



## Attentional control in OCD and GAD: Specificity and associations with core cognitive symptoms

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### ABSTRACT

Obsessive–compulsive disorder (OCD) and generalized anxiety disorder (GAD) are both defined by excessive negatively-valenced cognitions. Although obsessional thoughts are considered essential to OCD and perseverative worry is considered essential to GAD, these excessive cognitions have been found to co-occur in both disorders. Accordingly, a common diathesis may influence the emergence of excessive thoughts in both disorders. The present study examined deficits in attentional control as a cognitive vulnerability that may contribute to both obsessional thought and perseverative worry. Patients with OCD ( $n = 30$ ), GAD ( $n = 29$ ), and non-clinical controls (NCC;  $n = 29$ ) completed measures of obsessional thoughts, perseverative worry, and attentional control. Deficits in self-reported attentional control were found in both OCD and GAD relative to the NCC. However, attentional control was only related to excessive cognition in the GAD patient group, where deficits were associated with increased perseverative worry. Mediation modeling suggested that trait anxiety mediated the relationship between attentional control and perseverative worry in GAD. Implications of these findings for conceptualizing the role of attentional control in the genesis of excessive cognitions in OCD and GAD are discussed.

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Among the anxiety disorders in the DSM-IV (American Psychiatric Association [APA], 2000), two are defined primarily by excessive negatively-valenced cognitions: obsessive–compulsive disorder (OCD) and generalized anxiety disorder (GAD) (Brown, Moras, Zinbarg, & Barlow, 1993). In OCD, excessive emotionally-valenced cognition can be seen in *obsessions*, which are unwanted, repetitive thoughts considered inappropriate or harmful. Obsessional thoughts motivate *compulsions*, rigid behaviors performed ritualistically to undo harm related to obsessions (APA, 2000). In GAD, excessive anxiogenic cognition takes the form of *perseverative worry*, which consists of apprehensive thoughts about everyday concerns, such as finances, academic performance, and household maintenance (Burns, Keortge, Formea, & Sternberger, 1996). Perseverative worry sustains a high level of negative affect and physiological arousal, which may lead to tension, fatigue, and other somatic complaints (APA, 2000). Research examining the nature of these excessive cognitions supports their diagnostic specificity, as patients with OCD report more obsessional thoughts than patients with GAD, and patients with GAD report more perseverative worry than patients with OCD (Brown, Antony, & Barlow, 1992; Brown et al., 1993). However, obsessional thoughts and perseverative

worry often co-occur in clinical and non-clinical samples (Brown et al., 1993; Clark & Claybourn, 1997). Indeed, self-report measures of obsessional thoughts and perseverative worry have been found to share a considerable degree of variance (Burns et al., 1996; Freeston et al., 1994; Zinbarg & Barlow, 1996).

Rumination is yet another form of excessive cognition that has been implicated in OCD and GAD. Rumination involves passive, repetitive dwelling on one's distress, as well as its causes and consequences (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). By keeping individuals fixated on their problems, rumination is believed to maintain or worsen negative affect and prevent active coping strategies that could alleviate distress. Rumination has been investigated mostly in the context of depression (e.g., Nolen-Hoeksema, 1991); however, increased rumination has also been observed in OCD (Fineberg, Fourie, Gale, & Sivakumaran, 2005) and GAD (Rector, Antony, Laposa, Kocovski, & Swinson, 2008), and may partially explain comorbid depression frequently found in these disorders. In addition, self-report measures of rumination have been found to share a considerable degree of variance with measures of worry (Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Muris, Roelofs, Rassin, Franken, & Mayer, 2005), and symptoms of OCD (Grisham & Williams, 2009).

The association between obsessional thoughts commonly observed in OCD, perseverative worry that is characteristic of GAD, and rumination that is associated with both disorders may suggest

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that these cognitive symptoms derive from a common underlying mechanism. Alternatively, these cognitive processes may only share phenomenology; while obsessions, worries, and ruminations may all be described as unpleasant, they may arise from unrelated processes. An intermediate viewpoint argues that while obsessional thoughts, perseverative worry, and rumination are all distinct in terms of content and form, they are all exacerbated by a common cognitive vulnerability. One such cognitive vulnerability may be deficits in attentional control (Derryberry & Reed, 2002). Attentional control refers to one's top-down command over different components of attention, and is necessary for the flexible regulation of cognitive resources. Attentional control has two dimensions, corresponding to the components of attention that may be brought under voluntary control. *Attentional Focus* encompasses one's ability to maintain attentional engagement in the face of distraction, while *Attentional Shifting* encompasses one's ability to execute attentional disengagement, in order to shift attention away from a distraction or toward a new task. Reliable individual differences arise on measures of attentional control, and as such attentional control may be conceptualized as a trait capturing the control of information processing (Derryberry & Reed, 2002).

Diminished attentional control may confer risk for perseverative worry, obsessional thoughts, and rumination by undermining one's ability to manage attentional resources toward the prevention of "unwanted negative thoughts" (Brown et al., 1993; Levens, Muhtadie, & Gotlib, 2009). Excessive negatively-valenced cognition may be facilitated by deficits in attentional focus, which would allow unwanted thoughts to gain entry into working memory despite suppression attempts (Rosen & Engle, 1998). The inability to disengage attention from obsessional thoughts, perseverative worries, and rumination post-intrusion may be exacerbated by weakened attentional shifting. Thus, deficits in attentional control could account for the intrusion of obsessional thoughts, perseverative worries, and rumination as well as difficulty coping with these excessive cognitions. Although no studies have directly investigated the relationship between excessive cognitions in OCD and GAD, and attentional control, indirect evidence supports the proposed associations. For example, deficits in "cognitive control," a construct similarly defined by control over attention and susceptibility to distraction, have been found in patients with OCD (Barrett & Healy, 2003) and GAD (Jazbec, McClure, Hardin, Pine, & Ernst, 2005).

If attentional control deficits indeed contribute to symptoms of OCD or GAD, the treatment implications may be significant, as attentional control shows considerable plasticity and may be a potential treatment target (Posner & Rothbart, 2007). Both meditation and computer-based training procedures have shown initial success in augmenting attentional control (Tang & Posner, 2009). In addition, procedures that train attention away from threat have been shown to reduce symptoms of anxiety disorders (Hakamata et al., 2010), and there is some evidence that these procedures work in part by augmenting attentional control (Browning, Holmes, Murphy, Goodwin, & Harmer, 2010; Klumpp & Amir, 2010).

The present study sought to directly examine the relationship between excessive negatively-valenced cognitions in OCD and GAD and components of self-reported attentional control. It was predicted that individuals with OCD and GAD would show comparable attentional control deficits relative to controls, and that within each disorder, deficits in attentional control would be most highly correlated with the primary excessive cognition, such that in OCD, attentional control would be correlated most highly with obsessional thoughts, whereas in GAD, attentional control would be most highly correlated with perseverative worry. Attentional control was

predicted to show weaker correlations with rumination, compared to obsessional thoughts or perseverative worry, in OCD and GAD, respectively. Lastly, trait anxiety was assessed in order to gain further insight into the nature of relations between attentional control and excessive cognitions in GAD. Trait anxiety has been found to be associated with self-report (Derryberry & Reed, 2002), behavioral (Pacheco-Unguetti, Acosta, Callejas, & Lupianez, 2010), and neural (Bishop, 2009) measures of attentional control, and is also strongly correlated with measures of perseverative worry (e.g., Davey, 1994), but not obsessional thoughts (Lee & Telch, 2005). Accordingly, mediational modeling of the relations between attentional control, trait anxiety, and perseverative worry was conducted to explore the relations between these constructs in GAD.

## Method

### Participants

A total of 88 adults participated: 30 patients with obsessive-compulsive disorder (OCD; age  $M = 39.23$ ,  $SD = 11.90$ ; % female = 50; % Caucasian = 96.7, % multi-ethnic/other = 3.3; % college graduate = 65.51), 29 patients with generalized anxiety disorder (GAD; age  $M = 38.00$ ,  $SD = 10.91$ ; % female = 48, % Caucasian = 86, African-American = 3.4, % Asian = 6.9, % multi-ethnic/other = 3.4; % college graduate = 56.67), and 29 non-clinical controls without a history of any anxiety disorder (NCC; age  $M = 39.76$ ,  $SD = 10.37$ ; % female = 52; % Caucasian = 72.4; % African-American = 17.2, % Asian = 3.4, % multi-ethnic/other = 6.9; % college graduate = 72.41). Groups did not differ in terms of age, gender, ethnicity, or education level ( $ps > .05$ ). NCC and GAD participants were recruited from community advertisements or referral from Vanderbilt Adult Psychiatry Outpatient Clinic. An initial dichotomous phone screen with the Generalized Anxiety Disorders Questionnaire 4th Edition (GADQ-IV; Newman, Zuellig, Kachin, Constantino, & Cashman, 2002) was performed for individuals calling in response to GAD symptom community advertisements. OCD participants were mainly recruited from the obsessive-compulsive disorder/Tourette Syndrome Program at Vanderbilt University. Given that some OCD participants were receiving treatment, the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989) was administered to determine if symptoms were currently at moderate levels or higher ( $\geq 16$ ) for OCD participants. The Structured Clinical Interview for the DSM-IV (SCID-I; First, Spitzer, Gibbon, & Williams, 2002) was administered to determine diagnoses for all participants. Exclusionary criteria for all groups were a diagnosis of bipolar disorder, substance abuse, attention deficit hyperactivity disorder, pervasive developmental disorders, mental retardation, or current or past central nervous system diseases. The clinical groups were non-overlapping (i.e., OCD participants could not have a current diagnosis or history of GAD and vice versa). SCIDs were conducted by a graduate-level clinician and phone screening was conducted by a research assistant; both were trained and supervised by a licensed clinical psychologist. All participants provided informed consent and the study was approved by the Vanderbilt Institutional Review Board.

### Measures

#### SCID-I, research version, patient edition (First et al., 2002)

The SCID-I is a semi-structured clinical interview used to diagnose mental disorders as delineated in the DSM-IV. Inter-rater and test-retest reliability estimates for the SCID-I vary, but have generally been found to be in the fair to good range (e.g., Lobbstaël, Leurgans, & Arntz, 2011).

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