



Mechanisms driving pre- and post-stressor repetitive negative thinking: Metacognitions, cognitive avoidance, and thought control

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ABSTRACT

Background and objectives: Repetitive negative thinking (RNT) is common to multiple emotional disorders and occurs before, during, and following a stressor. One replicated difference between common forms of RNT such as worry and rumination is temporal orientation towards a stressor, with worry being more future-oriented and rumination more past-oriented. Different mechanisms may drive RNT at these different time points. The aim of Study 1 was to examine whether previously demonstrated relationships between post-stressor RNT and mechanisms theorized to drive engagement in RNT, including meta-cognitive beliefs, cognitive avoidance strategies, and thought control strategies, would be replicated with anticipatory (pre-stressor) RNT. The aim of Study 2 was to replicate these associations in a new sample that completed measures of both pre- and post-stressor RNT.

Method: Participants in Study 1 ($N = 175$) completed the RNT-L in anticipation of a stressor, along with measures of metacognitive beliefs, cognitive avoidance strategies, and thought control strategies. Participants in Study 2 ($N = 91$) completed the measures both before and after a stressor. **Results:** Pre- and post-stressor RNT were significantly correlated with all three mechanism measures. Metacognitive beliefs that RNT is uncontrollable and dangerous, and the thought control strategy of punishment, were most consistently and uniquely associated with RNT at both time-points.

Limitations: Replication with clinical samples and with reference to a broader array of stressors is required. The correlational design precluded causal conclusions.

Conclusions: Common and possibly some distinct mechanisms drive RNT before and after a stressor.

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1. Introduction

Repetitive negative thinking (RNT) involves perseverative cognitive activity that revolves around negative themes and is subjectively experienced as difficult to control (Ehring & Watkins, 2008). RNT has been associated with multiple emotional disorders and is therefore considered to be a transdiagnostic construct (Harvey, Watkins, Mansell, & Shafran, 2004). Worry and rumination are two forms of RNT that have typically been examined within the anxiety and depression literatures, respectively. Worry is conceptualized as an attempt to prevent future catastrophes and is associated with increases in negative affect, interference with cognitive function, and inhibition of physiological processes associated with

the extinction of fear responses (Borkovec, Alcaine, & Behar, 2004; Borkovec, Ray, & Stöber, 1998). Depressive rumination refers to repetitive thinking in response to sad mood in which the individual contemplates the causes, meanings, and implications of their mood, as well as problems and events from the past (Nolen-Hoeksema, 1991, 2004). Depressive rumination has been associated with the onset, maintenance, and relapse of depressive episodes (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008), and experimental studies have reliably demonstrated a causal role of rumination on mood states (Nolen-Hoeksema & Morrow, 1993).

Despite evolving within different literatures, evidence is building that worry and rumination may be more similar than different. Watkins, Moulds, and Mackintosh (2005) compared thoughts associated with worry and rumination and found that they differed on only seven out of 53 dimensions. Ehring and Watkins (2008) concluded from a comprehensive review of the literature that there are more similarities than differences across the processes of worry and rumination, including the fact that they are repetitive,

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difficult to control, negative in content, predominantly verbal, and relatively abstract. The only replicated differences were reported to be thought content and temporal orientation, with worry more likely to be about the future and depressive rumination more likely to be about the past. Another interesting difference found in Watkins et al.'s (2005) study was that worry was more likely to be associated with a feeling of insecurity, whereas rumination was more likely to be deemed to have a basis in reality. Together, these findings suggest that worry is more likely to be about future events, where an outcome is unpredictable but expected to be negative, whereas depressive rumination is more likely to be about past events and as such the outcome is known (and thus more likely to be based in reality) and is perceived to be negative. Extending this line of thought, Nolen-Hoeksema et al. (2008) speculated that worry may occur when people are uncertain, because the event is in the future, but they see the event as potentially controllable. Worrying is thus a strategy used to avert potentially negative outcomes. In contrast, rumination occurs when people are more certain about an event, given that it is more likely to have already occurred, and, as a consequence, the event is not controllable. These differences suggest that different mechanisms may contribute to RNT before or after a particular stressor.

Worry and rumination have traditionally been measured using different instruments, such as the Ruminative Responses Scale (RRS, Nolen-Hoeksema & Morrow, 1991) for depressive rumination and the Penn State Worry Questionnaire (PSWQ, Meyer, Miller, Metzger, & Borkovec, 1990) for worry. Although items from these scales tend to load on separate factors (e.g., Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Goring & Papageorgiou, 2008), when diagnosis-specific confounds are removed (e.g., items measuring depression symptoms in the RRS, different instructions, the use of the term 'worry' in all PSWQ items) they tend to load on the same factor (McEvoy, Mahoney, & Moulds, 2010), which supports the idea that the underlying constructs may be more similar than different. Importantly, the RRS and PSWQ have also both been found to be associated with symptoms of depression and anxiety (e.g., Segerstrom, Tsao, Alden, & Craske, 2000), suggesting that they are not unique to a particular emotional state.

Given the evidence that RNT is transdiagnostic, researchers have started developing instruments that index RNT without diagnosis-specific content. For instance, Ehling et al. (2011) recently developed the Perseverative Thinking Questionnaire (PTQ) as a content-independent measure of three aspects of RNT; core characteristics (repetitiveness, intrusiveness, and difficulties with disengagement), perceived unproductiveness, and the capturing of mental capacity. The PTQ was significantly associated with other measures of RNT and with symptoms of anxiety and depression. McEvoy et al. (2010) developed the Repetitive Thinking Questionnaire (RTQ) by removing diagnosis-specific content and instructions from three existing measures of RNT, including the PSWQ, the RRS, and the Post-Event Processing Questionnaire (McEvoy & Kingsep, 2006; Rachman, Grüter-Andrews, & Shafran, 2000), which is a measure of RNT typically used within the social phobia literature. McEvoy et al. found that all items from these three measures loaded on a single RNT factor, with the exception of the four negatively worded PSWQ items, which reflected an absence of RNT. Interestingly, scores from the RNT subscale were significantly and uniquely associated with various emotions, including anxiety, depression, shame, anger, and general distress. Moreover, the RNT subscale was also significantly associated with mechanisms theorized to drive engagement in RNT, including positive and negative metacognitive beliefs, cognitive avoidance, and thought control strategies.

Several models of RNT, including the Self-Regulatory Executive Function (S-REF) model (Wells & Matthews, 1996) and the avoidance theory of worry (Borkovec et al., 2004), suggest that positive

and negative metacognitive beliefs and cognitive avoidance increase the incidence of RNT. For example, positive metabeliefs that "worrying about my problems helps me to cope" and "worrying will help me to solve my problems" are likely to motivate engagement in RNT. Once worrying is initiated, negative metabeliefs, for example that worrying itself is harmful or dangerous, are likely to escalate the perceived threat from worry and thereby increase RNT further. Consistent with these models, McEvoy et al. (2010) found that the RNT subscale of the RTQ was significantly associated with both positive and negative metacognitive beliefs, even when controlling for depression and anxiety symptoms. However, given that the original RTQ measured RNT following a stressor, the question remains as to whether the same beliefs are associated with RNT in anticipation of a stressor.

Borkovec et al.'s (2004) avoidance theory suggests that worry functions as a misguided attempt to prevent feared outcomes or to prepare for future danger (Borkovec & Roemer, 1995). Consistent with this theory, worry has been associated with measures of experiential (Roemer, Salters, Raffa, & Orsillo, 2005) and cognitive (Sexton & Dugas, 2008) avoidance, and has been found to distract individuals from more distressing cognitive material such as negative imagery (Borkovec & Inz, 1990), and suppress distressing somatic sensations (Borkovec & Hu, 1990). Depressive rumination may also serve avoidant functions, including avoidance of engaging in an aversive external environment, and as a means of justifying withdrawal, inactivity, and the relinquishing of responsibility (Martell, Addis, & Jacobson, 2001; Moulds, Kandris, Starr, & Wong, 2007; Nolen-Hoeksema et al., 2008). The Cognitive Avoidance Questionnaire (CAQ, Gosselin et al., 2002; Sexton & Dugas, 2008) measures five cognitive avoidance strategies, including thought *Substitution* (replacing distressing thoughts with less distressing ones), *Transformation* of images into less distressing verbal thoughts, *Distraction* (e.g., I often do things to distract myself from my thoughts), *Avoidance* of stimuli that trigger unpleasant thoughts, and thought *Suppression* (deliberate attempts to remove thoughts from consciousness). Consistent with the proposal that RNT serves an avoidant function, McEvoy et al. (2010) found that the RNT subscale of the RTQ was significantly and positively correlated with all five subscales, and that the Substitution, Transformation, and Avoidance scales explained unique variance in RNT, even when controlling for symptoms of depression and anxiety. Thus, the more individuals used these avoidance strategies the more RNT they reported engaging in.

A range of additional thought control strategies have also been shown to be counter-productive and, in fact, increase the frequency of distressing thoughts (e.g., Clark, Winton, & Thynn, 1993; Wegner, Schneider, Knutson, & McMahan, 1991). In an attempt to capture potentially maladaptive thought control strategies, Wells and Davies (1994) developed the Thought Control Questionnaire (TCQ), which consists of five scales measuring cognitive *Distraction* (e.g., 'I keep myself busy'), *Social Control/Reassurance* (e.g., 'I talk to a friend about the thought'), *Worry* (e.g., 'I focus on different negative thoughts'), *Punishment* (e.g., 'I punish myself for thinking the thought'), and *Reappraisal* (e.g., 'I try to reinterpret the thought'). These researchers found that the Worry and Punishment subscales were associated with the PSWQ, suggesting that attempts to think about 'other' more minor worries and punishing oneself for having thoughts were both associated with more RNT. Similarly, Fehm and Hoyer (2004) found that the Punishment and/or Worry subscales were significantly associated with a broad array of measure of psychopathology, including anxiety, depression, worry, social anxiety, agoraphobia, and obsessive compulsive disorder. Interestingly the Distraction subscale was negatively associated with symptoms of depression, worry, and social anxiety, suggesting that distracting oneself from worries was associated with fewer

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