Cognitive Therapy and Research (2020) 44:275–286
https://doi.org/10.1007/s10608-019-10063-6

ORIGINAL ARTICLE

Experiential Avoidance as a Mechanism of Change Across Cognitive-Behavioral Therapy in a Sample of Participants with Heterogeneous Anxiety Disorders

Elizabeth H. Eustis[1] · Nicole Cardona[1] · Maya Nauphal[1] · Shannon Sauer-Zavala[1] · Anthony J. Rosellini[1] · Todd J. Farchione[1] · David H. Barlow[1]

Published online: 21 November 2019

Abstract

Despite the substantial evidence that supports the efficacy of cognitive-behavioral therapy for the treatment of anxiety and related disorders, our understanding of mechanisms of change throughout treatment remains limited. The goal of the current study was to examine changes in experiential avoidance across treatment in a sample of participants ($N = 179$) with heterogeneous anxiety disorders receiving various cognitive-behavioral therapy protocols. Univariate latent growth curve models were conducted to examine change in experiential avoidance across treatment, followed by parallel process latent growth curve models to examine the relationship between change in experiential avoidance and change in anxiety symptoms. Finally, bivariate latent difference score models were conducted to examine the temporal precedence of change in experiential avoidance and change in anxiety. Results indicated that there were significant reductions in experiential avoidance across cognitive-behavioral treatment, and that change in experiential avoidance was significantly associated with change in anxiety. Results from the latent difference score models indicated that change in experiential avoidance preceded and predicted subsequent changes in anxiety, whereas change in anxiety did not precede and predict subsequent changes in experiential avoidance. Taken together, these results provide additional support for reductions in experiential avoidance as a transdiagnostic mechanism in cognitive-behavioral therapy.

Keywords Experiential avoidance · Mechanism of change · Transdiagnostic · Cognitive-behavioral therapy · Latent difference score

Although substantial evidence supports the efficacy of cognitive-behavioral therapy (CBT) for the treatment of emotional disorders, including anxiety disorders and depression (Butler et al. 2006; Hofmann and Smits 2008), the mechanisms through which successful interventions exert their effects remain less understood (Kazdin 2007). A more in depth understanding of why and how different treatment modalities work has important implications for the optimization, personalization, and dissemination of effective psychological treatments (Kazdin 2007). Additionally, adopting a mechanistic approach to evaluating the effectiveness of different treatments provides a common framework to distill the "active ingredients" that underlie changes in symptoms across protocols. In fact, while various treatment approaches exist within the umbrella of CBT, each targeting specific psychopathological populations (Barlow et al. 2004), it is likely that the majority of these interventions share common mechanisms of change (Kazdin 2007).

Experiential avoidance (EA) is a psychological process that has long been posited to play a significant role in the etiology and maintenance of a range of mental health conditions (Hayes et al. 1999,1996). EA is defined as an unwillingness to experience uncomfortable or distressing physical sensations, thoughts, or emotions, coupled with subsequent attempts to escape or avoid such experiences, despite unfavorable long-term consequences (Chawla and Ostafin 2007; Hayes et al. 1996; Rochefort et al. 2018). Although occasional avoidance of unwanted internal experiences can be an adaptive emotion regulation strategy in the short-term, the

✉ Elizabeth H. Eustis
eeustis@bu.edu

[1] Center for Anxiety and Related Disorders, Department of Psychological and Brain Sciences, Boston University, 900 Commonwealth Avenue 2nd Floor, Boston, MA 02215, USA

resultant relief from distress can be reinforcing, leading to an enduring, rigid, and maladaptive pattern of EA (Hayes et al. 1996). Paradoxically, attempts to avoid or control distressing internal experiences have been shown to increase the frequency of the experience and the distress associated with it (e.g. Roemer and Borkovec 1994; Wegner et al. 1987). Therefore, use of EA can maintain and increase symptoms of anxiety and related disorders. EA can include a wide range of attempts to control or alter various distressing internal experiences including physical sensations, thoughts, and emotions, and can also manifest behaviorally (e.g., avoiding situations that might lead to a strong emotion). Previous research suggests that different manifestations of EA may differentially predict anxiety and depression (Blalock and Joiner 2000). However, regardless of the specific form, the various manifestations of EA serve the same function-to attempt to avoid or alter unwanted distressing internal experiences.

Experiential avoidance has been implicated as a vulnerability factor in various types of psychopathology, with particularly substantial evidence for its association with anxiety and depressive disorders (Naragon-Gainey and Watson 2018). Additionally, lower levels of EA have been associated with reduced PTSD symptoms following a traumatic experience in samples of college students and veterans with PTSD and related impairments (Meyer et al. 2019; Orcutt et al. 2005). Finally, in a non-clinical sample, EA mediated the relations between worry and several constructs that are also associated with the development of emotional disorders (intolerance of uncertainty, metacognitive beliefs, and negative emotional schemas; Akbari and Khanipour 2018). EA has also been associated with the maintenance of anxiety and depressive disorders. Specifically, one recent study found that EA uniquely predicted the maintenance of anxiety disorders over and above neuroticism, rumination, and worry in a sample of adults with current or past anxiety disorders (Spinhoven et al. 2017). In addition, EA has been associated with the maintenance of additional emotional disorders including obsessive–compulsive disorder (OCD), and post-traumatic stress disorder (PTSD), along with related maladaptive behaviors that function to avoid strong emotions such as substance use and suicidality (Hayes et al. 1996). Taken together, EA appears to be a transdiagnostic process that is relevant to the range of anxiety, depressive, and related disorders (Hayes et al. 1996; Naragon-Gainey and Watson 2018).

Experiential avoidance has received increased attention as a treatment target for emotional disorders (Gámez et al. 2011) given its role as a psychopathological process that contributes to the development and maintenance of these conditions. In fact, EA is central to mindfulness and acceptance-based behavioral conceptual models and treatments, which include a focus on altering how individuals respond to their internal experiences (e.g., emotions, thoughts, physical sensations) through decreasing EA and increasing acceptance (e.g., Hayes et al. 2011; Roemer and Orsillo 2009, 2014). Emotional avoidance is also a target in other CBT approaches (e.g., Barlow et al. 2018).

Previous research has demonstrated significant reductions in EA following treatment with mindfulness and acceptance-based behavioral interventions, as well as more traditional CBT approaches, across samples with heterogeneous anxiety disorders (Arch et al. 2012; Ciarrochi et al. 2010; Roemer et al. 2008). Moreover, change in EA is related to change in treatment outcomes. For example, in a trial of acceptance and commitment therapy (ACT; Dalrymple and Herbert 2007), early change in EA predicted later improvements in symptom severity for participants with social anxiety disorder; a similar pattern of results was observed during treatment with mindfulness and acceptance-based group therapy (Kocovski et al. 2009). In addition, reductions in EA mediated change in symptom outcome and quality of life during acceptance-based behavior therapy and applied relaxation in a sample of participants with generalized anxiety disorder (Eustis et al. 2016). Kocovski et al. (2015) utilized rigorous latent difference score analyses in a sample of participants with social anxiety disorder who received either mindfulness and acceptance-based group therapy or traditional CBT to examine acceptance (sometimes referred to as the opposite of EA), but the authors reported that the LDS results for acceptance did not indicate one clear model with better fit, and should be interpreted with caution, limiting the conclusions that can be drawn. Finally, Espejo et al. (2017) found that reductions in EA mediated decreases in negative affect and fear ratings in a sample of 48 veterans receiving transdiagnostic group CBT. The results from these studies indicate that EA decreases significantly across treatment for emotional disorders, and that change in EA is often significantly associated with outcomes. Despite the existing research support for EA as a hypothesized mechanism of change in CBT, several previous studies relied on open trial designs and were limited by small sample sizes, and the majority did not utilize statistical analyses that satisfy the requirements for full temporal precedence.

Kazdin (2007) puts forth seven criteria to establish variables as mechanisms or mediators: (1) strong association, (2) specificity, (3) consistency, (4) experimental manipulation, (5) timeline, (6) gradient, and (7) plausibility, and notes that no single study can cover all of these requirements given their scope. The existing literature has demonstrated a strong association between reductions in EA and treatment outcome, and these results have been replicated across a range of CBT interventions and studies (consistency). In addition, there is a theoretical explanation (plausibility) for how reductions in EA lead to improvements in outcomes both in the literature on mindfulness

and acceptance-based behavioral therapies as well as more traditional CBTs (e.g., Arch and Craske 2008; Hayes et al. 2012; Hayes-Skelton et al. 2012; Roemer and Orsillo 2009, 2014). However, as described previously, research on the temporal precedence of change in EA and change in outcomes is lacking (timeline).

EA has been conceptualized as both a global construct (i.e., single-factor) as well as a multidimensional construct. The Acceptance and Action Questionnaire (AAQ; Hayes et al. 2004) and its revised version (AAQ-II; Bond et al. 2011) are the most widely used measures of EA to date. The original version of the AAQ measures two aspects of EA: (1) non-acceptance of distress and (2) interference of avoidance with valued actions (or personally meaningful actions). Unfortunately, the original AAQ has demonstrated suboptimal internal consistency (Hayes et al. 2004; Rochefort et al. 2018).

The AAQ-II (single factor) was developed in response to psychometric concerns with the original AAQ, and yields better internal consistency relative to the original AAQ; unfortunately, it continues to demonstrate suboptimal construct validity with measures of neuroticism, negative affect, and mindfulness (Rochefort et al. 2018). Specifically, the AAQ-II appears to be a stronger measure of an individual's perceived distress (or negative affect) than of an individual's response to distress (Wolgast 2014). Additionally, more recently, the AAQ has been described in the literature as a measure of psychological inflexibility, a broader term referring to the six key targets within ACT (Gámez et al. 2011; Hayes et al. 2012, 2004), suggesting that it may not be a pure measure of EA.

A relatively newer and understudied alternative to the AAQ and AAQ-II is the Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gámez et al. 2011). The MEAQ is a 62-item, multidimensional self-report measure designed to both address the psychometric limitations of the AAQ and AAQ-II, and to distinguish EA from higher order personality traits like negative affectivity. This measure assesses EA as a trait-like tendency and attempts to capture extreme, pervasive manifestations of EA. Cross-validation studies of the MEAQ have demonstrated good internal consistency, optimal convergent validity with measures of avoidance, and adequate discriminant validity from neuroticism (see "Measures" for additional detail; Gámez et al. 2011; Rochefort et al. 2018). Based on these findings, Rochefort et al. (2018) recommend using the MEAQ to assess EA over other available self-report measures. Although the MEAQ includes six subscales (see "Method"), distress aversion—defined as "negative evaluations or attitudes toward distress" and attempts to avoid emotional distress—(Gámez et al. 2011)—is believed to be core to the construct of EA, and has demonstrated one of the highest factor loadings out of the subscales in initial studies (Gámez et al. 2011).

With the exception of one idiographic single case study that examined change on the distraction/suppression subscale of the MEAQ (Boswell et al. 2014), the MEAQ has not been used to examine changes in EA during treatment. Thus, the current study has three main goals. First, we aimed to examine whether there were significant reductions in the MEAQ total score, and the distress aversion subscale of the MEAQ, during a course of CBT. Given the absence of research utilizing the MEAQ in treatment outcome research we decided to examine both the MEAQ total score and the distress aversion subscale, as this subscale has been identified as core to the construct of EA. We hypothesized that there would be significant reductions in both the MEAQ total score and the distress aversion subscale across treatment. The second aim was to examine whether change in EA was associated with change in treatment outcome (symptoms of anxiety); we hypothesized that change in EA would be significantly associated with change in symptoms of anxiety. The third aim, which was exploratory and consistent with Kazdin's timeline criteria for mechanisms, sought to examine whether change in EA preceded and predicted subsequent change in symptoms of anxiety.

Method

Procedure

The study was approved by the Institutional Review Board at Boston University. The current study is a secondary data analysis from a randomized controlled equivalence trial comparing five CBT protocols (described below) and a waitlist control condition in a sample of participants with heterogeneous principal anxiety disorders. Given the existing literature that indicates that change in EA occurs across a range of treatments that fall under the CBT umbrella (e.g., Eustis et al. 2016), and our aim to explore the role of EA as a mechanism of change in CBT, the active treatment conditions (i.e., all five CBT protocols) were collapsed into a single sample and waitlist participants were excluded. Additional details about the parent study, including participant flow, have been previously reported (please see Barlow et al. 2017).

Participants

The current study includes 179 participants who were randomized to active CBT treatment conditions in the parent study (Barlow et al. 2017). Participants were recruited from the Center for Anxiety and Related Disorders at Boston University. Inclusion criteria required that eligible individuals were assigned a principal diagnosis of panic disorder with or without agoraphobia (PD/A; $n = 47$), generalized anxiety

disorder (GAD; $n = 49$), social anxiety disorder (SAD; $n = 48$), or obsessive–compulsive disorder (OCD; $n = 35$) using the Anxiety Disorder Interview Schedule (ADIS; Brown and Barlow 2014; Brown et al. 1994), were 18 years of age or older, and fluent in English. There were no exclusions based on emotional disorder comorbidity. The majority of participants (83.2%) identified racially as White, while 7.3% identified as Black, 6.7% as Asian, 0.6% as Native Hawaiian or Pacific Islander, and 2.2% as Multiracial. In terms of ethnicity, 8.4% identified as Hispanic/Latinx, while 91.6% identified as non-Hispanic/Latinx. The majority of the sample identified their biological sex as female (55.3%), with 44.7% identifying their biological sex as male. Finally, the mean age of the sample was 30.66 years (SD = 10.77).

CBT Interventions

Participants were randomized to either the waitlist control condition or to one of two active treatment conditions, the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders or Single Disorder Protocols (block randomization with a 1:2:2 allocation ratio, respectively). The Unified Protocol (Barlow et al. 2018) is a transdiagnostic cognitive-behavioral intervention that was developed to target emotional disorders (e.g., anxiety, depressive, and related disorders). This protocol includes five core modules aimed at decreasing aversive, avoidant responses to emotional experiences: mindful emotion awareness, cognitive flexibility, countering emotional behaviors, understanding and confronting physical sensations, and emotion exposures. Previous research supports the efficacy of the Unified Protocol in treating heterogeneous anxiety and related emotional disorders (Barlow et al. 2017; Barlow and Farchione 2018; Farchione et al. 2012).

The single disorder protocols included in the current study were Managing Social Anxiety: A Cognitive Behavioral Therapy Approach, second edition (Hope et al. 2006, 2010) for SAD, Mastery of Your Anxiety and Panic, fourth edition (Barlow and Craske 2006; Craske and Barlow 2007), for PD/A, Mastery of Your Anxiety and Worry, second edition (Craske and Barlow 2006; Zinbarg et al. 2006) for GAD, and Treating Your Obsessive–Compulsive Disorder With Exposure and Response (Ritual) Prevention Therapy, second edition (Foa et al. 2012a, b) for OCD.

Measures

The Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gámez et al. 2011) is a 62-item self-report measure of experiential avoidance. The MEAQ yields a total score and six subscales: distress aversion, behavioral avoidance, procrastination, distraction/suppression, repression/denial, and distress endurance. In addition to being hypothesized to tap into one of the core aspects of EA, the distress aversion subscale (DA) had one of the strongest factor loadings (compared to the other subscales) on a higher-order dimension of EA (Gámez et al. 2011), and has been utilized in previous research examining EA (Naragon-Gainey and Watson 2018). For both the MEAQ total score and the distress aversion subscale score higher scores indicate higher levels of EA and distress aversion, respectively. The MEAQ has evidenced stronger discriminatory validity with constructs such as neuroticism and negative affect compared to previous measures of EA (e.g., MEAQ & NA: $r = 0.54$, MEAQ-DA & NA: $r = 0.41$, AAQ-II & NA: $r = 0.74$; Gámez et al. 2011). Rochefort et al. (2018) examined the convergent and discriminant validity of the MEAQ and AAQ-II with neuroticism/negative affect and reported that the AAQ-II was more strongly correlated with measures of neuroticism/negative affect (rs = 0.59–0.71), whereas correlations between the MEAQ and neuroticism/negative affect were between 0.44 and 0.57. With regard to convergent validity, they reported that the MEAQ was more strongly correlated with other mindfulness and acceptance-based constructs (e.g., mindfulness) as would be expected, whereas the AAQ-II was more strongly correlated with neuroticism/negative affect than it was with mindfulness and acceptance-based constructs. In addition, the total score and distress aversion subscale of the MEAQ have demonstrated good–excellent internal reliability across clinical, community, and student samples (MEAQ total score α range 0.92–0.95, MEAQ-DA α range 0.84–0.89; Gámez et al. 2011). Internal reliability in the current sample at pre-treatment was $\alpha = 0.87$ for the total score, and $\alpha = 0.88$ for the distress aversion subscale. Taken together, these results suggest that the MEAQ has stronger psychometric properties than previous measures of EA. Therefore, we utilized the MEAQ total score and the MEAQ distress aversion subscale in the current study.

The Hamilton Anxiety Scale (HAS; Hamilton 1959) is a gold standard measure of symptoms of anxiety that has demonstrated good reliability and validity (Shear et al. 2001). In addition, the HAS has been used as an outcome measure in recent transdiagnostic treatment research (Barlow et al. 2017). Higher scores on the HAS indicate higher levels of anxiety. In the current study, this measure was administered by independent evaluators who were blind to treatment condition following the Structured Interview Guide for the Hamilton Anxiety (SIGH-A; Shear et al. 2001). Internal reliability in the current sample at pre-treatment was $\alpha = 0.83$.

Data Analytic Plan

All analyses were conducted on the raw data using Mplus version 7 (Muthén and Muthén 1998) and robust maximum likelihood estimation (MLR) to account for non-normal

and missing data. To examine our first aim, a series of univariate latent growth curve models (LGMs) were estimated to examine change in EA (MEAQ total score and MEAQ distress aversion subscale) and symptoms of anxiety across treatment. The MEAQ and HAS were administered every four sessions (five time points: pre-treatment, session 4, session 8, session 12, and post-treatment), roughly every four weeks. Univariate LGMs were conducted for each measure to determine: (1) whether the sample (on average) experienced significant reductions in EA and anxiety symptoms across treatment (i.e., latent slope mean) and (2) whether there were significant individual differences in trajectories of change in EA and anxiety symptoms across participants (i.e., latent slope variance). Slope factors were justified by fixing the factor loadings for the pre-treatment and post-treatment assessments to 0 and 1, respectively, and freely estimating the slope loadings at sessions 4, 8, and 12. This specification permits modeling of nonlinear trajectories in EA and anxiety symptoms over the course of treatment. Latent intercepts were fixed to 1 (i.e., pre-treatment value).

After estimating the univariate LGMs, two parallel process LGMs were estimated to examine the associations between change in EA and change in symptoms of anxiety over treatment (i.e., MEAQ total score and HAS; MEAQ-DA and HAS). Residual covariances between the measures at each assessment (e.g., HAS scores at session 4 with MEAQ total score at session 4) were specified to capture time-specific covariance. In all LGMs, associations between the latent intercept and slope factors were freely estimated. Model fit was evaluated using root-mean-square-error of approximation (RMSEA; Steiger 1990), the Tucker-Lewis Index (TLI; Tucker and Lewis 1973), and the comparative fit index (CFI; Bentler 1990). Standard model fit criteria were used to determine adequate model fit (RMSEA close to or < 0.06, CFI and TLI values ≥ 0.95). The acceptability of the models was further evaluated by the presence or absence of salient localized areas of strain in the solutions (e.g., modification indices), and the strength and interpretability of the parameter estimates.

For our final and exploratory aim, we conducted a series of bivariate latent difference score models (LDS; Ferrer and McArdle 2003) to examine the temporal precedence of within-participant changes in EA and anxiety symptoms, and distress aversion and anxiety symptoms. LDS analyses combine aspects of latent growth curve modeling, cross-lagged regression analyses, and latent difference score analyses (McArdle and Nesselroade 1994). These models examine the latent changes on variables across multiple time points, and test whether change in one variable precedes and predicts change in another variable using a *coupling parameter* γ. Following convention (Ferrer and McArdle 2003), four competing coupling parameter specifications were evaluated. LDS models were first estimated for MEAQ total score and anxiety, and subsequently for the MEAQ distress aversion subscale and anxiety. The first model specified reciprocal prediction of EA and anxiety across time points (e.g., EA → HAS *and* HAS → EA; "both coupling"; see Fig. 1), the second specified EA predicting anxiety only (EA → HAS), the third specified anxiety predicting EA only (HAS → EA), and the fourth omitted the coupling parameter (no coupling). The Satorra–Bentler calculation for scaled chi-square difference values when using MLR was utilized to compare model fit across these four models. Given that participants in the parent trial who received a principal diagnosis of PDA/PD received 12 sessions of treatment and all other participants received 16 sessions of treatment,[1] we conducted the LDS analyses with the participants in the active CBT conditions with a principal diagnosis of SAD, GAD, or OCD ($n = 164$), and excluded participants with principal PDA/PD in order to examine changes and timing across an equal number of treatment sessions.

Results

Univariate Latent Growth Models

Means and standard deviations for study variables are presented in Table 1. Results from the three univariate LGMs, all of which provided acceptable model fit, can be found in Table 2. The univariate LGMs examining changes in MEAQ total score, MEAQ-DA, and HAS across treatment in the sample of participants who received CBT indicated that there were significant reductions (on average) in EA and anxiety symptoms (MEAQ total score slope mean = − 34.01, $p < 0.001$; MEAQ-DA slope mean = − 9.78, $p < 0.001$; HAS slope mean = − 7.59, $p < 0.001$) and significant individual differences in trajectories of change for these constructs (MEAQ total score slope variance = 958.27, $p < 0.001$; MEAQ-DA slope variance = 71.78, $p < 0.001$; HAS slope variance = 36.07, $p < 0.001$).[2] The univariate slope factor loadings indicate that most of the change (reductions) in MEAQ-DA occurred over the first eight sessions (session 4 and 8 factor loadings = 0.35 and 0.79, respectively, i.e., 35% of the reduction in MEAQ-DA occurred by session 4 and

[1] Number of treatment sessions in the Unified Protocol condition were based on the recommended number of sessions in each SDP to control for number of sessions across active treatment conditions.

[2] Additional univariate LGMs examined reductions in EA (MEAQ total score and MEAQ-DA subscale) within the Unified Protocol and Single Disorder Protocol conditions separately, and indicated that there were significant reductions in EA (MEAQ total score and MEAQ-DA) within each treatment condition, and no significant differences between the Unified Protocol and Single Disorder Protocol conditions.

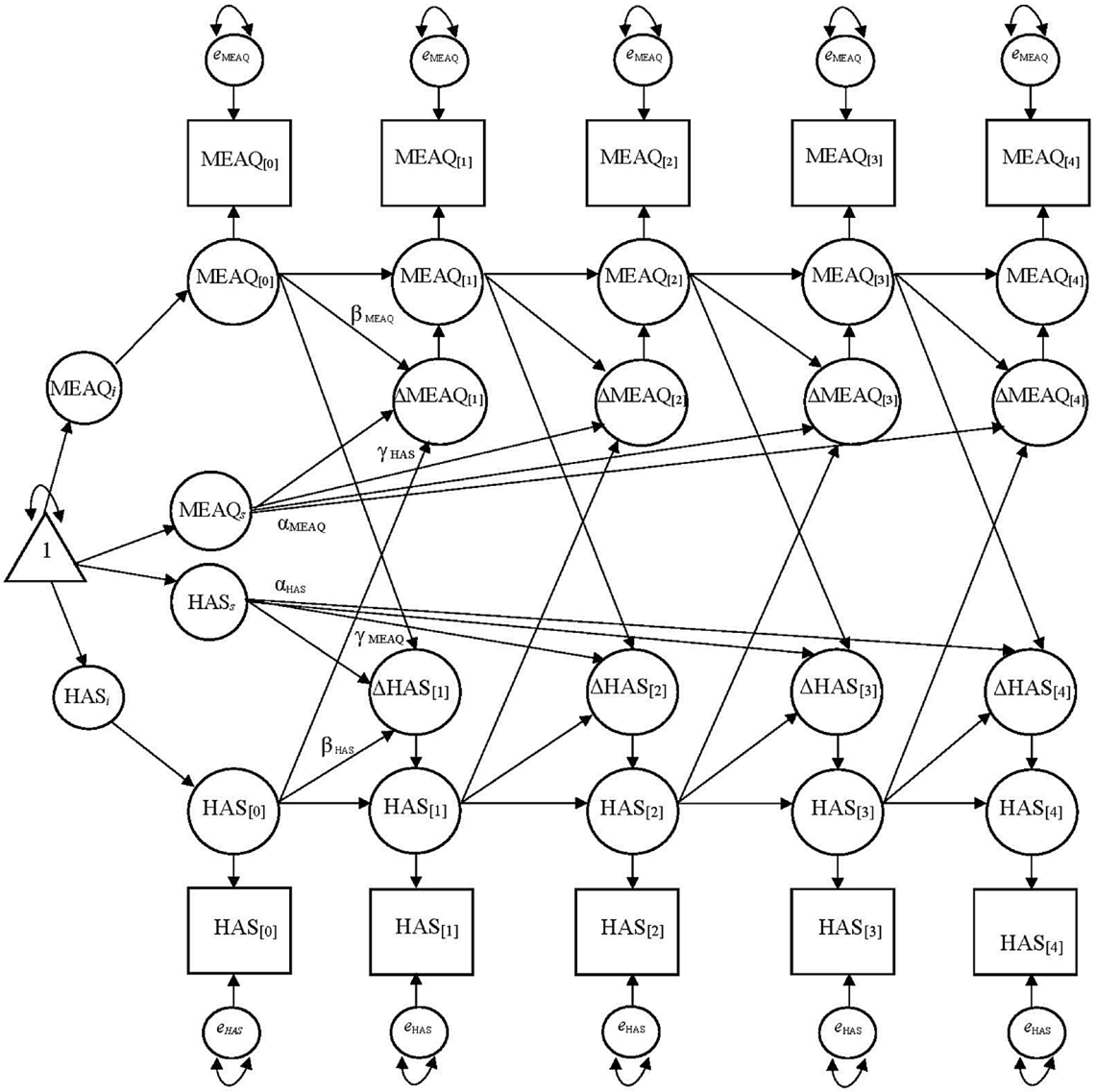

Fig. 1 A Bivariate latent difference score model of experiential avoidance (MEAQ) and anxiety (HAS) with couplings in both directions. $\Delta MEAQ_{[t]}$ and $\Delta HAS_{[t]}$ = latent change scores at time *t*. $MEAQ_i$ and HAS_i = initial scores. $MEAQ_s$ and HAS_s = slopes. Triangle = constant. α = slope parameter. β = autoproportional parameter. γ = coupling parameter

Table 1 Means and standard deviations of study variables in the collapsed CBT sample

Measure	Pre-tx	Session 4	Session 8	Session 12	Post-tx
MEAQ-Total	214.56 (32.67)	210.64 (33.87)	196.47 (36.23)	186.43 (39.50)	182.55 (38.44)
MEAQ-DA	49.20 (11.34)	46.16 (11.91)	41.61 (12.81)	40.13 (13.12)	39.89 (13.13)
HAS	17.03 (9.05)	16.05 (7.95)	13.10 (7.39)	11.53 (7.48)	8.93 (6.31)

MEAQ-Total Multidimensional Experiential Avoidance Questionnaire total score, *MEAQ-DA* Multidimensional Experiential Avoidance Questionnaire distress aversion subscale, *HAS* Hamilton Anxiety Scale

79% by mid-treatment). In comparison, a smaller proportion of the change in MEAQ total score and HAS occurred by mid-treatment (session 8 factor loading = 0.57 for MEAQ total score and 0.55 for HAS).

Association Between EA and Anxiety Outcomes

Parallel process LGMs were conducted to examine the associations between change in EA and change in symptoms of

Table 2 Estimates of temporal variation in experiential avoidance and anxiety symptoms across treatment from single-process univariate latent growth models

Parameter estimate	MEAQ	MEAQ-DA	HAS
Intercept			
Mean (SE)	214.67*** (2.65)	49.42*** (0.91)	17.26*** (0.67)
Variance (SE)	863.11*** (104.81)	104.47*** (12.39)	55.77*** (8.11)
Slope			
Mean (SE)	− 34.01*** (3.21)	− 9.78*** (0.92)	− 7.59*** (0.75)
Variance (SE)	958.27*** (187.53)	71.78*** (14.99)	36.07*** (9.67)
Factor loadings			
Baseline	0.00	0.00	0.00
Session 4	0.14	0.35	0.16
Session 8	0.57	0.79	0.55
Session 12	0.84	0.89	0.73
Post-Tx	1.00	1.00	1.00
Intercept-slope			
Covariance	− 143.48	− 6.62	− 29.18***
Correlation	− 0.16	− 0.08	− 0.65***

MEAQ Multidimensional Experiential Avoidance Questionnaire, *MEAQ-DA* Multidimensional Experiential Avoidance Questionnaire distress aversion subscale, *HAS* Hamilton Anxiety Scale. Fit values for univariate growth models: MEAQ $\chi^2 = 9.24$, $p = .60$, RMSEA = 0.00 (90% confidence interval [CI] 0.00–0.07, $p = .84$), TLI = 1.01, CFI = 1.00; MEAQ–DA $\chi^2 = 30.10$, $p = .001$, RMSEA = 0.11 (90% confidence interval [CI] 0.06–0.15, $p = .02$), TLI = 0.97, CFI = 0.97; HAS $\chi^2 = 18.46$, $p = .07$, RMSEA = 0.06 (90% confidence interval [CI] 0.00–0.11, $p = .31$), TLI = 0.97, CFI = 0.97

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

anxiety across treatment (Model 1: MEAQ total score and HAS; Model 2: MEAQ-DA and HAS). Both models provided acceptable model fit (Table 3). The completely standardized correlations among the latent variables indicated that change in MEAQ total score (completely standardized $r = 0.68$, $p < 0.001$) and MEAQ-DA (completely standardized $r = 0.57$, $p < 0.001$) were each significantly associated with change in HAS, with decreases in EA across treatment being significantly associated with decreases in symptoms of anxiety.

Latent Difference Score Models

Since previous analyses indicated that there were significant reductions in EA across treatment, and that change in EA was significantly associated with change in symptoms of anxiety, we wanted to evaluate the temporal precedence of changes in EA and anxiety using LDS modeling. These models were considered to be exploratory because the MEAQ and HAS were administered every four sessions opposed to every session (which would have permitted a finer-grained/session-by-session evaluation of concurrent change in EA and anxiety symptoms; cf. Gallagher et al. 2013). However, there is a precedent in the literature to use LDS analyses with four to five assessment time points (e.g. Hayes-Skelton et al. 2015; Kocovski et al. 2009). The first set of LDS analyses examined the MEAQ total score and HAS. MEAQ and HAS scores were standardized to foster LDS model convergence (i.e., due to large differences in score ranges/variances). However, in the initial LDS "both coupling" model for the MEAQ total score and HAS the coupling parameter from MEAQ → anxiety was not significant (estimate = 0.29, $p = 0.27$), indicating that change in MEAQ total score did not precede and predict subsequent change in HAS. The coupling parameter from anxiety → MEAQ was also not significant (estimate = − 0.07, $p = 0.88$). Based on these results, additional examination of model fit across the various models including the MEAQ total score

Table 3 Completely standardized latent correlations from parallel-process latent growth curve models of experiential avoidance and symptoms of anxiety

Construct	HAS_{INT}	HAS_{SLP}
$MEAQ_{INT}$	0.25**	− 0.15
$MEAQ\text{-}DA_{INT}$	0.13	− 0.16
$MEAQ_{SLP}$	− 0.11	0.68***
$MEAQ\text{-}DA_{SLP}$	− 0.10	0.57***

MEAQ Multidimensional Experiential Avoidance Questionnaire, *MEAQ-DA* Multidimensional Experiential Avoidance Questionnaire distress aversion subscale, *HAS* Hamilton Anxiety Scale, *INT* intercept, *SLP* slope. Fit values for parallel process models: MEAQ and HAS $\chi^2 = 61.67$, $p = .03$, RMSEA = 0.05, (90% confidence interval [CI] 0.02–0.08, $p = .49$), TLI = 0.97, CFI = 0.97; MEAQ–DA and HAS $\chi^2 = 83.90$, $p \leq .001$, RMSEA = 0.07, (90% confidence interval [CI] 0.05–0.10, $p = .06$), TLI = 0.96, CFI = 0.96

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 4 Satorra–Bentler scaled chi square difference scores and fit statistics for bivariate latent difference score models

Index	Both couplings	MEAQ-DA to HAS only	HAS to MEAQ-DA only	No coupling
χ^2/df	77.34/44	78.04/45	82.82/45	82.62/46
p	0.001	0.002	< 0.001	< 0.001
Satorra–Bentler Scaled χ^2/Δdf	–	1.18/1	8.26/1	4.99/2
p		0.28	< 0.01	0.08
RMSEA	0.08	0.08	0.08	0.08
CI	0.05–0.10	0.05-0.10	0.05-0.11	0.05–10
CFI	0.95	0.96	0.95	0.95
TLI	0.95	0.96	0.95	0.95
Overall fit significantly degraded?	–	No	Yes	Trend

MEAQ-DA Multidimensional Experiential Avoidance Questionnaire distress aversion subscale, *HAS* Hamilton Anxiety Scale, *RMSEA* root-mean-square error of approximation, *CI* 90% confidence interval of the RMSEA, *CFI* comparative fit index, *TLI* Tucker Lewis index

and the HAS was not warranted. The second set of LDS analyses examined the MEAQ-DA subscale and HAS. See Table 4 for results. The bidirectional change model, which included pathways from distress aversion (DA) to anxiety and anxiety to DA (both coupling) yielded acceptable model fit. The coupling parameter from DA → anxiety was significant, indicating that change in MEAQ-DA preceded and predicted change in anxiety at the subsequent time point (estimate = 0.30, $p = 0.01$), while change in anxiety did not precede and predict change in EA (based on the coupling parameter from anxiety → DA; estimate = − 0.33, $p = 0.28$). Next, the DA only model was run. The coupling parameter for DA preceding and predicting anxiety remained significant in this model (estimate = 0.26, $p = 0.02$). The second model fit was compared to the first model, and the non-significant Satorra–Bentler scaled chi-square difference test ($p = 0.28$) indicates that removing the pathways from anxiety → DA did not significantly degrade the model fit, and that the pathways from anxiety → DA can be dropped. Model 3 tested the pathway from anxiety → DA only (estimate = − 0.40, $p = 0.47$). This model was then compared to model 1. The significant Satorra-Bentler scaled chi-square difference test ($p = 0.004$) indicates that removing the DA pathway significantly degraded the model fit. Finally, the fourth model was run with no coupling and compared to the first model, and then the second model. The Satorra–Bentler scaled chi-square difference test was significant at a trend level when comparing model 4 to model 1 ($p = 0.08$) indicating that removing both pathways degraded the model at a trend level compared to the both coupling model. When comparing model 4 to model 2, the Satorra-Bentler scaled chi-square difference test was significant ($p < 0.01$), indicating that removing the pathways from DA to anxiety significantly degraded the model. Taken together, these results provide preliminary support that changes in DA precede and predict subsequent changes in symptoms of anxiety.

Discussion

The purpose of the present study was to add to the growing literature supporting EA as an important psychopathological process that can serve as a mechanism of action during cognitive-behavioral treatments for a range of conditions. Results suggest that, during a course of CBT for heterogeneous anxiety disorders, EA and anxiety symptoms decrease significantly, with most of the improvement on these targets occurring in the first half of treatment. Of note, approximately 80% of the change on the MEAQ distress aversion subscale (established as the core element of this construct) occurred in the first half of treatment, whereas only 57% of change on the MEAQ total score and 55% of change on the HAS occurred by mid-treatment. These results suggest that the distress aversion subscale may change earlier in treatment than MEAQ total score and anxiety symptoms. In general, the first half of treatment in the CBT interventions examined in the current study focus mostly on psychoeducation, cognitive interventions, and other skills (e.g., mindful emotion awareness, diaphragmatic breathing, progressive muscle relaxation, etc.), while the second half of these interventions tend to focus more on behavior change and situational exposures. It is possible that the distress aversion subscale changes earlier in treatment, as participants' understanding of and responses to their emotions begin to change, and that other MEAQ subscales, such as behavioral avoidance, may change later in treatment when there is a stronger focus on behavior change. However, additional research is needed to examine these questions empirically. In addition, there is variation across the CBT protocols utilized in the current study, and the SDP for OCD introduces exposure and response prevention earlier in treatment. Future research should examine if reductions in EA are associated with specific CBT treatment components. To our knowledge no other studies to date have examined change on the MEAQ or distress aversion subscale across treatment, with the exception of one single case study that examined the distraction/suppression MEAQ subscale (Boswell et al. 2014). The finding that there were significant reductions in EA across treatment is consistent with the existing literature (Arch et al. 2012; Roemer et al. 2008). Furthermore, parallel process LGMs revealed that change in EA, assessed via the

MEAQ total score and its distress aversion subscale, was significantly associated with change in anxiety symptoms. These findings are in line with the existing literature that indicates that change in EA is associated with change in outcomes (Dalrymple and Herbert 2007; Kocovski et al. 2009). With regard to baseline scores, results indicated that higher MEAQ total scores were significantly associated with higher levels of anxiety symptoms at pre-treatment. However, baseline MEAQ distress aversion scores were not significantly associated with baseline symptoms of anxiety. This was unexpected, as in general, research has found that higher levels of EA are associated with higher symptoms of anxiety (Hayes et al. 2004; Naragon-Gainey and Watson 2018). Given that the MEAQ is a relatively newer measure, additional research is warranted to examine whether this result is replicated in other samples. Finally, in order to establish the temporal precedence necessary to meet Kazdin's timeline criteria for mechanisms of change (Kazdin 2007), LDS analyses were used to explore whether improvements in EA preceded and predicted subsequent decreases in anxiety symptoms. Results from the LDS models examining the MEAQ total score and anxiety indicated that change in MEAQ total score did not precede and predict change in anxiety symptoms. However, our findings from the LDS models examining the distress aversion subscale of the MEAQ suggest that change on this subscale preceded and predicted change in anxiety symptoms. When the impact of anxiety on EA broadly (MEAQ total score) and the distress aversion subscale were examined, the results indicated that change in anxiety did not precede or predict change in EA, which provides additional support for EA as a mechanism of change. The results from the LDS models provide a unique contribution to the literature by building off of existing research that has found reductions in EA to be a mediator of outcomes (Espejo et al. 2017; Eustis et al. 2016) by examining the full temporal precedence of change in EA and change in anxiety. One other study utilized LDS analyses to examine change in acceptance (sometimes referred to as the opposite of EA) in a sample of participants with social anxiety disorder, but the results from these models were inconclusive (Kocovski et al. 2015).

The findings from the present study represent an important contribution to our field's understanding of how CBT, long established as efficacious for symptom reduction in anxiety disorders (Hofmann and Smits 2008), exerts its effects. The goals of this study, to identify whether EA drives symptom improvement during treatment, are consistent with recent efforts to develop more potent interventions by only including elements that lead to therapeutic change (e.g., the National Institute of Mental Health's Research Domain Criteria). Understanding the key processes that change during treatment, along with their effect on symptoms, may allow treatment developers to create interventions that include only active treatment components (i.e., skills) that target these mechanisms more directly. Given that all of the CBT protocols used in the present study consist of multiple components, future research should explore whether all skills included in these treatment packages each contribute to reductions in EA.

Additionally, much of the previous research exploring the role of EA in the context of treatment outcome research has used the AAQ or AAQ-II to assess this construct. Given the psychometric limitations of these measures, it is not surprising that the literature has been somewhat mixed with regard to the relationship between EA and other psychopathological processes. The present study, in contrast, used the MEAQ, a newly developed assessment tool that has evidenced strong psychometric properties and demonstrates that EA is a distinguishable construct from other risk-conferring transdiagnostic process (e.g., negative affectivity; Gámez et al. 2011). To our knowledge, the present study represents the first large-scale examination of the MEAQ in the context of a treatment outcome study. Furthermore, using a psychometrically sound measure of this construct allows for greater confidence in our finding that the distress aversion subscale of the MEAQ is a treatment mechanism for CBT. However, we found significant differences in results between the DA subscale and MEAQ total score both in the timing of change across treatment and the temporal relationship between change in these variables and change in anxiety. These differences in results raise questions about the utility of the MEAQ total score above and beyond the distress aversion subscale, at least in the current sample. Previous research has conceptualized the distress aversion subscale as central to the construct of EA and this subscale had one of the strongest factor loadings in initial tests, and has been used in previous research (Gámez et al. 2011; Naragon-Gainey and Watson 2018). This subscale focuses on individuals' negative evaluations of their distress (i.e. "non-acceptance of distress"; Gámez et al. 2011); changing evaluations of and reactions to emotions is consistent with conceptual models of mindfulness and acceptance-based behavioral therapies (e.g., Hayes et al. 2012; Roemer and Orsillo 2009, 2014), and the functional model of emotional disorders in the Unified Protocol (Barlow et al. 2018), one of the CBT protocols utilized in the current study. In addition, previous research has suggested that reductions in EA and increases in acceptance of emotions also occur in traditional CBTs that may not emphasize these constructs as explicitly as mindfulness and acceptance-based CBTs (Arch and Craske 2008; Eustis et al. 2016; Hayes-Skelton et al. 2012). Additional research is needed to examine the MEAQ total score and the other subscales across treatment, and to see whether or not our results are replicated. In line with Kazdin's criteria of specificity, future research is needed to investigate the relations among various mechanisms of change in CBTs. For

example, there are a number of constructs or mechanisms of change in the literature, mostly related to specific mental health disorders, that may have some overlap with EA (e.g., anxiety sensitivity, intolerance of uncertainty). This is an important area for future research. Future research should also continue to examine the relations among EA, negative affect, and neuroticism.

The findings of the present study must, of course, be interpreted in the context of its limitations. First, assessment of study variables occurred following every four sessions; weekly measure of EA and anxiety symptoms would have allowed for a more fine-grained understanding of the timing of improvements. Additionally, although the sample size was quite large overall and allowed for sophisticated data analytic techniques to establish temporal precedence of EA's effect on anxiety symptoms during CBT, we were unable to explore differential effects as a function of the 5 unique CBT protocols utilized. Additionally, one of the latent difference score analyses comparing fit across the various models was significant at a trend level, suggesting that our results will need to be replicated and should be interpreted with caution. The current study used the Hamilton Anxiety Scale administered by independent evaluators as a symptom outcome measure, which is a gold standard measure of anxiety symptoms, and has been used previously to assess transdiagnostic symptoms of anxiety (Barlow et al. 2017). However, this measure may not be as sensitive to symptoms of some anxiety or related disorders (for example, OCD) as others. Future research should also include the use of multiple symptom outcome measures to examine replication. Finally, the current study did not include a non-CBT intervention condition, so we are not able to examine possible differences in reductions in EA between CBT treatment and non-CBT treatment.

Conclusion

Understanding mechanisms of action is an important component of treatment outcome research given that knowledge of how interventions exert their effects can inform refinements that support treatment potency and efficiency. Using psychometrically sound measures, the present study contributes to the growing literature suggesting that experiential avoidance is a transdiagnostic psychopathological processes that can be addressed in treatment, and may account for symptom improvements during CBT.

Acknowledgements The authors thank Sarah A. Hayes-Skelton for her statistical consultation.

Funding This work was supported by National Institute of Mental Health Grant No. MH090053 awarded to the last author.

Compliance with Ethical Standards

Conflict of interest Dr. Barlow receives royalties from Oxford University Press (which includes royalties for all five treatment manuals included in this study), Guilford Publications Inc., Cengage Learning, and Pearson Publishing. Grant monies for various projects including this one come from the National Institute of Mental Health, the National Institute of Alcohol and Alcohol Abuse, and Colciencias (Government of Columbia Initiative for Science, Technology, and Health Innovation). Consulting and honoraria during the past several years have come from the Agency for Healthcare Research and Quality, the Foundation for Informed Medical Decision Making, the Department of Defense, the Renfrew Center, the Chinese University of Hong Kong, Universidad Católica de Santa Maria (Arequipa, Peru), New Zealand Psychological Association, Hebrew University of Jerusalem, Mayo Clinic, and various American Universities and Institutes. Drs. Farchione and Sauer-Zavala receive royalties from Oxford University Press (for one of the treatment manuals included in this study). The other authors do not have any disclosures to report.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Research Involving Animal Rights This article does not contain any studies with animals performed by any of the authors.

References

Akbari, M., & Khanipour, H. (2018). The transdiagnostic model of worry: The mediating role of experiential avoidance. *Personality and Individual Differences, 135*, 166–172. https://doi.org/10.1016/j.paid.2018.07.011.

Arch, J. J., & Craske, M. G. (2008). Acceptance and commitment therapy and cognitive behavioral therapy for anxiety disorders: Different treatments, similar mechanisms? *Clinical Psychology: Science and Practice, 15*(4), 263–279. https://doi.org/10.1111/j.1468-2850.2008.00137.x.

Arch, J. J., Wolitzky-Taylor, K. B., Eifert, G. H., & Craske, M. G. (2012). Longitudinal treatment mediation of traditional cognitive behavioral therapy and acceptance and commitment therapy for anxiety disorders. *Behaviour Research and Therapy, 50*(7–8), 469–478. https://doi.org/10.1016/j.brat.2012.04.007.

Barlow, D. H., Allen, L. B., & Choate, M. L. (2004). Toward a unified treatment for emotional disorders. *Behavior Therapy, 35*(2), 205–230. https://doi.org/10.1016/S0005-7894(04)80036-4.

Barlow, D. H., & Craske, M. G. (2006). *Mastery of your anxiety and panic* (4th ed.). Oxford: Oxford University Press.

Barlow, D. H., Farchione, T. J., Bullis, J. R., Gallagher, M. W., Murray-Latin, H., Sauer-Zavala, S., et al. (2017). The unified protocol for transdiagnostic treatment of emotional disorders compared with diagnosis-specific protocols for anxiety disorders: A randomized clinical trial. *JAMA Psychiatry, 74*(9), 875. https://doi.org/10.1001/jamapsychiatry.2017.2164.

Barlow, D. H., Farchione, T. J., Sauer-Zavala, S., Latin, H. M., Ellard, K. K., Bullis, J. R., et al. (2018). *Unified protocol for transdiagnostic treatment of emotional disorders: Workbook* (2nd ed.). New York: Oxford University Press.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*(2), 238–246. https://doi.org/10.1037/0033-2909.107.2.238.

Blalock, J. A., & Joiner, T. E. (2000). Interaction of cognitive avoidance coping and stress in predicting depression/anxiety. *Cognitive Therapy and Research, 24*(1), 47–65. https://doi.org/10.1023/A:1005450908245.

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., et al. (2011). Preliminary psychometric properties of the acceptance and action questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy, 42*(4), 676–688. https://doi.org/10.1016/j.beth.2011.03.007.

Boswell, J. F., Anderson, L. M., & Barlow, D. H. (2014). An idiographic analysis of change processes in the unified transdiagnostic treatment of depression. *Journal of Consulting and Clinical Psychology, 82*(6), 1060–1071. https://doi.org/10.1037/a0037403.

Brown, T. A., & Barlow, D. H. (2014). *Anxiety and related disorders interview schedule for DSM-5 (ADIS-5) - adult version: Client interview schedule 5-copy set*. Oxford: Oxford University Press.

Brown, T. A., DiNardo, P., & Barlow, D. H. (1994). *Anxiety disorders interview schedule adult version (ADIS-IV): Client interview schedules*. Oxford: Oxford University Press.

Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review, 26*(1), 17–31. https://doi.org/10.1016/j.cpr.2005.07.003.

Chawla, N., & Ostafin, B. (2007). Experiential avoidance as a functional dimensional approach to psychopathology: An empirical review. *Journal of Clinical Psychology, 63*(9), 871–890. https://doi.org/10.1002/jclp.20400.

Ciarrochi, J., Bilich, L., & Godsell, C. (2010). Psychological flexibility as a mechanism of change in acceptance and commitment therapy. *Assessing mindfulness and acceptance processes in clients: Illuminating the theory and practice of change* (pp. 51–75). Oakland, CA: Context Press/New Harbinger Publications.

Craske, M. G., & Barlow, D. H. (2007). *Mastery of your anxiety and panic: Therapist guide*. Oxford: Oxford University Press.

Dalrymple, K. L., & Herbert, J. D. (2007). Acceptance and commitment therapy for generalized social anxiety disorder: A pilot study. *Behavior Modification, 31*(5), 543–568. https://doi.org/10.1177/0145445507302037.

Espejo, E. P., Gorlick, A., & Castriotta, N. (2017). Changes in threat-related cognitions and experiential avoidance in group-based transdiagnostic CBT for anxiety disorders. *Journal of Anxiety Disorders, 46*, 65–71. https://doi.org/10.1016/j.janxdis.2016.06.006.

Eustis, E. H., Hayes-Skelton, S. A., Roemer, L., & Orsillo, S. M. (2016). Reductions in experiential avoidance as a mediator of change in symptom outcome and quality of life in acceptance-based behavior therapy and applied relaxation for generalized anxiety disorder. *Behaviour Research and Therapy, 87*, 188–195. https://doi.org/10.1016/j.brat.2016.09.012.

Farchione, T. J., Fairholme, C. P., Ellard, K. K., Boisseau, C. L., Thompson-Hollands, J., Carl, J. R., et al. (2012). Unified protocol for transdiagnostic treatment of emotional disorders: A randomized controlled trial. *Behavior Therapy, 43*(3), 666–678. https://doi.org/10.1016/j.beth.2012.01.001.

Ferrer, E., & McArdle, J. (2003). Alternative structural models for multivariate longitudinal data analysis. *Structural Equation Modeling, 10*(4), 493–524. https://doi.org/10.1207/S15328007SEM1004_1.

Foa, E. B., Yadin, E., & Lichner, T. K. (2012a). *Exposure and response (ritual) prevention for obsessive compulsive disorder: Therapist guide* (2nd ed.). Oxford: Oxford University Press.

Foa, E. B., Yadin, E., & Lichner, T. K. (2012b). *Treating your OCD with exposure and response (ritual) prevention: Workbook* (2nd ed.). New York: Oxford University Press.

Gallagher, M. W., Sauer-Zavala, S. E., Boswell, J. F., Carl, J. R., Bullis, J., Farchione, T. J., et al. (2013). The impact of the unified protocol for emotional disorders on quality of life. *International Journal of Cognitive Therapy, 6*(1), 57–72. https://doi.org/10.1521/ijct.2013.6.1.57.

Gámez, W., Chmielewski, M., Kotov, R., Ruggero, C., & Watson, D. (2011). Development of a measure of experiential avoidance: The multidimensional experiential avoidance questionnaire. *Psychological Assessment, 23*(3), 692–713. https://doi.org/10.1037/a0023242.

Hamilton, M. (1959). The assessment of anxiety states by rating. *British Journal of Medical Psychology, 32*(1), 50–55. https://doi.org/10.1111/j.2044-8341.1959.tb00467.x.

Hayes, S. C., Bissett, R. T., Korn, Z., Zettle, R. D., Rosenfarb, I. S., Cooper, L. D., et al. (1999). The impact of acceptance versus control rationales on pain tolerance. *The Psychological Record, 49*(1), 33–47. https://doi.org/10.1007/BF03395305.

Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and commitment therapy as a unified model of behavior change. *The Counseling Psychologist, 40*(7), 976–1002. https://doi.org/10.1177/0011000012460836.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (2011). *Acceptance and commitment therapy, second edition: The process and practice of mindful change* (2nd ed.). New York: Guilford Press.

Hayes, S. C., Strosahl, K., Wilson, K. G., Bissett, R. T., Pistorello, J., Toarmino, D., et al. (2004). Measuring experiential avoidance: A preliminary test of a working model. *The Psychological Record, 54*(4), 553–578. https://doi.org/10.1007/BF03395492.

Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*(6), 1152–1168. https://doi.org/10.1037/0022-006X.64.6.1152.

Hayes-Skelton, S. A., Usmani, A., Lee, J. K., Roemer, L., & Orsillo, S. M. (2012). A fresh look at potential mechanisms of change in applied relaxation for generalized anxiety disorder: A case series. *Cognitive and Behavioral Practice, 19*(3), 451–462. https://doi.org/10.1016/j.cbpra.2011.12.005.

Hofmann, S. G., & Smits, J. A. J. (2008). Cognitive-behavioral therapy for adult anxiety disorders: A meta-analysis of randomized placebo-controlled trials. *The Journal of Clinical Psychiatry, 69*(4), 621–632. https://doi.org/10.4088/jcp.v69n0415.

Hope, D. A., Heimberg, R. G., & Turk, C. L. (2006). *Managing social anxiety: A cognitive-behavioral therapy approach: Therapist guide* (1st ed.). Oxford: Oxford University Press.

Hope, D. A., Heimberg, R. G., & Turk, C. L. (2010). *Managing social anxiety: A cognitive-behavioral therapy approach* (2nd ed.). New York: Oxford University Press.

Kazdin, A. E. (2007). Mediators and mechanisms of change in psychotherapy research. *Annual Review of Clinical Psychology, 3*(1), 1–27. https://doi.org/10.1146/annurev.clinpsy.3.022806.091432.

Kocovski, N. L., Fleming, J. E., Hawley, L. L., Ho, M.-H. R., & Antony, M. M. (2015). Mindfulness and acceptance-based group therapy and traditional cognitive behavioral group therapy for social anxiety disorder: Mechanisms of change. *Behaviour Research and Therapy, 70*, 11–22. https://doi.org/10.1016/j.brat.2015.04.005.

Kocovski, N. L., Fleming, J. E., & Rector, N. A. (2009). Mindfulness and acceptance-based group therapy for social anxiety disorder: An open trial. *Cognitive and Behavioral Practice, 16*(3), 276–289. https://doi.org/10.1016/j.cbpra.2008.12.004.

McArdle, J. J., & Nesselroade, J. R. (1994). Using multivariate data to structure developmental change. In *The West Virginia University Conferences on Life-Span Developmental Psychology. Life-span developmental psychology: Methodological contributions* (pp. 223–267). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Meyer, E. C., Kotte, A., Kimbrel, N. A., DeBeer, B. B., Elliott, T. R., Gulliver, S. B., et al. (2019). Predictors of lower-than-expected posttraumatic symptom severity in war veterans: The influence of personality, self-reported trait resilience, and psychological flexibility. *Behaviour Research and Therapy, 113*, 1–8. https://doi.org/10.1016/j.brat.2018.12.005.

Muthén, L. K., & Muthén, B. O. (1998). *Mplus user's guide: Statistical analysis with latent variables* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Naragon-Gainey, K., & Watson, D. (2018). What lies beyond neuroticism? An examination of the unique contributions of social-cognitive vulnerabilities to internalizing disorders. *Assessment, 25*(2), 143–158. https://doi.org/10.1177/1073191116659741.

Orcutt, H. K., Pickett, S. M., & Pope, B. E. (2005). Experiential avoidance and forgiveness as mediators in the relation between traumatic interpersonal events and posttraumatic stress disorder symptoms. *Journal of Social and Clinical Psychology, 24*(7), 1003–1029. https://doi.org/10.1521/jscp.2005.24.7.1003.

Rochefort, C., Baldwin, A. S., & Chmielewski, M. (2018). Experiential avoidance: An examination of the construct validity of the AAQ-II and MEAQ. *Behavior Therapy, 49*(3), 435–449. https://doi.org/10.1016/j.beth.2017.08.008.

Roemer, L., & Borkovec, T. D. (1994). Effects of suppressing thoughts about emotional material. *Journal of Abnormal Psychology, 103*(3), 467–474. https://doi.org/10.1037/0021-843X.103.3.467.

Roemer, L., & Orsillo, S. M. (2009). *Mindfulness- and acceptance-based behavioral therapies in practice*. New York: The Guilford Press.

Roemer, L., & Orsillo, S. M. (2014). An acceptance-based behavioral therapy for generalized anxiety disorder. In *Clinical handbook of psychological disorders, fifth edition: A step-by-step treatment manual* (5th ed., pp. 206–236). New York: The Guilford Press.

Roemer, L., Orsillo, S. M., & Salters-Pedneault, K. (2008). Efficacy of an acceptance-based behavior therapy for generalized anxiety disorder: Evaluation in a randomized controlled trial. *Journal of Consulting and Clinical Psychology, 76*(6), 1083–1089. https://doi.org/10.1037/a0012720.

Shear, M. K., Vander Bilt, J., Rucci, P., Endicott, J., Lydiard, B., Otto, M. W., et al. (2001). Reliability and validity of a structured interview guide for the Hamilton Anxiety Rating Scale (SIGH-A). *Depression and Anxiety, 13*(4), 166–178. https://doi.org/10.1002/da.1033.

Spinhoven, P., van Hemert, A. M., & Penninx, B. W. J. H. (2017). Experiential avoidance and bordering psychological constructs as predictors of the onset, relapse and maintenance of anxiety disorders: One or many? *Cognitive Therapy and Research, 41*(6), 867–880. https://doi.org/10.1007/s10608-017-9856-7.

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25*(2), 173–180. https://doi.org/10.1207/s15327906mbr2502_4.

Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*(1), 1–10. https://doi.org/10.1007/BF02291170.

Wegner, D. M., Schneider, D. J., Carter, S. R., & White, T. L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology, 53*(1), 5–13. https://doi.org/10.1037//0022-3514.53.1.5.

Wolgast, M. (2014). What does the acceptance and action questionnaire (AAQ-II) really measure? *Behavior Therapy, 45*(6), 831–839. https://doi.org/10.1016/j.beth.2014.07.002.

Zinbarg, R. E., Craske, M. G., & Barlow, D. H. (2006). *Mastery of your anxiety and worry* (2nd ed.). Oxford: Oxford University Press.