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# Three-year outcomes of adults with anxiety and related disorders following cognitive-behavioral therapy in a non-research clinical setting

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ABSTRACT

Anxiety and related disorders are highly prevalent and costly to society. Fortunately, a large number of randomized controlled trials have demonstrated the efficacy of cognitive behavioral therapy (CBT) in the treatment of anxiety and related disorders. A smaller number of effectiveness studies have also demonstrated that similar outcomes to randomized controlled trials can be obtained in "real-world" settings. There is minimal research, however, into long-term outcomes in effectiveness research. This study describes the outcomes of 98 individuals with anxiety and related disorders treated in an outpatient, fee-for-service setting using a case formulation CBT approach. Participants were followed up each year after their discharge, for a period of 3 years. The results indicate that patients maintained their treatment gains, with large effect sizes obtained from pre-treatment to each follow-up time point ($d = 1.11–1.60$). The results provide preliminary evidence to suggest that individuals treated with CBT in "real-world" settings maintain their treatment gains in the long-term.



Anxiety disorders are highly prevalent (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012) and costly to society (Greenberg et al., 1999; Tolin, Gilliam, & Dufresne, 2010). Fortunately, the short term efficacy of cognitive behavioral therapy (CBT) has consistently been demonstrated in the treatment of anxiety and related disorders (Acarturk, Cuijpers, Van Straten, & De Graaf, 2009; Gava et al., 2007; Hanrahan, Field, Jones, & Davey, 2013; Mitte, 2005; Watts et al., 2013; Westen & Morrison, 2001; Wolitzky-Taylor, Horowitz, Powers, & Telch, 2008). However, despite the numerous studies demonstrating short-term efficacy, long-term outcomes of CBT for the anxiety and related disorders are less well studied.

A small number of randomized controlled trials (RCTs) have followed participants for 1 year or more after treatment discontinuation to investigate the long-term efficacy of CBT. The long-term efficacy of CBT has been demonstrated in panic disorder (PD; Bruce, Spiegel, & Hegel, 1999), posttraumatic stress disorder (PTSD; Power et al., 2002), obsessive-compulsive disorder (OCD; Whittal, Robichaud, Thordarson, & McLean, 2008), generalized anxiety disorder (GAD; Salzer, Winkelbach, Leweke, Leibing, & Leichsenring, 2011) and social phobia (SP; Heimberg, Salzman, Holt, & Blendell, 1993). The results of these studies demonstrate that CBT is efficacious not only in the short term, but also in the long-term, beyond the active treatment period of RCTs.

While the many internally valid efficacy studies conducted on the short- and long-term efficacy of anxiety disorders using CBT techniques have been instrumental in advancing the treatment of anxiety and related disorders, a limitation of these studies is their reduced external validity, as they are generally designed to treat a single disorder using a fixed treatment manual and tend to include strict inclusion/exclusion criteria. A number of studies have addressed this critique by analyzing outcomes of CBT for anxiety disorders in non-research settings (effectiveness studies). Results from three meta-analyses have demonstrated the short-term

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effectiveness of CBT for anxiety disorders (Cohen's $d = 0.9–2.6$) (Hans & Hiller, 2013; Stewart & Chambless, 2009; Van Ingen, Freiheit, & Vye, 2009) and demonstrate results similar to those seen in more internally valid RCTs.

Relative to studies evaluating short-term effectiveness, there have been far fewer studies investigating the long-term effectiveness of CBT for anxiety disorders. However, one recent study demonstrated large pre-treatment to 12-month follow-up effect sizes (Cohen's *d)* ranging from 1.2 to1.6 across each of the anxiety disorders (DiMauro, Domingues, Fernandez, & Tolin, 2013). The present study aims to build on this literature by investigating the 3-year outcomes of individuals with anxiety and related conditions treated with a case formulation CBT approach at an outpatient clinic. Based on outcomes in other studies, it was hypothesized that symptoms of anxiety and functional impairment would improve from baseline and would be maintained across a 3-year follow-up period.

## 1. Method

The present study employed a prospective analysis of long-term outcome of patients seen at an outpatient CBT clinic (Anxiety Disorders Center/Center for Cognitive Behavioral Therapy, Hartford Hospital, Connecticut) for fee for service treatment during 2007–2011. Patients were seen by one of eight staff clinical psychologists employed at the site or by one of their students (postdoctoral fellow or practicum student), under the clinical psychologist's direct supervision. While a chart review to ensure CBT adherence was not conducted, psychologists employed at the site strictly adhere to a CBT approach in both treatment and training.

To be eligible for the study participants needed to be (1) aged 18 years or older; (2) have baseline data on at least one of the outcome measures; (3) have complete basic demographics available (age, gender, diagnosis); and (4) have a primary diagnosis of an anxiety or related disorder according to DSM-IV-TR (American Psychiatric Association, 2000) and a Clinician's Global Impression-Severity (CGI-S) score of 3 or greater. Four-hundred thirteen participants met inclusion criteria and 315 participants (76.3%) were lost to follow-up (i.e., were not able to be contacted or did not wish to provide follow-up information), resulting in a total sample size of 98 participants eligible for analysis. The sample was roughly equal in terms of gender (54.1% female) and had a mean age of 36.98 (SD = 13.85). Most patients were taking psychiatric medications at baseline (67.6%) and received an average of 16 sessions (SD = 12.84) of CBT. On average participants had a mean of 1.50 diagnoses (SD = 0.75) including GAD (30.6%), SP (30.6%), OCD (28.6%), PD (17.3%), specific phobia (13.3%), anxiety disorder not otherwise specified (13.3%), PTSD (7.1%), body dysmorphic disorder (5.1%) and agoraphobia (4.1%).

All participants were diagnosed at pre-treatment with the MINI International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998) and follow-up interviews were conducted by clinic staff or clinic volunteers, commencing approximately 12-months after treatment termination. The follow-up interviews included the self-report CGI-S and Sheehan Disability Scale (SDS) and were completed over the telephone. The NIMH CGI-S (Guy, 1976) is a widely used single item measure of global symptom severity. The present study used a self-report adaptation of the CGI-S, which shows an adequate correlation with the original clinician rating (Hannan & Tolin, 2007). The SDS (Sheehan, 1983) is a widely used 3-item scale that measures impairment in functioning across three domains: work, social and home functioning. Both measures were administered at pre-treatment, post-treatment and each of the follow-up time points. Written, informed consent was obtained from all participants prior to commencing treatment and the study was approved by the hospital institutional review board.

## 2. Data analysis

Differences between those who completed the long-term follow-up and those that did not on baseline demographic and outcome measures were compared using the Mann–Whitney non-parametric equivalent of the independent-samples *t* test for continuous measures and $\chi^2$ tests for categorical measures. The longitudinal data were analyzed using mixed linear models (MLM) for repeated measures using an autoregressive covariance structure and incorporated all missing data. Effect sizes with 95% confidence intervals (CI) were calculated using Cohen's *d* based on pooled standard deviation and were calculated in two ways: (1) for the total sample (incorporating all missing data using the estimated marginal means from the MLM) and (2) for the completer sample (using observed means from those who returned follow up data at each time point). All analyses were conducted using SPSS Version 21 (IBM Inc., USA).

## 3. Results

### 3.1. Participants compared with those who were lost to follow-up

There were no significant differences between patients who provided follow-up data and those who were lost to follow-up on any of the continuous demographic pre-treatment data including age ($U = 14585.00$, $p = 0.41$), number of sessions ($U = 4285.00$, $p = 0.67$), number of diagnoses ($U = 14695.00$, $p = 0.42$), CGI-S ($U = 12825.50$, $p = 0.72$), or SDS total score ($U = 13718.50$, $p = 0.43$). There was also no significant difference between those who provided follow up data compared to those who were lost to follow up on the CGI-S ($U = 88.50$, $p = 0.52$) or SDS ($U = 180.00$, $p = 0.40$) at post-treatment, demonstrating that those who were followed up were unlikely to be merely those who responded well to treatment. For the categorical measures, there was no significant difference between those who provided follow-up data and those who were lost to follow-up on gender [$\chi^2$ (1, $N = 413$) = 0.23, $p = 0.63$] or medication status at baseline [$\chi^2$ (1, $N = 304$) = 0.49, $p = 0.48$].

### 3.2. Attrition and long-term outcome

On the CGI-S, 90 (92%) completed the measure at pre-treatment, 27 (28%) at post-treatment, 55 (56%) at 1-year follow-up, 49 (50%) at 2-year follow-up, and 28 (29%) at 3-year follow-up. On the SDS, 96 (98%) completed the measure at pre-treatment, 31 (32%) at post-treatment, 48 (49%) at 1-year follow-up, 45 (46%) at 2-year follow-up and 27 (28%) at 3-year follow-up. The results of the MLM analysis indicated a statistically significant effect of time for both of the outcome measures (CGI-S, $F(4, 158) = 32.85$, $p = <0.001$; SDS, $F(4, 152) = 27.08$, $p = <0.001$). Scores also remained significantly lower than pre-treatment at each of the follow-up time-points on both measures ($p$'s = <0.001), indicating that treatment gains were maintained. Means, standard deviations and effect sizes for both the completer sample (using observed means) and the total sample (using the estimated marginal means) for each of the follow up periods are outlined in Table 1. Effect sizes from pre-treatment to follow-up on the CGI-S were large across each of the follow-up time points (range 1.11–1.60) for the completer sample, and moderate to large for the ITT sample (taking into account all missing data) (range 0.57–1.18). On the SDS, effect sizes from pre-treatment to follow-up were also large for the completer sample (0.97–1.25) and moderate to large for the ITT sample (0.63–0.95).