

# Combining Computerized Home-Based Treatments for Generalized Anxiety Disorder: An Attention Modification Program and Cognitive Behavioral Therapy

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Generalized anxiety disorder (GAD) is a common and disabling condition associated with significant personal and societal costs. Although efficacious treatments exist for GAD, the majority of these individuals fail to access our most effective treatments. In the current paper, we report the results of an open trial that examined the efficacy of a computer-delivered home-based treatment program for GAD. Twenty-one individuals seeking treatment for GAD received a self-administered program over 6 weeks that comprised two components: (1) an Attention Modification Program (AMP) designed to facilitate attentional disengagement from threat-relevant stimuli and (2) brief computer-delivered cognitive and behavioral treatment modules (CCBT). Fourteen of the 21 enrolled participants (67%) completed the treatment program. Intent-to-treat and completer analyses revealed that AMP+CCBT resulted in significant reductions in clinician- and self-rated symptoms of anxiety, worry, depression, and functional impairment. Moreover, treatment completers displayed significant reductions in attentional bias for threat from pre-

postassessment. Change in attentional bias for threat from pre- to postassessment was associated with change in worry symptoms. Finally, 79% of participants no longer met *DSM-IV* criteria for GAD at postassessment and 36% were classified as remitted (Hamilton Rating Scale for Anxiety  $\leq 7$ ; Rickels et al., 2006). These results suggest that computer-delivered AMP+CCBT may serve as an effective and easily accessible treatment option for individuals with GAD.

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GENERALIZED ANXIETY DISORDER (GAD) is a common and debilitating psychiatric condition associated with medical overutilization, poor perceived health, low ratings of quality of life, and impairment at work that result in a significant economic and public health impact (Ballenger et al., 2001; Hoffman, Dukes, & Wittchen, 2008; Wittchen, 2002). GAD has a high lifetime prevalence (5.7%, Kessler et al., 2005; 8.5% in primary care settings, Roy-Byrne & Wagner, 2004) and is chronic, running an unremitting and disabling course (i.e., mean duration of 20 years; Ninan, 2001). Although efficacious psychosocial and pharmacological treatments exist for GAD (for reviews see Gould et al., 2004; Gould et al., 1997; Lydiard & Monnier, 2004; Nutt et al., 2002), the majority of these individuals do not access our most effective treatments (Collins, Westra, Dozois, & Burns, 2004). Moreover, even when individuals with GAD eventually access treatment, treatment-seeking delays are longer for GAD relative to all other anxiety and mood disorders (i.e., 14 years

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from the time of onset; Kessler, Olfson, & Berglund, 1998). Considered together, the substantial delays in treatment seeking, failure to access evidence-based treatments, and overutilization of medical services results in prolonged personal and economic costs. These findings highlight the need to develop efficient and cost-effective treatments that have the potential to be widely accessible to individuals with GAD.

Although the translation of evidence-based treatments developed in tightly controlled research settings into easily accessible interventions has many challenges, two of the most common obstacles include (a) treatment fidelity and (b) acceptability of evidence-based treatment approaches to clinicians and community health organizations (Chambless et al., 1996; Hollon et al., 2002; Persons, 1995; Wilson, 1995). Accordingly, the National Institute of Mental Health (NIMH) Psychosocial Intervention Development Workgroup recommended the “development of user-friendly interventions and non-traditional delivery methods to increase access to evidence-based interventions” (Hollon et al., 2002, p. 625). Consistent with these recommendations, researchers have increasingly used computer-based technologies to facilitate transportability of empirically supported treatments into the community. These procedures have the potential to overcome many barriers to accessing traditional forms of therapy, including cost, convenience, and limited availability of evidence-based therapies in routine clinical care (Przeworski & Newman, 2006). Moreover, such interventions can be delivered systematically and reliably to large segments of the public outside of clinical settings, thereby increasing accessibility among populations that would otherwise not seek or receive adequate treatment. Computer-based interventions have similar rates of patient satisfaction, acceptability, and attrition compared to standard clinic treatment (Marks & Cavanagh, 2009; Przeworski & Newman), suggesting they may provide a feasible cost-effective alternative for individuals who may otherwise not access evidence-based treatments. Although computerized treatments may reduce treatment barriers that are common across a number of psychiatric conditions, these interventions may be particularly relevant for individuals with GAD who tend to exhibit the longest treatment-seeking delays relative to other anxiety and mood disorders (Kessler et al., 1998).

The most commonly used strategy to date involves the translation of empirically supported psychosocial strategies (e.g., cognitive and behavioral techniques, applied relaxation) into computer-delivered formats such as the internet, palmtop or desktop computers, i.e., computerized-CBT (CCBT; Andersson, 2009; Marks & Cavanagh,

2009; Newman, Erickson, Przewoski & Dzus, 2003; Proudfoot, 2004; Przeworski & Newman, 2006). More recently, our program of research (e.g., Amir, Beard, Burns and Bomyea, 2009; Amir, Weber, Beard, Bomyea, & Taylor, 2008) and others (Schmidt, Richey, Buckner, & Timpano, 2009) have adapted experimental procedures used in cognitive science to develop a computerized Attention Modification Program (AMP) designed to target central cognitive mechanisms implicated in the maintenance of anxiety (Mathews & MacLeod, 2005). In the current paper, we describe our ongoing efforts to create an integrated computer-delivered treatment program (AMP+CCBT) that can be self-administered in the home (or other community settings) for individuals suffering from GAD.

The treatment program described in the current study comprises two components: AMP and CCBT. AMP is based on cognitive theories of anxiety that propose a causal role for selective attention to threat-relevant information in the maintenance of anxiety (e.g., Mathews & MacLeod, 2005; Williams, Watts, MacLeod, & Mathews, 1997). Consistent with these theories, 25 years of research provides evidence demonstrating that patients meeting diagnostic criteria for an anxiety disorder, including GAD (see Mogg & Bradley, 2005), preferentially attend to threat-relevant stimuli over neutral stimuli when the two compete for processing resources (for a review and meta-analysis see Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van IJzendoorn, 2007). More relevant to the causality hypothesis, recent studies have demonstrated that experimentally manipulating attentional allocation in the presence of threatening information confers differential susceptibility to anxiety under stress (e.g., Amir et al., 2008; Clarke, MacLeod, & Shirazee, 2008; MacLeod, Rutherford, Campbell, Ebsworthy, & Holker, 2002).

To modify attention, individuals complete a variant of the traditional probe detection task (MacLeod, Mathews, & Tata, 1986) that guides their attention *away* from threat-relevant cues by requiring them to respond to a visual probe that consistently follows benign (nonthreat) cues (e.g., couch) when these cues compete for processing resources with threat-relevant stimuli (e.g., illness). To our knowledge, three published studies have examined the efficacy of AMP in reducing symptoms in treatment-seeking individuals meeting diagnostic criteria for an anxiety disorder; two in generalized social phobia (GSP; Amir, Beard, Taylor, et al., 2009; Schmidt et al., 2009) and one in generalized anxiety disorder (GAD; Amir, Beard, Burns, & Bomyea, 2009). All three studies were

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