

Exposure therapy for youth with anxiety: Utilization rates and predictors of implementation in a sample of practicing clinicians from across the United States

Adam M. Reid^a, Andrew G. Guzick^{b,c,*}, Alyka Glor Fernandez^d, Brett Deacon^e,
Joseph P.H. McNamara^{b,c,f}, Gary R. Geffken^g, Ryan McCarty^{b,c}, Catherine W. Striley^{b,c}

^a McLean Hospital, Harvard Medical School, 115 Mill Street, Boston, MA 02478, United States

^b University of Florida (UF), College of Medicine, 8491 NW 39th Ave, Gainesville, FL, 32606, United States

^c UF, College of Public Health and Health Professions, 1225 Center Drive, Gainesville, FL 32611, United States

^d Kansas City University of Medicine and Biosciences, 1750 Independence Ave, Kansas City, MO 64106, United States

^e University of New South Wales, Sydney, NSW, 2052, Australia

^f UF, College of Liberal Arts and Sciences, 945 Center Drive, Gainesville FL, 32611, United States

^g The Geffken Group, 2833 NW 41 St #140, Gainesville, FL, 32606, United States

ARTICLE INFO

Keywords:

Cognitive-behavioral therapy
Dissemination
Community
Private practice
Barriers
Treatment

ABSTRACT

Exposure therapy is a highly effective, evidence-based treatment technique for children and adolescents with anxiety disorders. Regardless, therapists in the community are reported to use exposure relatively rarely compared with other approaches. The goal of the present study was to identify how practicing clinicians treat youth with anxiety disorders across the United States and what factors contribute to their use of exposure therapy. Recruited from public directories, 257 private practice therapists who treat anxious youth were surveyed. Non-exposure cognitive-behavioral techniques like cognitive restructuring and relaxation techniques were used significantly more frequently than exposure. Providers with more training in exposure therapy and fewer negative beliefs about this approach reported using exposure significantly more in the treatment of youth with social anxiety, obsessive-compulsive, and panic disorders. Self-identification as an anxiety disorder specialist significantly predicted exposure use for youth with posttraumatic stress disorder. Most therapists in private practice have minimal training in exposure therapy, perceive a lack of training options, and believe there would be a benefit to acquiring more training. The implications of these findings are discussed, including how to optimally design training opportunities in exposure therapy.

1. Introduction

Anxiety disorders are among the most common mental health disorders in children and adolescents, with over 31% of youth in the United States estimated to meet criteria for an anxiety disorder by the age of 18 (Merikangas et al., 2010). When left untreated, anxiety disorders often run a chronic course (Keller et al., 1992; Perkonig et al., 2014) and are associated with the development of other mental health problems, such as substance abuse (Woodward & Fergusson, 2001). Fortunately, a substantial amount of evidence supports cognitive-behavioral therapy (CBT) as an efficacious intervention for youth with anxiety disorders (e.g., Chorpita et al., 2011; Higa-McMillan, Kotte, Jackson, & Daleiden, 2016; Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012; Jordan, Reid, Mariaskin, Augusto, & Sulkowski, 2012).

Exposure therapy has been shown to be the key ingredient in CBT for anxiety (Ale, McCarthy, Rothschild, & Whiteside, 2015; Olatunji, Cisler, & Deacon, 2010; Peris et al., 2015, 2017; Voort, Svecova, Jacobson, & Whiteside, 2010; Whiteside et al., 2015), though community providers report using exposure relatively infrequently to treat adults with anxiety disorders (Becker, Zayfert, & Anderson, 2004; Cook, Biyanova, Elhai, Schnurr, & Coyne, 2010; van Minnen, Hendriks, & Olff, 2010; Whiteside, Deacon, Benito, & Stewart, 2016; Wolitzky-Taylor, Zimmermann, Arch, De Guzman, & Lagomasino, 2015), particularly when compared with other CBT techniques like relaxation or cognitive restructuring (Hipol & Deacon, 2013; Whiteside et al., 2016). Some recent literature has begun to explore how practicing clinicians treat anxious children and adolescents as well. A survey of clinicians in a Hawaiian community mental health system showed that therapists used

* Corresponding author at: University of Florida (UF), College of Medicine, 8491 NW 39th Ave, Gainesville, FL, 32606, United States.

E-mail addresses: areid@mclean.harvard.edu (A.M. Reid), guzick@php.ufl.edu (A.G. Guzick), afernandez@kcumb.edu (A.G. Fernandez), drbrettedeacon@gmail.com (B. Deacon), jpm2@ufl.edu (J.P.H. McNamara), geffkengroup@gmail.com (G.R. Geffken), ryanmccarty12@ufl.edu (R. McCarty), cstriley@ufl.edu (C.W. Striley).

<https://doi.org/10.1016/j.janxdis.2018.06.002>

Received 16 March 2018; Received in revised form 2 June 2018; Accepted 8 June 2018

Available online 18 June 2018

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exposure therapy with fewer than 25% of trauma-exposed youth (Borntrager, Chorpita, Higa-McMillan, Daleiden, & Starace, 2013) and with fewer than 15% of youth with anxiety disorders (Higa-McMillan et al., 2016). This pattern was also recently observed in a sample of practicing clinicians in Minnesota who treat youth with various anxiety disorders (Whiteside et al., 2016). The present study sought to extend the emerging literature on barriers to exposure therapy use by surveying therapists around the entire United States about their treatment practices for youth with anxiety disorders. This survey focused on therapists in private practice, who make up a large portion of the psychology workforce and may be especially expected to use evidence-based techniques like exposure as they are often perceived as experts, but have not been adequately studied by previous surveys of exposure use (American Psychological Association, 2009; Whitaker, Weismiller, & Clark, 2006).

Towards the goal of building a practice-to-research bridge where feedback from practicing clinicians can be used to inform future dissemination and implementation (DI) efforts, it is important to identify factors that explain why some clinicians underutilize exposure techniques. This aim is particularly pertinent considering that exposure therapy use tends to wane more over time than other CBT techniques (Chu et al., 2015; Edmunds et al., 2014; Southam-Gerow et al., 2010). Several theoretical models of DI (e.g., Beidas & Kendall, 2010; Southam-Gerow, Rodríguez, Chorpita, & Daleiden, 2012) underscore the importance of client/family, provider, intervention, and organizational/systems factors that may influence the implementation of evidenced-based practices to treat youth with anxiety. Clinician-specific factors may be a particularly important barrier to the DI of exposure-based practices, as therapists often hold negative beliefs towards exposure therapy (e.g., that patients will decompensate or drop out of treatment if they participate in exposure therapy; Deacon et al., 2013; Olatunji, Deacon, & Abramowitz, 2009) and report concern for their own emotional reactions to exposure (Harned, Dimeff, Woodcock, & Contreras, 2013; Zoellner et al., 2011). Therefore, in order to guide future DI efforts, this study sought to investigate several potential provider-specific barriers, specifically those related to provider demographics, training history, emotional sensitivities, and beliefs about exposure therapy.

With regard to demographics, two studies suggested that females may be less likely to implement trauma-related exposure (Deville & Huther, 2008; van Minnen et al., 2010), although it is unknown if gender impacts the utilization of non-trauma-related exposure. An aim of the current study is to determine whether female therapists use exposure less with children with various anxiety and related disorders.

A much larger amount of research, however, has investigated how training history and education impact exposure utilization. These studies suggest practicing clinicians with higher self-reported education or specialization in treating anxiety may be more likely to use exposure (Harned et al., 2013; Higa-McMillan, Francis, Rith-Najarian, & Chorpita, 2015; Higa-McMillan, Nakamura, Morris, Jackson, & Slavin, 2015; Hipol & Deacon, 2013; Jacobson, Newman, & Goldfried, 2016; Whiteside et al., 2016). However, it remains unclear how critical *specific* training in exposure therapy is for sustained implementation, compared to obtaining a higher level of education or developing a self-reported specialization. Consistent with three studies focused on post-traumatic stress disorder (PTSD; Becker et al., 2004; Russell & Silver, 2007; van Minnen et al., 2010), one study conducted with Dutch therapists found that higher levels of self-reported specialized training in exposure therapy was associated with higher exposure therapy utilization (Sars & van Minnen, 2015). Though training appears critical to exposure implementation, there is a lack of data on how receptive practicing clinicians who treat youth with anxiety disorders are to receiving more exposure-specific training or how they would prefer to receive this additional training.

Clinicians' emotional sensitivities may also contribute to the poor DI of exposure therapy, as clinicians with higher anxiety sensitivity appear

to be more hesitant about the implementation of exposure (Harned et al., 2013). For example, a clinician who is less tolerant of experiencing physical manifestations of anxiety may be less likely to model and use interoceptive exposure with adolescents with panic disorder. Similarly, novice therapists may fear that they would not be able to handle watching their patient endure situations that cause them to re-experience a traumatic event (Zoellner et al., 2011). Disgust sensitivity could also leave practitioners more hesitant to conduct disgust-provoking exposure such as those that target obsessions related to harm, sexuality, or contamination. Taken together, practitioners' emotional sensitivities have received little attention in the literature, yet may be significant barriers to using exposure.

In addition to therapists' emotional sensitivities, their beliefs about exposure therapy are another important factor that may determine their implementation of this treatment. Clinicians are often dubious of evidence-based practices more broadly, and as a result, they are less likely to implement these approaches (e.g., Borntrager, Chorpita, Higa-McMillan, & Weisz, 2015; Brookman-Frazee, Haine, Baker-Ericzén, Zoffness, & Garland, 2010; Lilienfeld, Ritschel, Lynn, Cautin, & Litzman, 2013). Much less research has studied attitudes towards specific techniques such as exposure. A few studies have described several common negative beliefs that have been associated with less exposure utilization by practicing clinicians (Whiteside et al., 2016) and suboptimal exposure delivery (Deacon et al., 2013; Harned et al., 2013). Emerging research suggests that younger children are less likely to receive evidence-based treatments (Borntrager et al., 2013; Brookman-Frazee et al., 2010; Higa-McMillan et al., 2016). While this could be due to a variety of factors, it is plausible that clinicians may have negative beliefs about the use of exposure therapy with youth that deter them from using these techniques (Meyer, Farrell, Kemp, Blakey, & Deacon, 2014; Ringle et al., 2015; Southam-Gerow et al., 2012; Whiteside et al., 2016). For example, clinicians may believe that youth are more likely to drop out from exposure-based treatment or that exposure exercises will hinder alliance with children or parents, though there is a lack of data to support either of these fears (Imel, Laska, Jakupcak, & Simpson, 2013; Kendall et al., 2009; Ormhaug & Jensen, 2018; Öst, Havnen, Hansen, & Kvale, 2015; Reid, Bolshakova et al., 2017).

In summary, practicing therapists in the United States often treat youth with clinical anxiety, yet there is limited research about how often exposure therapy is utilized by these clinicians. This study addresses current gaps in the literature by focusing on the treatment of youth with anxiety rather than adults, recruiting private practitioners rather than general community-based clinicians, and assessing multiple clinician-specific factors that may inhibit exposure therapy implementation. Less is known about how often exposure is used for youth with anxiety, though children may be particularly less likely to see a therapist who uses exposure (Higa-McMillan et al., 2016). To date, only two studies have surveyed child and adolescent therapists, each in specific states in the United States. We sought to survey a nationally representative sample of therapists to enhance the generalizability of findings to date. We also specifically assessed private practitioners, a rarely studied group who make up a large portion of practicing therapists (American Psychological Association, 2009; Whitaker et al., 2006), as most studies have focused on community clinicians more broadly, despite private practitioners often being advertised as experts. This study also used psychometrically validated measures of clinician-specific factors that may inhibit exposure implementation, including provider disgust sensitivity, anxiety sensitivity, training in exposure therapy, and provider beliefs about exposure. The few studies that have compared the frequency of exposure with other techniques have not included several third-wave approaches that are growing in popularity (e.g., values-based action, cognitive defusion), and thus we also included these practices to accurately compare exposure therapy utilization with other common techniques.

The first aim of the current study was to survey therapists to

determine how often they use different treatments with anxious youth. We expected exposure to be used less frequently than other CBT techniques, and for suboptimal exposure techniques (i.e., self-directed exposure) to be used more frequently than optimal exposure techniques (i.e., therapist-assisted *in vivo* exposure). The second aim of our study sought to investigate potential barriers to the implementation of exposure therapy for youth with anxiety disorders, hypothesizing that clinician demographics and training (i.e., female gender, less specific training in exposure therapy, more years in practice, and non-identification as an anxiety specialist), emotional sensitivities (i.e., higher anxiety and disgust sensitivity), and negative beliefs about exposure-based techniques would all predict less exposure utilization. The third aim was descriptive and sought to illuminate the most common negative beliefs about exposure therapy among providers who treat anxious youth and their perspectives on future training in exposure therapy.

2. Materials and methods

2.1. Participants

The final sample included 257 private practice therapists (age: $M = 49.20$, $SD = 12.00$). Clinicians were eligible to participate if they had treated at least one child or adolescent (ages 7–17) with obsessive-compulsive disorder (OCD), PTSD, panic disorder (PD), or social anxiety disorder (SAD) within the last year. These four disorders were selected based on consideration of three factors: prevalence in youth, likelihood they lead treatment-seeking, and frequency of severe cases (Green, McGinnity, Meltzer, Ford, & Goodman, 2005; Merikangas et al., 2010, 2011; Piacentini, Bergman, Keller, & McCracken, 2003; Ruscio, Stein, Chiu, & Kessler, 2010). Though OCD and PTSD are no longer classified as anxiety disorders, they were also included due to their historical cognitive-behavioral conceptualization as anxiety disorders and their first-line CBT treatments that emphasize exposure therapy (Freeman et al., 2014; Silverman et al., 2008). Among the final 257 respondents, 179 clinicians reported treating youth with OCD ($M = 6.88$ patients, $SD = 9.32$), 179 reported treating youth with PTSD ($M = 8.16$ patients, $SD = 8.48$), 144 reported treating youth with PD ($M = 5.08$ patients, $SD = 8.48$), and 173 reported treating youth with SAD ($M = 8.37$ patients, $SD = 7.94$) in the last year. Clinicians self-identified as psychologists (42%), clinical social workers (31%), master's level counselors (20%), nurse practitioners (3%), marriage and family therapists (1%), and "other" (3%). The majority of the therapists were female (75%) and Caucasian (90%). Other racial/ethnic backgrounds included Hispanic/Latino (4%), Black/African American (2%), Asian (2%), Native American (1%), and Pacific Islander/Hawaiian (< 1%). Respondents had been working as treatment providers for youth with anxiety disorders for an average of 16.64 years ($SD = 10.58$). Over a third of the sample self-identified as pediatric anxiety specialists (39%). The regional distribution of participants recruited via convenience sampling was approximately equal to that of the 2010 United States Census (Mackun & Wilson, 2011).

2.2. Procedures

Using publicly accessible mental health directories of providers in the United States, therapists were contacted by phone (if no email was listed) or e-mail to participate in the present study by completing a brief survey. The following directories were used: American Psychological Association, Psychology Today, Network Therapy, Help Pro, and Wellness. In order to ensure enough self-identified specialists were recruited, refined searches were made requesting providers who indicated that they treat youth with anxiety. The investigating University's Institutional Review Board approved the recruitment strategy and consenting procedure. A description of study recruitment and response rates is provided in Fig. 1. To avoid social desirability bias and to prevent priming participants toward a less favorable view of exposure

therapy, we included an assessment of general practice patterns early in the survey and questionnaires with items specifically about exposure therapy later.

2.3. Measures

2.3.1. Treatment utilization rates

We adapted a self-report measure from Hipol and Deacon (2013) to assess how frequently clinicians used different therapeutic techniques with youth with OCD, PTSD, PD, and SAD within the past year. Every participant was asked, "In the past year, how often did you use the following therapeutic techniques to treat pediatric [disorder] (0–100% of the time)?" If respondents had treated children with the specific disorder, they gave estimations of what percent of the time they used 30 assorted therapeutic practices, including five exposure techniques (see Table 1 for a full list of techniques). The measure for this study added eleven techniques to the list used by Hipol and Deacon (2013), many of which were specific to youth (e.g., play therapy, family systems therapy) or emerging third-wave cognitive-behavioral techniques (e.g., cognitive defusion).

2.3.2. Exposure training assessment

Due to the lack of a psychometrically validated questionnaire that assesses exposure therapy training, the research team created a measure of this nature called the Exposure Training Assessment (ETA; complete measure and detailed psychometric information available upon request). The 15-item measure asks participants how much they received training in exposure therapy during and after graduate school through various modalities, such as online training (e.g., "Completed online exposure therapy training modules") or conducting supervised clinical care, (e.g., "Conducted supervised exposure therapy in an anxiety focused specialty clinic") with a nine-point Likert scale (e.g., 1 = never, 9 = always). The ETA produces a total score that represents total training history in exposure-based techniques and had high internal consistency for the present sample ($\alpha = .84$). It also demonstrated good convergent validity with the Therapist Beliefs about Exposure Scale (TBES, described below) and self-reported behaviors during an exposure therapy case vignette described by Deacon et al. (2013), as well as discriminant validity as it was not significantly associated with more use of four selected non-CBT techniques (i.e., psychodynamic therapy, family systems therapy, interpersonal therapy, and non-directive supportive therapy).

2.3.3. Anxiety sensitivity index

The Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007) measures the fear of anxiety-related body sensations based on beliefs about their harmful physical, social, and cognitive consequences. The ASI-3 yields a total score that has good psychometrics in clinical and non-clinical samples and is broadly associated with various anxiety disorders (Taylor et al., 2007; Wheaton, Deacon, McGrath, Berman, & Abramowitz, 2012). Cronbach's alpha for this total score was 0.79.

2.3.4. Disgust scale-revised

The Disgust Scale-Revised (DS-R; Olatunji et al., 2007) was used to measure disgust sensitivity, which is the predisposition to experience disgust in response to a wide array of aversive stimuli or situations. The DS-R is a 25-item measure that creates a three-factor solution (Core Disgust, Animal Reminder Disgust, Contamination-Based Disgust) that can be combined to create a total disgust sensitivity score. Cronbach's alpha for this total score was 0.80.

2.3.5. Therapist beliefs about exposure scale

The TBES (Deacon et al., 2013) is a 21-item, self-report measure of negative beliefs about exposure therapy. The rating scale was developed from a literature review that identified common reservations about exposure therapy, including beliefs that it is intolerable,

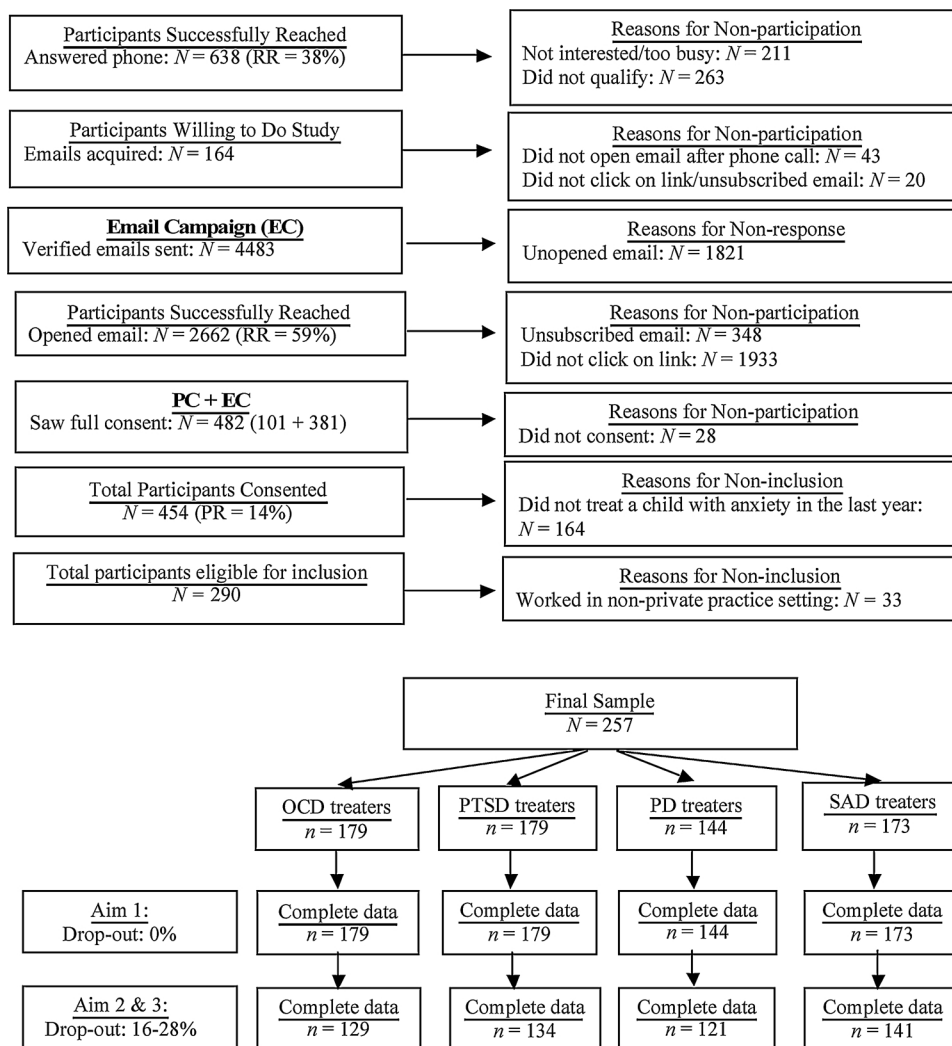


Fig. 1. Flow chart summarizing sample recruitment and retention.

Note: OCD = Obsessive-compulsive disorder; PTSD = Post-traumatic stress disorder; PD = Panic disorder; SAD = Social anxiety disorder. RR = Response rate (i.e., percent who responded to our phone or email outreach and thus heard about the study); PR = Participation rate (percent who consented to participate out of those we successfully reached); PC = Phone campaign; EC = Email campaign. RR for PC was calculated by dividing 638/1670. RR for the EC = 2662/4483. PR for PC + EC = 455/3300.

unethical, harmful, and leads to dropout. Higher scores indicate more negative beliefs about exposure therapy. The TBES has demonstrated a single-factor structure and strong psychometric properties, including excellent internal consistency, test-retest reliability, and construct validity (Deacon et al., 2013). Cronbach's alpha for this total score was 0.93.

2.3.6. Opinions and preferences about training in exposure therapy

In order to assess opinions about the availability of training opportunities in exposure therapy, participants were asked, "How much do you feel like there is a lack of training in exposure therapy?" Four answer options were provided, ranging from *No lack of training opportunities in exposure therapy* to *Severe lack of training opportunities in exposure therapy*. As a measure of the perceived benefit of acquiring training, participants were also asked, "How much do you feel like you would benefit as a clinician from training in exposure therapy?" Four responses were available to participants, ranging from *No benefit from attending training in exposure therapy* to *Extreme benefit from attending training in exposure therapy*. Finally, participants were asked, "What would be your preferred mechanism for a short-term training in exposure therapy?" Participants could choose from online training, mailed readings and video lessons, a training seminar held at a national

conference, or a one-day intensive training held at a location in the United States.

2.4. Analyses

Descriptive statistics for each treatment technique were calculated and are presented in Table 1. For statistical analyses, various therapeutic techniques were then averaged to create an "exposure" category, a "non-exposure CBT" category, and a "third wave CBT" category. Therapist-assisted *in vivo* exposure, client self-directed *in vivo* exposure, and imaginal exposure were combined to create an "exposure" category for OCD and SAD. Trauma-focused narrative was also included in the exposure category for PTSD and interoceptive exposure was included in the exposure category for PD (e.g., Deblinger, Mannarino, Cohen, Runyon, & Steer, 2011; Pincus, May, Whitton, Mattis, & Barlow, 2010). Cognitive restructuring, breathing retraining, progressive muscle relaxation, thought stopping techniques, elimination of avoidance and safety-seeking behaviors, and elimination of family accommodation were combined to create a "non-exposure CBT" category. The latter two were not included in the exposure category in order to estimate how often prescribed, distinct exposure occurs separate from response prevention strategies that often are implemented without specific exposure

Table 1
Percent of Time That Treatments are Utilized for Anxiety Disorders in Youth.

Technique	Frequency % (SD)				
	OCD (n = 179)	PTSD (n = 179)	PD (n = 144)	SAD (n = 173)	Overall (n = 257)
Non-exposure CBT techniques					
Cognitive Restructuring	56% (35)	50% (35)	64% (34)	65% (32)	57% (31)
Breathing Retraining	49% (36)	52% (36)	65% (36)	53% (38)	53% (34)
Progressive Muscle Relaxation	46% (36)	47% (37)	58% (36)	48% (37)	47% (34)
Elimination of Avoidance and Safety-Seeking Behaviors	52% (38)	36% (33)	54% (36)	54% (37)	46% (33)
Thought Stopping Techniques	38% (38)	33% (35)	36% (37)	31% (35)	33% (33)
Elimination of Family Accommodation	35% (39)	13% (27)	24% (34)	29% (36)	24% (30)
Exposure techniques					
Therapist-Assisted <i>In Vivo</i> Exposure	30% (36)	11% (23)	21% (30)	21% (34)	19% (27)
Client Self-Directed <i>In Vivo</i> Exposure	26% (31)	18% (27)	37% (37)	38% (38)	30% (31)
Imaginal Exposure	40% (33)	31% (33)	42% (36)	41% (35)	36% (29)
Trauma-Focused Narrative	13% (23)	37% (36)	14% (26)	10% (24)	18% (25)
Interoceptive Exposure	5% (15)	4% (14)	10% (28)	4% (15)	4% (13)
Third-wave techniques					
Mindfulness Techniques	47% (35)	53% (35)	59% (35)	51% (36)	50% (32)
Acceptance	32% (36)	31% (35)	30% (38)	27% (36)	29% (32)
Meditation	26% (32)	28% (32)	32% (37)	24% (32)	25% (30)
Motivational Interviewing	22% (33)	18% (29)	20% (33)	24% (35)	21% (30)
Dialectical Behavior Therapy	14% (24)	15% (26)	12% (25)	10% (24)	12% (22)
Cognitive Defusion	9% (22)	9% (22)	9% (23)	11% (25)	9% (20)
Committed Action	7% (20)	8% (22)	9% (25)	11% (27)	8% (21)
Self-as-context	4% (14)	7% (21)	6% (20)	4% (17)	5% (15)
Other					
Family Systems Therapy	29% (32)	35% (34)	30% (35)	29% (34)	30% (31)
Non-Directive Supportive Psychotherapy	22% (30)	33% (33)	27% (33)	32% (35)	29% (30)
Play Therapy	19% (30)	33% (36)	20% (32)	21% (32)	24% (31)
Interpersonal Therapy	17% (28)	21% (32)	17% (30)	21% (32)	20% (27)
Art Therapy	14% (25)	24% (32)	17% (30)	14% (26)	17% (36)
Psychodynamic Therapy	12% (25)	17% (29)	16% (28)	14% (27)	15% (27%)
Eye Movement Desensitization and Reprocessing	11% (25)	18% (33)	11% (26)	7% (22)	11% (25)
Hypnosis	5% (17)	6% (20)	8% (24)	7% (21)	6% (19)
Applied Behavior Analysis	5% (15)	6% (19)	6% (20)	6% (19)	6% (16)
Gestalt Therapy	2% (11)	4% (13)	5% (18)	4% (16)	4% (12)
Thought Field Therapy	1% (7)	2% (9)	1% (7)	1% (5)	1% (7)

Note: CBT: cognitive-behavioral Therapy; OCD: obsessive-compulsive disorder; PTSD: post-traumatic stress disorder; PD: panic Disorder; SAD: social anxiety disorder. The “Overall” column was calculated by averaging each participant’s response across the four disorders. Therapeutic techniques are divided into categories for ease of interpretation. For each diagnosis, participants were asked, “In the past year, how often did you use the following therapeutic techniques to treat pediatric [disorder] (0–100% of the time)?”.

exercises. Frequencies of dialectical behavior therapy, mindfulness techniques, acceptance, meditation, motivational interviewing, cognitive defusion, committed action, and self-as-context were combined to create a “third-wave CBT” category. To maximize interpretability, psychodynamic therapy was selected to represent an “other” category in this analysis, as it was one of the original treatments described for youth with anxiety and thus serves as a meaningful benchmark for how much exposure techniques have been disseminated.

A within-subjects analysis of variance (ANOVA) was used to compare how frequently practitioners reported using exposure techniques, non-exposure CBT techniques, third-wave CBT techniques, and psychodynamic therapy for OCD, PTSD, PD, and SAD, with simple post-hoc comparisons used to compare each therapeutic technique with exposure. For all omnibus effects, Greenhouse-Geisser corrections were made to account for unequal variances across treatment techniques. Effect sizes were determined using a *partial eta squared* (η^2) estimate and the following cut-offs: 0.01 = small, .13 = medium, and .26 = large (Cohen, 1992). Within-subjects t-tests were also used to compare the utilization rate of therapist-assisted *in vivo* exposure (optimal exposure delivery) versus client self-directed *in vivo* exposure (sub-optimal exposure delivery) for each diagnosis. An additional analysis was run to compare the use of interoceptive exposure (optimal) to imaginal exposure (sub-optimal) for PD. Each *p*-value was Bonferroni corrected to account for family-wise error and effect sizes were determined with

Cohen’s D, with the following cut-offs: .2 = small, .5 = medium, .8 = large (Cohen, 1992).

Finally, a step-wise linear regression was implemented to investigate potential barriers to using therapist-assisted *in vivo* exposure. Therapist-assisted *in vivo* exposure was selected as a dependent variable due to research with OCD populations suggesting its superiority over other forms of exposure (Abramowitz, 1996; Tolin et al., 2007) and because therapist-assisted *in vivo* exposure is the primary delivery style emphasized in leading CBT manuals for various anxiety disorders (e.g., Beidel, Turner, & American Psychological Association, 2007; Foa, Chrestman, & Gilboa-Schechtman, 2008). Step one included gender (0 = Male, 1 = Female), self-reported education (0 = Two years or less of graduate school, 1 = More than two years of graduate school), perceived specialization in anxiety (0 = Non-specialist, 1 = Specialist), and exposure-specific training history as measured by the ETA. Step two included variables related to emotional sensitivities as measured by the DS-R and ASI-3 and step three included provider beliefs about exposure as measured by the TBES.

3. Results

3.1. Frequency of therapeutic technique utilization

Practitioners were asked to provide information about what percent

Table 2
Mean Comparison of Exposure, Non-Exposure CBT, Third-Wave CBT, and Psychodynamic Utilization Rates.

Other technique:	Non-Exposure CBT			Third-Wave			Psychodynamic		
	Mean difference	F	η^2_{partial}	Mean difference	F	η^2_{partial}	Mean difference	F	η^2_{partial}
Exposure:									
OCD	18%	96.22***	.34	–8%	16.71***	.09	–16%	33.40***	.16
PTSD	18%	142.14***	.44	1%	0.71	.004	–3%	1.49	.008
PD	23%	126.35***	.47	–5%	6.40*	.04	–12%	12.32***	.08
SAD	21%	166.10***	.49	–5%	8.28*	.05	–12%	17.05***	.09

Note: CBT: cognitive-behavioral therapy; OCD: obsessive-compulsive disorder; PTSD: post-traumatic stress disorder; PD: panic disorder; SAD: social anxiety disorder. Mean differences are calculated as the mean of the column group minus the mean of row group. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

of the time they used various treatment techniques to treat youth with OCD, PTSD, PD, and SAD. Overall, therapist-assisted *in vivo* exposure was used 19% of the time, while cognitive restructuring and breathing retraining were used 57% and 53% of the time, respectively. Clinicians also described using mindfulness frequently, as they endorsed using this technique 50% of the time. Treatment utilization patterns for all assessed techniques are displayed in Table 1.

3.1.1. Comparison of exposure utilization with other techniques

Significant differences between treatment techniques were found across diagnoses; OCD, $F(3) = 88.24$, $p < 0.001$, $\text{partial } \eta^2 = 0.33$; PTSD, $F(3) = 42.69$, $p < 0.001$, $\text{partial } \eta^2 = 0.19$; PD, $F(3) = 66.67$, $p < 0.001$, $\text{partial } \eta^2 = 0.32$; and SAD, $F(3) = 78.53$, $p < 0.001$, $\text{partial } \eta^2 = 0.31$.

Non-exposure CBT techniques were used significantly more than exposure techniques in the treatment of youth with all four disorders. All four of these comparisons had a large effect size. In contrast, providers reported using exposure more often than third-wave and psychodynamic techniques to treat youth with OCD, PD, and SAD, but there was no difference between utilization rates for these treatments for youth with PTSD. A summary of these results can be found in Table 2.

3.1.2. Comparison of optimal and suboptimal exposure techniques

In general, optimal exposure techniques were used significantly less often than suboptimal exposure techniques. Therapist-assisted *in vivo* exposure (optimal) was used significantly less often than client self-directed *in vivo* exposure (suboptimal) in the treatment of youth with OCD, mean difference = 7%, $t(178) = 2.91$, $p = 0.04$, $d = 0.22$, PTSD, mean difference = 7%, $t(178) = 3.31$, $p = 0.001$, $d = .28$ PD, mean difference = 16%, $t(143) = 5.38$, $p < 0.001$, $d = 0.50$, and SAD, mean difference = 16%, $t(172) = 5.87$, $p < 0.001$, $d = 0.48$. The effect sizes for these comparisons ranged from small to medium. For PD, interoceptive exposure was utilized significantly less often than imaginal exposure, mean difference = 32%, $t(143) = 8.66$, $p < 0.001$, $d = .73$, suggesting a medium-to-large difference.

3.2. Predictors of optimal exposure use

The stepwise linear regression that investigated the predictors of utilization of therapist-assisted *in vivo* exposure for youth with each disorder is displayed in Table 3. In summary, practitioner demographic and training variables (step 1) and attitudes and beliefs about exposure therapy (step 3) were significantly associated with exposure use for youth with OCD, PD, and SAD, while provider emotional sensitivities (step 2) were not significantly associated with use of exposure for any of the disorders.¹

When evaluating the specific predictors, practitioner training

¹ Time spent working with anxious youth was considered as another potential predictor of exposure use during one stage of the revision process of this manuscript. This variable was not found to be a significant predictor of exposure implementation for any disorder.

Table 3
Predictors of Therapist Assisted In Vivo Exposure for Panic Disorder.

	β	R ²	Change R ²	Change F
Step 1. Demographics		.18	.18	6.55***
Gender ^a	.02			
Education ^b	.16			
Specialist ^c	.10			
ETA ^d	.31**			
Step 2. Temperament		.18	.00	0.02
Gender	.02			
Education	.16			
Specialist	.10			
ETA	.31**			
DS ^e	.02			
ASI-3 ^f	–.006			
Step 3. Attitudes and Beliefs		.37	.19	33.64***
Gender	.11			
Education	.03			
Specialist	–.02			
ETA	.20*			
DS	–.06			
ASI-3	.17			
TBES ^g	–.52***			

Note: Only participants with complete data who treated panic disorder were included for this analysis (n = 122).

* $p < .05$, ** $p < .01$, *** $p < .001$.

^a Participants' self-reported gender (0 = Male, 1 = Female).

^b Participants' self-reported education was categorized into two groups (0 = Those who obtained one to two years of graduate education; 1 = Those who obtained more than two years of graduate education).

^c Participants self-reported if they viewed themselves as an anxiety disorder specialist (0 = Non-specialist, 1 = Specialist).

^d Continuous self-report measure of training in exposure-based techniques during and/or after graduate school.

^e Continuous self-report measure of disgust sensitivity.

^f Continuous self-report measure of anxiety sensitivity.

^g Continuous self-report measure of practitioner negative attitudes and beliefs about exposure-based techniques.

history in exposure therapy was a significant predictor of therapist-assisted *in vivo* exposure use across OCD, PD, and SAD. Practitioner anxiety and disgust sensitivity were not significantly associated with use for any of the disorders. Across OCD, PD, and SAD, negative beliefs about exposure therapy were the strongest predictor of therapist-assisted *in vivo* exposure use. Self-identification as an anxiety specialist was the only significant predictor in the model predicting therapist-assisted *in vivo* exposure for youth with PTSD. Identifying as an anxiety specialist also predicted exposure utilization for children with OCD and SAD, though it became a non-significant predictor in the SAD model when controlling for therapist beliefs.

3.3. Top negative attitudes and beliefs about exposure

An item level analysis of TBES revealed that the top three negative beliefs held by practitioners who treat youth with anxiety disorders are: 1) “Arousal reduction strategies, such as relaxation or controlled breathing, are often necessary for clients to tolerate the distress exposure therapy evokes” ($M = 3.01$, $SD = 1.11$; 32% “agree,” 31% “strongly agree”), 2) “Clients are at risk of decompensating (i.e., losing mental and/or behavioral control) during highly anxiety-provoking exposure therapy sessions” ($M = 3.20$, $SD = 1.09$; 37% “agree,” 4% “strongly agree”), and 3) “Most clients have difficulty tolerating the distress exposure therapy evokes” ($M = 3.18$, $SD = 1.06$; 37% “agree,” 4% “strongly agree”).

3.4. Training in exposure techniques

3.4.1. Training history

The average score on the ETA was 26.93 ($SD = 20.33$) and the average response on the ETA was between “Never” and “Rarely.” The three most commonly cited sources of training in exposure-based techniques during graduate school were related to reading research articles or treatment manuals ($M = 4.56$, $SD = 3.09$), teachings in academic classes ($M = 3.64$, $SD = 2.77$), and conference workshops or seminars ($M = 2.77$, $SD = 2.45$). The most commonly cited sources of training in exposure-based techniques post-graduate school were conference workshops or seminars ($M = 4.22$, $SD = 2.57$), and non-conference workshops or seminars ($M = 3.328$, $SD = 2.69$).

3.4.2. Access to training opportunities

In terms of opportunities to obtain more training in exposure-based techniques, five percent reported that they believed there is *No lack of training opportunities*, 22% selected that there is *Some lack of training opportunities*, 45% reported there is *Moderate lack of training opportunities*, and 28% indicated that there is *Extreme lack of training opportunities*.

3.4.3. Benefit of training opportunities

In terms of perceived benefit of attending a training in exposure-based techniques, eight percent of participants reported that they believed there would be *No benefit*, 32% selected that there would be *Some benefit*, 32% reported there would be *Moderate benefit*, and 28% stated that there would be *Extreme benefit*.

3.4.4. Preferred training mechanism

Nine percent of participants indicated they prefer training at a national conference, 17% reported a preference for reading materials and video recordings to be mailed to them, 36% indicated a preference for training at a one-day seminar held in the United States, and 37% stated that they prefer online training materials.

4. Discussion

In this sample of private practitioners from around the United States, exposure therapy was used less often than other CBT techniques in the treatment of anxious youth, but more often than third-wave behavioral strategies and psychodynamic therapy. These findings were largely consistent regardless of the disorder being treated, with the exception of youth with PTSD, with whom exposure therapy was particularly underused. These results suggest that although clinicians often use cognitive-behavioral strategies with anxious youth, they more heavily rely on cognitive therapy and anxiety management strategies than exposure therapy despite the well-documented efficacy of this technique. Self-reported training in exposure therapy and positive beliefs about exposure appeared to be the most consistent predictors of exposure implementation, and thus future DI efforts should continue to emphasize effective training in exposure therapy that engenders

positive beliefs towards this therapy.

Consistent with the treatment of other diagnoses, non-exposure CBT techniques were the most common therapeutic strategies used to treat youth with PTSD. Unlike the other diagnoses, psychodynamic therapy and third-wave techniques were used just as frequently as exposure techniques. Therapists indicated that they only conducted therapist-assisted in-session exposure 11% of the time, though it is worth noting trauma-focused narrative was reported to be used 37% of the time by respondents. It may be that private practice therapists conceptualize childhood trauma as fundamentally different than anxiety and thus do not consider traditional exposure an effective approach, or that exposure may re-traumatize youth with PTSD, leading them to seek other approaches. Other fears about exposure may be more prevalent when treating youth with PTSD due to the sensitive nature of trauma, such as concerns about dropout from treatment. Additionally, practitioners may find imaginal exposure more important than in-vivo practice, easier to conduct, or a more comfortable treatment to implement. Future research should more thoroughly investigate practitioner perspectives on the treatment of PTSD, as this appears to be an area of particular opposition to evidence-based practice.

This survey indicates that even when clinicians use exposure therapy, they tend to favor less powerful exposure techniques like imaginal exposure or client self-directed exposure compared with therapist-lead exposure. Consistent with previous literature (Hipol & Deacon, 2013; Whiteside et al., 2016), interoceptive exposure was used significantly less often than imaginal exposure, a less effective form of exposure for PD (see Boettcher, Brake, & Barlow, 2016, for a review). Similarly, therapists reported instructing patients to conduct exposure themselves more often than they engaged in exposure alongside their patients, despite the literature suggesting that therapist-lead exposure is more effective (Abramowitz, 1996; Tolin et al., 2007).

Behind cognitive restructuring and breathing retraining, mindfulness was the most frequently cited therapeutic technique used to treat youth with anxiety disorders. The frequency of mindfulness as a therapeutic practice speaks to its appeal to private practice therapists and its rapidly growing empirical support for childhood internalizing disorders (Semple & Lee, 2014; Zoogman, Goldberg, Hoyt, & Miller, 2015). Research should continue to investigate its efficacy among children with anxiety disorders to determine whether the evidence for this technique matches its popularity.

Negative beliefs about exposure therapy and less training in this technique both appear to inhibit the implementation of exposure, while therapist emotional sensitivities do not appear to be a barrier to implementation. Future quantitative studies are needed to test other factors of interest that may influence exposure implementation, such as financial barriers like limited session length to conduct exposure (Reid, Bolshakova et al., 2017). More specific training in exposure therapy, but not higher education, was consistently associated with higher use of optimal exposure-based techniques. These findings further support the recommendations made by the inter-organizational task force on cognitive-behavioral psychology education that recommended additional training in exposure therapy during graduate school (Klepac et al., 2012). Fortunately, results of this study suggest that practicing clinicians are eager for additional training in exposure therapy, as 92% of the sample perceived at least some benefit of more training opportunities of this kind. These data also indicate that practicing clinicians have a preference for online or one-day intensive training opportunities over more traditional post-graduate training methods (e.g., conference workshops). Improving graduate and post-graduate training in exposure therapy appears to be one potential method to improve implementation of exposure-based techniques in the community.

Yet, the current challenge facing DI researchers is to learn *how* to design and implement a training intervention of this nature. It appears that reading manuals or attending didactic lectures are ineffective training modalities (Beidas & Kendall, 2010; Herschell, Kolko, Baumann, & Davis, 2010; see Reid & McHugh, 2018, for a review) and

that interventions at the systems level may be required for sustained behavioral change in practicing clinicians (e.g., Beidas et al., 2015; Higa-McMillan, Francis et al., 2015; Higa-McMillan, Nakamura et al., 2015; Ringle et al., 2015). Within broader CBT training programs for practicing clinicians, sustained implementation of exposure-based techniques is relatively worse compared to other CBT techniques (Chu et al., 2015; Edmunds et al., 2014; Southam-Gerow et al., 2010), so the need for more effective training interventions in exposure therapy is clear. Unfortunately, few training programs specific to exposure-based techniques have been comprehensively evaluated (e.g., Harned et al., 2014; Reese et al., 2016; Reid, Guzick et al., 2017; Ruzek et al., 2015). Substantial research is needed to identify how to provide effective and lasting training in exposure therapy to practicing clinicians that match their preferences for one-day intensive or online exposure.

Some have argued that a “train-the-trainer” model may be an effective approach to disseminating evidence-based practices (McHugh & Barlow, 2012) and that any effective training intervention will require some form of consultation in order to be effective (Beidas, Edmunds, Marcus, & Kendall, 2012; Edmunds, Beidas, & Kendall, 2013; Herschell et al., 2010; see Reid & McHugh, 2018, for a review). In terms of teaching exposure therapy to novice clinicians, key ingredients such as *in vivo* practice, opportunity to articulate exposure therapy to others, and on-going supervision have been proposed (Balkhi, Reid, Guzick, Geffken, & McNamara, 2016; Farrell, Deacon, Dixon, & Lickel, 2013; Harned et al., 2014). Based on the results of this and other studies, another critical component of training may be addressing negative beliefs about exposure-based techniques (Deacon et al., 2013; Harned et al., 2014; Reid, Guzick et al., 2017). It will be important for training efforts to provide evidence that directly counters the most frequently endorsed negative beliefs identified in this study and by Deacon et al. (2013), such as arousal reduction strategies can be counterproductive during exposure, that patients do not decompensate during exposure, and that patients are resilient and can handle the level of distress exposure evokes. More broadly, training will likely need to address negative beliefs towards evidence-based practice (e.g., Borntrager et al., 2015; Brookman-Frazee et al., 2010; Lilienfeld et al., 2013). Our results match previous work that has found that specialists are more likely to implement exposure therapy (Hipol & Deacon, 2013; Howard, 1999) and deliver this treatment in an optimal manner (Harned et al., 2013; Howard, 1999), although longitudinal research is needed to determine the direction of causality in this association. Finally, considering how the workplace setting in which a provider is employed can steer the interventions they provide and alter their beliefs about evidence-based practice (e.g., Beidas et al., 2015; Higa-McMillan, Francis et al., 2015; Higa-McMillan, Nakamura et al., 2015; Ringle et al., 2015), systems level interventions need to be developed and evaluated as well.

This study is not without limitations. First, the implications of our study are limited to private practice therapists due to our sample of clinicians who work in this setting, though as noted, practice patterns of this group have been less systematically studied. A second limitation of this study was the use of a convenience sample rather than a random sample of practicing clinicians. However, our recruitment efforts successfully obtained a sample that was approximately proportionate to the geographic distribution of the United States population. Our sample did have a higher proportion of psychologists than what is observed in the community (Hamp, Stamm, Christidis, & Nigrinis, 2014), which may have inflated estimates of evidence-based practices (e.g. Higa-McMillan, Francis et al., 2015; Higa-McMillan, Nakamura et al., 2015). Further, based on the design of our study, it is unclear which negative beliefs affect exposure use the most, and whether these relationships differ based on disorder (e.g., dropout concerns in youth with PTSD). A fourth limitation is the lack of data collected on other common childhood anxiety disorders, such as specific phobia and separation anxiety disorder, and future research should focus on these diagnoses as well.

Surveys can be prone to social desirability and recall biases and thus future research of this nature should consider observational measures as

well (e.g., McLeod, Smith, Southam-Gerow, Weisz, & Kendall, 2015). To reduce social desirability bias, measures that probed about exposure were included at the end of the survey. More so, research suggests online data collection may be more immune to social desirability bias due to the privacy it provides (Rhodes, Bowie, & Hergenrath, 2003). In order to reduce recall bias, participants were asked to provide data on treatments utilized only within the past 12 months. Finally, considering the cross-sectional nature of this study, longitudinal randomized-controlled trials are needed to better study barriers to the implementation of exposure-based techniques.

5. Conclusion

The poor dissemination and implementation of evidenced-based practices such as exposure therapy is a public health problem in the United States. Practicing clinicians appear to underutilize highly potent exposure techniques compared with other cognitive-behavioral approaches. That said, positive strides have been made over the past decade in the United States, including the comprehensive and commendable reform efforts made by Hawaii's Child and Adolescent Mental Health Division (see Nakamura et al., 2014 for a review) and increasing state mandates for evidence-based care (Cooper et al., 2008). Assessment of training needs, such as the surveying of practicing clinicians about their reasons for or against the implementation of specific evidenced-based practices, should help continue the development of targeted training programs that lead to optimal training outcomes (Dimeff et al., 2015). Regardless, as future programs are proposed to enhance the DI of exposure-based techniques, it will be critical for them to consider the guidelines provided by leaders in DI science to ensure a maximum return on investment for the public (e.g., Glasgow et al., 2012; Neta et al., 2015).

Funding

This study was funded by an internal grant from the University of Florida College of Medicine.

Acknowledgements

We are grateful to the Division of Medical Psychology Research Lab for their efforts in recruitment and data management. We also are extremely appreciative of the numerous practicing clinicians who took time out of their busy schedules to complete the study surveys. We would also like to thank Amanda Balkhi, Ph.D., for her help supervising data collection for this study.

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