



# Trait attentional control influences the relationship between repetitive negative thinking and psychopathology symptoms



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## ABSTRACT

Repetitive negative thinking (RNT) has been implicated in several disorders (e.g., Clark (2005)). However, little research has examined how RNT influences other risk factors of psychopathology, such as attentional control. This study used prospective methodology to determine if relationships among various RNT styles and symptoms of psychological disorders are indirectly influenced by facets of attentional control. The sample included 376 participants who completed measures of RNT (worry, rumination, anticipatory processing, obsessions, intrusive thoughts and panic cognitions), psychopathology (generalized anxiety disorder, depression, social anxiety, obsessive-compulsive disorder, posttraumatic stress disorder, and panic disorder), and attentional control at two time points. Several relationships between RNT forms and symptom levels were indirectly predicted by the focusing subscale of attentional control; however, the patterns of these relationships differed based on the disorder. The shifting subscale did not indirectly predict any relationship. Therefore, it appears that low focusing may be a particular risk factor for the development of later RNT and/or psychopathology symptoms.

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## 1. Introduction

Repetitive negative thinking (RNT) has been researched for decades. Although much of this work has examined worry (in Generalized Anxiety Disorder; GAD) and rumination (in Major Depressive Disorder; MDD), several other disorders are associated with repetitive cognitions (Clark, 2005), including anticipatory processing in social anxiety disorder (SAD; e.g., Clark and Wells (1995)), obsessions in obsessive-compulsive disorder (OCD; American Psychiatric Association, 2013), intrusive thoughts in posttraumatic stress disorder (PTSD; American Psychiatric Association, 2013), and catastrophic cognitions in panic disorder (PD; e.g., Clark (1986)). However, little is known about how RNT maintains symptoms. These mechanisms may differ across forms of RNT, but many of them appear to involve attention. For example, worry may maintain GAD by facilitating cognitive avoidance of negative images (Borkovec et al., 2004); rumination taxes cognitive resources and prevents disengagement from negative self-referential stimuli, thus maintaining depression (Koster et al., 2011); and anticipatory processing possibly maintains SAD by activating attentional biases (Mills et al., 2014). Each RNT style may generate unique risk factors for specific disorders; however, there

may be trait factors that affect these relationships more trans-diagnostically. One of these may be attentional control (AC), which involves inhibiting task-irrelevant distractors (i.e., focusing) and switching between tasks (i.e., shifting) to direct attention.

Most psychological disorders influence attention in *some* fashion (e.g., Bar-Haim et al. (2007) and Snyder (2013)), including biased attention, reduced processing efficiency, and/or consumption of attentional resources. RNT styles can affect attention as well (e.g., Verkuil et al. (2009), Joormann et al. (2011) and Mills et al. (2014)), above and beyond psychopathology. Eysenck et al. (2007) proposed Attentional Control Theory (ACT), which suggests that anxiety decreases processing efficiency in the central executive, which results in difficulties inhibiting task-irrelevant stimuli and shifting attention between tasks.

Decreased processing efficiency has consequences that may maintain symptoms. Those with low AC experience difficulty disengaging from threat (e.g., Bardeen and Orcutt (2011) and Judah et al. (2013a,b)), exhibit a stronger relationship between emotional avoidance and anxiety (Bardeen et al., 2014), and experience decreased mood recovery (Bardeen and Read, 2010) than those with high AC. Therefore, AC is an important risk factor associated with psychopathology.

Studies have found that individuals with symptoms of GAD (Armstrong et al., 2011; Stefanopoulou et al., 2014), OCD (Armstrong et al., 2011), PTSD (Bardeen and Orcutt, 2011), and SAD (Wieser et al., 2009; Judah et al., 2013a,b; Tully et al., 2014)

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demonstrate impaired AC. Those with high AC perform well on speeches regardless of trait public speaking anxiety, whereas those with low AC perform more poorly as trait speaking anxiety rises (Jones et al., 2012). Similarly, attentional impairment has been found during RNT (e.g., Armstrong et al. (2011) and Stefanopoulou et al. (2014)). Ruminators experience difficulty with inhibition, which could result in difficulty disengaging from ruminative thoughts and prolong rumination and depressive symptoms (De Lissnyder et al., 2011). Those with low AC are more likely to develop subsequent intrusive thoughts and symptoms of avoidance (Verwoerd et al., 2008) following trauma, and those low in AC demonstrated worse recovery from negative moods after recalling traumatic events compared to those high in AC (Bardeen and Read, 2010). The PD literature has limited direct tests of ACT, but Hovland et al. (2012) found that inhibition was negatively related to panic duration and panic-related distress. Low AC also interacts with broad risk factors for anxiety disorders. For example, Richey et al. (2012) found that high AC buffered the relationship between trait anxiety and fear response to a CO<sub>2</sub> challenge.

Together, the literature suggests that low AC is associated with symptoms of psychopathology, and in some cases, RNT. AC appears to serve as a moderator (e.g., Bardeen, and Orcutt (2011) Jones et al. (2012) and Richey et al. (2012)) and mediator (Tully et al., 2014) of relationships among symptoms and their correlates. RNT has clearly-established associations with psychopathology; however, little research has examined RNT, psychopathology, and AC together. AC may partially explain the relationship between RNT and psychopathology. For example, those who experience RNT may have impaired ability to inhibit negative thoughts and/or redirect focus to other stimuli, and therefore repeated exposure to RNT may result in the later development of psychopathology. It also is possible that those with symptoms of psychopathology and low AC may be more prone to develop uncontrollable RNT for the same reasons (e.g., inability to inhibit distractions/shift focus), and this RNT may exacerbate psychopathology. Therefore, the purpose of this study is to examine the indirect effects of AC on the prospective relationships between RNT and symptoms of psychopathology. The temporal relationship among these factors has yet to be established; therefore, we will examine these relationships reciprocally (i.e., Time 1 RNT predicting Time 2 psychopathology symptom levels and Time 1 psychopathology symptom levels predicting Time 2 RNT).

This study examined six prospective RNT/psychopathology symptom level relationships, including relationships between anticipatory processing and social anxiety symptoms; intrusions and PTSD symptoms; obsessions and OCD symptoms; panic cognitions and panic attack symptoms; rumination and depressive symptoms, and worry and GAD symptoms. As research suggests AC primarily consists of two facets (i.e., focusing and shifting; Judah et al., 2014), we examined these relationships using both constructs. Because studies have found that both shifting (Judah et al., 2014) and focusing (e.g., Reinholdt-Dunne et al. (2013)) are related to several psychopathology symptoms, we expected that both subscales would indirectly predict each of these reciprocal relationships.

## 2. Methods

### 2.1. Participants

Participants were undergraduates recruited from a large Midwestern university who received research credit for participation. The initial sample (Time 1; T1) included 619 individuals; however, 15 participants were removed from analyses due to more than 20% missing data at T1, resulting in a T1 sample of 604 participants. Of

those, 394 completed the survey at Time 2 (T2). This attrition rate (35%) is consistent with similar prospective designs (e.g., Grant et al. (2014)). Eighteen participants had more than 20% missing data at T2, resulting in a final sample of 376 participants. For those with missing data, automatic multiple imputation in SPSS was used (Graham, 2009). The mean age was 19.1 years ( $SD=2.61$ ). They mostly identified as female (73%) and Caucasian (81%), followed by African-American (6.6%), Native American (4.3%), Asian (2.8%), and Latino/a (2.0%).

Nonresponders did not differ from responders on any RNT/psychopathology variable ( $ps$  ranged from 0.16 for depression to 0.94 for AC), nor did they differ on sex ( $p=0.12$ ). Although nonresponders ( $M=19.68$ ,  $SD=4.42$ ) were significantly older than responders ( $M=19.06$ ,  $SD=2.49$ ;  $p=0.01$ ), this difference is unlikely to be theoretically significant and is likely driven by the high sample size.

### 2.2. Demographic measure

#### 2.2.1. Demographics form

The demographics form asked about age, sex, year in school, ethnicity, country of origin, and marital status.

### 2.3. Attentional control measure

#### 2.3.1. Attentional Control Scale, Focusing and Shifting Subscales (ACS; Derryberry and Reed, 2002).

The full ACS is a 20-item self-report questionnaire used to measure individual differences in attentional regulation, concentration, and attentional flexibility. Items are rated on a 4-point scale ranging from 1 (almost never) to 4 (always). The scale consists of two subscales; the Focusing subscale assesses the trait ability to concentrate on goal-relevant tasks and inhibit distractions (e.g., "It's hard for me to concentrate on a difficult task when there are noises around" [reverse coded]), whereas the Shifting subscale assesses the trait ability to multi-task and easily switch from one task to another (e.g., "It is easy for me to alternate between two different tasks"). These subscales map on to core executive functions commonly described in the literature (e.g., Miyake et al. (2000)). Higher scores on the scale represent better trait attentional control abilities. For the current study, the 12-item version consisting of only the Focusing and Shifting subscales was used. The Focusing subscale correlates with an antisaccade task, a behavioral measure of inhibition, whereas the Shifting subscale correlates with letter-number sequencing, a behavioral measure of working memory capacity (Judah et al., 2014). Overall, this questionnaire appears to be a valid measure of attentional regulation (Judah et al., 2014) and has adequate-(Shifting  $\alpha=0.77$ ) to-good (Focusing  $\alpha=0.87$ ) internal consistency (Judah et al., 2014). Internal consistency was adequate for both subscales at both time points (Focusing  $\alpha=0.85$  and  $0.87$ ; Shifting  $\alpha=0.76$  and  $0.80$ ). Test-retest reliability was  $r=0.68$  for the Focusing subscale and  $0.55$  for the Shifting subscale.

### 2.4. Repetitive negative thinking measures

#### 2.4.1. Anticipatory Social Behaviours Questionnaire (ASBQ; Hinrichsen and Clark, 2003)

The ASBQ is a 12-item self-report measure that assesses trait anticipatory processing. Each item is rated on a four-point scale ranging from 1 (never) to 4 (always). Previous research has shown high internal consistency ( $\alpha=0.88$ ; Hinrichsen and Clark, 2003). Internal consistency in the current study was high for T1 ( $\alpha=0.92$ ) and T2 ( $\alpha=0.91$ ). Test-retest reliability was  $r=0.56$ .

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