T1 depressive rumination predicts T2 depressive symptoms, because the latter may simply be predicted by T2 depressive rumination. Once T2 depressive rumination is taken into account, it becomes less likely on statistical grounds that there would be a relation between T1 depressive rumination and T2 depressive symptoms. Several studies have omitted to take T2 depressive rumination into account, so their findings remain inconclusive with regard to the influence of depressive rumination on dysphoria (Abela, Brozina & Haigh, 2002; Abela, Aydin, & Auerbach, 2007; Bagby, Rector, Segal, Joffe, Levitt, Kennedy, & Levitan, 1999; Broderick & Korteland, 2004; Butler & Nolen-Hoeksema, 1994; Kuehner & Weber, 1999; Schwartz & Koenig, 1996).

The study by Arnow, Spangler, Klein, and Burns (2004) is an example of a longitudinal study on depressive rumination and depression that took into account both T1 depression and T2 depressive rumination. Arnow and colleagues (2004) examined the relation between depressive rumination and depression in chronically depressed individuals who underwent treatment over a period of 12 weeks. In their model, pretreatment depression and pretreatment depressive rumination were predictive of post-treatment depression and post-treatment depressive rumination, respectively. Depression and depressive rumination were covariates at each assessment. Arnow and colleagues (2004) found that pretreatment depressive rumination did not have a causal relation with post-treatment depression; nor did pretreatment depression and post-treatment depressive rumination.

Besides controlling for T1 dysphoria and T2 depressive rumination, neuroticism is a crucial construct that should be taken into account when investigating the relation between depressive rumination and dysphoria. Neuroticism is individuals' persisting propensity to experience negative emotions, such as anxiety, anger, guilt and sadness (Widiger, 2009). Neuroticism is genetically determined, with genetics explaining 40-60% of the variance (Widiger, 2009), and neuroticism remains relatively stable with a tendency to decline slightly in adulthood over time (Roberts, Walton, & Viechbauer, 2006). Neuroticism is related to both depressive rumination and dysphoria. Individuals who are high in neuroticism are vulnerable to experiencing depressive symptoms or suffering from depression in a relatively frequent, chronic and severe fashion (Duggan, Sham, Lee, Minne, & Murray, 1995; Muris, Roelofs, Rassin, Franken, & Mayer, 2005; Saklofske, Kelly, & Jessen, 1995). They also engage in more depressive rumination (Muris et al., 2005; Nolan, Roberts, & Gotlib, 1998). More generally, neuroticism is a core personality construct that influences a very wide range of outcomes.

Some research findings further suggest that rumination may mediate the relation between neuroticism and dysphoria. In their model, Nolan, Roberts, and Gotlib (1998) found that neuroticism did not predict T2 depressive symptoms directly, but it did indirectly via T1 depressive rumination. It should be noted that in this study, depressive rumination was only measured at T1, so T2 depressive rumination was not taken into account. Muris and colleagues (2005) also found that even the cross-sectional relation between neuroticism and depressive symptoms disappeared when controlling for rumination and worry. However, Roelofs, Huibers, Peeters, Arntz, and van Os (2008) found that in a clinical sample, even when rumination was taken into account as a

mediator, neuroticism was still positively related to depressive symptoms. Given these relations between neuroticism, depressive rumination, and dysphoria, it is necessary to control for neuroticism when examining the relation between depressive rumination and dysphoria.

Another construct that should be taken into account when examining the relation between depressive rumination and depressive symptoms is control beliefs. Control beliefs refer to individuals having a sense of control in life as opposed to regarding life circumstances in a fatalistic manner (Pearlin & Schooler, 1978). Individuals who believe that they have less control over their lives are likely to experience more dysphoria (Marshall & Lang, 1990; Jang, Haley, Small, & Mortimer, 2000), and they also report engaging in more depressive rumination (Nolen-Hoeksema & Jackson, 2001; Nolen-Hoeksema, Larson, & Grayson, 1999).

Some researchers may argue that taking control beliefs into account when investigating the association between depressive rumination and dysphoria is unnecessary due to its overlap with neuroticism. According to Judge, Erez, Bono, and Thoresen (2002), control beliefs and neuroticism (as well as self-esteem and generalized self-efficacy) measures may be targeting the same higher-order construct. Taking either neuroticism or control beliefs into consideration when examining the relation between depressive rumination and dysphoria would be sufficient if neuroticism and beliefs in lack of control were basically the same. However, Judge and colleagues (2002) added that neuroticism, control beliefs, self-esteem, and generalized self-efficacy had some unique variance. Furthermore, their findings suggest that control beliefs have weaker associations with the other constructs than the relations among the remaining constructs.

This may suggest that although there is an overlap between neuroticism and control beliefs, they have their own unique variance and are not similar enough to be considered the same construct. Consequently, both neuroticism and control beliefs should be taken into account when examining the relation between depressive rumination and dysphoria.

Some demographic information, such as age and gender, should also be taken into account when examining the relation between depressive rumination and dysphoria.

There are age and gender differences in dysphoria. For instance, research suggests that older individuals tend to experience less depressive symptoms (Jorm, 2000). In terms of gender, women have also been found to suffer from depression more than men do (Piccinelli & Wilkinson, 2000; Weissman, Bland, Joyce, Newman, Wells, & Wittchen, 1993), and also report more depressive rumination (Butler & Nolen-Hoeksema, 1994).

### **Positive Perception of Depressive Rumination**

Despite its relation to depressive symptoms, depressive rumination may be perceived by individuals as beneficial. Papageorgiou and Wells (2001a) conducted a study with a small sample of individuals who met the criteria of recurrent major depressive disorder. They found that all participants reported both advantages and disadvantages of rumination, with the advantages representing their perception of rumination as a strategy to understand and cope with their depression. These findings are consistent with those of Watkins and Baracaia (2001), who interviewed self-identified ruminators who were found to be highly ruminative and moderately dysphoric. Most participants identified at least one benefit of rumination. Examples of the benefits of rumination they identified included gaining insight or understanding, solving problems, and learning from past mistakes (Watkins & Baracaia, 2001). There was also a positive



correlation between positive beliefs about rumination and proneness to depressive rumination, such that individuals who believed in the advantages of rumination were more likely to ruminate (Papageorgiou & Wells, 2001b; Watkins & Baracaia, 2001).

The need to gain insight may be a crucial reason why individuals ruminate. Findings from a study by Lyubomirsky and Nolen-Hoeksema (1993, Study 3) demonstrated that individuals with more depressive symptoms perceived themselves as less insightful than those with less depressive symptoms. Individuals who were asked to focus on their emotions, their physical sensations or symptoms, and themselves (e.g., “the kind of person you are” and “why do you react the way you do”) reported higher perceived insightfulness than those who engaged in some distraction (Lyubomirsky & Nolen-Hoeksema, 1993, Study 4). This effect emerged regardless of whether individuals were dysphoric or not. Combining these findings together, it can be argued that individuals who are dysphoric may perceive themselves as particularly less insightful and may consequently ruminate so as to gain some insight into their own feelings.

Depressive rumination may also be perceived as positive because it helps individuals avoid or experience less distress. Nolen-Hoeksema, Wisco, and Lyubomirsky (2008) argued that what reinforces individuals’ engagement in rumination is a decrease in distress resulting from their withdrawal from aversive situations, because rumination arguably leads individuals to feel certain about their inability to overcome the situation and feel justified to take no action in the situation, or to leave the aversive situation. There is some evidence indicating that depressive rumination is associated with avoidance. Moulds, Kandris, Starr, and Wong (2007) examined different types of avoidance. The 4 types of avoidance included in this study were behavioral-social (e.g.,

desire to leave social situation), behavioral-nonsocial (e.g., avoid overly challenging activities), cognitive-social (e.g., fail to address the tension in interpersonal relationships), and cognitive-nonsocial (e.g., avoid deciding what to do with one's future). They found that depressive rumination was associated with behavioral-social avoidance. It should be noted that only anxiety symptoms, and not depressive symptoms, were controlled for in the analyses because avoidance typically is a characteristic of anxiety states. Therefore, it is inconclusive whether such an association between depressive rumination and behavioral-social avoidance is present if depressive symptoms are taken into account. Furthermore, it should also be noted that this relation was correlational in nature, and it cannot be concluded that depressive rumination leads to more behavioral-nonsocial avoidance or vice versa.

### **Stability of Depressive Rumination**

The above perceived advantages of depressive rumination may partly explain why certain individuals are inclined to engage in such rumination whenever they feel sad or depressed. As mentioned above, there is evidence indicating that individuals' tendency to engage in depressive rumination is relatively stable over time. Nolen-Hoeksema, Morrow, and Fredrickson (1993) asked participants in one study to keep records of their mood over a 30-day period. They found that the majority of participants in their study were relatively consistent in how they reacted to dysphoria, such that some individuals tended to ruminate whenever they felt sad. In a 6-month longitudinal study in which Nolen-Hoeksema, Parker, and Larson (1994) followed adults who had recently lost a family member, it was found that individuals' initial depressive rumination was strongly correlated with their depressive rumination at the 6-month follow-up. In another study

mentioned above, Nolen-Hoeksema and colleagues (1999) found that in an adult community sample, individuals' initial depressive rumination scores strongly positively correlated with their depressive rumination scores measured one year later.

Research findings also suggest that even with effective treatment, individual differences in rumination remain stable, at least in terms of relative ranking (i.e., who ruminates more than their peers). In a study with a clinical sample of outpatients diagnosed with major depressive disorder, Bagby, Rector, Bacchioni, and McBride (2004) assessed participants' levels of depressive rumination and depression before and after a pharmacological treatment of 20-week average duration. Participants who experienced a substantial reduction in depression severity that lasted for at least 6 weeks were considered remitted. For the remitted group, depression severity reduced substantially after treatment, and their depressive rumination showed a clinically significant reduction post-treatment. The correlation between pre- and post-treatment depressive rumination was significant. That is, in terms of ranking, individual difference in depressive rumination were stable. In a previously mentioned study by Arnow and colleagues (2004) in a sample of individuals with major depression, pre-treatment depressive rumination scores were moderately correlated with depressive rumination after a 12-week treatment. In sum, depressive rumination has been shown to correlate with itself over time.

### **Mechanisms of Depressive Rumination**

There are several mechanisms of depressive rumination that are proposed to play a role in the exacerbation of dysphoria. These mechanisms are negative thinking, poor problem solving, interference with instrumental behaviors, and a decrease in social

support (Nolen-Hoeksema, 1991; Nolen-Hoeksema et al., 2008). First of all, depressive rumination appears to lead dysphoric individuals to engage in more negative thinking about themselves and their situations in the past, present and future. In various experimental studies, a rumination manipulation in individuals who were sad or dysphoric led them to express more negative thoughts (Lyubomirsky, Tucker, Caldwell, & Berg, 1999), perceive themselves as more worthless and incompetent (Rimes & Watkins, 2005), recall more negative memories and perceive negative events as happening to them relatively frequently (Lyubomirsky et al., 1998), and expect more negative future events (Lavender & Watkins, 2004). Individuals who were induced to ruminate were also more likely to interpret a situation in a depressive and distorted manner. For instance, in a study by Lyubomirsky and Nolen-Hoeksema (1995), it was found that when asked to imagine losing an election, ruminating dysphoric individuals were more inclined to feel bad and think that they have lost by a landslide and less likely to shrug it off and think that they have done their best. Moreover, they were more likely to blame themselves, perceive the situation as unchangeable, and regard negative events as having an impact on various aspects of their lives. In contrast, dysphoric individuals who engaged in distraction and non-dysphoric individuals tend to explain negative situations in a less pessimistic fashion. Note that the rumination manipulation used in these experimental studies did not specifically ask individuals to think about their depressive symptoms. It was presumed that sad or dysphoric individuals would think about their symptoms when asked to focus on themselves and their feelings. Furthermore, many studies did not take into account an increase in sad feelings post-manipulation;

therefore, it is not possible to conclude that negative thinking results from rumination and not from acute sadness.

Another mechanism through which depressive rumination may impact on dysphoria is lowered problem-solving abilities. Lyubomirsky and Nolen-Hoeksema (1995) studied the effects of rumination on individuals' problem-solving in hypothetical social situations. They found that dysphoric individuals who were led to ruminate provided less effective solutions than dysphoric individuals who engaged in distraction and individuals who were not dysphoric. Other researchers also found relatively similar detrimental effect of rumination on problem solving in dysphoric individuals, and this effect persisted even when the change of mood was accounted for (Donaldson & Lam, 2004). However, ruminating about oneself and one's symptoms may not be enough to affect one's problem solving abilities. Watkins and Moulds (2005) found that it was only when depressed individuals ruminated in a more analytical way (e.g., think about the causes, meanings, and consequences of their feelings) that they showed poor problem solving. However, depressed individuals who ruminated in a more concrete manner (e.g., focus on the experience of their feelings) did not show poor problem solving. One possible explanation as to why rumination appears to negatively affect problem solving abilities is its association with problem perception. It has been found that dysphoric individuals who were induced to ruminate were likely to perceive their problems as more serious and unsolvable (Lyubomirsky et al., 1999). Furthermore, even when these individuals could come up with solutions, they were unlikely to implement these solutions to resolve their problems (Lyubomirsky et al., 1999).

Interference with instrumental behaviors is another mechanism through which depressive rumination prolongs depressed mood. Lyubomirsky and Nolen-Hoeksema (1993) found that dysphoric individuals who were induced to ruminate about themselves, their physical symptoms, and their emotions did not differ from dysphoric individuals and those who were not dysphoric regarding their perception of pleasant activities. Dysphoric individuals who engaged in rumination still perceive pleasant activities as enjoyable. However, ruminating dysphoric individuals were less likely to anticipate engaging in those activities. Lyubomirsky and Nolen-Hoeksema (1993) conducted a correlational study in another sample, and they found that without being induced to ruminate about their emotion, their symptoms, and themselves, dysphoric individuals did not differ from non-dysphoric individuals in terms of their judgment of the utility of pleasant activities and their likelihood to engage in such activities. Lyubomirsky and Nolen-Hoeksema (1993) concluded that the unwillingness to engage in pleasant activities that could improve individuals' mood resulted from rumination, not solely from dysphoria. Other research suggests that the inhibitive effect of rumination on instrumental behavior can have serious negative consequences. Lyubomirsky, Kasri, Chang, and Chung (2006) found that, when asked to read a vignette about discovering a breast lump and imagine that they were experiencing it themselves, female ruminators reported being less likely to contact doctors immediately than female non-ruminators even when both groups showed similar positive and negative ratings for their affect upon discovering the symptom. Furthermore, in their retrospective study, breast cancer survivors who were ruminators reported presenting their cancer symptoms to a healthcare professional significantly later than the non-ruminators even when both ruminators and non-

ruminators reported similar feelings upon their discovery of breast cancer symptoms (e.g., a breast lump, nipple change, and nipple discharge). This suggests that rumination, not negative affect, inhibits individuals' instrumental behaviors, although the effect was also partially moderated by individuals' recalled positive affect at the time they discovered the symptom. Ruminators who reported more positive feelings did not wait as long as ruminators who reported low positive affect to see a healthcare professional (Lyubomirsky et al., 2006). Based on these findings, it is proposed that the impact of rumination on problem solving and instrumental behaviors may help maintain or worsen depressive symptoms in individuals.

The last mechanism through which depressive rumination influences dysphoria is via its impact on interpersonal relationships. Depressive rumination is proposed to reduce social support and cause problems in relationships. Nolen-Hoeksema and Davis (1999) studied the effects of rumination on social support in a sample of individuals who lost their loved one. Highly ruminative participants reported seeking social support consistently more than those who were low ruminators over a period of 18 months, even after taking depressive symptoms into account. However, high ruminators reported receiving less social support, perceiving more friction and feeling more isolated from those who provided them with support even after controlling for their concurrent distress. In another study with students in the seventh grade, higher rumination is correlated with less perceived social support, although it should be noted that depressive symptoms were not controlled for (Abela, Vanderbilt, & Rochon, 2004).

Other researchers also reported that besides perceiving that they receive less support from others, ruminators also report more interpersonal distress. Lam, Schuck,

Smith, Farmer, and Checkley (2003) found that ruminative depressed outpatients reported more distress from interpersonal relationships than their non-ruminative counterparts.

Depressive rumination and depression significantly predicted individuals' overall interpersonal problems even when engagement in distracting activities and gender were taken into account. In sum, these findings support the proposition that depressive rumination negatively affects interpersonal relationships and lead to the reduction of social support, which may maintain or exacerbate individuals' dysphoria.

### **Subtypes of Depressive Rumination**

One way to clarify the consequences of depressive rumination is to examine specific aspects of depressive rumination. More recent studies on rumination have found two different facets of depressive rumination, with one facet potentially being less harmful than the other (Roberts, Gilboa, & Gotlib, 1998; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The dimension considered less harmful, or sometimes even potentially adaptive, involves reflecting upon one's feelings and circumstances in order to understand or overcome one's sadness. The supposedly more detrimental dimension of rumination includes self-criticism, regret, and helplessness (Roberts et al., 1998; Treynor et al., 2003). In a study by Roberts and colleagues (1998) using the Ruminative Response Scale of the Response Styles Questionnaire (RRS; Nolen-Hoeksema & Morrow, 1991), they found three factors of depressive rumination: symptom-based rumination, introspection/self-isolation, and self-blame. The symptom-based rumination factor included items that may overlap with measures of depressive symptoms, such as "Think about your feelings of fatigue and achiness" and "Think about how hard it is to concentrate." The other two factors do not seem to overlap with depressive symptoms



and may be more properly considered as measuring rumination. The introspection/self-isolation factor consisted of items representing an attempt to reflect upon one's feelings such as "Isolate yourself and think about the reasons why you feel sad" and "Write down what you are thinking about and analyze it." The last factor was labeled self-blame, and it included items such as "Think 'Why do I always react this way?'" and "Think about how angry you are with yourself" (Roberts et al., 1998). Both introspection/self-isolation and self-blame factors were positively associated with current and worst lifetime depressive symptoms and were also positively correlated with neuroticism, a personality factor related to negative emotions and depression. Self-blame demonstrated a stronger relationship with neuroticism than introspection/isolation (Roberts et al., 1998), and so seems a more detrimental subtype of rumination.

### **The RRS: Reflective Pondering and Brooding**

Nolen-Hoeksema, along with her colleagues, has identified subtypes of depressive rumination for the scale that she had developed. Treynor, Gonzalez, and Nolen-Hoeksema (2003) removed some of the RRS items which they deemed to be relatively similar to items of the Beck Depression Inventory (Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961), which assesses individuals' depressive symptoms. From the remaining RRS items, Treynor and colleagues (2003) identified two subtypes of depressive rumination, which they labeled as reflective pondering and brooding. Relatively similar to the findings from Roberts and colleagues (1998), reflective pondering included items such as "Go someplace alone to think about your feelings" and "Analyze recent events to try to understand why you are depressed." The brooding factor consisted of items such as "Think 'What am I doing to deserve this?'" and "Think 'Why do I have problems other

people don't have?" Reflection, brooding, and dysphoria were positively correlated with one another cross-sectionally and longitudinally. Based on zero-order correlations, compared to reflection, brooding was more strongly associated with dysphoria cross-sectionally and longitudinally. Note that with these were zero-order correlations, when analyzing the relation between one subtype of rumination and dysphoria, the other subtype of rumination is not controlled for. Furthermore, when examining the correlations between T2 depressive rumination and T2 dysphoria, the initial levels of depressive rumination and dysphoria were not controlled for.

Treynor and colleagues (2003) also used structural equation modeling to examine the relations between reflection, brooding, and dysphoria over a one-year period. They found that each variable at the later time point was best predicted by its initial score, after controlling for initial scores of the other two variables. As well, individuals' T1 reflection did not predict their T2 brooding, and nor did T1 brooding predict T2 reflection. However, individuals who were more dysphoric at T1 were more likely to engage in both reflecting and brooding at T2, even when T1 reflection, T1 brooding and T2 dysphoria were controlled for. Furthermore, individuals who engaged in T1 brooding were likely to become more dysphoric at T2, whereas those who reflected at T1 were slightly less likely to be dysphoric at T2. The findings thus suggest that compared to reflection, brooding has a stronger association with dysphoria. However, the findings from the structural equation modeling should be interpreted with caution because the model did not show a very good fit to the data, with the chi-square being significant. Nonetheless, other indices demonstrated a good fit (Treynor et al., 2003).

Some cross-sectional findings also support the differential effects of reflection and brooding. Burwell and Shirk (2007) studied reflection and brooding in an adolescent sample. A battery of questionnaires, including measures of depressive symptoms, rumination, and stress, were completed by the adolescents or their mothers at three time points (T1, T2, and T3) over three academic semesters. However, adolescents' levels of rumination were only assessed at T2 with a modified version of the RRS. Two factors of depressive rumination emerged, which mostly overlapped with what had been previously found by Treynor and colleagues (2003). At T2, those who brooded had more depressive symptoms, as rated by the adolescents, adolescents' mothers and clinicians, whereas reflection was only correlated with clinician-rated depressive symptoms cross-sectionally.

Findings on rumination and cognitive biases also indicated that reflection and brooding are different. Participants in a study by Joorman, Dkane, and Gotlib (2006) performed a dot probe task, in which they identified the position of a dot which appeared after a pair of images showing different emotions. Controlling for concurrent depressive symptoms, they found a positive correlation between brooding and attentional bias for faces displaying sadness. In other words, individuals who engaged in more brooding were more likely to be attentive to sadness (Joorman et al., 2006). There was no association between individuals' tendency to engage in reflection and such a cognitive bias to sadness (Joorman et al., 2006).

Studies on depressive rumination subtypes and suicide also support the differences between reflection and brooding. Crane, Barnhofer, and Williams (2007) found that individuals with different past levels of suicidality showed different patterns of

engagement in depressive rumination. Individuals who had never had suicide ideation and never attempted suicide reported more reflection than brooding. Those who had suicidal ideation but never attempted suicide reported relatively equal tendencies to engage in reflection and brooding. Individuals with a history of suicide attempts (who presumably had had suicidal ideation) reported more brooding than reflection (Crane et al., 2007). O'Connor and Noyce (2008) also studied the association between subtypes of depressive rumination and suicidal ideation. They found that brooding had a stronger association with suicidal ideation at the 3-month follow-up than did reflection. Furthermore, only brooding mediated the relation between self-criticism and suicidal ideation. These differences support the distinction between reflection and brooding, with brooding appearing to be more maladaptive than reflection.

However, reflection may not be completely innocuous. Surrence, Miranda, Marroquin, and Chan (2009) studied subtypes of depressive rumination in relation to suicidal ideation and suicide attempts. Overall, individuals who engaged in more brooding reported higher suicidal ideation, but there was no such correlation between reflection and suicidal ideation. However, for individuals who had attempted suicide in the past, the more they engaged in reflecting upon their sadness and circumstances, the more prone they were to having thoughts about committing suicide, and this effect emerged even after controlling for individuals' past suicide attempts, depressive symptoms, hopelessness, and brooding. However, the same proneness to suicidal ideation did not emerge in brooding individuals with a history of suicide attempts (Surrence et al., 2009). These findings thus suggest that reflection may not be completely harmless.

It should be noted that the two subtypes of depressive rumination might not be consistently identified when using different samples. Whitmer and Gotlib (2011) conducted factor analyses of the RRS in 3 different groups of participants: never depressed individuals, formerly depressed individuals, and currently depressed individuals. In samples with never depressed individuals and formerly depressed individuals, reflection and brooding still emerged as subtypes of depressive rumination, although it should be noted that one reflection item (“Write down what you are thinking and analyze it”) did not load on either reflection or brooding factors in sample of formerly depressed individuals. In currently depressed individuals, however, two reflection items loaded onto the same factor as the brooding items. Whitmer and Gotlib (2011) argued that the distinction between reflection and brooding is blurred in individuals who are currently suffering from depression. In currently depressed individuals, apart from the brooding factor, the other factor consisted of items indicating individuals’ attempt to isolate themselves in order to engage in rumination. There was no reflection factor per se.

### **Rumination on Sadness Scale**

Another measure of depressive rumination is the Rumination on Sadness Scale (RSS) developed by Conway, Csank, Holm, and Blake (2000). The RSS is a 13-item self-report questionnaire. It includes items such as “I repeatedly analyze and keep thinking about the reasons for my sadness,” “I have difficulty getting myself to stop thinking about how sad I am,” and “I search my mind repeatedly for events or experiences in my childhood that may help me understand my sad feelings.”

Conway and colleagues (2000) developed this measure of rumination on sadness in response to the presence of some validity issues that they had identified on the Ruminative Response Scale of the Response Styles Questionnaire (RRS; Nolen-Hoeksema & Morrow, 1991). Among the issues raised, one was the overlap between the RRS and the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980), which measures individuals' frequency of having negative automatic thoughts related to depression. Examples of items from the ATQ include "I'm no good" and "What's wrong with me" (Hollon & Kendall, 1980), which are not very different from RRS items such as "Think about all your shortcomings, failings, faults, mistakes" and "Think 'Why can't I get going?'" (Treyner et al., 2003). Although Nolen-Hoeksema and colleagues (2008) later provided a distinction between rumination and automatic negative thought by indicating that rumination is defined in terms of process of thinking rather than the thought content, this distinction remains quite arbitrary.

The Rumination on Sadness Scale (RSS; Conway et al., 2000) was originally developed to assess one construct. The findings from the principle components analysis in the original study with a student sample demonstrated that all the scale items loaded onto one factor (Conway et al., 2000). When factor-analyzed with other repetitive thought scales, such as worry, posttraumatic stress, reflection, emotional processing, and other rumination scales (the RRS and the rumination scale of the RRQ), all RSS items loaded on only one factor (Seegerstrom et al., 2003). Similarly, Siegle, Moore, and Thase (2004) found that the RSS items loaded onto one factor when they were factor-analyzed with items from other measures of rumination, posttraumatic stress, worry, emotional control (i.e., extent to which individuals inhibit undesired thoughts), and thought control

(i.e., ways of coping with intrusive thoughts). These findings supported the unidimensionality of rumination on sadness as measured by the RSS.

However, it might be possible that depressive rumination as assessed by the RSS is composed of subtypes. Raes, Hermans, Williams, Bijttebier, and Eelen (2008, Study 1) conducted confirmatory factor analyses on the RSS and found a 3-factor solution: causal analysis (ruminating about the reasons for sadness), understanding (ruminating about the meaning of sadness), and uncontrollability (having no control over one's ruminative thinking on sadness). They then removed some original RSS items and added some new items so as to improve the measure. They then replicated the 3-factor model in another sample (Raes et al., 2008, Study 2). However, there were some methodological flaws in the research. For instance, the method the authors used to test and change the structures of their confirmatory factor analysis in Study 1 was akin to a stepwise regression, and the changes they made were data-driven rather than theory-based. In Study 2, the omission of a chi-square test rendered the findings for the 3-factor model problematic, especially when considering the relatively small size ( $n = 152$ ) of the sample used in the study. The findings from this paper should then be interpreted with caution. Roelofs, Muris, Huibers, Peeters, and Arntz(2006) also found that the RSS might have multiple factors. They identified 3 factors: rumination on causes of sadness, symptom-based rumination, and rumination on sadness. However, they factor analyzed the RSS items in conjunction with the RRS items; therefore, it is not clear whether the RSS would consist of 3 factors if analyzed on its own (Roelofs et al., 2006).

In more recent work, a confirmatory factor analysis with a large sample of respondents indicates that depressive rumination as assessed by the RSS consists of two

subtypes. In an attempt to investigate the components of rumination on sadness, Tabri, Conway, and Alfonsi (manuscript in preparation) conducted a confirmatory factor analysis with a sample of 3,089 university students. Of the 13 RSS items, six items loaded onto two factors. The first factor included three items that indicated individuals' attempt to search for deeper meaning regarding their own sadness. The three items were "I repeatedly think about what sadness really is by concentrating on my feelings and trying to understand them," "I question and keep wondering about the meaning of life to find clues that may help me understand my sadness" and "I get the feeling that if I think long enough about my sadness, I will find that it has some deeper meaning and that I will be able to understand myself better because of it." This factor was labeled as meaning searching. The second factor consisted of three items reflecting individuals' repetitive and uncontrollable thoughts about their sadness, and it was thus labeled as repetitive thinking. The three items were "I get absorbed about why I am sad and find it difficult to think about other things," "I have difficulty getting myself to stop thinking about how sad I am" and "I repeatedly analyze and keep thinking about the reasons for my sadness."

Further examination of meaning searching and repetitive thinking in relation to personality traits in a subsample of individuals who completed a personality inventory (n = 337) supported the differentiation between the two subtypes of depressive rumination. Individuals who engage in rumination to find meaning for their sadness scored higher on both neuroticism and openness to experience, whereas those who think repetitively about their sadness were likely to have high scores on neuroticism only (Tabri et al., manuscript in preparation). It should be noted that these distinctions between meaning searching and repetitive thinking on the basis of their relations to personality constructs correspond to



those between reflection and ruminative self-focus found by Trapnell and Campbell (1999). Using the RRQ, Trapnell and Campbell (1999) found that reflection was correlated with both neuroticism and openness to experience, whereas ruminative self-focus was only associated with neuroticism. Although meaning searching and repetitive thinking as assessed with the RSS are characteristically different, both subtypes of depressive rumination were positively correlated with individuals' depressive symptoms in a subsample of individuals who completed a measure of depressive symptomatology (n = 1,098). In other words, individuals who engaged in either meaning searching or repetitive thinking were likely to experience more depressive symptoms (Tabri et al., manuscript in preparation).

### **Present study**

Few studies have been conducted that have effectively examined the causal relation of depressive rumination on depressive symptoms. What is required is that both depressive rumination and depressive symptoms be assessed at each time point in a longitudinal design. Within that context, the impact of T1 rumination on T2 dysphoria can be examined, while taking into account T1 dysphoria and T2 depressive rumination. Prior longitudinal research has yielded mixed results, and has not always taken into account T1 depressive symptoms and T2 depressive rumination. Finally, to my knowledge, only one longitudinal study of proper design have been conducted making the distinction between more and less maladaptive forms of depressive rumination.

The present study addressed this relative absence of well controlled longitudinal research. In the present study, the relations between meaning searching, repetitive thinking, and depressive symptoms were examined in a sample of recent retirees over a

period of two years. The study was part of a larger longitudinal study on retirement conducted at Concordia University. At the outset of the study, participants completed a packet of questionnaires including some demographic items such as age and gender, a measure of personality, and a measure of control beliefs. As stated earlier, neuroticism, control beliefs, age, and gender should be taken into account when examining the relation between depressive rumination and dysphoria. Therefore, these variables were controlled for in the current study. Participants completed the RSS and a measure of depressive symptomatology 3 times, with 1-year time intervals between T1 and T2, and between T2 and T3.

The main hypothesis in the present study was that only repetitive thinking, but not meaning searching, predicts depressive symptoms over time. This hypothesis was based on findings from previous research which showed that compared to reflective pondering, brooding was more strongly associated with depressive symptoms over time (Burwell & Shirk, 2007; Treynor et al., 2003). At face value, repetitive thinking, which reflects the uncontrollability of ruminative thinking, seems not as negative as brooding which includes the sense of regret and self-blame. However, in comparison to meaning searching, repetitive thinking still appears more negative and does not seem adaptive. Thus, only repetitive thinking was hypothesized to predict depressive symptoms over time.

It should be noted that this predicted longitudinal relation of repetitive thinking to depressive symptoms was proposed to emerge, even as each would predict itself at subsequent assessments, as would meaning searching. In other words, T1 meaning searching would predict T2 meaning searching, and T2 meaning searching would predict

T3 meaning searching. The same relations would emerge for repetitive thinking and depressive symptomatology, respectively. Furthermore, it was expected that meaning searching, repetitive thinking, and depressive symptoms would be positively correlated with each other cross-sectionally.

Another hypothesis in the present study was that meaning searching and repetitive thinking predict each other over time. According to Ramel, Goldin, Carmona, and McQuaid (2004), a less maladaptive rumination subtype such as reflection may actually be an important first step that leads to individuals brooding and dwelling on their current state. The idea that the potentially adaptive subtype of depressive rumination and the more maladaptive subtype of depressive rumination are predictive of each other was also partially based on Papageorgiou and Wells's (2003) metacognitive model of rumination and depression. They proposed that positive beliefs about rumination (e.g., "Ruminating about my depression helps me to understand past mistakes and failures") lead to more rumination, which in turn leads to individuals' experience of negative beliefs about rumination that reflect the uncontrollability of ruminative thought and its negative social consequences (e.g., "It is impossible not to ruminate about the bad things that have happened in the past" and "Everyone would desert me if they knew how much I ruminate about myself"). Note that positive beliefs about rumination appear to correspond to RSS meaning searching, and the perception of uncontrollability appears to correspond to RSS repetitive thinking. Just as Papageorgiou and Wells (2003) argue that positive beliefs would precede negative beliefs about depressive rumination, it is possible that meaning searching would precede repetitive thinking.

Additionally, in the present study, repetitive thinking was also proposed to predict subsequent meaning searching. It is possible that individuals who are quite stuck in the process of depressive rumination might try to explain or justify their own ruminative thinking, and they may try to convince themselves that they cannot stop ruminating because they have not yet found meaning for their experience of sadness. Empirical findings from previous studies partially support the latter hypothesis. It has been shown that reflective pondering, which is a potentially less maladaptive subtype of depressive rumination, is positively correlated with brooding, which is a more maladaptive subtype of rumination cross-sectionally (Schoofs, Hermans, & Raes, 2010; Surrence et al., 2009; Treynor et al., 2003) and longitudinally (Schoofs et al., 2010; Treynor et al., 2003). However, it should be noted that Treynor and colleagues (2003) found that T1 reflective pondering did not predict T2 brooding when controlling for individuals' T1 brooding and T1 depressive symptoms. Nor did T1 brooding predict T2 reflective pondering when T1 reflective pondering and T1 depressive symptoms were taken into account.

## **Method**

### **Participants**

Participants were recruited through organizations for retirees and through advertisements in local newspapers. Data were collected from a sample of 433 participants who had worked full-time for a minimum of 20 years and were not currently working more than 10 hours a week. After excluding participants with missing data, there were 349 participants in total (181 women and 168 men; 80.60% of the original sample). There were no statistically significant differences between participants whose data were complete and those with missing data aside from the fact that those who completed the

study tended to be younger ( $M = 58.97$ ,  $SD = 4.89$ ) than those whose data were missing ( $M = 60.19$ ,  $SD = 6.32$ ;  $t(431) = 1.94$ ,  $p = .05$ ). Mean age of participants who were included in the study was 58.97 years, with a range of 44 to 77 years. Percentage by age range were 1.43% (50 years or younger), 23.50% (51-55 years), 41.55% (56-60 years), 23.78% (61-65 years), 7.16% (66-70 years), and 2.58% (71 years or older). Participants' ethnicity was not assessed, but it was apparent to us that the vast majority of participants were of European ancestry.

## **Materials**

**The Rumination on Sadness Scale (RSS; Conway, Csank, Holm, & Blake, 2000).** As mentioned above, the RSS is a 13-item self-report measure that was designed to assess individuals' levels of rumination when they are feeling sad (e.g., "I have difficulty getting myself to stop thinking about how sad I am"). Respondents rate the extent to which each item reflects their responses to sadness on a 5-point scale ranging from *not at all* (1) to *very much* (5). Score range is from 13 to 60. It has been demonstrated that the RSS has good internal consistency ( $\alpha = .91$ ) and test-retest reliability over the duration of 2-3 weeks ( $r = .70$ ) (Conway et al., 2000). The RSS has also been shown convergent validity and discriminant validity with several related measures (Conway et al., 2000), and has been recommended as a measure of depressive rumination (Luminet, 2004).

Based on recent findings (Tabri et al., manuscript in preparation), only 6 items included in the 2 subscales of RSS, Repetitive Thinking and Meaning Searching, were used in the current study. Meaning searching and repetitive thinking total scores reported here varied from 3 to 15, with higher numbers corresponding to more rumination.

**The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977).** Depression was assessed with the CES-D, which is a 20-item self-report questionnaire developed for measuring depressive symptomatology in the general population. Respondents indicate the extent to which each item reflects how frequently they felt or behaved during the week prior to the assessment (e.g., “I was bothered by things that usually don’t bother me”) on a 4-point scale. The response scale was as follows: 0 = Rarely or none of the time (less than 1 day), 1 = Some or a little of the time (1-2 days), 2 = Occasionally or a moderate amount of the time (3-4 days), and 3 = most or all of the time (5-7 days). Scores range from 0 to 60, with 16 as a cutoff score for depression. The CES-D puts a main focus on the affective component of depression rather than physical symptoms, which renders the CES-D suitable for assessing depressive symptomatology in older adults who tend to have some medical conditions. It has been found that the CES-D showed good accuracy for detecting depression in an older population in a primary care setting (Watson & Pignone, 2003).

It has been demonstrated that the CES-D has good internal consistency, with an alpha coefficient of .87 and .89 in cancer patients and healthy individuals, respectively (Hann, Winter, & Jacobsen, 1999). The CES-D has also been found to have moderate test-retest reliability over a period of 2.5 weeks (Hann et al., 1999).

**The NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992).** Neuroticism was assessed with the NEO-FFI, which is a 60-item questionnaire designed to assess individuals’ Big Five personality dimensions including neuroticism, extraversion, agreeableness, conscientiousness and openness to experience. NEO-FFI is a shortened version of the revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae,

1992). Other personality dimensions besides neuroticism were not of interest in the present study. There are 12 neuroticism items, each of which is a self-descriptive statement (e.g., “When I’m under a great deal of stress, sometimes I feel like I’m going to pieces”). Respondents rate each statement in terms of its representativeness of their opinion on a 5-point scale ranging from *strongly disagree* (1) to *strongly agree* (5). Higher total scores reflect more neuroticism.

Overall, the NEO-FFI has satisfactory psychometric properties. It has been shown that the 5 scales have adequate internal consistency ( $\alpha = .73$  to  $.87$ ) in Canadian female university students (Holden & Fekken, 1994). Furthermore, all scales have been shown to have strong test-retest reliability across the duration of 30 months in an adult population (Murray, Rawlings, Allen, & Trinder, 2003).

**Control Beliefs (CB; Pearlin & Schooler, 1978).** Participants’ perception of control in their lives was assessed with the CB, which is composed of 7 items. Each item is a statement reflecting a person’s beliefs in control in life (e.g., “I have little or no control over the things that happen to me”). Respondents rate the extent to which they agree with each statement on a 4-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (4). The scale has been shown to have good internal consistency (Pearlin & Schooler, 1978) and moderate reliability over the period of 3 years (Pearlin, Liberman, Menaghan, & Mullan, 1981). Higher total scores reflect more perceived control.

**Demographics Questionnaire.** A demographics questionnaire contained items inquiring about participants’ age, gender, educational level, occupation, marital status, spoken and written languages, and retirement. Of all the information, only age and gender were of interest in the present study.

## Procedure

The present study was part of a larger longitudinal study on retirement conducted at Concordia University. Individuals interested in participating in the study contacted the laboratory. No more than 6 participants completed the questionnaires at any given session. At the first session, the experimenter asked participants to fill out a packet of questionnaires, which included the demographics questions, the personality measure (NEO-FFI), the measure of control beliefs, as well as other measures not relevant to the present study. A year later (Time 1), participants were asked to return in order to complete the rumination scale (RSS) and the depression scale (CES-D) as well as other measures which were not relevant to the present study. Participants were asked to return to complete the same questionnaires as Time 1 again after one year (Time 2) and two years (Time 3). Each participant was paid \$50 per session.

## Results

Table I shows means and standard deviations and correlations between the variables. The average age of participants in the study was 58.97 years (range: 44 to 77 years,  $SD = 4.89$ ). The average score on neuroticism was 15.30 ( $SD = 7.71$ ). The average score of the control beliefs measure was 23.24 ( $SD = 3.30$ ). Meaning searching average scores were 5.24 ( $SD = 2.51$ ), 5.16 ( $SD = 2.58$ ), and 4.88 ( $SD = 2.36$ ) at T1, T2, and T3, respectively. As mentioned above, these scores ranged from 3 to 15, and these indicated that the participants engaged in little meaning searching. As for repetitive thinking, the average scores at T1, T2, and T3 were 6.94 ( $SD = 2.84$ ), 6.56 ( $SD = 2.76$ ), and 6.43 ( $SD = 2.75$ ), indicating that participants engage in little repetitive thinking. In terms of depression scores, the average scores were 7.40 ( $SD = 7.23$ ), 7.57 ( $SD = 7.49$ ), and 7.64



Table I

*Descriptive Statistics and Zero-Order Correlations among All Measures in the Model*

Measure	1	2	3	4	5	6
1. Gender	—					
2. Age	-.07	—				
3. Neuroticism	.18**	.00	—			
4. Control	-.07	-.10	-.50***	—		
5. RSS_R 1	.20***	-.04	.47***	-.33***	—	
6. RSS_M 1	.13*	-.03	.42***	-.30***	.63***	—
7. RSS_R 2	.21***	-.17**	.48***	-.28***	.62***	.54***
8. RSS_M 2	.13*	-.07	.41***	-.31***	.53***	.63***
9. RSS_R 3	.23***	-.12*	.45***	-.31***	.58***	.50***
10. RSS_M 3	.17**	-.08	.40***	-.29***	.47***	.58***
11. Dysphoria 1	.01	.12*	.49***	-.41***	.45***	.39***
12. Dysphoria 2	.05	.13*	.53***	-.46***	.41***	.36***
13. Dysphoria 3	.01	.06	.45***	-.42***	.39***	.33***
<i>M</i>	1.52	58.97	15.30	23.24	6.94	5.24
<i>SD</i>	.50	4.89	7.71	3.30	2.84	2.51
$\alpha$	—	—	.86	.81	.89	.86

Table I (continued)

*Descriptive Statistics and Zero-Order Correlations among All Measures in the Model*

Measure	7	8	9	10	11	12	13
1. Gender							
2. Age							
3. Neuroticism							
4. Control							
5. RSS_R 1							
6. RSS_M 1							
7. RSS_R 2	—						
8. RSS_M 2	.68***	—					
9. RSS_R 3	.66***	.53***	—				
10. RSS_M 3	.55***	.66***	.65***	—			
11. Dysphoria 1	.42***	.36***	.38***	.27***	—		
12. Dysphoria 2	.48***	.41***	.38***	.32***	.71***	—	
13. Dysphoria 3	.42***	.35***	.49***	.36***	.68***	.71***	—
<i>M</i>	6.56	5.16	6.43	4.88	7.40	7.57	7.64
<i>SD</i>	2.76	2.58	2.75	2.36	7.23	7.49	7.27
$\alpha$	.89	.86	.89	.86	.88	.89	.87

*Note.* For gender; Male is score 1 and Female is scored 2. Control = Control Beliefs;

RSS\_R = Rumination (Repetitive Thinking); RSS\_M = Rumination (Meaning

Searching). 1, 2, and 3 refer to Time 1, Time 2, and Time 3, respectively.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\*  $p < .001$ .  $N = 349$ . For all measures, higher scores mean more of the construct.

( $SD = 7.27$ ) at T1, T2, and T3 respectively, indicating that approximately 12.51% of the participants scored at or above the cutoff of depression (score = 16).

As indicated in Table I, participants who were more dysphoric tended to be older, to have higher neuroticism scores, to be less likely to believe that they had control, to be more likely to try to search for meaning, and to think repetitively. Women and men did not differ in terms of their levels of dysphoria.

### **Comparisons of Mean Scores of Rumination and Dysphoria across Time 1, Time 2, and Time 3**

Paired t-tests were conducted to compare the means of meaning searching, repetitive thinking, and dysphoria over time (T1, T2, and T3). Individuals' meaning searching scores were stable from T1 ( $M = 5.24$ ,  $SD = 2.51$ ) to T2 ( $M = 5.16$ ,  $SD = 2.58$ ;  $t < 1$ ), dropped significantly from T1 to T3 ( $M = 4.88$ ,  $SD = 2.36$ ;  $t(348) = 2.98$ ,  $p < .01$ ) and from T2 to T3 ( $t(348) = 2.56$ ,  $p < .05$ ). Repetitive thinking showed a significant drop from T1 ( $M = 6.94$ ,  $SD = 2.84$ ) to T2 ( $M = 6.56$ ,  $SD = 2.76$ ;  $t(348) = 2.90$ ,  $p < .01$ ), and from T1 to T3 ( $M = 6.43$ ,  $SD = 2.75$ ;  $t(348) = 3.69$ ,  $p < .001$ ). The difference between T2 and T3 repetitive thinking was not statistically significant ( $t(348) = 1.03$ ,  $p = .30$ ). Participants' dysphoria scores remained stable across T1 ( $M = 7.40$ ,  $SD = 7.23$ ), T2 ( $M = 7.57$ ,  $SD = 7.49$ ), and T3 ( $M = 7.64$ ,  $SD = 7.27$ ),  $ts < 1$ .

### **Meaning Searching, Repetitive Thinking, and Dysphoria**

The hypotheses of the present study as paths in a model were tested by structural equation modeling (SEM; Kline, 2005). Preliminary analyses showed that there was a high level of multivariate kurtosis in the data (Normalized Mardia's coefficient was 48.21). Upon examination of the kurtosis of each measure, it was found that dysphoria

scores at the 3 time points showed large kurtosis (5.81 at T1, 3.70 at T2, and 3.98 at T3). Using the cutoffs for kurtosis and skewness suggested by Kline (2005), none of the variables presented a serious problem to the analyses. However, because the multivariate kurtosis posed a problem, the maximum likelihood robust estimator was used in order to evaluate the path coefficients and to test their standard errors. The values used to assess the fit of the model included the Sattora-Bentler chi-square ( $S-B\chi^2$ ), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and its 90% confidence interval (CI). To indicate a good fit, a model should have a nonsignificant  $S-B\chi^2$ , a CFI close to 1.00, RMSEA less than or equal to .05, a 90% CI within the range of .00 to .08, and residuals less than .10.

The model proposed that when neuroticism, control beliefs, age, and gender were controlled for, the main hypothesis was that repetitive thinking predicts dysphoria longitudinally. As such, there were paths from T1 repetitive thinking to T2 dysphoria, and from T2 repetitive thinking to T3 dysphoria. The second hypothesis was that meaning searching and repetitive thinking relate to each other over time, such that T1 meaning searching predicts T2 repetitive thinking, and T1 repetitive thinking predicts T2 meaning searching. Similarly, T2 meaning searching predicts T3 repetitive thinking, and T2 repetitive thinking predicts T3 meaning searching. Cross-sectionally, it was expected that meaning searching, repetitive thinking, and dysphoria would be positively correlated with one another. The model treated the two subtypes of depressive rumination and dysphoria as covariates at each time point.

The proposed model had a relatively good fit to the data ( $S-B\chi^2(12) = 12.47, p = .41, CFI = 1.00, RMSEA = .01, CI = .00 - .06$ ), with most of the proposed paths being

significant. However, one residual of .13, which was above the cutoff of .10, appeared between individuals' T1 depression and their T2 repetitive thinking. To improve the fit of the model, the non-significant paths were removed and a path was added between T1 dysphoria and T2 repetitive thinking. The final model demonstrated a good fit to the data ( $S-B\chi^2(14) = 11.75, p = .63, CFI = 1.00, RMSEA = .00, CI = .00 - .04$ ) with no residuals. All paths in the model were significant. See Figure 1.

Contrary to the initial hypothesis that repetitive thinking predicts dysphoria a year later, the final model indicated that dysphoria was a predictor of repetitive thinking over time. The model indicated that individuals who reported more dysphoria at T1 reported more repetitive thinking at T2 ( $\beta = .11, z = 2.60, p < .01$ ). However, T2 dysphoria did not predict repetitive thinking at T3.

As for the second hypothesis regarding the relation between meaning searching and repetitive thinking, the findings indicated that each subtype of depressive rumination predicted the other type of depressive rumination between T1 and T2, and between T2 and T3, save for T2 meaning searching and T3 repetitive thinking. Individuals' T1 meaning searching predicted their T2 repetitive thinking a year later ( $\beta = .15, z = 3.21, p < .01$ ). T1 repetitive thinking also predicted T2 meaning searching ( $\beta = .19, z = 2.34, p < .05$ ). In other words, individuals who tried to search for meaning of their sadness in the first year became likely to think about their sadness repetitively a year after. Furthermore, those who thought repetitively about their sad feelings would be inclined to search for meanings of their sadness after a year. However, between T2 and T3, only T2 repetitive thinking predicted T3 meaning searching ( $\beta = .12, z = 2.21, p < .05$ ), whereas T2 meaning searching did not predict T3 repetitive thinking.

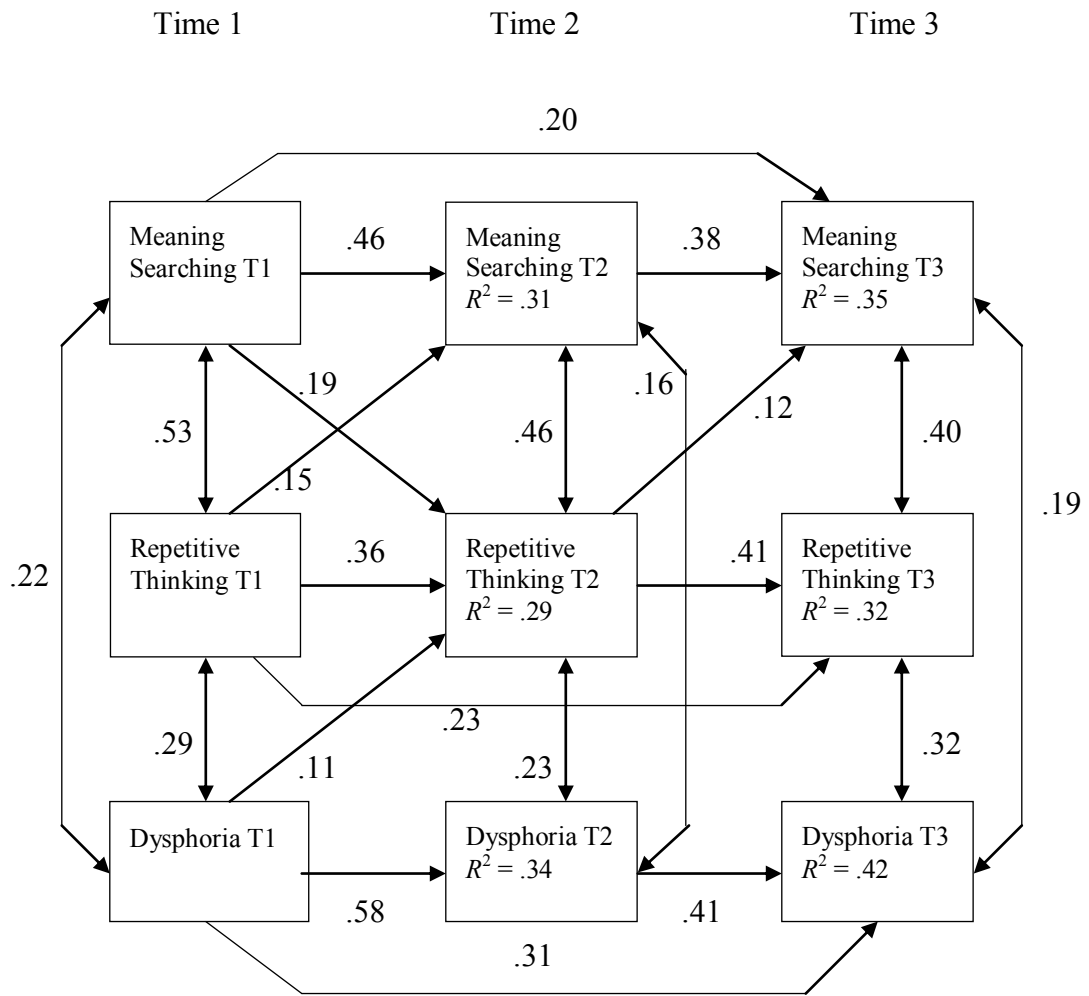


Figure 1. Final model of the relations between meaning searching, repetitive thinking, and dysphoria over time.

Finally, these relationships between meaning searching and repetitive thinking, and between repetitive thinking and depression emerged in the context of relatively high predictive relations between the repeated measures of repetitive thinking, meaning searching, and depression. The beta weights between consecutive measures ranged from .36 to .58 ( $ps < .001$ ).

Apart from the longitudinal relations between meaning searching and repetitive thinking, the model also showed that meaning searching, repetitive thinking, and depression were significantly positively associated with one another cross-sectionally while controlling for neuroticism, control beliefs, age, and gender, with the beta weights ranging from .16 to .32 ( $ps < .05$ ).

### **Discussion**

In the present study, the relation between dysphoria and subtypes of depressive rumination, which are meaning searching and repetitive thinking, was observed in a sample of retirees. At the beginning of the study, individuals reported their neuroticism, control beliefs, age, and gender. Individuals also reported their depressive symptoms, meaning searching, and repetitive thinking three times over a two-year period. Dysphoria, meaning searching, and repetitive thinking were correlated with one another cross-sectionally, indicating that those who experience more dysphoria also engage in more meaning searching and repetitive thinking, even after taking neuroticism, control beliefs, age, and gender into account.

Longitudinally, individuals' propensity to engage in meaning searching and repetitive thinking slightly declined over time. Specifically, individuals' engagement in meaning searching consistently declined longitudinally. For repetitive thinking, there was

a significant drop between T1 and T2; however, individuals' scores between T2 and T3 were not significantly different. It should also be noted that as a group, individuals in the present study engaged in little meaning searching or repetitive thinking and the decline were small in magnitude. The average scores for both subtypes of depressive rumination remained relatively low throughout the study. In regards to dysphoria, participants in this study reported low levels of dysphoria and this remained stable over time. Only 12.51% of the participants met the criteria for depression.

It was hypothesized that repetitive thinking, which seems to be a more maladaptive subtype of depressive rumination, would lead to more dysphoria over time when taking neuroticism, control beliefs, age, and gender into account. This hypothesis was not supported. The present findings indicated that neither repetitive thinking nor meaning searching predicted dysphoria longitudinally. On the contrary, dysphoria predicted repetitive thinking over time, with those reporting more depressive symptoms becoming more likely to engage in repetitive thinking a year later. However, this relation was relatively weak and only emerged between T1 dysphoria and T2 repetitive thinking. The same relation did not emerge between T2 dysphoria and T3 repetitive thinking. On the basis of these findings, individuals' dysphoria may slightly contribute to more engagement in repetitive thinking over time.

Thus, the present findings contradicted the findings from previous research which suggest that more maladaptive subtypes of depressive rumination are associated with more dysphoria over time (Burwell & Shirk, 2007; Treynor et al., 2003). One explanation for this discrepancy may be that the present study took into consideration more variables that might influence the relation between subtypes of depressive rumination and



dysphoria. As mentioned above, several longitudinal studies failed to take depressive rumination (or its subtypes) at follow-ups into consideration, which consequently rendered their findings inconclusive. Their findings that the more maladaptive subtype of depressive rumination leads to more dysphoria over time might have been confounded because depressive rumination at follow-up was not controlled for.

Another potential explanation as to why repetitive thinking did not predict dysphoria longitudinally is that repetitive thinking items are not as negative as items of other maladaptive rumination subtypes such as brooding. The RSS items for the repetitive thinking subtype (e.g., “I get absorbed about why I am sad and find it difficult to think about other things”) suggest that ruminating individuals experience difficulty in stopping their sad thoughts. Even though this uncontrollability of repetitive thinking is likely negative, it may not be as negative as the brooding items from the RRS (Treynor et al., 2003), which suggest wishful thinking (“Think about a recent situation, wishing it had gone better”), self-criticism (“Think ‘Why can’t I handle things better?’”), and seeing oneself as a victim of the situation (“Think ‘What am I doing to deserve this?’”).

The unexpected finding that dysphoria predicted repetitive thinking over time is consistent with some previous research. The present finding that dysphoria predicted repetitive thinking over time corresponded to what Treynor and colleagues (2003) found in their study, which was that individuals who reported more dysphoria were likely to report more brooding a year later. It should be noted that in their model, dysphoria also predicted more reflection, which is inconsistent with the present findings because there was no relation between dysphoria and subsequent meaning searching.

In regards to the relation between meaning searching and repetitive thinking, the present findings indicated that the two subtypes predicted each other longitudinally even when neuroticism, control beliefs, age, and gender were taken into account. Individuals who thought about their sadness repetitively reported more meaning searching over time, and those who searched for meaning reported engaging in more repetitive thinking a year later. The latter finding is consistent with what Ramel and colleagues (2004) and Papageorgiou and Wells (2003) have suggested, which is that seemingly less maladaptive rumination can later lead to more maladaptive depressive rumination. Note that the effects in the present study were relatively small, and the relation between T2 meaning searching and T3 repetitive thinking was not significant. Furthermore, similar relations between the two subtypes of depressive rumination were not found in the study by Treynor and colleagues (2003), in which T1 reflection did not lead to more T2 brooding, and nor did T1 brooding lead to more T2 reflection.

To summarize, the present findings suggest that meaning searching and repetitive thinking may be correlated with dysphoria concurrently, but neither predicts dysphoria over time. On the contrary, dysphoria may predict more maladaptive depressive rumination longitudinally. The lack of support for Response Styles Theory (Nolen-Hoeksema, 1991) gives rise to a question as to whether depressive rumination subtypes actually lead to more severe dysphoria or whether it would be more appropriate to consider depressive rumination (and its subtypes) as one of the symptoms of depression. As reviewed above, depressive rumination has been consistently correlated with depressive symptoms (Thomsen, 2006). It can be argued that rather than be a predictor, depressive rumination may simply be present when individuals experience other

depressive symptoms such as sad mood, sense of worthlessness, reduced interest in pleasurable activities, weight fluctuation, or sleep difficulty.

In addition, as mentioned earlier in this paper, one characteristic of repetitive thinking is its uncontrollability, such that individuals feel absorbed in their ruminative thought and find it difficult to stop ruminating or to think about other things. This characteristic corresponds to one of the criteria for a major depressive episode listed in the DSM-IV-TR (American Psychiatric Association, 2000), which is “diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)”(p.356). This difficulty in concentration is assessed by an item from the measure of depressive symptoms used in the present study (the CES-D; Radloff, 1977), which is “I had trouble keeping my mind on what I was doing.” Respondents rate how frequently they experience this during the past week. On the basis of this shared characteristic between depressive rumination and depressive symptomatology, it can be argued that depressive rumination might be more suitably conceptualized as a symptom of depression.

If depressive rumination is considered a symptom of depression, intervention aimed at reducing rumination may be beneficial. In a preliminary study by Watkins and colleagues (2007), outpatient cases with residual depression and high depressive rumination underwent rumination-focused cognitive behavior therapy (RFCBT). The treatment aimed to coach participants to shift to a more effective style of thinking, for instance, by helping them to differentiate when it would be unhelpful to think about problems, and to develop strategies to avoid engaging in rumination. They found that the treatment was effective, with participants showing a significant decrease in depressive

symptoms, and half of them met the full remission criteria. This seems to suggest that when rumination declines, depression will also lessen. However, the sample was very small, and there was no comparison control group. This renders the findings rather inconclusive as to whether the symptom reduction was due to a decrease in rumination. Watkins and colleagues (2011) consequently conducted another study to compare the effectiveness of CBT and RFCBT for residual depression. They found that those in RFCBT reported significantly less depressive symptoms and depressive rumination post-treatment than those in the CBT condition even after controlling for baseline depressive symptoms. Furthermore, a decline in depressive rumination mediated the treatment effect on depressive symptoms.

Another technique that has been proposed to lower depressive rumination is mindfulness meditation. Mindfulness is typically defined as a state in which individuals attend to and are aware of what is happening in the present without making judgment (Brown & Ryan, 2003; Holzel, Lazar, Gard, Schuman-Oliver, Vago, & Ott, 2011). Holzel and colleagues (2011) reviewed research on mindfulness and proposed the means by which mindfulness is beneficial: attention regulation, body awareness, emotion regulation (e.g., reappraisal, exposure, extinction, and reconsolidation), and change in perspective on the self. In terms of attention regulation, those who practice mindfulness meditation have shown better attentional performance (Holzel et al., 2011). This may potentially help reduce the chance individuals will ruminate, because individuals who practice mindfulness may be able to control their thought better and not engage in rumination in the first place, or even if they ruminate, they are capable to disengage from rumination.

According to Holzel and colleagues (2011), another explanation why mindfulness is beneficial is because it tends to lead a person to engage in reappraisal. Reappraisal is regarded as an aspect of emotional regulation, and it occurs when individuals reinterpret the meaning of a certain stimulus and consequently change their emotional responses to it (Holzel et al., 2011). There is some evidence that mindfulness training helped individuals reappraise their experience of stress in a more positive way, and this subsequently led to decreased distress (Garland, Gaylord, & Fredrickson, 2011). By practicing mindfulness, dysphoric individuals may be able to appraise their experience of sadness, including the causes of sadness, in a different or perhaps in a more meaningful way. This potentially helps them gain a sense of insight, which, as mentioned above, is one of the reasons why individuals engage in rumination (Lyubomirsky & Nolen-Hoeksema, 1993).

It can be argued that another reason why mindfulness is of benefit when one tries to avoid ruminating is because one has to detach oneself from one's emotional thought to a certain extent. Garland, Gaylord, and Park (2009) proposed that mindfulness involves decentering, which they defined as "a stepping back from mental experience" (p. 37). Although not exactly the same, decentering seems to correspond to the idea of third-person perspective in repetitive thought suggested by Kross and colleagues (2005) that noted above. Decentering may help individuals step back and take a perspective of an outsider, and may consequently reduce the chances to engage in ruminative thought from a first-person perspective.

Some research findings support that mindfulness may lead to a reduction in rumination. Deyo, Wilson, Ong, and Koopman (2009) found that in adult volunteers who

underwent an eight-week mindfulness-based stress reduction program reported a significant decrease in ruminative self-focus and depressive symptoms. However, it was unclear whether this reduction in ruminative self-focus partially resulted from the reduction of depressive symptoms. Nevertheless, mindfulness-based treatment may present itself as a beneficial treatment option for individuals who tend to engage in rumination, and since rumination may arguably be considered a characteristic of depression, reducing depressive rumination by practicing mindfulness meditation may help ameliorate one's dysphoric or depressed state. A cautionary note is that Kabat-Zinn (1990) stated that mindfulness meditation may lead to the resurgence of distressing thoughts and feelings that have been ignored for some time. As such, the emotional regulation of mindfulness may involve greater distress on the short term, followed by extinction and reconsolidation.

In regards to limitations of the present study, the study was conducted with a specific sample of recent retirees who generally did not suffer from clinical depression. Therefore, the findings may not be applicable in other samples. It would be of interest to test the model in the present study with a wider range of sample, such as younger adults or people who suffer from clinical depression.

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## Appendix A

### Consent Form for Retirement Study

This is to state that I, \_\_\_\_\_, agree to participate in the study on retirement being conducted by Drs. Pushkar, Conway, Li, and Wrosch from the Centre for Research in Human Development and the Department of Psychology at Concordia University.

I have been informed that:

1. My participation in this study entails my completing a battery of questionnaires, including questionnaires about the activities I do, my physical health, as well as about various life domains including my well-being, memory, cognition, and my attitudes.
2. All information about me or any other person will remain completely confidential. Results from this study will be accessible only to the researchers involved in this study. They will be able to use the information for scientific purposes, such as for publications in scientific journals or presentations at scientific conferences, as long as I cannot be identified as a participant in this study.
3. I am free to withdraw my consent and discontinue my participation at anytime without negative consequences.
4. This interview should last approximately four hours. I will receive a monetary compensation of \$50 for the four hours.
5. Because this study is a longitudinal study, I may be contacted again for an annual interview in 2006, 2007, and 2008. Each annual interview will last approximately four hours. I will receive \$50 for each annual interview in which I will take part.
6. I will receive a copy of the general results as they become available if I have indicated my name and address on the previous page.
7. I understand the purpose of this study; I know that there is no deception involved.
8. The person in charge of this study is Dr. Dolores Pushkar. She can be reached at (514) 848-2424, extension 7540, email: [retraite@alcor.concordia.ca](mailto:retraite@alcor.concordia.ca)

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE.

Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Witness: \_\_\_\_\_

*If at any time you have questions about your rights as a research participant, please contact Adela Reid, Research Ethics and Compliance Officer, Concordia University, at (514) 848-2424, extension 7481 or by email at [areid@alcor.concordia.ca](mailto:areid@alcor.concordia.ca)*

Appendix B

Demographics Questionnaire for Recent Retirees

1. What is your sex? Male \_\_\_\_\_ Female \_\_\_\_\_
2. What is the date of your birth?  
Year \_\_\_\_\_ Month \_\_\_\_\_ Date \_\_\_\_\_
3. What is your age? \_\_\_\_\_
4. What is the highest level of education you have completed?  
(Please circle that which corresponds best)  
Primary School:    1    2    3    4    5    6  
Secondary School:    7    8    9    10    11    12  
CEGEP/College:    Diploma  
University:    Bachelor's    Master's    Doctorate  
  
Other (please indicate what, how many years) \_\_\_\_\_
5. What is your occupation?  
\_\_\_\_\_
6. When did you retire?  
Year \_\_\_\_\_ Month \_\_\_\_\_ Date \_\_\_\_\_
7. How many years were you employed? \_\_\_\_\_
8. Do you receive a pension from your employer?  
Yes \_\_\_\_\_ No \_\_\_\_\_
9. At the time of your retirement, what was your annual salary?  
\_\_\_\_\_

10. What is your present annual income (include all sources, e.g. RRSP's, etc.)

\_\_\_\_\_

11. What is your total family income from all sources?

\_\_\_\_\_

12. Compared to other people of your age that you know, how would you rate your financial situation?

(Please circle the corresponding number)

- 1) A lot worse than most
- 2) Worse than most
- 3) A little worse than most
- 4) About the same as most
- 5) A little better than most
- 6) Better than most
- 7) A lot better than most

13. What languages do you speak?

French \_\_\_\_\_

English \_\_\_\_\_

Other (please specify): \_\_\_\_\_

14. What language do you read and write?

French \_\_\_\_\_

English \_\_\_\_\_

Other (please specify): \_\_\_\_\_

15. What is your civil status?

Married \_\_\_\_\_

Single \_\_\_\_\_

Divorced \_\_\_\_\_

Widowed \_\_\_\_\_

Common-law \_\_\_\_\_

16. How many times have you been married? \_\_\_\_\_

17. Do you have children? Yes \_\_\_\_\_ No \_\_\_\_\_

18. If yes, how many girls? \_\_\_\_\_

How many boys? \_\_\_\_\_

19. Who do you live with?

Alone \_\_\_\_\_

Spouse \_\_\_\_\_

Brother/Sister \_\_\_\_\_

Friend \_\_\_\_\_

Children \_\_\_\_\_

Other (please specify) \_\_\_\_\_

20. How did you find out about this study?

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