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**THE PERSEVERATIVE THINKING QUESTIONNAIRE:
DEVELOPMENT AND VALIDATION**

A Thesis in

Psychology

by

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ABSTRACT

Worry and rumination are maladaptive repetitive thought processes that increase negative affect and disrupt cognitive functioning and adaptive problem solving ability, and are generally associated with anxiety and depression, respectively. Their similarity has led to a debate about whether these types of thought are the same constructs associated with different disorders or whether they are differing constructs that may help to distinguish anxiety from depression. Studies comparing these repetitive thought styles have used extant or modified instruments that capture different aspects of worry and rumination. However, comparison studies rarely use equivalent measures when assessing worry and rumination, and it is not clear how respondents conceptualize these two repetitive thinking styles. These issues influence hypotheses about the relationship between these constructs and incite disagreement over their distinguishable characteristics. As advances in the field are likely to follow from more precise definitions of worry and rumination and their components, three studies are presented detailing the development and validation of the Perseverative Thinking Questionnaire (PTQ). The PTQ is a 26-item self-report measure that assesses five shared and unique facets of worry and rumination, including General Repetitive Thought, Future Control, Understanding, Past-Focused Repetitive Thought, and Obsessive Thought. The PTQ structure was validated using confirmatory factor analysis. Furthermore, the PTQ and its subscales were positively associated with measures of anxiety, depression, stress, worry, rumination, obsessions, negative affectivity (e.g., neuroticism), and narcissistic vulnerability, and negatively associated with measures of positive affectivity, extraversion, agreeableness, and conscientiousness. Although both anxious and

depressed individuals scored significantly higher on the PTQ and its subscales than nonanxious and nondepressed controls, anxious individuals were more likely to engage in repetitive thinking as measured by the PTQ than depressed individuals.

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love and support has made me the person I am today, and I love you both very much. I hope I can one day give to others as you have given to me.

Be not troubled by the wanderings of your imagination which you cannot restrain; how often do we wander through the fear of wandering and the regret that we have done so! What would you say of a traveller who, instead of constantly advancing in his journey, should employ his time in anticipating the falls which he might suffer, or in weeping over the place where one had happened?

-- *François Fénelon, The Inner Life (1697)*

Chapter 1

INTRODUCTION

A mental process that involves thinking attentively, repetitively, or frequently about oneself and one's concerns and experiences is implicated in different models of adjustment and maladjustment (Segerstrom, Stanton, Alden, & Shortridge, 2003; Watkins, 2008). Engaging in perseverative thinking is associated with self-regulation, psychopathology, and mental and physical health (Watkins, 2008). In particular, some repetitive thought processes enhance vulnerability to both anxiety and depression (Calmes & Roberts, 2007). Worry and rumination are two forms of maladaptive repetitive thought that can increase negative affect and disrupt cognitive functioning and adaptive problem solving ability (Segerstrom et al., 2003). Worry is generally defined as repetitive, uncontrollable thinking about negative events people fear may occur in the future (Borkovec, Ray, & Stöber, 1998), including future potential threat, imagined catastrophes, and uncertainties and risks, and is the core cognitive process of generalized anxiety disorder (GAD) (DSM-IV-TR; American Psychiatric Association, 2000). On the other hand, rumination has been conceptualized as repetitive, aversive, and uncontrollable thought revolving around an instrumental theme, such as personal loss or failure to achieve one's goals (Martin & Tesser, 1996), and is often associated with dysphoria and depression. In the study of the role of ruminative thinking in depression, Nolen-Hoeksema (1991) defines rumination as repetitive, prolonged self-focused negative thinking about past negative experiences and negative mood. Although these constructs have emerged from distinct areas of research, such definitions underscore the overlap in theoretical conceptualizations of worry and rumination. This similarity has led

to a debate about whether these forms of repetitive, perseverative thought are the same constructs associated with different disorders or whether they are differing constructs that may help to distinguish anxiety from depression. Thus, assessing these constructs in tandem can assist in identifying whether there are unique features of worry and rumination.

Considering the overlap between worry and rumination, developing a greater understanding of these concepts may explain high levels of comorbidity between anxiety and mood disorders. This idea has inspired a recent body of literature exploring the related and unique features of worry and rumination, which are often examined in terms of both process characteristics, including frequency, controllability, and form, and content characteristics, including foci and perceived function of worrisome and ruminative thinking. Studies comparing the two types of repetitive thought have used extant or modified instruments that capture different aspects of worry and rumination, and have not been consistent in systematically defining worry and rumination, thus influencing hypotheses about the relationship between these constructs and inciting disagreement over where their distinguishable characteristics (if any) lie.

Whereas some studies conceptualize worry and rumination as related cognitive phenomena associated with anxiety and depression sharing an underlying process (Calmes & Roberts, 2007; Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Hong, 2007; Muris, Roelofs, Meesters, & Boomsma, 2004; Muris, Roelofs, Rassin, Franken, & Mayer, 2005; Segerstrom, Tsao, Alden, & Craske, 2000; Watkins, Moulds, & Mackintosh, 2005), others have found that they involve overlapping, but distinct processes (Papageorgiou & Wells, 1999a, 1999b, 2001a, 2004). It has been suggested

that worry and rumination differ within a number of domains, such as temporal orientation, content, degree of internal-focus, and perceived function. However, comparison studies rarely use equivalent measures when assessing worry and rumination, and therefore conclusions regarding differences between these repetitive cognitive processes may depend on how the instruments capture these constructs. In addition, there is a circular problem in determining if and how these constructs may differ. Measures rarely define the constructs of worry or rumination and most lay people use them interchangeably. Therefore, simply asking about an individual's worry or rumination does not ensure that people completing these measures are referencing the correct constructs and that all people completing the measures are starting from the same point. On the other hand, defining the constructs has the potential to bias participants' responses. Consequently, some context needs to be supplied without biasing participants so that they understand what is known about worry and rumination. Accordingly, there is need for a more systematic way of distinguishing between these constructs.

Phenomenology of Worry and Rumination

Nature and Measurement of Worry

Borkovec and colleagues (1983, p. 10) defined worry as “a chain of thoughts and images, negatively affect-laden and relatively uncontrollable...an attempt to engage in mental problem-solving on an issue whose outcome is uncertain but contains the possibility of one or more negative outcomes...[and] relate[d] closely to the fear process.” These researchers acknowledged that characterizing the nature and process of worry, as well as distinguishing it from emotionally-related constructs, such as fear and anxiety, would require both conceptual and empirical effort (Borkovec, Robinson,

Pruzinsky, & DePree, 1983), and the definition of worry was later extended to include anxious apprehension for future, negative events (Borkovec, Ray, & Stöber, 1998).

Moreover, worry is predominated by verbal thought activity, as demonstrated in both anxious and nonanxious samples (Borkovec & Inz, 1990), such that when people worry, they talk to themselves about negative events they fear may occur in the future (Borkovec, Ray, & Stöber, 1998). Due to its verbal-linguistic nature, worry primarily functions as a strategy to avoid affective, cognitive, and somatic experiences (Borkovec, Ray, & Stöber, 1998). To illustrate, worry has been shown to suppress somatic arousal associated with a fearful event or situation in speech-phobic individuals, preventing adequate exposure (Borkovec & Hu, 1990; Borkovec, Lyonfields, Wisner, & Deihl, 1993, Llera & Newman, in press), thereby hindering emotional processing of aversive stimuli. Additionally, worry, as reflected in a clinical population, represents an attempt to avoid negative events or to prepare for the worst (Borkovec, Ray, & Stöber, 1998; Borkovec & Roemer, 1995). Similar to Eysenck's (1992) cognitive model of the worry process emphasizing worry's three major functions of alarm, prompt, and preparation, worry can be conceived as a form of anticipatory problem solving (Szabo & Lovibond, 2002). Worry also functions as distraction from more emotionally laden topics, such that individuals may engage in worrisome thinking about superficial concerns in an effort to distract themselves from more serious problems (Borkovec, Ray, & Stöber, 1998).

A number of instruments have been developed to capture various facets of worry, including process, content, perceived function and beliefs about worry, as well as repercussions of the construct. Despite the variability in current measures, worry is generally assessed empirically using the *Penn State Worry Questionnaire* (PSWQ;

Meyer, Miller, Metzger, & Borkovec, 1990), a 16-item self-report measure designed to capture the excessiveness, pervasiveness, and uncontrollability of pathological worry. Trait worry is reported using a 5-point Likert-type scale, ranging from 1 (*not at all typical of me*) to 5 (*very typical of me*). Examples of items include “My worries overwhelm me,” “I worry all the time,” and “I find it easy to dismiss worrisome thoughts.” Although this questionnaire assesses aspects of the frequency, topic variability, negative impact, and controllability of the worry process, it does not gauge worry content or function.

As a means to depict the object of one’s worrisome thoughts across different individuals, content-based instruments were established, including the *Worry Scale for Older Adults* (WS; Wisocki, 1988), the *Student Worry Scale* (SWS; Davey, Hampton, Farrell, & Davidson, 1992), and the *Worry Domains Questionnaire* (WDQ; Tallis, Eysenck, & Mathews, 1992). The WS and SWS assess worry across specific content areas relevant to older adults and students, respectively. Similarly, the WDQ measures worry across the following five domains: relationships, lack of confidence, aimless future, work incompetence, and financial concerns. Unlike the PSWQ, these instruments do not capture pathological worry. However, each of these process and content-based measures directly refers to worry in each item, but does not define the construct for respondents.

In contrast to instruments assessing process and content, the *Why Worry Scale* (WW; Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994), *Thought Control Questionnaire* (TCQ; Wells & Davies, 1994), and *Metacognitions Questionnaire* (MCQ; Cartwright-Hatton & Wells, 1997) assess reasons why people engage in worry, in addition to beliefs they hold about their worrisome thinking. Specifically, the WW

focuses on the positive aspects of worry, which perpetuate this form of repetitive thought, such as worry's role in problem solving, motivation, protection from negative emotions, and prevention of negative outcomes, whereas the TCQ solely emphasizes worry's function as a strategy to control unpleasant and unwanted thoughts. The MCQ is more comprehensive in that it assesses both positive and negative beliefs about worry and other metacognitive judgments and processes. Likewise, the *Consequences of Worrying Scale* (COWS; Davey, Tallis, & Capuzzo, 1996) measures the degree to which individuals believe a range of negative and positive consequences apply to their worry.

Although each of these instruments sufficiently captures the aspects of worry it is designed to measure, a common limitation is that they do not assess the entirety of this construct. These measures are valuable because they enhance understanding of the worry construct within specific domains. Whereas some instruments focus on the form that worry takes, including its excessiveness and pervasiveness, others are more concerned with content and the beliefs that people have about worry as both a perceived coping strategy and maladaptive process. Considered in tandem, these instruments provide a complete picture of the process, content, and function of worry. However, none of these measures is sufficient enough on its own if the ultimate goal is to evaluate and capture this form of repetitive thought as it is conceived in the literature. Despite their focus on different aspects of this construct, the aforementioned instruments always use the word 'worry' in their items, but do not define the construct for respondents. Without a common starting point, it cannot be assumed that people conceptualize worry in a similar manner, which poses a problem when comparing worry to other related constructs.

Nature and Measurement of Rumination

Nolen-Hoeksema (1991, p. 569) defines rumination as “behaviors and thoughts that focus one’s attention on one’s depressive symptoms and on the implications of these symptoms.” As a construct that is implicated in the onset and maintenance of depression, the Response Styles Theory (Nolen-Hoeksema, 1991) posits that depressive rumination is a particular cognitive reaction to depressed mood (Just & Alloy, 1997; Nolen-Hoeksema, 2000; Nolen-Hoeksema, Morrow, & Fredrickson, 1993). It is proposed that ruminative responses prolong depression because they influence biased thinking, such as distorted interpretations of events and expectation of negative future outcomes, and interfere with instrumental behavior and problem solving (Nolen-Hoeksema, 1991). Ultimately, rumination encourages a shift of attention from adaptive responses, including complex problem solving, to negative mood.

Similar to worry, rumination is primarily a verbal thought process, although it can consist of imagery. Given its association with depression, rumination often involves themes of personal loss and failure to achieve personal goals (Martin & Tesser, 1996). Generally characterized by self-focused, “Why” type questions, such as “Why do I feel this way” and “Why did this happen to me,” ruminative thinking involves negative appraisals about oneself, feelings, behaviors, situations, and ability to cope.

Borkovec and colleagues’ (1983) definition of worry is highly accepted in research communities and amply represented in the worry literature. Thus, instrument construction frequently revolves around this conceptualization, although worry measures rarely provide a definition of their corresponding construct to the participants who complete them. On the other hand, different theorists conceptualize rumination in

different ways, as reflected in measures of this construct (Papageorgiou & Wells, 2004). As a result, Siegle, Moore, and Thase (2004) explored the convergence and divergence among self-report measures of rumination in adults with depression, healthy adults, and nondepressed adults with Systemic Lupus Erythematosus, and found that different measures represented different “rumination-like” constructs with different relationships to depression. This finding highlights the variability within the conceptualization of a single construct, and is an important consideration when developing instruments designed to distinguish between two similar constructs.

Resembling measures of worry, rumination instruments assess different facets of this construct, particularly rumination as a response to a specific mood state, the process of rumination, and people’s perceptions of their ruminative thinking. Just as worry is primarily assessed using the PSWQ, rumination is traditionally measured by the *Ruminative Response Scale* (RRS) of the *Response Styles Questionnaire* (RSQ; Nolen-Hoeksema & Morrow, 1991). This 22-item instrument assesses individuals’ self-focused (e.g., “I think, ‘Why do I react this way?’”) and symptom-focused (e.g., “I think about how hard it is to concentrate”) responses to their own depressed mood, as well as responses focused on the possible consequences and causes of their mood (e.g., “I think, ‘I won’t be able to do my job if I don’t snap out of this’”). Respondents rate on a 4-point Likert-type scale ranging from 1 (*almost never*) to 4 (*almost always*).

To examine whether symptom contamination was responsible for the relationship between depression and rumination, Treynor and colleagues (2003) constructed a measure unconfounded with depression content by removing twelve items from the RRS related to depression symptomatology. Analyses revealed two components, reflection,

defined as “the purposeful turning inward to engage in cognitive problem solving to alleviate one’s depressive symptoms” (Treynor, Gonzalez, & Nolen-Hoeksema, 2003, p. 256) and brooding, defined as “passive comparison of one’s current situation with some unachieved standard, differentially related to depression” (Treynor, Gonzalez, & Nolen-Hoeksema, 2003, p. 256). Just as certain measures capture both pathological and non-pathological forms of worry, reflection and brooding can be conceived as adaptive and maladaptive forms of rumination, respectively.

Additional measures that depict rumination as a response to one’s mood are the *Multidimensional Rumination Questionnaire* (MRQ; Fritz, 1999) that assesses three potential subtypes of rumination in response to a stressful event, including emotion-focused rumination, searching for meaning of negative experiences, and instrumental rumination; the *Scott-McIntosh Rumination Inventory* (Scott & McIntosh, 1999) that examines three facets of rumination, emotionality, motivation, and distraction, in response to failed goal attempts; the *Rumination on Sadness Scale* (ROS; Conway, Csank, Holm, & Blake, 2000) that measures rumination in response to one’s current feelings of distress and circumstances surrounding sadness; and the *Anger Rumination Scale* (ARS; Sukhodolsky, Golub, & Cromwell, 2001) that assesses an individual’s tendency to focus attention on angry moods, recall past experiences of anger, and ponder the causes and consequences of anger. Although rumination is often studied in relation to depression, the aforementioned measures lend support to the finding that these instruments portray different “rumination-like” constructs that occur in a variety of contexts. Thus, in an examination of the components of private self-attentiveness, Trapnell and Campbell (1999) developed the *Rumination-Reflection Questionnaire*,

likening reflective self-focus to “playful exploring of novel, unique, or alternative self-perceptions” (Trapnell & Campbell, 1999, p. 290) and ruminative self-focus to “compulsive attending to perceived threats, losses, and injustice to the self” (Trapnell & Campbell, 1999, p. 290). The development of this instrument reduced the construct of rumination to its more pathological form, thereby narrowing the conceptualization of rumination. Whereas reflection has been identified as a subcomponent of rumination in the RRS, the *Rumination-Reflection Questionnaire* distinguishes between these constructs.

In addition to measures assessing rumination in response to mood state, the *Global Rumination Scale* (GRS; McIntosh & Martin, 1992) is a process-based instrument that measures an individual’s tendency toward repetitive thought, including increased frequency and decreased controllability of thoughts, tendency to engage in mental rehearsal of future and past events, and distractibility. On the other hand, the *Positive Beliefs About Rumination Scale* (PBRs; Papageorgiou & Wells, 2001b) assesses the range of positive metacognitive beliefs about rumination in depression. This scale does not define rumination, thus assuming that respondents conceptualize the construct in a similar manner. Given the overlap in metacognitions about worry and rumination (e.g., worry/rumination perceived as a coping strategy and means to avoid negative future events and prepare for the worst), such beliefs may not be a distinguishing factor as the measure may tap into both cognitive processes.

Comparing Worry and Rumination

As noted previously, worry and rumination have emerged from distinct areas of research, but these constructs have been investigated systematically in studies designed to

assess their similarities and differences. A number of studies have concluded that worry and rumination are related processes associated with anxiety and depression. In particular, Segerstrom and colleagues (2000) examined the specificity of worry and depressive rumination to symptoms and thought content associated with anxiety and depression using structural equation modeling. Worry and rumination were measured using the PSWQ and RRS, respectively. They demonstrated that a latent variable labeled as “repetitive thought,” a common feature between worry and rumination, predicted anxiety and depression in student and clinical samples. However, the specific components of worry and rumination did not differentially relate to anxiety and depression, suggesting that these constructs are not as distinct as previously indicated. In an explanation of why repetitive thought was associated with anxiety and depression, it was concluded that this common characteristic of worry and rumination may arise from the interruption of personal goals, as well as failures of emotional and information processing, thereby increasing negative mood states.

Furthermore, Fresco and colleagues (2002) conducted a joint factor analysis of the PSWQ and RRS administered to an unselected college sample, and a four-factor solution emerged comprised of two factors from the worry scale (Worry Engagement and Absence of Worry) and two factors from the rumination scale (Dwelling on the Negative and Active Cognitive Appraisal). This finding was not surprising considering that the two measures used in this study assessed different aspects of worry and rumination. Nevertheless, the correlations between these factors were high, and in an investigation of their association with anxious and depressive symptoms, both worry and rumination were highly and similarly related to anxiety and depression, consistent with the findings

demonstrated by Segerstrom et al. (2000). In short, both of these studies indicate that worry and rumination are highly similar processes, possibly sharing the general feature of repetitive thought.

In support of this conclusion, Watkins, Moulds, and Mackintosh (2005) compared worry and rumination in a nonclinical population across a number of variables, particularly appraisals and strategies associated with these constructs. Rather than using the PSWQ and RRS to directly measure worry and rumination, they developed a set of worry items from the WDQ and ruminative thought items from the RRS, prefacing each item with “Thoughts or images,” rather than “worry” or “rumination.” Participants were instructed to select one item from both the worry and rumination lists that they engaged in most frequently or best represented their personal experience. They were then asked to complete the *Cognitive Intrusions Questionnaire* (CIQ) for each of these items, rating their individual thoughts on the following categories: general descriptors (e.g., frequency, duration, etc.); appraisal (e.g., responsibility, importance, etc.); associated emotion (e.g., sadness, worry, etc.); strategies used in response to the intrusion (e.g., distraction, suppression, etc.). In their request that participants select the most relevant worry and rumination items, Watkins and colleagues did not explicitly distinguish between these two constructs, thus attempting to refrain from biasing the respondents. Nevertheless, CIQ items contain words like “analyze”, which cue into a particular thought process conveying intent to reach some goal. Suggesting that worry and rumination are associated with some form of thoughtful analysis may influence particular responses in the absence of defining these constructs for the participants.

Ultimately, Watkins and colleagues found that compared to rumination, worrisome thoughts were more chronic and upsetting or disturbing, as well as more focused on the future. Additionally, worry was associated with greater feelings of insecurity and worry in response to an intrusive thought. On the other hand, participants were more likely to believe that their ruminative thought was focused on a real problem. Nevertheless, in the absence of defining these thought processes, it is possible that some participants conceptualized worry and rumination in different ways from other participants when completing the instrument. In addition, only a nonclinical sample was used and nonclinical participants' understanding of these constructs may differ from that of a clinical population, thereby further influencing the observed association between worry and rumination. Although the authors demonstrated that these constructs differed on seven variables: chronicity (years experience with the thought), unpleasantness, reality of the problem, future orientation, past orientation, feelings of worry, and insecurity, they found no differences between worry and rumination on appraisals and strategies used in response to intrusive thoughts, consistent with the proposal that these constructs share the same processes, but differ in content.

With the goal of extending this general finding to another population, Muris and colleagues (2004) examined the relationships between self-reported rumination as measured by the *Children's Response Style Scale* (CRSS), worry as assessed by the *Penn State Worry Questionnaire for Children* (PSWQ-C), and anxiety and depression symptoms in a sample of nonclinical adolescents. They found worry and rumination to be correlated with each other, as well as anxious and depressive symptoms, justifying the conclusion that these constructs are related cognitive processes. This idea garnered

further support from additional studies conducted by Muris and colleagues (2005), Calmes and Roberts (2007), and Hong (2007). In short, these studies suggest that worry and rumination may be two manifestations of the same theoretical construct.

Nevertheless, they utilized the PSWQ and RRS to assess worry and rumination, respectively. Although each of these instruments has been validated in a number of samples, as noted earlier, they capture different facets of the intended construct. In other words, these studies did not use equivalent measures, therefore hindering proper evaluation of worry and rumination in terms of their distinct and similar features.

An alternative line of research exploring worry and rumination as perceived coping strategies suggests that these cognitive processes are similar, yet distinct. To illustrate, worry is conceptualized as a cognitive avoidance strategy that enables people to mentally prepare for anticipated negative outcomes (Borkovec, Ray, & Stöber, 1998), whereas rumination is perceived to be a form of coping employed in response to one's depressed mood in order to understand the nature and implication of those negative feelings (Nolen-Hoeksema, 1991). Specifically, people who engage in worry generally view their repetitive thought as a constructive process that allows them to prepare for the worst and avoid the occurrence of negative events (Borkovec & Roemer, 1995), thereby perpetuating their worry. Along these lines, Davey and colleagues (1992) found that worry is associated with information-seeking and problem-focused processes that facilitate the discovery of a practical solution to forthcoming stressful events.

Likewise, empirical studies have supported the notion of rumination as a perceived coping strategy. Similar to the beliefs that people hold about worry, Cartwright-Hatton and Wells (1997) reported that people hold both positive and negative

beliefs about rumination. This finding was supported by Papageorgiou and Wells (2001a) who examined the presence and content of metacognitive beliefs about rumination in patients with recurrent major depression. Whereas the negative beliefs concern uncontrollability and harm (e.g., “Ruminating about my problems is uncontrollable,” “Ruminating about my depression could make me kill myself”), the positive beliefs portray rumination as a coping strategy (e.g., “I need to ruminate about my problems to find answers to my depression,” “Ruminating about the past helps me to prevent future mistakes and failures”) (Papageorgiou and Wells, 2001a). Since this study utilized a relatively small sample and there was the possibility of confounds within the measure used to assess positive beliefs about rumination (*Positive Beliefs about Rumination Scale* (PBRs); Papageorgiou & Wells, 2001b) between the severity of depressed mood and endorsement of beliefs, Watkins & Moulds (2005) attempted to replicate previous findings in a larger sample and adapted the PBRs to reduce confounds with affective state and valence by changing “ruminate/rumination” to “think/thinking” and “depression” to “feelings.” Ultimately, people in depression-prone groups who held positive beliefs about rumination demonstrated a greater tendency to ruminate.

Despite the positive beliefs that people have about rumination relating to its utility as a coping/problem solving strategy, studies comparing worry and rumination (Papageorgiou & Wells, 1999a, 1999b, 2004) indicated that the most reliable differences found between these styles of thinking were effort and confidence in problem solving and past orientation. These studies suggest that the nature of rumination is not as conducive to problem solving and coping as worry. So what can account for the positive beliefs that people report regarding ruminative thinking? In perceiving rumination as a coping

strategy, positive beliefs appear to reflect themes of problem solving (e.g., “Ruminating about the past helps me work out how things could have been done better) and avoidance of negative events/preparation for the worst (e.g., “Ruminating about the past helps me to prevent future mistakes and failures”) (Papageorgiou & Wells, 2001b). These beliefs are reminiscent of the perceived function of worry (Borkovec & Roemer, 1995; Davey, Hampton, Farrell, & Davidson, 1992), thus it is possible that studies examining positive beliefs about rumination are simultaneously measuring the worry process. Since both worry and rumination are conceptualized as coping strategies given the wording of the questionnaire items, it cannot be determined whether this function is a shared feature or subject to item contamination.

Overall, worry and rumination are repetitive thought processes that can perpetuate negative mood states. Often associated with anxiety, worry primarily functions as a problem-focused coping behavior, a means to actively avoid current negative emotions and future consequences. Alternatively, rumination is a more emotion-focused strategy related to depression that is geared toward understanding one’s negative mood without actually circumventing those feelings. However, the picture is still unclear where the procedural and functional distinctions lie between worry and rumination. Results are mixed, as some studies indicate that they are similar processes, whereas others suggest that these two thinking styles are divergent. The majority of studies comparing worry and rumination evaluate these constructs with the PSWQ and RRS, and therefore operationally define the tendency to worry and ruminate with the measures themselves. The conceptualization of these constructs is limited to the concepts captured by these instruments since they only focus on certain aspects of worry and rumination. For

instance, the PSWQ narrowly focuses on the frequency and pervasiveness of worry, whereas the RRS is more content-based, targeting a specific response to a negative mood state and is contaminated by items reflecting symptoms of depression.

Given the differences between measures of worry and rumination, it is plausible that patterns of association can be attributed to the instruments used, rather than to the constructs measured. Although current instruments assessing worry and rumination have exhibited sound validity and reliability, their limitations become apparent when utilized in comparison studies since they target different facets of these constructs. Consequently, a measure is needed to identify the distinctive characteristics of worry and rumination that includes items that neither directly refer to the constructs themselves nor indicate diagnostic symptoms specific to anxiety disorders and major depression since these constructs are to be examined simultaneously. Taking these parameters into consideration, if worry and rumination are determined to be distinct repetitive thought processes, future studies will need to distinguish between these constructs. Although worry and rumination may be found to overlap significantly, it is beneficial to have a measure that captures all facets of these constructs. As advances in the field are likely to follow from more precise definitions of worry and rumination and their components, the goal of this study is to refine these constructs through the development and validation of a questionnaire designed to determine whether these processes differ within domains that previous studies have found to discriminate them.

Present Studies

Three studies were conducted to obtain initial psychometric data on a self-report measure of components of worry and rumination [*Perseverative Thinking Questionnaire*

(PTQ)], designed to distinguish between these two forms of repetitive thought commonly associated with anxiety and depression, respectively. Study 1 comprised item selection and development of the PTQ. Study 2 established retest reliability and validity of this measure. Finally, Study 3 examined the differential relationship between anxiety and depression using the PTQ.

Chapter 2

STUDY 1: DEVELOPMENT OF THE PTQ

The purpose of this study was three-fold: 1) to assess how worry and rumination have been conceptualized and operationalized in the literature and identify the underlying facets of these constructs, 2) to evaluate the factor structure of the item pool and examine the basic psychometric properties of the PTQ, and 3) to establish questionnaire norms for a nonclinical sample. The latter goal is important when later developing norms for a clinical population to determine whether this measure can distinguish between individuals with generalized anxiety disorder and those with major depression. A comprehensive review of the literature revealed that worry and rumination differ within four theoretically interrelated domains: temporal orientation (past/future), positive perceived function (understanding/preparation), content (problem-focused/emotion-focused), and focus (internal/external). Conversely, similarities between the two constructs have been attributed to their shared unconstructive, repetitive nature (e.g., Ehring & Watkins, 2008; Watkins, 2008). Although worry and obsessions have been found to differ in nonclinical populations on dimensions such as frequency, duration, and appraisal (Clark & Claybourn, 1997; Langlois, Freeston, & Ladouceur, 2000a, 2000b; Wells & Morrison, 1994), as well as rumination and obsessions in clinical samples (Wahl, 2007), worry and rumination's lack of controllability, spontaneity, and the extreme discomfort they can elicit have an obsessive-like quality. Accordingly, six dimensions related to the distinct and common features of worry and rumination and capturing varying degrees of severity were identified, and labeled General Repetitive Thought, Future Control, Understanding, Past-Focused Repetitive Thought, Future-

Focused Repetitive Thought, and Obsessive Thought. It was hypothesized that a questionnaire developed to include a representative sample of items pertaining to each of these facets, and administered to a large sample of nonclinical participants, would be best summarized by these dimensions.

Method

Item pool generation. In the initial phase of test development (Morey, 2003), theoretical and empirical literature was reviewed to understand how worry and rumination have been conceptualized across disciplines with the aim of identifying distinct and overlapping features of these related constructs. Whereas worry and rumination are two types of maladaptive repetitive thought that can exacerbate negative affect and interfere with various areas of functioning, they have been found to differ within four domains: temporal orientation (past/future), positive perceived function (understanding/preparation), content (problem-focused/emotion-focused), and focus (internal/external). A pool of 126 items was generated to capture these common and distinct aspects of worry and rumination, adequately depicting content representative of each of the six dimensions of general repetitive thought (e.g., I find it difficult to dismiss a thought once it's entered my head), future control (e.g., I repeatedly think about things so I can better handle any unforeseen event that occurs), understanding (e.g., I gain insight into my difficulties by replaying them in my mind), past-focused repetitive thought (e.g., It's difficult for me to let go of things that have happened to me), future-focused repetitive thought (e.g., I repeatedly think about bad things that might happen), and obsessive thought (e.g., I'd be mortified if others knew what I was thinking at times).

To ensure that items were potentially relevant to the target constructs, items were generated for each dimension on the basis of both theoretical and empirical considerations to better understand how clients with GAD and depression express and refer to worrisome and ruminative types of thinking. Also, empirically validated measures assessing worry and rumination, as well as related constructs, were reviewed to establish wording of the items, as well as determine the limitations of these measures in capturing these constructs to circumvent similar problems when generating items for the PTQ. Experts on the nature and treatment of anxiety and comorbid disorders, including clinical faculty, in addition to graduate students, were consulted to ensure items reflected the corresponding construct facets. Any items identified as poorly worded or determined to be unrepresentative of either worry or rumination were eliminated or revised. Ultimately, the initial item pool included a sufficient breadth of content related to the core constructs of worry and rumination that neither used the words ‘worry’ or ‘rumination’ nor referred to symptoms of anxiety or depression.

Participants. Respondents were recruited from a subject pool of undergraduate students taking an Introductory Psychology course at a large Eastern university. All participants had the opportunity to complete the study for course credit. Sample 1 (N = 686) was 52.3% female and 47.2% male (3 respondents did not report their gender) with a mean age of 19.51 years. It comprised 77.1% White Americans, 6.6% Asian Americans, 5.8% African Americans, 3.9% Hispanic Americans, 0.4% Pacific Islander, 0.1% American Indian, 2.9% more than one ethnicity, and 2.8% other ethnicity. Two participants did not identify their ethnicity. Sample 1 was used for initial item derivation. Sample 2 (N = 985) was 59.7% female and 40.3% male with a mean age of 19.20 years.

It comprised 77.9% White Americans, 4.9% Asian Americans, 5.7% African Americans, 5.1% Hispanic Americans, 0.2% Pacific Islander, 0.2% American Indian, 3.1% more than one ethnicity, and 2.9% other ethnicity. This sample was used to validate the PTQ structure derived in Sample 1 and test additional items.

Measures.

PTQ Item Pool. The PTQ version administered to Sample 1 consisted of 126 items depicting the following aspects of worry and rumination: general repetitive thought, future control, understanding, past-focused repetitive thought, future-focused repetitive thought, and obsessive thought. Items were endorsed on a 6-point Likert-type scale ranging from *not at all like me* to *very much like me*. This format allowed for response variability and the elimination of any tendency to overuse the scale midpoint when responding. Sample 2 was administered a reduced item pool.

Procedure. Students were invited to participate in a research study on the development and validation of a self-report measure of different types of repetitive thinking. Individuals who consented to participate in the study answered survey questions regarding repetitive thought styles in an online survey format. The second phase of test development involved evaluation of the structure of the PTQ item pool and examination of the psychometric properties of the Perseverative Thinking Questionnaire (PTQ).

Data Analysis. It was hypothesized that a 6-factor model representing theoretically established domains of similarity and distinction for worry and rumination would best explain the PTQ item pool. Therefore, confirmatory factor analysis with maximum likelihood estimation was used to determine if this hypothesized factor

structure would demonstrate optimal fit to the data. The model was evaluated using multiple complementary fit indices (Hu & Bentler, 1999). Although the chi-square (χ^2) is the most commonly used goodness-of-fit index, it is inflated by sample size (Brown, 2006). Therefore, additional absolute fit indices, as well as parsimony correction and comparative fit indices, were applied. The standardized root mean square residual (SRMR) is an absolute fit index, similar to χ^2 , that represents the discrepancy between observed matrix correlations and those predicted by the model (Brown, 2006). Based on a noncentral χ^2 distribution, the root mean square error of approximation (RMSEA) assesses model parsimony through examination of the model's fit in the population (Brown, 2006). Finally, the comparative fit index (CFI) was computed as a means to evaluate the fit of the specified model in relation to a more constrained, comparative baseline model (Brown, 2006). The modification index (MI; Sörbom, 1989), which represents an approximation of how much the overall model χ^2 would decrease if the fixed or constrained parameter was freely estimated (Brown, 2006), was used to evaluate the model with respect to the specific relationships in the solution. Model respecification involved removing items with an inflated modification index ($MI > 10.83$, $df = 1$, $p = .001$).

The solution was then validated on a large, independent sample to decrease the likelihood that the model capitalized on chance (MacCallum, Roznowski, & Necowitz, 1992). Coefficient alpha reliabilities were computed for each of the PTQ subscales, as well as item total correlations and subscale intercorrelations, to establish the internal validity of the measure. In identifying the latent structure of the PTQ, alternative factor solutions were examined based on subscale intercorrelations.

Results

Confirmatory factor analysis. The data was subjected to confirmatory factor analysis using LISREL 8.80 (Jöreskog & Sörbom, 2006) and *Mplus* (Version 5.1, Muthén & Muthén, 2008) to determine if the hypothesized factor structure demonstrated optimal fit to the data. Analysis of univariate and multivariate skewness and kurtosis denoted significant departures from normality. Accordingly, THEIL (Molenaar, 2009), a FORTRAN program, was used in conjunction with LISREL 8.80 for robust covariance matrix estimation. Similarly, maximum likelihood estimation with robust standard errors for non-normal continuous outcomes was employed (Yuan & Bentler, 2000; MLR estimator in *Mplus*). The MLR chi-square test statistic is asymptotically equivalent to the Yuan-Bentler T2* test statistic.

Assigning items to factors based on theoretical and empirical considerations indicated a 6-factor model. All factors were allowed to freely correlate. Given the sensitivity of the chi-square (χ^2) statistic to sample size, it was significant ($\chi^2(7734) = 22,570.32, p = 0.000$). The comparative fit index, however, signified adequate fit of the data to the factor model (CFI = 0.98), but the absolute fit indices did not converge as well in supporting model fit (SRMR = 0.077; RMSEA = 0.074, 90% confidence interval [CI] for RMSEA = 0.073 – 0.075, RMSEA p for close fit = 1.00). Subsequently, the model was recalibrated by removing items with a modification index greater than 10.83. All items assigned to the Future-Focused Repetitive Thought factor would result in significant χ^2 differences if these cross-loadings were freely estimated, therefore, they were removed and a 5-factor model consisting of 30 items emerged. The fit indices, except the chi-square statistic ($\chi^2(395) = 798.777, p = 0.000$), converged in support of the

fit of the data to this new factor model (CFI = 0.954; SRMR = 0.037; RMSEA = 0.039, 90% confidence interval [CI] for RMSEA = 0.035 – 0.042, RMSEA p for close fit = 1.00).

This 5-factor solution was then validated on a larger, independent sample (N = 985). As expected, the chi-square statistic was significant ($\chi^2(395) = 1202.590, p = 0.000$), however the other fit indices again supported a 5-factor model fit (CFI = 0.940; SRMR = 0.045; RMSEA = 0.046, 90% confidence interval [CI] for RMSEA = 0.043 – 0.049, RMSEA p for close fit = 0.994). The Understanding and Obsessive Thought factors contained 3 and 4 items, respectively. For that reason, additional items had been generated, as it could not be guaranteed that those factors truly signified the latent constructs of interest with so few items. Again, the data collected from Sample 2 was submitted to confirmatory factor analysis using robust maximum likelihood estimation in *Mplus* (Version 5.1, Muthén & Muthén, 2008), and the model was refined by eliminating items with a modification index greater than 10.83. Model respecification resulted in a 26-item 5-factor model that demonstrated good fit to the data (CFI = 0.952; SRMR = 0.043; RMSEA = 0.045, 90% confidence interval [CI] for RMSEA = 0.041 – 0.048, RMSEA p for close fit = 0.993; $\chi^2(289) = 860.623, p = 0.000$).

Internal Consistency. Standardized factor loadings, factor intercorrelations, and scale psychometrics are presented in Tables 1 and 2. Factor intercorrelations ranged from .51 to .90. Coefficient alphas for all subscales ranged from .83 to .90 (Total PTQ $\alpha = .95$).

Gender Differences. Females scored significantly higher than males on the General Repetitive Thought and Past-Focused Repetitive Thought subscales, whereas

Table 1

Standardized Factor Loadings of PTQ Items

PTQ Item	PTQ Factors				
	GRT	FUT	UND	PAST	OBT
22. It's hard for me to put certain thoughts out of my mind	.85				
7. No matter how much I try to control certain thoughts they still persist	.84				
12. I find it difficult to dismiss a thought once it's entered my head	.82				
17. I am consumed by certain thoughts	.82				
2. I feel overwhelmed by certain thoughts	.66				
8. I repeatedly think about things to figure out how to avoid or prevent bad things from happening		.82			
18. I repeatedly think about things so I can be prepared in case something bad happens		.80			
23. I repeatedly think about things so I can better handle any unforeseen event that occurs		.80			
3. I repeatedly think about all possible outcomes to prepare for the worst		.66			
13. I can't move forward unless I've considered all possible outcomes of a situation		.66			
4. To know why I do the things that I do, I repeatedly think about them			.77		
9. I repeatedly think about things to get the answers I'm looking for			.77		
14. I repeatedly think about the past to find out whether my current situation has a deeper meaning			.71		
24. My problems make sense when I think about them repeatedly			.70		
19. I gain insight into my difficulties by replaying them in my mind			.66		
1. Things I've said or done always seem to be playing in my mind				.78	
10. I can't help but rehash past events in my mind				.77	
25. I often find myself repeatedly thinking about recent events, wishing they had gone better				.74	
15. After a problem has long been resolved, my thoughts drift back to what happened				.73	
20. I repeatedly second-guess the things I've done				.73	
5. It's difficult for me to let go of things that have happened to me				.63	
16. My thoughts make me uncomfortable					.82
6. I have difficulty preventing horrific images from popping into my head					.75
11. I'm losing control when I have bad thoughts					.73
26. My thoughts can be scary at times					.67
21. I'd be mortified if others knew what I was thinking at times					.61

Note. N = 985. PTQ = Perseverative Thinking Questionnaire; GRT = General Repetitive Thought; FUT = Future Control; UND = Understanding; PAST = Past-Focused Repetitive Thought; OBT = Obsessive Thought.

Table 2

PTQ Scale Intercorrelations and Scale Statistics

	1	2	3	4	5	Men (n = 397)		Women (n = 588)		<i>T</i>	<i>d</i>
						<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
PTQ Scale											
1. GRT	(.90)					3.22	1.25	3.43	1.30	-2.53*	0.16
2. FUT	.67	(.86)				3.48	1.10	3.44	1.15	0.48	0.04
3. UND	.73	.90	(.85)			3.49	1.05	3.46	1.10	0.39	0.03
4. PAST	.90	.78	.83	(.87)		3.41	1.14	3.71	1.17	-4.05***	0.26
5. OBT	.76	.51	.57	.65	(.83)	2.62	1.12	2.38	1.10	3.26**	0.22
PTQ Total						3.25	0.95	3.30	0.99	-0.85	0.05

Note. N = 985. Coefficient alpha appears on the diagonal. Abbreviations: PTQ = Perseverative Thinking Questionnaire; GRT = General Repetitive Thought; FUT = Future Control; UND = Understanding; PAST = Past-Focused Repetitive Thought; OBT = Obsessive Thought.

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

males scored significantly higher on the Obsessive Thought subscale. Effect sizes (d) for all subscales ranged from .03 to .26. These findings corroborate previously observed gender differences with respect to worry (e.g., Dugas, Freeston, & Ladouceur, 1997), rumination (e.g., Zlomke & Hahn, 2010), and obsessions (e.g., Torresan, et al., 2009).

Latent Structure of the PTQ. Given the high correlations between subscales (refer to Table 2), two additional models were examined: 1) a single-factor model, which assumed all PTQ items loaded on a common factor (perseverative thinking) and 2) a 3-factor model, which constrained the General Repetitive Thought and Past-Focused Repetitive Thought and Future Control and Understanding subscales to load on common factors (unconstructive repetitive thought and perceived constructive thought), with Obsessive Thought items loading on a third factor. Fit indices for the 1-, 3-, and 5-factor models are presented in Table 3. As can be seen from Table 3, there is a decrease in fit index values, with corresponding declines in Akaike's information criterion from the 1- to 5-factor models. The relative fit of these nested models was evaluated through a series of chi-square difference tests using the Satorra-Bentler scaled chi-square (Satorra, 2000), which was indicated on account of using MLR estimation in *Mplus*. The Satorra-Bentler scaled chi-square difference test (TRd) was conducted to compare the 1- and 5-factor models and the 3- and 5-factor models. TRd statistics were 986.293 ($df_1 - df_0 = 10$, $p < .001$) and 217.914 ($df_1 - df_0 = 7$, $p < .001$), respectively, indicating that the 5-factor model demonstrates best fit to the data. The 5-factor model provides a significant improvement over the 3-factor and 1-factor models. The factor loadings and scale intercorrelations associated with each of these models are depicted in Tables 4 and 5.

Table 3

Goodness-of-Fit Indices for Models Obtained Using Confirmatory Factor Analysis

Model	Goodness-of-Fit Index						
	χ^2	<i>df</i>	AIC	CFI	TLI	SRMR	RMSEA
1-Factor	2647.885***	299	78870.037	0.802	0.785	0.071	0.089
3-Factor	1186.993***	296	77015.584	0.925	0.917	0.049	0.055
5-Factor	860.623***	289	76616.861	0.952	0.946	0.043	0.045

Note. N = 985. Abbreviations: χ^2 = chi-square test statistic; *df* = degrees of freedom; AIC = Akaike's Information Criterion; CFI = Comparative Fit Index, TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation.

*** $p > .001$.

Table 4

Standardized Factor Loadings for Models Obtained Using Confirmatory Factor Analysis

PTQ Item	Models								
	1- Factor	3-Factor			5-Factor				
	PER	URT	PCT	OBT	GRT	FUT	UND	PAST	OBT
GRT									
2	.64	.66			.66				
7	.78	.81			.84				
12	.78	.81			.82				
17	.76	.79			.82				
22	.79	.83			.85				
FUT									
3	.60		.65			.66			
8	.67		.78			.82			
13	.63		.66			.66			
18	.66		.77			.80			
23	.65		.78			.80			
UND									
4	.72		.75				.77		
9	.69		.75				.77		
14	.67		.68				.71		
19	.56		.65				.66		
24	.57		.69				.70		
PAST									
1	.75	.75						.78	
5	.59	.61						.63	
10	.75	.75						.77	
15	.71	.72						.73	
20	.69	.71						.73	
25	.69	.70						.74	
OBT									
6	.54			.75					.75
11	.55			.72					.73
16	.58			.82					.82
21	.56			.61					.61
26	.52			.67					.67

Note. N = 985. Abbreviations: PTQ = Perseverative Thinking Questionnaire; GRT = General Repetitive Thought; FUT = Future Control; UND = Understanding; PAST = Past-Focused Repetitive Thought; OBT = Obsessive Thought; PER = Perseverative Thought; URT = Unconstructive Repetitive Thought; PCT = Perceived Constructive Thought.

Table 5

PTQ Scale Intercorrelations and Coefficient Alphas for Models Obtained Using Confirmatory Factor Analysis

	1	2	3	4	5
PTQ Scale					
1-Factor Model					
1. PER	(.95)				
3-Factor Model					
1. URT	(.93)				
2. PCT	.79	(.91)			
3. OBT	.74	.55	(.83)		
5-Factor Model					
1. GRT	(.90)				
2. FUT	.67	(.86)			
3. UND	.73	.90	(.85)		
4. PAST	.90	.78	.83	(.87)	
5. OBT	.76	.51	.57	.65	(.83)

Note. N = 985. Coefficient alpha appears on the diagonal. Abbreviations: PTQ = Perseverative Thinking Questionnaire; PER = Perseverative Thought; URT = Unconstructive Repetitive Thought; PCT = Perceived Constructive Thought; OBT = Obsessive Thought; GRT = General Repetitive Thought; FUT = Future Thought; UND = Understanding; PAST = Past-Focused Repetitive Thought.

Discussion

Results from the confirmatory factor analyses and scale statistics provide evidence for a 5-factor solution depicting theorized facets of worry and rumination: General Repetitive Thought, Future Control, Understanding, Past-Repetitive Thought, and Obsessive Thought. PTQ subscales demonstrated adequate internal consistency and small gender differences were detected in accordance with previous empirical findings.

Chapter 3

STUDY 2: ASSESSING RELIABILITY AND VALIDITY OF THE PTQ

This study had two major goals: 1) to assess the temporal stability of the PTQ and 2) to explore the convergent and discriminant validity of the PTQ through examination of the external validity correlations between the PTQ and empirically-sound measures of worry, rumination, anxiety, depression, positive and negative affect, obsessive thinking, personality, narcissism, and psychopathy. It was hypothesized that the subscales of the PTQ would exhibit adequate retest reliability over a 2-week interval. Since rumination is implicated in the onset and maintenance of depression (Nolen-Hoeksema, 1991), and depressive symptoms vary over time, a 2-week time interval was less likely to capture individuals either entering or remitting from a depressive episode. Furthermore, the reliability of the PTQ was established in a university sample. Consequently, level of worry and anxiety could have been influenced by examination periods, so a shorter retest period was implemented since it was less likely to be affected by exam schedules and variable workload depending on the time of the semester. A 2-week interval also facilitated data to be collected more readily throughout the semester.

Moreover, another objective of this study was to assess whether correlations between the PTQ and its subscales and measures of related and unrelated constructs were significantly different from each other in the process of establishing convergent and discriminant validity of the PTQ. Thus, it was predicted that the PTQ would correlate highly with convergent measures and correlate significantly less with discriminant measures. Specifically, it was hypothesized that the worry-related subscale (Future Control) of the PTQ would converge with the *Penn State Worry Questionnaire*, the

Generalized Anxiety Disorder Questionnaire-IV, the *DASS Anxiety Scale*, and the *Obsessive Beliefs Questionnaire*, whereas the rumination-related subscales (Understanding, Past-Focused Repetitive Thought) would converge with the *RSQ Ruminative Response Scale* and the *DASS Depression Scale*. The common factor subscales (General Repetitive Thought and Obsessive Thought) were predicted to be significantly associated with all convergent measures. Since negative affectivity, or neuroticism, has been shown to be a vulnerability factor for the development of anxiety and depression (Clark, Watson, & Mineka, 1994; Muris, Roelofs, Rassin, Franken, & Mayer, 2005; Roelofs, Huibers, Peeters, Arntz, & van Os, 2008), it was hypothesized that the PTQ and its subscales would be positively associated with the *PANAS Negative Affect Scale* and the Neuroticism scale of the *NEO-Five Factor Inventory*, whereas they would be negatively associated with the *PANAS Positive Affect Scale* and the Extraversion and Agreeableness scales of the *NEO-Five Factor Inventory*. It was expected that the PTQ subscales would not correlate as highly with the scales of the *Self-Report Psychopathy Scale-III* and the *Pathological Narcissism Inventory*. For the PTQ to be a valid measure, a stable pattern of convergent and discriminant external correlates should emerge.

Method

Participants. Based on an a priori power analysis using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007), a sample size of at least 82 participants was required to observe a medium effect ($r = .30$) with an α -level of .05 and power of .80 when using a correlational design. Respondents were recruited from a subject pool of undergraduate students taking an Introductory Psychology course at a large Eastern university, and had the opportunity to complete the study for course credit. The sample ($N = 235$) was 68.9%

female and 31.1% with a mean age of 19.46 years. It comprised 84.3% White Americans, 3.4% Asian Americans, 2.6% African Americans, 3.0% Hispanic Americans, 1.3% Pacific Islander, 3.0% more than one ethnicity, and 2.6% other ethnicity. Approximately 86.8% (N = 204) of this sample completed the Perseverative Thinking Questionnaire (PTQ) for a second time 2 weeks after completing the initial battery of questionnaires. This sample was used to assess the temporal stability of the PTQ.

Measures.

Perseverative Thinking Questionnaire (PTQ). A 26-item self-report measure designed to evaluate distinct and common facets of worry and rumination along five dimensions: General Repetitive Thought (GRT), Future Control (FUT), Understanding (UND), Past-Focused Repetitive Thought (PAST), and Obsessive Thought (OBT) using a 6-point Likert-type scale ranging from *not at all like me* to *very much like me*. Alpha coefficients were .90 (GRT), .86 (FUT), .85 (UND), .87 (PAST), and .83 (OBT).

Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). The PSWQ is a 16-item measure that assesses the generality, excessiveness, and uncontrollability of pathological worry. Sample items on the PSWQ include, “My worries overwhelm me” and “I worry all the time.” Items are rated on a 5-point Likert-type scale representing how typical the individual feels the statement is of him/her. The PSWQ is associated with good to very good internal consistency (α s ranging from .83 to .93 across clinical and college samples; Molina & Borkovec, 1994). Adequate to good retest reliability has been demonstrated in college samples (r s ranging from .74 to .93 across periods ranging from 2 to 10 weeks; Molina & Borkovec, 1994).

Response Styles Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991). The 22-item *Ruminative Response Scale (RRS)* from the RSQ assesses an individual's tendency to ruminate when faced with depressive symptoms. Participants are asked to indicate what they "generally do when feeling down, sad, or depressed" using a 4-point Likert-type scale representing frequency. The RRS consists of items measuring how often people engage in responses that are self-focused, symptom-focused, and focused on the causes and consequences of having a depressed mood. The RRS has demonstrated a good 5-month retest reliability ($r = .80$; Nolen-Hoeksema, Parker, & Larson, 1994).

Obsessive Beliefs Questionnaire (OBQ; OCCWG, 1997, 2001, 2005). The OBQ is an 87-item self-report measure assessing six key belief domains of OCD including Control of Thoughts, Importance of Thoughts, Responsibility, Intolerance of Uncertainty, Overestimation of Threat, and Perfectionism. OBQ Items are rated on a 7-point Likert-type scale ranging from *disagree very much* to *agree very much*. The OBQ demonstrates high to very high internal consistency in both clinical and nonclinical samples (α s ranging from .80 to .96; OCCWQ, 2001), as well as good retest reliability in a clinical sample (r s ranging from .76 to .90; OCCWG, 2001). This study used the OBQ-44, a 44-item version of the OBQ composed of items reflecting three factors: 1) Responsibility and threat estimation (RT), 2) Perfectionism and intolerance for uncertainty (PC), and 3) Importance and control of thoughts (ICT). These three factors demonstrated good internal consistency (α s for RT, PC, and ICT were .91, .91, and .83, respectively).

Generalized Anxiety Disorder Questionnaire-IV (GAD-Q-IV; Newman et al., 2002). The GAD-Q-IV is a 9-item self-report measure designed to assess DSM-IV criteria for GAD. Items measure the degree, excessiveness, and uncontrollability of

worry, as well as related physical symptoms that individuals may have experienced in the past 6 months. The GAD-Q-IV has demonstrated high sensitivity and specificity in classifying individuals as having GAD that was assessed by a diagnostic interview (Newman et al., 2002), in addition to good internal consistency ($\alpha = .84$) and good 2-week retest reliability ($r = .81$) in a college sample.

Depression and Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995a).

The DASS is a 42-item self-report measure that assesses depression, anxiety, and stress over the previous week. Respondents indicate how much each statement applies to them over the past week on a 4-point Likert-type scale. The DASS demonstrates good to very good internal consistency (α s ranging from .81 to .96 across clinical and college samples; Brown, Chorpita, Korotitsch, & Barlow, 1997; Lovibond & Lovibond, 1995). Adequate two-week retest reliability was also demonstrated in a clinical sample (r s ranging from .71 to .81; Brown et al., 1997). This scale was chosen over the *Beck Depression Inventory-II* (BDI-II; Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961) since it discriminates between depressive and anxious symptomatology.

Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988).

The PANAS is a 20-item measure that assesses the distinct dimensions of positive and negative affect (PA and NA, respectively). Respondents are asked to indicate on a 5-point Likert-type scale the extent to which they feel or have felt a list of adjectives over a specified time period. The PANAS demonstrates good to excellent internal consistency (α s ranging from .88 to .90 for the PA scale; α s ranging from .84 to .87 for the NA scale; Watson, Clark, & Tellegen, 1988). Retest reliabilities increase over time (α s ranging

from .47 (moment) to .68 (general) for the PA scale; α s ranging from .39 (moment) to .71 (general) for the NA scale; Watson, Clark, & Tellegen, 1988).

NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). The NEO-FFI is a short-version of the NEO-PI-R (Costa & McCrae, 1992) consisting of 60 items assessing the Five Factor Model of adult personality; Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). Each of the five subscales consists of 12 items in the form of statements that are to be rated on a 5-point Likert-type scale from *strongly disagree* to *strongly agree*. Internal consistency reliabilities for the NEO-FFI have ranged from .68 (A) to .86 (N), and retest reliabilities have ranged from .79 (E and O) to .89 (N; Costa & McCrae, 1992).

Pathological Narcissism Inventory (PNI; Pincus, Ansell, Pimentel, Cain, Wright, & Levy, 2009). The PNI is a 52-item self-report measure that assesses seven dimensions of pathological narcissism related to narcissistic grandiosity [Exploitativeness (EXP), Grandiose Fantasy (GF), Self-Sacrificing Self-Enhancement (SSSE)] and narcissistic vulnerability [Contingent Self-Esteem (CSE), Hiding the Self (HS), Devaluing (DEV), Entitlement Rage (ER)] rated on a 6-point Likert-type scale ranging from *not at all like me* to *very much like me*. Alpha coefficients were: EXP (.78), GF (.89), SSSE (.79), CSE (.93), HS (.75), DEV (.85), ER (.89).

Self-Report Psychopathy Scale-III (SRP-III; Paulhus, Hemphill, & Hare, in press). The SRP-III is a 64-item self-report questionnaire designed to assess facets of psychopathy across four domains: Interpersonal Manipulation (IPM), Callous Affect (CA), Erratic Life Style (ELS), and Criminal Tendencies (CT). The SRP-III demonstrated good internal consistency (α s ranging from .67 to .91) in a nonclinical

sample (Williams, Paulhus, & Hare, 2007). The alpha coefficient for the total score was .88.

Procedure. Students were invited to participate in a research study examining the relationship between repetitive thought styles, emotion, and personality. Individuals who consented to participate in the study answered survey questions regarding repetitive thought styles, emotion, and personality in an online survey format. Upon completion of this battery of questionnaires, participants were invited to complete the Perseverative Thinking Questionnaire (PTQ) for a second time 2 weeks later.

Data Analysis. Pearson product moment correlations for the PTQ total score and subscales were computed to examine the retest reliability of this measure. Correlations were also computed between the administered measures to examine the convergent and discriminant validity of the PTQ and its subscales. To determine whether convergent correlations were significantly higher than divergent correlations, relationships were compared using Steiger's (1980) method for comparing correlated correlations and elements of a correlation matrix.

Results

Temporal Stability. For the 2-week retest interval, the retest reliabilities were .82 (Total PTQ), .77 (General Repetitive Thought), .71 (Future Control), .74 (Understanding), .80 (Past-Repetitive Thought), and .83 (Obsessive Thought).

Convergent and Discriminant Validity. Correlations between the PTQ and its subscales and measures of related constructs are presented in Table 6. PTQ external correlations demonstrate the hypothesized convergent and discriminant patterns. The PTQ and its subscales were positively associated with generalized anxiety disorder

Table 6

External Correlates of the PTQ

	PTQ Total	GRT	FUT	UND	PAST	OBT
Anxiety						
GAD-Q	.60 ^{***}	.59 ^{***}	.47 ^{***}	.43 ^{***}	.56 ^{***}	.60 ^{***}
DASS-A	.47 ^{***}	.45 ^{***}	.36 ^{***}	.35 ^{***}	.37 ^{***}	.52 ^{***}
Depression						
DASS-D	.49 ^{***}	.46 ^{***}	.36 ^{***}	.38 ^{***}	.41 ^{***}	.55 ^{***}
Stress						
DASS-S	.59 ^{***}	.56 ^{***}	.47 ^{***}	.45 ^{***}	.52 ^{***}	.56 ^{***}
Worry						
PSWQ	.66 ^{***}	.68 ^{***}	.51 ^{***}	.51 ^{***}	.66 ^{***}	.53 ^{***}
Rumination						
RRS-R	.47 ^{***}	.37 ^{***}	.41 ^{***}	.47 ^{***}	.41 ^{***}	.43 ^{***}
RRS-B	.57 ^{***}	.52 ^{***}	.43 ^{***}	.45 ^{***}	.54 ^{***}	.53 ^{***}
Obsessions						
OBQ	.56 ^{***}	.45 ^{***}	.52 ^{***}	.54 ^{***}	.49 ^{***}	.45 ^{***}
Negative Affect						
PANAS-N	.50 ^{***}	.48 ^{***}	.36 ^{***}	.39 ^{***}	.45 ^{***}	.50 ^{***}
Positive Affect						
PANAS-P	-.25 ^{***}	-.26 ^{***}	-.14 [*]	-.11	-.26 ^{***}	-.33 ^{***}
Personality						
NEO-PI- Neuroticism	.64 ^{***}	.60 ^{***}	.45 ^{***}	.46 ^{***}	.65 ^{***}	.62 ^{***}
NEO-PI- Extraversion	-.29 ^{***}	-.25 ^{***}	-.24 ^{***}	-.16 [*]	-.25 ^{***}	-.38 ^{***}
NEO-PI- Openness	.10	.04	.03	.16 [*]	.11	.09
NEO-PI- Agreeableness	-.22 ^{**}	-.18 ^{**}	-.23 ^{***}	-.14 [*]	-.16 [*]	-.24 ^{***}
NEO-PI- Conscientiousness	-.25 ^{***}	-.23 ^{***}	-.16 [*]	-.15 [*]	-.26 ^{***}	-.27 ^{***}
Narcissism						
PNI-Total	.50 ^{***}	.46 ^{***}	.41 ^{***}	.43 ^{***}	.47 ^{***}	.40 ^{***}
PNI-Grandiosity	.30 ^{***}	.27 ^{***}	.28 ^{***}	.32 ^{***}	.27 ^{***}	.19 ^{**}
PNI-Vulnerability	.53 ^{***}	.50 ^{***}	.42 ^{***}	.43 ^{***}	.52 ^{***}	.45 ^{***}
Psychopathy						
SRP-III	.11	.09	.16 [*]	.09	-.01	.18 ^{**}

Note. N = 235. Abbreviations: PTQ = Perseverative Thinking Questionnaire; GRT = General Repetitive Thought; FUT = Future Control; UND = Understanding; PAST = Past-Focused Repetitive Thought; OBT = Obsessive Thought.

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

(GAD), depression, stress, worry, rumination (brooding and reflection), obsessions, negative affect, neuroticism, and narcissistic vulnerability, and negatively associated with positive affect, extraversion, agreeableness, and conscientiousness. Only the Understanding subscale of the PTQ and openness were significantly correlated, albeit a weak relationship. As predicted, the PTQ did not correlate with psychopathy, although small, but significant correlations were found between the PTQ subscales of Future Control and Obsessive Thought and the indicator of psychopathic personality. Significant small ($r = .19$) to moderate ($r = .53$) relationships were detected between the PTQ and its subscales and narcissism. However, the PTQ and its subscales were differentially associated with vulnerable and grandiose narcissistic characteristics: Total PTQ ($Z = -5.07, p < .001$), General Repetitive Thought ($Z = -4.48, p < .001$), Future Control ($Z = -2.94, p < .01$), Understanding ($Z = -2.33, p < .05$), Past-Focused Repetitive Thought ($Z = -5.46, p < .001$), and Obsessive Thought ($Z = -5.46, p < .001$). Interestingly, the only disparate relationships found between the Future Control and Understanding subscales of the PTQ were in relation to the positively valenced personality traits of extraversion ($Z = 2.02, p < .05$), agreeableness ($Z = -3.24, p < .01$), and openness ($Z = 2.27, p < .05$). The General Repetitive Thought and Past-Focused Repetitive Thought subscales did not differ in their relationships to any of the convergent and divergent constructs.

Discussion

Significant associations with related constructs, such as anxiety, depression, worry, rumination, obsessions, and negative affectivity, provide support for the validity of the PTQ and its subscales, which also exhibit adequate temporal stability. Although a

5-factor model demonstrates optimal fit to the data both theoretically and statistically, examination of the construct validity of the PTQ and its five subscales revealed a general lack of differentiation between the Future Control and Understanding subscales and the General Repetitive Thought and Past-Focused Repetitive Thought subscales, possibly lending support to a 3-factor model (e.g., Unconstructive Repetitive Thought, Perceived Constructive Thought, and Obsessive Thought). This model captures varying degrees of severity of repetitive thinking, which may be differentially associated with different forms of psychopathology and disruption in functioning. Regardless of the latent structure of the PTQ, it appears to be both a reliable and valid measure of aspects of worry and rumination.

Chapter 4

STUDY 3: EXAMINING THE DIFFERENTIAL RELATIONSHIP BETWEEN ANXIETY AND DEPRESSION USING THE PTQ

The objective of this study was to evaluate the relationship between the subscales of the PTQ and symptoms of generalized anxiety disorder (GAD) and depression, as measured by the GAD-Q-IV and DASS, respectively, with the goal of examining the extent to which the PTQ factors could discriminate between anxious, depressed, and comorbid groups. Given the association between anxiety and depression and negative repetitive thinking, it was hypothesized that anxious and depressed individuals would score significantly higher on the PTQ and its subscales than nonanxious and nondepressed individuals. Although both anxious and depressed individuals were likely to endorse similar levels of general repetitive thought and obsessive thought, it was predicted that anxious participants would score significantly higher on the Future Control subscale, whereas depressed individuals would score significantly higher on the Understanding and Past-Focused Repetitive Thought subscales.

Method

Participants. Respondents were recruited from a subject pool of undergraduate students taking an Introductory Psychology course at a large Eastern university, and had the opportunity to complete the study for course credit. The sample (N = 235) was the same sample used in Study 2. It was 68.9% female and 31.1% with a mean age of 19.46 years. It comprised 84.3% White Americans, 3.4% Asian Americans, 2.6% African Americans, 3.0% Hispanic Americans, 1.3% Pacific Islander, 3.0% more than one ethnicity, and 2.6% other ethnicity. Only the relevant self-report measures are described.

Measures.

Perseverative Thinking Questionnaire (PTQ). A 26-item self-report measure designed to evaluate distinct and common facets of worry and rumination along five dimensions: General Repetitive Thought (GRT), Future Control (FUT), Understanding (UND), Past-Focused Repetitive Thought (PAST), and Obsessive Thought (OBT) using a 6-point Likert-type scale ranging from *not at all like me* to *very much like me*. Alpha coefficients were .90 (GRT), .86 (FUT), .85 (UND), .87 (PAST), and .83 (OBT).

Generalized Anxiety Disorder Questionnaire-IV (GAD-Q-IV; Newman et al., 2002). The GAD-Q-IV is a 9-item self-report measure designed to assess DSM-IV criteria for GAD. Items measure the degree, excessiveness, and uncontrollability of worry, as well as related physical symptoms that individuals may have experienced in the past 6 months. The GAD-Q-IV has demonstrated high sensitivity and specificity in classifying individuals as having GAD that was assessed by a diagnostic interview (Newman et al., 2002), in addition to good internal consistency ($\alpha = .84$) and good 2-week retest reliability ($r = .81$) in a college sample.

Depression and Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995a). The DASS is a 42-item self-report measure that assesses depression, anxiety, and stress over the previous week. Respondents indicate how much each statement applies to them over the past week on a 4-point Likert-type scale. The DASS demonstrates good to very good internal consistency (α s ranging from .81 to .96 across clinical and college samples; Brown, Chorpita, Korotitsch, & Barlow, 1997; Lovibond & Lovibond, 1995). Adequate two-week retest reliability was also demonstrated in a clinical sample (r s ranging from .71 to .81; Brown et al., 1997). This scale was chosen over the *Beck Depression*

Inventory-II (BDI-II; Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961) since it discriminates between depressive and anxious symptomatology.

Procedure. Students were invited to participate in a research study examining the relationship between repetitive thought styles, emotion, and personality. Individuals who consented to participate in the study answered survey questions regarding repetitive thought styles, emotion, and personality in an online survey format.

Data Analysis. Based on the results of the GAD-Q-IV and the DASS, participants were divided into four groups using empirically established cut-points. An analogue diagnosis of GAD was warranted if participants had a mean score of 4 or higher on the GAD-Q-IV (Newman et al., 2002). Similarly, participants were considered to be depressed if they scored a 10 or higher on the depression scale of the DASS (Lovibond & Lovibond, 1995b). Groups were Anxiety Only ($n = 8$), Depression Only ($n = 53$), Comorbid Anxiety and Depression ($n = 28$), and No Anxiety and No Depression ($n = 146$; control group). Analysis of Variance (ANOVA) was used to evaluate group mean total PTQ and subscale score differences. Given the disparate sample sizes of the groups, as well as the assumption of unequal population variances, the Games-Howell *post hoc* procedure was performed in order to assess individual group differences.

Results

Mean and standard deviation PTQ and subscale scores for anxious, depressed, comorbid, and nonanxious and nondepressed participants are presented in Table 7. Anxious, depressed, and comorbid individuals scored significantly higher on the PTQ ($F(3, 231) = 34.37, p < .001$) and the General Repetitive Thought ($F(3, 231) = 27.54, p < .001$), Future Control ($F(3, 231) = 16.84, p < .001$), Understanding ($F(3, 231) = 16.20, p$

Table 7

Mean and Standard Deviation PTQ and Subscale Scores for Nonanxious and Nondepressed, Anxious, Depressed, and Comorbid Participants

	Participant Group								<i>F</i>	<i>d</i>
	No Anxiety, No Depression (<i>n</i> = 168)		Anxiety Only (<i>n</i> = 14)		Depression Only (<i>n</i> = 31)		Comorbid Anxiety & Depression (<i>n</i> = 22)			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
PTQ Scale										
1. GRT	3.08	1.15	4.76	0.74	3.92	0.97	4.85	0.83	27.54***	0.76
2. FUT	3.20	1.13	4.36	0.86	3.86	1.05	4.66	0.85	16.84***	0.60
3. UND	3.38	1.09	4.54	0.77	4.04	0.98	4.67	0.63	16.20***	0.58
4. PAST	3.46	1.02	4.77	0.54	4.02	0.92	5.06	0.94	24.12***	0.71
5. OBT	2.15	0.96	3.63	0.98	3.03	1.00	4.31	1.04	41.72***	0.94
PTQ Total	3.07	0.90	4.43	0.57	3.78	0.80	4.73	0.75	34.37***	0.85

Note. *N* = 235. Abbreviations: PTQ = Perseverative Thinking Questionnaire; GRT = General Repetitive Thought; FUT = Future Control; UND = Understanding; PAST = Past-Focused Repetitive Thought; OBT = Obsessive Thought.

*** *p* < .001.

< .001), Past-Repetitive Thought ($F(3, 231) = 24.12, p < .001$), and Obsessive Thought ($F(3, 231) = 41.72, p < .001$) subscales than nonanxious and nondepressed individuals. Additionally, the Games-Howell *post hoc* group comparison revealed that comorbid anxious and depressed individuals scored significantly higher than depressed only (all p 's < .05), but not anxious only individuals on the PTQ and each of its subscales. Similarly, individuals reporting high anxiety but not depression scored significantly higher than depressed only individuals on the PTQ and the General Repetitive Thought and Past-Focused Repetitive Thought subscales (all p 's < .05). No significant differences were found on the Future Control, Understanding, and Obsessive Thought subscales.

Discussion

As predicted, anxious and depressed individuals tended to engage in significantly more perseverative thinking than nonanxious and nondepressed individuals. It appears that the most discriminating PTQ subscale was Obsessive Thought, which fits given the severe nature of this type of repetitive thought. Whereas most individuals are prone to some degree of repetitive thought, such as worry or rumination, the experience of obsessive intrusions is generally less common. Conversely, the least discriminating subscales, although the difference between groups was still significant, appeared to be Future Control and Understanding. Unlike the other subscales, these two subscales relate to the positive beliefs individuals may hold about their repetitive thinking, for instance it helps them to prepare for the worst (e.g., Future Control) or better understand some of their difficulties (e.g., Understanding). In fact, adhering to the belief that perseverative thought may actually be constructive or functional can maintain certain types of repetitive thinking (e.g., the belief that worry actually prevents catastrophes from occurring if one

were to repeatedly think about and anticipate the potential negative consequences of an aversive event).

Nevertheless, results did not support the hypothesis that depressed individuals would score significantly higher on the Understanding and Past-Repetitive Thought subscales, which are theoretically related to rumination and depression. Instead, significant differences with regard to the PTQ and its subscales emerged when comparing comorbid anxious and depressed individuals to those who endorsed significant depressive feelings only. Nevertheless, similar differences were not found between the comorbid and anxiety only groups, suggesting that repetitive thought may be more specific or salient (e.g., more distressing) to anxious individuals than depressed individuals. This finding has implications for the identification of differences between anxious and depressive thoughts. To illustrate, in a comparison of worrisome streams of consciousness in anxious and depressed individuals (Molina, Borkovec, Peasley, & Person, 1998), anxious individuals demonstrated more rigidity and catastrophizing in their interpretation of events. Although both anxious and depressive thoughts can be captured by their emotional intensity and controllability (or lack thereof), anxious thoughts have been described as being more emotionally intense than depressive thoughts (Clark & DeSilva, 1985), thereby speaking to the severity of anxiety-related thoughts in comparison to depression-related thoughts.

Moreover, the suggestion that repetitive thinking is more prominent within the context of anxiety than depression relates to the inclusion of worry in the diagnostic criteria for generalized anxiety disorder. In fact, this form of repetitive thought is the core feature of the disorder. Thus, if an individual does not endorse extensive and

uncontrollable worry, he/she does not qualify for a GAD diagnosis. Conversely, depressed individuals may engage in ruminative, or even worrisome, thinking, but it alone or in combination with other symptoms does not warrant a diagnosis of major depressive disorder. Although repetitive negative thinking has been referred to as a transdiagnostic process, such that elevated levels of repetitive thinking are present across a range of Axis I disorders and are likely involved in the maintenance of disorder-specific symptomatology and emotional dysfunction (Ehring & Watkins, 2008), findings from this study indicate that anxious individuals may be more prone to different types and more severe forms (e.g., obsessive thoughts) of repetitive thinking than depressed individuals.

Chapter 5

GENERAL DISCUSSION

The overall objective of this series of studies was to construct a reliable and valid measure of perseverative thinking with the goals of refining the constructs of worry and rumination and determining whether these processes differ within domains that previous studies have found to discriminate them. The PTQ includes scales assessing the overlapping and theoretically distinct aspects of worry and rumination, including general repetitive thought, future control, understanding, past-focused repetitive thought, and obsessive thought. The three studies documented here provide evidence for the validity and temporal stability of the PTQ.

The PTQ is a 26-item self-report measure that reliably measures five dimensions of unconstructive and perceived constructive repetitive thinking related to worry and rumination. Elevated scores on the PTQ and its subscales are associated with anxiety, depression, stress, worry, rumination, obsessions, negative affectivity, and narcissistic vulnerability, and inversely related to positive affect and personality dimensions of extraversion, agreeableness, and conscientiousness. The PTQ was unrelated to psychopathy. Although the PTQ is not intended to function as a diagnostic instrument, it assesses different facets of repetitive thought, irrespective of target (e.g., perseverating on a distressing relationship or getting fired from one's job), and can be used in conjunction with other measures of worry, rumination, and related constructs to illuminate individuals' tendency toward specific kinds of unconstructive, recurrent thought. Finally, anxious and depressed individuals are more prone to perseverative thought than nonanxious and nondepressed individuals. Specifically, people with comorbid anxiety

and depression scored significant higher on the PTQ and its subscales than depressed individuals, but not anxious individuals, suggesting that people who experience a significant degree of anxiety may be more likely to engage in repetitive thought than people who are depressed. Whereas past-focused repetitive thought and emotion-oriented thinking, such as wanting to understand and determine reasons for one's difficulties, have been associated with rumination and depression, and repetitive thought with regard to preparing for negative future events is related to worry and anxiety, it appears that anxious and depressed individuals engage in all facets of worry and rumination assessed by the PTQ. Yet, anxious individuals seem more prone to these repetitive thought processes.

Limitations and Future Directions

A number of limitations are noted in these three studies. Firstly, the PTQ data are cross-sectional and self-reported. Although preliminary evidence supports the PTQ as a reliable and valid measure within a nonclinical sample, it is an instrument that dimensionally assesses worry- and rumination-related repetitive thought processes, rather than evaluates disorder-specific manifestations of perseverative thought. When enhancing the clinical picture of the nature and maintenance of maladaptive forms of repetitive thought, a more thorough assessment of an individual's tendency toward perseverative thought and its role in disrupting various areas of functioning is warranted. Second, the differential relationship between anxiety and depression using the PTQ was based on groups determined through self-reported anxious and depressive symptoms, rather than clinical interview. Therefore, an important next step in establishing the construct validity of the PTQ would be to administer it to a clinical population.

Additionally, groups varied greatly in size, ranging from 8 participants (Anxiety Only group) to 146 participants (control group). Thus, results from Study 3 should be interpreted with caution as detection of differences may have been affected by sample size. Finally, the three samples used for initial development and validation of the PTQ comprised primarily Caucasian, female undergraduates. Diversity with regard to age, race, and ethnicity was limited, so the PTQ should be administered to a large, more diverse sample to determine if results are generalizable or a function of the specific samples used.

Moreover, there is debate regarding the optimal latent structure of the PTQ. Whereas theoretical and statistical evidence exists for a 5-factor model depicting General Repetitive Thought, Future Control, Understanding, Past-Focused Repetitive Thought, and Obsessive Thought, examination of the relationship between the PTQ and its subscales and external correlates provided evidence for a 3-factor model representing Unconstructive Repetitive Thought, Perceived Constructive Thought, and Obsessive Thought. Therefore, it will be important to examine the associations between the current five subscales and related constructs in another large, independent sample.

Conclusions

Overall, the PTQ appears to be a sound measure of shared and unique facets of worry and rumination. However, it does not necessarily capture day-to-day fluctuations in these perseverative cognitive processes, nor other related repetitive thought styles. The distinction of different types of repetitive thinking within disorders has important clinical implications. Accordingly, it would be beneficial to examine intraindividual variability of repetitive and intrusive thought styles, as it would likely aid our understanding of the

natural course and maintenance of negative repetitive thought, thereby informing more fine-grained methods of assessing perseverative thought processes trans- and intradiagnostically.

REFERENCES

- APA. (2000). *Diagnostic and Statistical Manual of Mental Disorders 4th Edition Text Revision*. Arlington, VA: American Psychiatric Association.
- Beck, A. T., Ward, C. H., Mendelsohn, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.
- Borkovec, T. D., & Hu, S. (1990). The effect of worry on cardiovascular response to phobic imagery. *Behaviour Research and Therapy, 28*, 69-73.
- Borkovec, T. D., & Inz, J. (1990). The nature of worry in generalized anxiety disorder: a predominance of thought activity. *Behaviour Research and Therapy, 28*, 153-158.
- Borkovec, T. D., Lyonfields, J. D., Wisner, S. L., & Deihl, L. (1993). The role of worrisome thinking in the suppression of cardiovascular response to phobic imagery. *Behaviour Research and Therapy, 31*, 321-324.
- Borkovec, T. D., Ray, W. J., & Stöber, J. (1998). Worry: a cognitive phenomenon intimately linked to affective, physiological, and interpersonal behavioral processes. *Cognitive Therapy and Research, 22*, 561-576.
- Borkovec, T. D., Robinson, E., Pruzinsky, T., & DePree, J. A. (1983). Preliminary exploration of worry: some characteristics and processes. *Behaviour Research and Therapy, 21*, 9-16.
- Borkovec, T. D., & Roemer, L. (1995). Perceived functions of worry among generalized anxiety disorder subjects: distraction from more emotionally distressing topics? *Journal of Behavior Therapy and Experimental Psychiatry, 26*, 25-30.
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York: The Guilford Press.

- Brown, T. A., Chorpita, B. F., Korotitsch, W., & Barlow, D. H. (1997). Psychometric properties of the Depression Anxiety Stress Scales (DASS) in clinical samples. *Behaviour Research and Therapy, 35*, 79-89.
- Calmes, C. A., & Roberts, J. E. (2007). Repetitive thought and emotional distress: rumination and worry as prospective predictors of depression and anxious symptomatology. *Cognitive Therapy and Research, 30*, 343-356.
- Cartwright-Hatton, S., & Wells, A. (1997). Beliefs about worry and intrusions: the Meta-Cognitions Questionnaire and its correlates. *Journal of Anxiety Disorders, 11*, 279-296.
- Clark, D. A. & Claybourn, M. (1997). Process characteristic of worry and obsessive intrusive thoughts. *Behaviour Research and Therapy, 35*, 1139-1141.
- Clark, D. A., & de Silva, P. (1985). The nature of depressive and anxious intrusive thoughts: distinct or uniform phenomena? *Behaviour Research and Therapy, 23*, 383-393.
- Clark, L. A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology, 103*, 103-116.
- Conway, M., Csank, P. A., Holm, S. L., & Blake, C. K. (2000). On assessing individual differences in rumination on sadness. *Journal of Personality Assessment, 75*, 404-425.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.

- Davey, G. C., Hampton, J., Farrell, J., & Davidson, S. (1992). Some characteristics of worrying: evidence for worrying and anxiety as separate constructs. *Personality and Individual Differences, 13*, 133-147.
- Davey, G. C., Tallis, F., & Capuzzo, N. (1996). Beliefs about the consequences of worrying. *Cognitive Therapy and Research, 20*, 499-520.
- Dugas, M. J., Freeston, M. H., & Ladouceur, R. (1997). Intolerance of uncertainty and problem orientation in worry. *Cognitive Therapy and Research, 21*, 593-606.
- Ehring, T. & Watkins, E. R. (2008). Repetitive negative thinking as a transdiagnostic process. *International Journal of Cognitive Therapy, 1*, 192-205.
- Eysenck, M. W. (1992). *Anxiety: the cognitive perspective*. Hillsdale, NJ: Erlbaum.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191.
- Freeston, M. H., Rheaume, J., Letarte, H., Dugas, M. J., & Ladouceur, R. (1994). Why do people worry? *Personality and Individual Differences, 17*, 791-802.
- Fresco, D. M., Frankel, A. N., Mennin, D. S., Turk, C. L., & Heimberg, R. G. (2002). Distinct and overlapping features of rumination and worry: the relationship of cognitive production to negative affective states. *Cognitive Therapy and Research, 26*, 179-188.
- Fritz, H. L. (1999). Rumination and adjustment to a first coronary event. *Psychosomatic Medicine, 61*, 105.

- Hong, R. Y. (2007). Worry and rumination: differential associations with anxious and depressive symptoms and coping behavior. *Behavior Research and Therapy, 45*, 277-290.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Just, N., & Alloy, L. B. (1997). The response styles theory of depression: tests and an extension of the theory. *Journal of Abnormal Psychology, 106*, 221-229.
- Langlois, F., Freeston, M. H., & Ladouceur, R. (2000a). Difference and similarities between obsessive intrusive thoughts and worry in a non-clinical population: Study 1. *Behaviour Research and Therapy, 38*, 157-173.
- Langlois, F., Freeston, M. H., & Ladouceur, R. (2000b). Difference and similarities between obsessive intrusive thoughts and worry in a non-clinical population: Study 2. *Behaviour Research and Therapy, 38*, 175-189.
- Llera, S. J., & Newman, M. G. (in press). Effects of worry on physiological and subjective reactivity to emotional stimuli in generalized anxiety disorder and nonanxious control participants. *Emotion*.
- Lovibond, P. F., & Lovibond, S. H. (1995a). The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*, 335-343.
- Lovibond, P. F., & Lovibond, S. H. (1995b). *Manual for the Depression Anxiety Stress Scales*. Psychology Foundation of Australia, Inc. Sydney: NSW.

- MacCallum, R. C., Roznowski, M., & Necowitz, L. B. (1992). Model modifications in covariance structure analysis: the problem of capitalization on chance. *Psychological Bulletin, 111*, 490-504.
- Martin, L. L., & Tesser, A. (1996). Some ruminative thoughts. In R. S. Wyer (Ed.), *Ruminative thoughts: advances in social cognition* (Vol. IX). Mahwah, NJ: Lawrence Erlbaum.
- McIntosh, W. D., & Martin, L. L. (1992). The cybernetics of happiness: the relation of goal attainment, rumination, and affect. In M. S. Clark (Ed.), *Emotion and Social Behavior: Review of Personality and Social Psychology* (Vol. 14, pp. 222-246). Thousand Oaks, CA: Sage Publications, Inc.
- Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy, 28*, 487-495.
- Molina, S., & Borkovec, T. D. (1994). The Penn State Worry Questionnaire: psychometric properties and associated characteristics. In G. C. L. Davey & F. Tallis (Eds.), *Worrying: perspectives on theory, assessment, and treatment* (pp. 265-283). New York: Wiley.
- Molina, S., Borkovec, T. D., Peasley, C., & Person, D. (1998). Content analysis of worrisome streams of consciousness in anxious and dysphoric participants. *Cognitive Therapy and Research, 22*, 109-123.
- Morey, L. C. (2003). Measuring personality and psychopathology. In J. A. Schinka & W. F. Velicer (Eds.), *Handbook of psychology: research methods in psychology* (Vol. 2, pp. 377-405). New York: Wiley.

- Muris, P., Roelofs, J., Meesters, C., & Boomsma, P. (2004). Rumination and worry in nonclinical adolescents. *Cognitive Therapy and Research, 28*, 539-554.
- Muris, P., Roelofs, J., Rassin, E., Franken, I., & Mayer, B. (2005). Mediating effects of rumination and worry on the links between neuroticism, anxiety and depression. *Personality and Individual Differences, 39*, 1105-1111.
- Newman, M. G., Zuellig, A. R., Kachin, K. E., Constantino, M. J., Przeworski, A., Erickson, T., et al. (2002). Preliminary reliability and validity of the Generalized Anxiety Disorder Questionnaire-IV: a revised self-report diagnostic measure of generalized anxiety disorder. *Behavior Therapy, 33*, 215-233.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569-582.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology, 109*, 504-511.
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: the 1989 Loma Prieta Earthquake. *Journal of Personality and Social Psychology, 61*, 115-121.
- Nolen-Hoeksema, S., Morrow, J., & Fredrickson, B. L. (1993). Response styles and the duration of episodes of depressed mood. *Journal of Abnormal Psychology, 102*, 20-28.
- Nolen-Hoeksema, S., Parker, L. E., & Larson, J. (1994). Ruminative coping with depressed mood following loss. *Journal of Personality and Social Psychology, 67*, 92-104.

- Obsessive Compulsive Cognitions Working Group. (1997). Cognitive assessment of obsessive-compulsive disorder. *Behaviour Research and Therapy*, *35*, 667-681.
- Obsessive Compulsive Cognitions Working Group. (2001). Development and initial validation of the obsessive beliefs questionnaire and the interpretation of intrusions inventory. *Behaviour Research and Therapy*, *39*, 987-1006.
- Obsessive Compulsive Cognitions Working Group. (2005). Psychometric validation of the obsessive belief questionnaire and interpretation of intrusions inventory – Part 2: Factor analyses and testing a brief version. *Behaviour Research and Therapy*, *43*, 1527-1542.
- Papageorgiou, C., & Wells, A. (1999a). Process and metacognitive dimensions of depressive and anxious thoughts and relationships with emotional intensity. *Clinical Psychology and Psychotherapy*, *6*, 156-162.
- Papageorgiou, C., & Wells, A. (1999b, November). *Dimensions of depressive rumination and anxious worry: a comparative study*. Paper presented at the 33rd Annual Convention of the Association for Advancement of Behavior Therapy.
- Papageorgiou, C., & Wells, A. (2001a). Metacognitive beliefs about rumination in recurrent major depression. *Cognitive and Behavioral Practice*, *8*, 160-164.
- Papageorgiou, C., & Wells, A. (2001b). Positive beliefs about depressive rumination: development and preliminary validation of a self-report scale. *Behavior Therapy*, *32*, 13-26.
- Papageorgiou, C., & Wells, A. (2004). Nature, functions, and beliefs about depressive rumination. In C. Papageorgiou & A. Wells (Eds.), *Depressive rumination: nature, theory and treatment* (pp. 3-20). Chichester, UK: John Wiley & Sons, Ltd.

- Paulhus, D. L., Hemphill, J. D., & Hare, R. D. (in press). Manual for the *Self-Report Psychopathy scale*. Toronto: Multi-Health Systems.
- Pincus, A. L., Ansell, E. B., Pimentel, C. A., Cain, N. M., Wright, A. G. C., & Levy, K. N. (2009). Initial construction and validation of the Pathological Narcissism Inventory. *Psychological Assessment, 21*, 365-379.
- Roelofs, J., Huibers, M., Peeters, F., Arntz, A., & van Os, J. (2008). Rumination and worrying as possible mediators in the relation between neuroticism and symptoms of depression and anxiety in clinically depressed. *Behaviour Research and Therapy, 46*, 1283-1289.
- Satorra, A. (2000). Scaled and adjusted restricted tests in multi-sample analysis of moment structures. In R. D. H. Heijmans, D.S.G. Pollock, & A. Satorra (Eds.), *Innovations in multivariate statistical analysis. A Festschrift for Heinz Neudecker* (pp.233-247). London: Kluwer Academic Publishers.
- Scott, V. B., & McIntosh, W. D. (1999). The development of a trait measure of ruminative thought. *Personality and Individual Differences, 26*, 1045-1056.
- Segerstrom, S. C., Stanton, A. L., Alden, L. E., & Shortridge, B. E. (2003). A multidimensional structure for repetitive thought: what's on your mind, and how, and how much? *Journal of Personality and Social Psychology, 85*, 909-921.
- Segerstrom, S. C., Tsao, J. C. I., Alden, L. E., & Craske, M. G. (2000). Worry and rumination: repetitive thought as a concomitant and predictor of negative mood. *Cognitive Therapy and Research, 24*, 671-688.

- Siegle, G. J., Moore, P. M., & Thase, M. E. (2004). Rumination: one construct, many features in healthy individuals, depressed individuals, and individuals with lupus. *Cognitive Therapy and Research, 28*, 645-668.
- Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin, 87*, 245-251.
- Sörbom, D. (1989). Model modification. *Psychometrika, 54*, 371-384.
- Sukhodolsky, D. G., Golub, A., & Cromwell, E. N. (2001). Development and validation of the Anger Rumination Scale. *Personality and Individual Differences, 31*, 689-700.
- Szabo, M., & Lovibond, P. F. (2002). The cognitive content of naturally occurring worry episodes. *Cognitive Therapy and Research, 26*, 167-177.
- Tallis, F., Eysenck, M., & Mathews, A. (1992). A questionnaire for the measurement of nonpathological worry. *Personality and Individual Differences, 13*, 161-168.
- Torresan, R. C., de Abreu Ramos-Cerqueira, A. T., de Mathis, M. A., Diniz, J. B., Ferrão, Y. A., Miguel, E. C., et al. (2009). Sex differences in the phenotypic expression of obsessive-compulsive disorder: An exploratory study from Brazil. *Comprehensive Psychiatry, 50*, 63-69.
- Trapnell, P. D., & Campbell, J. D. (1999). Private self-consciousness and the five-factor model of personality: distinguishing rumination from reflection. *Journal of Personality and Social Psychology, 76*, 284-304.
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: a psychometric analysis. *Cognitive Therapy and Research, 27*, 247-259.

- Wahl, K. (2007). *Differences and similarities between obsessive thoughts and ruminative thoughts in obsessive compulsive and depressed patients*. Paper presented at the V World Congress of Behavioral and Cognitive Therapies, Barcelona, 11-14 July 2007.
- Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin, 134*, 163-206.
- Watkins, E., & Moulds, M. (2005). Positive beliefs about rumination in depression - a replication and extension. *Personality and Individual Differences, 39*, 73-82.
- Watkins, E., Moulds, M., & Mackintosh, B. (2005). Comparisons between rumination and worry in a non-clinical population. *Behaviour Research and Therapy, 43*, 1577-1585.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.
- Wells, A., & Davies, M. I. (1994). The Thought Control Questionnaire: a measure of individual differences in the control of unwanted thoughts. *Behavior Research and Therapy, 32*, 871-878.
- Wells, A. & Morrison, A. P. (1994). Qualitative dimensions of normal worry and normal obsessions: A comparative study. *Behaviour Research and Therapy, 32*, 867-870.
- Williams, K. M., Paulhus, D. L., & Hare, R. D. (2007). Capturing the four-factor structure of psychopathy in college students via self-report. *Journal of Personality Assessment, 88*, 205-219.

- Wisocki, P. A. (1988). Worry as a phenomenon relevant to the elderly. *Behavior Therapy, 19*, 369-379.
- Yuan, K. & Bentler, P. M. (2000). Robust mean and covariance structure analysis through iteratively reweighted least squares. *Psychometrika, 65*, 43-58.
- Zlomke, K. R. & Hahn, K. S. (2010). Cognitive emotion regulation strategies: Gender differences and associations to worry. *Personality and Individual Differences, 48*, 408-413.

APPENDIX A

Perseverative Thinking Questionnaire (PTQ)

ID:

INITIALS:

DATE:

Please consider how well each statement below describes you. Indicate how typical or characteristic each item is of you on the following 6-point scale.

1	2	3	4	5	6
Not at all like me	Moderately unlike me	A little unlike me	A little like me	Moderately like me	Very much like me

1. Things I've said or done always seem to be playing in my mind
2. I feel overwhelmed by certain thoughts
3. I repeatedly think about all possible outcomes to prepare for the worst
4. To know why I do the things I do, I repeatedly think about them
5. It's difficult for me to let go of things that have happened to me
6. I have difficulty preventing horrific images from popping into my head
7. No matter how much I try to control certain thoughts they still persist
8. I repeatedly think about things to figure out how to avoid or prevent bad things from happening
9. I repeatedly think about things to get the answers I'm looking for
10. I can't help but rehash past events in my mind
11. I'm losing control when I have bad thoughts
12. I find it difficult to dismiss a thought once it's entered my head
13. I can't move forward unless I've considered all possible outcomes of a situation
14. I repeatedly think about the past to find out whether my current situation has a deeper meaning
15. After a problem has long been resolved, my thoughts drift back to what happened
16. My thoughts make me uncomfortable
17. I am consumed by certain thoughts
18. I repeatedly think about things so I can be prepared in case something bad happens

19. I gain insight into my difficulties by replaying them in my mind
20. I repeatedly second-guess the things I've done
21. I'd be mortified if others knew what I was thinking at times
22. It's hard for me to put certain thoughts out of my mind
23. I repeatedly think about things so I can better handle any unforeseen event that occurs
24. My problems make sense when I think about them repeatedly
25. I often find myself repeatedly thinking about recent events, wishing they had gone better
26. My thoughts can be scary at times

APPENDIX B

Scoring Key for the PTQ

General Repetitive Thought	Future Control	Understanding	Past-Focused Repetitive Thought	Obsessive Thought
2 _____	3 _____	4 _____	1 _____	6 _____
7 _____	8 _____	9 _____	5 _____	11 _____
12 _____	13 _____	14 _____	10 _____	16 _____
17 _____	18 _____	19 _____	15 _____	21 _____
22 _____	23 _____	24 _____	20 _____	26 _____
			25 _____	
Sum A _____	Sum B _____	Sum C _____	Sum D _____	Sum E _____
÷ 5 = _____ (Score)	÷ 5 = _____ (Score)	÷ 5 = _____ (Score)	÷ 6 = _____ (Score)	÷ 5 = _____ (Score)