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Cognitive-Behavior Therapy for Generalized Anxiety Disorder: Recent Developments in Theory and Treatment

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ABSTRACT

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Department of Psychiatry, University of Michigan, Rachel Upjohn Building, Plymouth Road, Ann Arbor, MI 48109-5766, USA, Tel: +(734) 936-9292; Fax: +(734) 232-0295; Email: ricksw@med.umich.edu Generalized anxiety disorder is a chronic disorder with out of control worry as a defining characteristic and is associated with significant impairment. While metaanalyses have shown CBT to be an effective treatment for GAD, until recently, GAD has been considered to be one of the least successfully treated anxiety disorders. This article reviews recently developed CBT theoretical models and related treatments. Mechanisms that may explain treatment effectiveness will also be presented. It is concluded that the more recent treatments are more effective than traditional ones and have impressive long term maintenance of improvement. Recommendations for future research are offered.

INTRODUCTION

GAD is a chronic and often unremitting anxiety disorder characterized by chronic worry and anxiety that is difficult to control. In addition, patients with GAD frequently avoid a variety of situations, such as being alone, exercising, and most frequently social situations [1]. Avoidance in GAD patients may include procrastination, avoidance of paying bills, dating, or making decisions. In addition, reassurance seeking regarding one's health or the safety of others are common, for example, repeatedly calling to make sure a loved one is safe [2,3]. GAD carries substantial burden to the individual with the disorder. GAD is associated with impairments in psychosocial functioning, lower productivity at work, increased risk of suicide [4] and significant disability and high levels of comorbidity. As Roemer and Orsillo [5] note, GAD is a specific risk factor for the development of other mental health conditions, especially major depression. Among primary care patients, GAD is the most common. GAD is associated with chest pain, irritable bowel syndrome [2].

The purpose of this article is to provide an update on the latest developments in theory and treatment for GAD. While prior research had found that compared to other anxiety disorders GAD had not fared as well in terms of long-term effectiveness, the research reviewed in this article should provide optimism that a variety of CBT interventions have now been shown to confer advantages over earlier CBT approaches. While meta-analyses have shown CBT to be an effective treatment for GAD, until recently, GAD has been considered to be one of the least successfully treated anxiety disorder [6], usually with less than 65% of patients meeting criteria for high end-state functioning [5], which indicates that the patient's anxiety is within the normal range [7]. Therefore, attempts to design treatments that may improve on



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these outcomes have been developed. This research will be presented as I discuss the different CBT models of GAD and its treatment.

CBT MODELS AND TREATMENTS

Avoidance Model of Worry

CBT is clearly the most researched evidence-based treatment for GAD. Thomas Borkovec and colleagues pioneered the development of a coherent model for conceptualizing GAD, highlighting the centrality of chronic worry in GAD. The CBT treatment for GAD follows their conceptual model with treatment techniques targeting theoretically important components. This model is known as the Avoidance Model of Worry (AMW) [8]. According this model, worry is an ineffective counterproductive attempt to problem solve in the face of perceived threat. Because worry may inhibit a further increase in anxiety in the face of subsequently triggered anxiety, worry may be negatively reinforced by this process. Research has shown that verbal processes do in fact dampen down arousal when persons are subsequently exposed to threat related material [1]. In addition, worry is reinforced by positive beliefs about worry such as the belief that worry serves as a distraction form more emotionally disturbing processes. Other positive beliefs about worry include: Worry helps to motivate me to get things done," "If I worry about something, I am more likely to actually figure out how to avoid or prevent something bad from happening." If I worry about something, when something bad does happen, I'll be better prepared for" [9,10]. Positive beliefs about worry make an additional contribution to worry above and beyond symptoms of anxiety and depression [11,12].

Following psychoeducation about the nature of worry and anxiety; AMW treatment includes self-monitoring of situations, thoughts, emotions, and bodily sensations associated with worry and anxiety is the next step in treatment. Additional monitoring includes worry outcome monitoring where persons track their worries, whether the event worried about occurred, and if it did, how they copied with it. Research has shown that 85% of the times the worries did not occur, and when they did, persons coped better than they expected [10]. Other interventions include progressive muscle relaxation, diaphragmatic breathing and pleasant imagery, cognitive restructuring and self-control desensitization. The latter technique involves having patient imagine successfully coping with their feared worry outcomes. Another technique is worry postponement and worry scheduling. With these techniques' patients are trained to notice the beginning of "what if?" thoughts and to redirect their attention to the present moment or task at hand. Worries are then postponed to a chosen time and place latter in the day. During this period, patients can simply worry or engage in problem-solving about worries that involve practical concerns [10]. Though GAD models that contain mindfulness and acceptance approaches will be covered later in this paper, it should be noted that Borkovec and colleagues have a long history of promoting the cultivation of present-moment focus and what they call expectancy free living. "The ideal would involve our clients' movement from their habitual, negative expectations to relatively more accurate expectations, to eventually no expectations at all. Thus, the ultimate goal of CT, like the ultimate goal of self-monitoring and relaxation therapy, is living in the present moment" [8].

Because interpersonal problems and problems processing emotions are common with GAD patients, and in order to develop more effective interventions, a study comparing traditional AVM CBT with an enhance version that incorporated interventions to address these issues was conducted in an open trial [13]. Results indicated that the interpersonally enhanced CBT was more effective than the average effect size in previous CBT for GAD studies. In a subsequent randomized controlled trial [14], CBT including Interpersonal and Emotional Processing (IEP) yielded high end-state status for 68.8% at 24month follow-up, compared to CBT plus supportive listening (CBT plus SL) with 52.9% at 2-year follow-up. However, on all dependent measures CBT plus IEP was not significantly better than CBT plus SL. The authors suggest that perhaps CBT including a focus on interpersonal problems or exploration of emotional experiences may be important for those clients who have issues in these areas, but may not be helpful for GAD clients who do not.

The Intolerance of Uncertainty Model

Dugas and Robichaud [15] consider their intolerance of uncertainty (IUM) model a cognitive model rather than a cognitive- behavioral model. This is because they view the behavioral and emotional symptoms stem from basic beliefs. This cognitive model contains four components, which are



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intolerance of uncertainty, positive beliefs about worry, negative problem orientation, and cognitive avoidance. Intolerance of certainty is considered a dispositional trait which is at the core of GAD. Beliefs about uncertainty are the beliefs that uncertainty is stressful, unfair, and that uncertainty will interfere with one's functioning. Negative problem orientation is also considered to result from negative beliefs about problems. GAD patients view problems as threatening, doubt their ability to solve their problems, and are pessimistic about the outcome of problem solving. GAD patients may resent having problems, in a sense thinking that it is abnormal to have problems, so they shouldn't have them. Interestingly GAD patients, while having this negative problem orientation do not actually lack problem solving skills. Intolerance of uncertainty also contributes to implementing the steps of problem-solving as patients may have difficulty moving from one step of the process to the next due to the inherent uncertainty present. Cognitive avoidance refers to the use of counterproductive strategies, such as thought suppression, substituting positive thoughts, or avoiding situations that trigger unpleasant thoughts and emotions.

Positive beliefs about worry include worry facilitates problem solving, enhances motivation, protects against negative emotions, prevents negative outcomes, and reflects a positive personality trait [16]. In a study with college students found that of the 5 beliefs, "the belief that worry facilitates problem solving and protects against negative emotions (in the event of a negative event) both uniquely predicted worry severity after controlling for anxiety and depression. These two beliefs have been consistently noted in clinical observations of clients with GAD..." [16]. The authors note the consistency with the Contrast Avoidance Model. Positive beliefs about worry are thought to be reinforced if they lead to worry which dampens down emotional reactions when worried outcomes do occur. The belief that worry facilitates problem solving may be reinforced when a problem solving successfully leads to resolution of the negative event one is worried about and the worrier attributes this to worry rather than problem solving per se. Research has shown that treatment targeting positive beliefs about worry both decreases beliefs and contributes to reduction in GAD symptoms [15]. In addition to addressing positive beliefs about worry, treatment also teaches problem solving skills, facilitates exposure to uncertainty, and uses imaginal exposure to address worries about future events when problem solving is not applicable. Research has confirmed that each of the four components of the IUS model contribute to the development and maintenance of GAD, and that targeting them in treatment contributes to a successful treatment outcome.

In the initial controlled clinical trial, IUM treatment led to 62% of patients obtaining high end state functioning posttreatment and 58 % at one-year follow-up assessment. 77% of patients no longer met diagnostic criteria for GAD [17]. IUM treatment has led to high end state functioning in 65 percent of patents by the end of treatment and up to 72% at two-year follow-up. A recent study evaluated an abbreviated version of IU, using only behavioral experiments for intolerance of uncertainty. Impressively, 86% of patients reached high end-state functioning at posttest and 6-month follow-up [18]. In addition, IUM for benzodiazepine discontinuation in patients with GAD led to 745 of patients with complete cessation, compared to patients in an active listening group. Medication tapering was included in both treatment conditions [19].

The Metacognitive Model

The metacognitive model (MCT) developed by Wells [20] posits that patients with GAD have two types of worry. Type I worry stems from positive beliefs about worry, such as the belief that worry is beneficial in various ways. Type II Worry is worry about worry and involves negative beliefs that worry uncontrollable and is dangerous for mental or physical wellbeing. Treatment based on this model targets Type li worry and the negative beliefs but does not target the Type I worry, which is thought to dissipate on its own if the negative beliefs about worry are eliminated. Type II worry involves the use of counterproductive attempts to avoid type I worry, such as reassurance seeking, thought suppression and avoidance of triggering situations. Such ineffective strategies increase anxiety rather than reduce it and reinforce the idea the worry is uncontrollable and dangerous. In addition to challenging positive and negative beliefs about worry, additional therapeutic strategies include detached mindfulness and worry postponement experiments [21]. While research on MCT for GAD has yielded positive results, sample sizes have been small, and only one randomized controlled trial has been conducted, as far as I can tell [22]. The results of this trial showed very positive results for MCT which was compared with



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a modified version of intolerance of uncertainty treatment. Both treatments led to high levels of clinically significant change with 91% in the MCT group and 80% in the IUT group. The authors concluded that overall, MCT proved superior. Rates of high-end state functioning were not provided.

ACCEPTANCE BASED BEHAVIORAL MODEL

The acceptance base behavioral model of GAD (ABBT) is based on traditional cognitive behavior and on mindfulness and acceptance based models [5]. While traditional CBT focuses on challenging unhelpful thinking and beliefs and replacing them with more logical, reasonable, and accurate ways of thinking, mindfulness and acceptance approaches focus on teaching patients to observe their unwanted thoughts and emotions and accepting them as internal experiences that don't have to be taken as truths. The mindfulness and acceptance approach of the ABBT incorporates concepts and practices from other such approaches, particularly acceptance and commitment therapy (ACT; Hayes et al.) Following the ACT model, psychopathology is consistently associated with experiential avoidance [23]. Experiential avoidance refers to individuals struggle to not have the internal experiences that are present. Thus, individuals attempt to put unpleasant thoughts, emotions, and physical reactions out of their minds, thru suppression, distraction, use of positive thinking, or behavioral avoidance of situations that elicit the internal experiences, or use of substances. These unsuccessful avoidance maneuvers typically increase the intensity and frequency of the unwanted experience and lead people to ultimately avoid engaging in valued activities [24].

ABBT treatment includes psychoeducation about the model, mindfulness exercises whereby patients practice observing thoughts, emotions, and physical sensations and seeing them as transient events, mindfully practicing progressive muscle relaxation, applying mindfulness and acceptance to events in everyday life, such as washing dishes, eating a meal, and eventually applying these skills to stressful and anxiety and other difficult emotion provoking situations. In addition, patients keep a daily valued activities log, tracking valued consistent actions and ratings of mindfulness during these actions. Worry in the ABBT model is considered one of many types of internal experiences that patients try to avoid. Worry is often associated with self-criticism. Roemer and Orsillo [5] note that it is important for clinicians to distinguish between these counterproductive attempts and emotional regulations and strategies that actually are adaptive (p213). For example, cognitive reframing of an undesirable event may lead to an adaptive emotion, such as disappointment when criticized rather than shame.

In a randomized controlled trial comparing ABBT with applied relaxation, both treatments were equally effective with clinically significant change ranging from approximately 60 to 80 % of patients falling into the normal range at post treatment and 6-month follow-up. These findings for ABBT are consistent with previous trials of ABBT. As noted by Roemer and Orsillo [5], session-by-session changes in acceptance of internal experiences and engagement in meaningful activities predicted outcome above and beyond change I worry [25].

CONTRAST AVOIDANCE MODEL

Newman and Llera [12] have developed a novel model of GAD (CAM) that views fear of negative emotions contrasts as central to worry in GAD. Research in cognitive psychology and affective contrast theory reveals that the intensity of a negative emotion such as anxiety or depressed mood will be heightened if experience immediately following a positive mood state. Similarly, a positive mood state will be more pleasant when following a negative mood state. Thus Llera & Newman hypothesize that patients with GAD have a stronger aversive reaction and are more sensitive to a negative emotional contrast than non-anxious persons. "In other words, individuals with GAD would rather remain in a perpetual worry-induced negative state than risk emotional reactivity when allowing themselves the vulnerability of fully experiencing positive or neutral emotional states [26]. It appears that GAD patients are not primarily afraid of negative emotions per se but more to the negative emotional contrast. Recent research with college students demonstrated that participants with clinical levels of GAD symptoms were more likely, compared to non-anxious participants to report more discomfort with negative emotional contrasts, preferred feeling bad due to worry to avoid negative emotional contrasts, preferred to expect the worse and be positively surprised than to hope for the best, and were more likely to acknowledge that worry induces and sustains negative emotions [27].



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Further supporting tenets of the CAM model, Crouch and colleagues [26] demonstrated thru persons' an eight- week prospective daily diary assessment that negative emotional contrasts were associated with individuals "worse events" of the week. Future research with treatment seeking GAD patients will be important for continuing development and testing the contrast avoidance mode. As for treatment implications, Newman et al., 2014 delineate treatment interventions that target patients using worry to prevent negative emotional contrast experience. These interventions include psychoeducation about the Contrast Avoidance Model, exploration of patients perceptions of benefit and costs of using worry with its perpetual emotional discomfort to prevent emotional contrast experiences, learning more adaptive emotion regulation strategies, and gradual exposure in imagination where patients are first relaxed and then presented with relevant emotionally evocative scenarios that trigger negative emotions, i.e. systematic exposure to the negative emotional contrast. Exposure to real life situations that are avoided for fear of the negative emotional contrast. Newman and colleagues describe two cases that illustrate GAD related emotional contrast avoidance and treatment implications [27]. Clearly there is a need to test these procedures with patients with GAD.

EMOTION DYSREGULATION MODEL

While the GAD models previously described all seek to help patients with GAD to better regulate anxiety and other problematic emotions with a variety of techniques, the Emotion Dysregulation Model (EDM) explicitly conceptualize and target emotional dysregulation combining tradition CBT techniques with the addition of interventions based on affective neuroscience [28]. EDM elucidates two independent motivational systems, one that promotes safety and security, while the other one promotes reward and activities of valued living. EDM seeks to equip patients with psychoeducation about these two often conflicting motivational systems and the central role one's emotions play in driving one toward one system or the other. For example, a very worried GAD patient may avoid taking the risk of applying for a job because of the risk of failure, and thereby lose out on the rewards contained in a potentially satisfying career. EDM is designed to address both GAD and depressive disorders, which the authors refer to as stress disorders. The authors note that patients with stress disorders commonly engage in what they refer to as Negative Self-Referential Processing (NSRP) often including rumination, worry, and self-criticism in response to intensive aversive emotional experiences [28]. In support of including GAD, MDD, and other depressive disorders as stress disorder, they note that GAD and MDD are 48-72% comorbid and share common underlying neurobiological processes.

Based on the EDM, Emotion Regulation Therapy ERT, consists of two phases. The first phase contains psychoeducation about the motivation systems and the emotions that fuel them, development of mindful emotion regulation skills, such as decentering and cognitive reappraisal to address intense emotions such as anxiety, anger, and sadness and accompanying NSRPs, such as self-criticism, worry, and rumination [28]. Patients develop more courageous and compassionate self-statements. In the second phase of treatment, patients are assisted in identifying meaningful valued activities and how anxiety and depression have kept them from engaging in these important life events. Therapists then assist clients in behavioral and imaginal ways to approach rather than avoid these activities. When patients have difficulty with these activities between sessions, therapist engage patients in "Do-Overs" in which patients vividly imagine how they could manage the difficult emotions and situations going forward. Preliminary efficacy of ERT was supported by a 20session open trial with adults meeting criteria for GAD with and without comorbid MDD [29]. Sessions were 60 minutes, except for sessions11-16 that were 90 minutes to allow for time for exposure exercises. Findings indicated that 66.75 of patients achieved high end state functioning at post treatment, 75% at 3-month and 85% at 9-month follow-up assessments. 45.5% of patients with comorbid MDD obtained high end state functioning at post treatment, with 70% at 3 months and 80% at 9-month follow-up obtaining high end state functioning. High end state functioning indicates that patients are within one standard deviation of a normative group on one or more measures [30]. It is encouraging that treatment gains were not only maintained after treatment was over, but patients continued to make additional improvements.

In a recent randomized control trial comparing ERT with a minimal attentional control condition [30], treatment was

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administered in the same format as in the open trial [29]. ERT proved superior to the control condition and evidenced significant improvement on measures of GAD and MDD symptoms and numerous other measures, including functional impairment and quality of life. Consistent with the open trial [30], 80% of patients achieved high end state functioning at 9month follow-up. In addition, 63% of MDD obtained high-end state functioning at 9- month follow-up and importantly, rumination and anhedonia were also significantly reduced. These findings are very impressive given the fact that traditional CBT treatments typically have only obtained high endstate functioning in about 40 to 50 % of patients with GAD and did not do well on measures of depression [30]. However, more recently developed CBT approaches as reviewed in this article have shown improvement on these earlier CBT interventions.

APPLIED RELAXATION

While the CBT treatments described above contain multiple components and techniques, Applied Relaxation (AR) is another evidence-based treatment for GAD that contains the components of progressive muscle relaxation and application of relaxation in daily life [31,32]. AR involves teaching patients diaphragmatic breathing and to systematically tense and relax their muscles over a series of sessions resulting in ability to apply relaxation skills immediately, (cue-controlled) upon noticing the beginning of anxiety symptoms. In a randomized controlled trial of acceptance-based behavior therapy vs applied relaxation, both treatments were equally effective Hayes-Skelton and colleagues [33] [33]. provide a contemporary discussion of AR for GAD that includes how mindfulness and acceptance may be fostered thru AR.

INTEGRATION OF MOTIVATIONAL INTERVIEWING WITH CBT

While the GAD models described above have focused on theory based content of treatment, the integration of motivational interviewing with CBT (MI-CBT) combines the process of delivering CBT with traditional CBT. Motivational Interviewing (MI) is a "client-centered, directive approach designed to enhance intrinsic motivation for change through understanding and resolving ambivalence about change" [34]. MI therapists seek to embody therapy with the "spirit MI" with client centered processes designed to help patients deal with ambivalence about change and increase motivation to make changes that patients come to see as being in their own best interest.

The spirit of MI includes a therapeutic relationship based on partnership or collaboration, profound acceptance and belief in the patient's absolute worth conveyed by accurate empathy, autonomy support, and affirmation of patients' strengths and efforts, and are largely drawn from Carl Rogers' [35] humanistic client centered therapy, and include skills such as active listening and asking open-ended questions. Specific MI skills include expressing empathy, developing discrepancy between patients' current problematic beliefs and behaviors and personal values inconsistent with these behaviors; rolling with resistance rather than confronting it directly, and supporting patient self-efficacy [36]. Because patients with GAD hold positive beliefs about the value of worry and how worry frequently gets reinforced by the nonoccurrence of the event worried about, a study was conducted a study where one group of GAD patients received four session of MI, exploring with patients their ambivalence about change and then 10 sessions of CBT with patients who only received 10 sessions of CBT [36]. CBT followed procedures followed a manual developed by Borkovec & Costello [37] and included self-monitoring, applied relaxation, cognitive therapy and worry exposure. Results indicated that MI-CBT outperformed CBT alone on the reduction of worry, though on all other outcome measures. Analyses found that most of the superior outcome of MI-CBT was due to the improvement in GAD high worriers. Consistent with MI principles and procedures, patients who received MI-CBT reported experiencing their therapists as "evocative guides" and as patients being more actively involved in treatment, while CBT alone patients described their therapists as "directive" and as patients saw themselves as more passively compliant [36].

In a subsequent study designed to improve on the previous study by equating number of treatment sessions and integrating MI throughout the CBT treatment (MI-CBT) and to select high GAD worriers, it MI-CBT again outperformed CBT alone [38]. While there were not between group differences at the end of treatment, at 12-month follow-up, the MI-CBT group was over 5 times more likely to be recovered and over 7 times more likely to meet criteria for clinically significant change. While the CBT alone group maintains post treatment gains at

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follow-up, the MI-CBT group continued to make significant improvements. In addition, there were twice as many dropouts in the CBT alone group. Not surprisingly, MI-CBT therapist were rated by observers as higher in empathy and the MI Spirit. The authors of the study suggest that MI-CBT patients likely continued to improve during the follow-up treatment because of the nature of MI which supports patient autonomy, selfefficacy, and attributions for improvements to their own efforts rather than to the therapist.

MECHANISMS OF CHANGE IN CBT FOR GAD

Hayes-Skelton and colleagues summarize important reasons for trying to determine mechanisms that lead to treatment outcome [33]. As the authors note, while cognitive-behavior therapies for GAD are effective for many individuals, compared to response rates for CBT for other anxiety disorders, treatment response rates are lower. If common mechanisms embedded within treatments can be identified, then therapists can target those mechanisms and thereby improve therapy outcomes. This may lead to more effective efficient treatments and aid in dissemination p403. Among other conditions, finding a factor that is a mediator of change, a session by session measure of the proposed mechanism and outcome measures showing that the proposed mechanism precedes rather than follows symptom change. Only a few studies of GAD have examined such proposed mechanisms. These include intolerance of uncertainty [39,15], decentering [33,40] and experiential avoidance [, cognitive reappraisal [30]. Interestingly, in the Bomyea et al. study, the CBT intervention did not explicitly focus on intolerance of uncertainty but still found intolerance of uncertainty to mediate change in worry. Decentering is the ability to observe thoughts, feelings, and bodily sensations from a more distant perspective as transient mental events and not truths about oneself. Decentering allows one to not be as triggered emotionally by the internal events in the mind [40,41]. Decentering was found to mediate changes in worry and anxiety for both acceptance-based behavior therapy (ABBT) and applied relaxation. Decentering also mediated change in Emotion Regulation Therapy (ERT) for patients with GAD with or without co-occurring MDD [40]. Experiential avoidance refers to rigid attempts to avoid or escape unwanted, distressing internal experiences. Experiential avoidance has been implicated across a wide variety of psychopathological conditions [23]. Experiential avoidance proved to be a mediator of change in worry and quality of life with both ABBT and applied relaxation [42]. It would be profitable for future studies with other GAD models and treatments to include similar measures to see if they are trans diagnostic mediators of therapy outcome.

CONCLUSION

Given the finding that compared to other anxiety disorders GAD has not fared as well in terms of long-term effectiveness, the research reviewed in this article should provide optimism that a variety of CBT interventions have now been shown to confer advantages over earlier CBT approaches. However, Borkovec and colleagues' initial development of CBT for GAD and the evidence obtained for worry as a central factor in GAD was ground breaking and set the stage for future models to refine and test variations on this influential mode [43]. Research on mechanisms that predict therapy outcome, can now guide clinicians in focusing treatment on these core processes and improve treatment effectiveness. While each of the CBT models discussed in this article have their own special focus, whether positive and negative beliefs about worry, intolerance of uncertainty, avoidance of internal experiences, and emotion dysregulation, all models address the importance of worry as an avoidance mechanism and offer alternative forms of emotional regulation. The findings that MI-CBT is more effective than CBT alone suggests that the more recent GAD models and treatments reviewed above might also be enhanced if integrated with MI. This appears to be a fertile arena for discovering new and improved treatments for GAD.

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