

## Can the Components of a Cognitive Model Predict the Severity of Generalized Anxiety Disorder?

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Over the past decade, a number of well-controlled studies have supported the validity of a cognitive model of generalized anxiety disorder (GAD) that has four main components: intolerance of uncertainty, positive beliefs about worry, negative problem orientation, and cognitive avoidance. Although these studies have shown that the model components are associated with high levels of worry in nonclinical samples and with a diagnosis of GAD in clinical samples, they have not addressed the question of whether the model components can predict the severity of GAD. Accordingly, the present study sought to determine if the model components are related to diagnostic severity, worry severity, and somatic symptom severity in a sample of 84 patients with a primary diagnosis of GAD. All model components were related to GAD severity, although positive beliefs about worry and cognitive avoidance were only modestly associated with the severity of the disorder. Intolerance of uncertainty and negative problem orientation had more robust relationships with the severity of GAD (and with worry severity, in particular). When participants were divided into Mild, Moderate, and Severe GAD groups, intolerance of uncertainty and negative problem orientation distinguished the Moderate and Severe GAD groups from the Mild GAD group, even when age, gender, and depressive symptoms were statistically controlled. Overall, the results lend further support to the validity of the model and suggest that intolerance of uncertainty and negative problem orientation are related to

the severity of GAD, independently of sociodemographic and associated clinical factors. The theoretical and clinical implications of the findings are discussed.

SEVERAL MODELS OF GENERALIZED ANXIETY DISORDER (GAD) have been proposed in recent years. Some emphasize the role of cognitive avoidance (i.e., Borkovec et al., 2004), whereas others focus on the function of metacognitive beliefs (i.e., Wells & Carter, 2001) or highlight the role of emotion dysregulation (i.e., Mennin et al., 2002). Alternatively, our clinical research group has developed a cognitive model that is based primarily on the idea that individuals with GAD have difficulty tolerating and dealing with the uncertainty of everyday life. The model has four main components, each of which can be conceptualized as a cognitive process involved in GAD: intolerance of uncertainty, positive beliefs about worry, negative problem orientation, and cognitive avoidance.

Intolerance of uncertainty, the model's main feature, refers to a dispositional characteristic resulting from a set of negative beliefs about uncertainty and its implications (Dugas & Robichaud, 2007). Individuals who are intolerant of uncertainty believe that uncertainty is stressful and upsetting, that being uncertain about the future is unfair, that unexpected events are negative and should be avoided, and that uncertainty interferes with one's ability to function (Buhr & Dugas, 2002). Research suggests that the relationship between intolerance of uncertainty and worry/GAD is relatively specific. In nonclinical samples, although one study found that intolerance of uncertainty was equally related to worry and obsessive-compulsive symptoms (Holaway et al., 2006), most of the data accumulated so far suggest

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that intolerance of uncertainty is more closely related to worry than to other anxiety and mood disorder symptoms (Dugas et al., 2001b; Dugas et al., 2004b; Roberts et al., 2006). Clinical data show that patients with GAD are more intolerant of uncertainty than patients with panic disorder with agoraphobia (Dugas et al., 2005) and patients with other anxiety disorders (Ladouceur et al., 1999). Finally, research suggests that intolerance of uncertainty may be a causal risk factor for worry/GAD. In nonclinical samples, the experimental manipulation of intolerance of uncertainty leads to changes in worry, with decreased intolerance of uncertainty leading to less worry, and increased intolerance of uncertainty leading to more worry (Ladouceur et al., 2000). In clinical samples, changes in intolerance of uncertainty typically precede changes in worry over the course of cognitive-behavioral therapy (CBT) for GAD (Dugas et al., 1998b).

The second component of the model, positive beliefs about worry, is based on the idea that individuals with GAD have unrealistic beliefs about the usefulness of worrying and that these beliefs are positively and negatively reinforced by false contingencies (Dugas & Robichaud, 2007; Wells, 1999). Individuals with GAD may overestimate the usefulness of worrying in any number of areas. For example, they may believe that worrying helps with problem solving, provides motivation to get things done, allows one to avoid unpleasant emotions should unfortunate events occur, or directly alters the course of events. Furthermore, individuals with GAD often equate worrying with caring and thus believe that being a worrier is a sign that they are kindhearted and compassionate. Nonclinical data show that positive beliefs about worry are closely related to level of worry, and this holds true whether beliefs are measured by structured interview (Francis & Dugas, 2004) or self-report (Holowka et al., 2000). Patients with GAD endorse more positive beliefs about worry than do healthy controls (Dugas et al., 1998a; Ladouceur et al., 1999), and change in beliefs over the course of CBT predicts outcome for patients with GAD (Labege et al., 2000).

The third model component, negative problem orientation, has also received considerable empirical support. Negative problem orientation can be defined as a disruptive cognitive set toward problems that includes perceiving problems as threats to well-being, doubting one's problem-solving ability, and being pessimistic about problem-solving outcomes (D'Zurilla & Nezu, 1999). Negative problem orientation is highly correlated with worry, and their relationship is not the result of shared variance with anxiety or depression

(Dugas et al., 1997). Patients with GAD report a more negative problem orientation than do patients with other anxiety disorders (Ladouceur et al., 1999) and healthy controls (Dugas et al., 1998a). Finally, in a laboratory study, changes in problem-solving confidence, a component of problem orientation, led to changes in catastrophic worrying (Davey et al., 1996a).

The model's fourth component, cognitive avoidance, is based on the notion that individuals with GAD use a variety of strategies (both automatic and controlled) to avoid concrete thoughts (including mental images) of threatening outcomes and unpleasant emotional responding (see Borkovec et al., 2004, for a detailed description of the avoidance theory of GAD). Given that avoidance can interfere with the emotional processing of fear (Foa & Kozak, 1986), the strategies used by individuals with GAD ultimately lead to the maintenance of high levels of worry and anxiety (Borkovec & Newman, 1999). Cognitive avoidance strategies that may be particularly relevant to GAD include substituting threatening thoughts with neutral or positive ones, transforming mental images into verbal-linguistic thoughts, using various distraction tactics, avoiding stimuli that may trigger worrisome thoughts, and attempting to suppress worrisome thoughts (Dugas & Koerner, 2005). Cognitive avoidance is related to both trait worry and catastrophic worry (Sexton & Dugas, 2004; Sexton et al., 2004). Patients with GAD report more cognitive avoidance than do healthy controls (Dugas et al., 1998a), and decreases in cognitive avoidance are related to positive outcomes following CBT (Dugas et al., 2004a).

In summary, most of the data supporting the model of GAD described above come from: (a) nonclinical studies comparing individuals with different levels of worry; (b) clinical studies comparing patients with GAD to patients with other anxiety disorders and healthy controls; and (c) treatment studies showing that decreases in the model components predict decreases in GAD symptoms over the course of CBT. Although these findings are very informative, they do not address whether the model components can predict the severity of GAD. This is an important question because, given the limited range (i.e., elevated levels) of worry and anxiety *within* a sample of patients with GAD, examining the relationship between the model components and the severity of GAD symptoms constitutes a conservative test of the model's sensitivity.

Accordingly, the main goal of this study was to determine if the cognitive processes making up the model are related to different indicators of severity

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