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6   Improving Delivery Behaviors during Exposure Therapy: A Cluster Randomized

7   Controlled Training Trial with Community Therapists

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Abstract

This study tested whether a new training tool, the Exposure Guide (EG), improved in-session therapist behaviors that have been associated with youth outcomes in prior clinical trials of exposure therapy. Sixteen therapists in practice settings treated 46 youth with an anxiety disorder or Obsessive-Compulsive Disorder (OCD). Therapists were randomly assigned to receive "gold-standard" exposure therapy training with weekly consultation (GS) or "gold-standard" training with weekly consultation plus the EG (EG). The primary outcome was therapist behavior during in-session exposures, observed using a validated coding system. Secondary outcomes included training feasibility/acceptability and observer-rated patient fear habituation; we also explored independent evaluator-rated clinical outcome. As hypothesized, therapists used similarly high rates of exposure with patients in both groups, but those in the EG condition used more fear-increasing behaviors and fewer fear-decreasing behaviors compared with those in the GS condition. Attendance data and therapist feedback support EG feasibility and acceptability. Patients treated by EG-trained therapists showed increased rates of in-session habituation. Descriptive clinical outcome data showed a slightly higher treatment response rate in the EG group (66.7% EG, 58.8% GS) that was more pronounced among patients completing a post-treatment assessment (83.3% EG, 60.0% GS). Results confirm the effectiveness of EG training for improving therapist delivery behaviors. Future studies will be needed to determine whether EG training can improve rates of patient treatment response via improved delivery behaviors.

Keywords: Exposure, Training, Mechanism, Anxiety, Implementation

Public Health Significance. This study shows that the Exposure Guide, a therapist training tool, improves therapist delivery of exposure.

Improving Delivery Behaviors during Exposure Therapy: A Cluster Randomized

Controlled Training Trial with Community Therapists

Efforts to disseminate evidence-based practices (EBPs) are limited by a variety of challenges, including a lack of sufficient therapist training (e.g., Garland et al., 2010) and a limited understanding of what constitutes effective training (Kilbourne et al. 2018). There is clear and consistent evidence that low-burden training models (e.g., self-guided training, workshop only) are ineffective for changing practice (Frank et al., 2020). Although more costly, effective ("gold-standard") methods for training therapists in EBPs involve (at minimum) workshop followed by ongoing consultation (Frank et al. 2020). Consultation has been shown to increase therapist knowledge, skill and intervention use above workshop training alone (Beidas et al., 2012, Frank et al., 2020). Active learning strategies (e.g., role plays) also contribute to enhanced training outcomes (Frank et al., 2020). Although consultation and active learning methods are effective training *formats*, studies have yet to identify key aspects of *content* that should be incorporated into training. In general, few resources describe training content with enough detail to ensure that training effects can be replicated across settings (Edmunds et al., 2013). Even with "gold-standard" training formats, high-integrity delivery of EBPs is difficult to achieve (e.g., Beidas et al. 2019). Although EBP use is impacted by multiple contextual factors in practice settings (e.g., organizational supports, workforce turnover), improving the potency of therapist training approaches is likely to be one key strategy for helping to close this science-service gap.

Studies of training content that focus on core EBP components, rather than broadly on a treatment package, have high potential to yield generalizable findings (Chorpita and Daleiden, 2018). That is, studying a common component results in findings that may benefit any protocol

1   or fit within a flexible practice approach. Exposure, a treatment component that involves

2   gradually confronting feared stimuli, is considered a primary and necessary part of cognitive-

3   behavioral therapy (CBT) and the first-line treatment for anxiety disorders and OCD (Higa-

4   McMillan et al., 2016). Among the 132 randomized controlled trials for child and adolescent

5   anxiety, exposure has been included in 86.2% of the 174 treatment arms that tested evidence-

6   based protocols, and 26% of all evidence-based treatments for all child and adolescent problems

7   contain exposure (PracticeWise, 2020).

8   Despite robust efficacy, exposure is underutilized in practice settings, and therapists

9   report having insufficient training supports to deliver exposure relative to other CBT components

10   (Wolitzky-Taylor et al. 2019). Exposure-based CBT has also not consistently outperformed usual

11   care in community settings (Weisz et al., 2013). Relative to other CBT components, exposure is

12   characterized by the largest research vs. practice differences in both adherence and competence

13   (McLeod et al., 2017). Further, even when therapists receive extensive consultation (i.e., for

14   more than one year), they still identify exposure as difficult to implement, cite concerns about its

15   effectiveness over time, and report it is the least sustainable element of CBT (Chu et al., 2015;

16   Ringle et al., 2015). This raises the possibility that the manner in which exposure is delivered

17   could influence its sustainability in clinical settings. That is, therapists may not observe symptom

18   improvement if delivery quality is low, which may lead them to discontinue using exposure. This

19   highlights the potential importance of improving quality in order to increase sustainability and

20   optimize clinical outcomes in practice settings.

21   Therapist training approaches might be able to improve exposure quality by targeting

22   specific therapist behaviors that relate to improved clinical outcomes. Although training and

23   quality improvement in clinical trials often focus on rates of protocol adherence, protocols can be

1   a poor match for the needs of practice settings (Borntrager et al., 2009), adherence inconsistently

2   predicts clinical outcomes (Huppert et al., 2001), and this approach may not be able to reliably

3   illustrate what high quality exposure "looks like," particularly under dynamic conditions within a

4   specific clinical encounter. Treatment manuals instruct the therapist to conduct an exposure but

5   rarely identify specific prescribed ("what to do") and proscribed ("what not to do") techniques

6   within exposure. A focus on recommended behaviors could help reproduce high quality in

7   practice settings by giving therapists concrete information and improving communication

8   between therapists and trainers. Such a focus is also highly consistent with the presumed

9   mechanisms of behavioral treatments, which usually relate to a core learning process (e.g.,

10   reinforcement, extinction). Several efficacious behavioral treatments define prescribed and

11   proscribed therapist behaviors according to their function for patient learning (e.g., Parent-Child

12   Interaction Therapy, Eyberg, 2005). Training interventions that improve these behaviors may

13   improve treatment potency by more accurately engaging the underlying treatment mechanism.

14   Targeting mechanism-relevant therapist behaviors may be an especially well-suited

15   approach for training therapists in exposure. Exposure is guided by a clear behavioral theory

16   focused on fear extinction learning (Foa & Kozak, 1986). Although variants of this theory detail

17   different neurocognitive processes that underlie fear extinction learning, there are many more

18   similarities than differences across these theories in terms of recommendations for delivery

19   (Himle, 2015). Additionally, most mechanistic variants describe patterns of client fear change

20   within exposure that are thought to facilitate and/or indicate learning (Craske, 2014). Fear

21   change during exposure is easy to measure in treatment settings, and thus has potential to serve

22   as practical signal of learning early in the course of exposure therapy. Unfortunately, studies

23   have reported inconsistent relationships between various fear changes and clinical outcomes

1   (Craske, 2014). However, behavioral theory suggests that certain types of fear reduction (e.g.,

2   when caused by avoidance or safety behaviors) maintain symptoms through negative

3   reinforcement; these are generally contraindicated during exposure. Aiming to integrate this

4   critical aspect of theory into the measurement of fear reduction, Benito and colleagues (2018)

5   conducted microanalytic observational coding of exposures with youth enrolled in three clinical

6   trials for pediatric OCD. Findings indicated that greater cumulative habituation (i.e., within-

7   exposure fear reduction observed to occur "on its own"; summed across treatment) predicted

8   better clinical outcomes, whereas other forms of fear reduction (e.g., those occurring in response

9   to avoidance or another clear antecedent) did not. Other types of fear changes (i.e. fear

10 increases/activation and fear variability) also did not predict outcomes.

11   Further evidence from the same sample (Benito et al., 2020) suggests that specific

12 therapist behaviors during exposure are linked to both habituation and clinical outcomes.

13 Specifically, fewer therapist behaviors that decrease short-term fear (accommodation, unrelated

14 talk) and more behaviors that maintain or increase fear (encouraging approach, intensifying)

15 predicted greater subsequent habituation within the same exposure as well as improved clinical

16 outcomes. These findings suggest that therapists should aim to use behaviors that maintain or

17 increase short-term fear. This is consistent with the longstanding recommendations of exposure

18 specialists to use an "intense" rather than a "cautious" delivery style (Abramowitz, et al., 2012).

19 However, practicing therapists report low rates of intense delivery behaviors and high rates of

20 cautious delivery behaviors (Whiteside et al., 2016).

21   Training approaches that encourage therapists to use more fear-increasing behaviors and

22 fewer fear-decreasing behaviors might improve exposure quality, clinical outcomes, and

23 sustainability in practice settings. Benito and colleagues (under review) developed a training tool

1   (the Exposure Guide; EG) to support therapist decisions about use of these behaviors during

2   exposure. Consistent with recommendations for coordinated strategic action (Chorpita &

3   Daleiden, 2018), the EG was developed with community partners to allow for scientific input

4   (e.g., recommended behaviors, guide structure) in conjunction with decisions in treatment based

5   on a therapist's observations. In a multiple baseline study, Benito et al. (under review) examined

6   whether adding the EG to "gold-standard" training for community mental health therapists is

7   effective for changing fear-increasing and -decreasing behaviors during sessions. Results

8   indicated that 4 of 5 of therapists did not consistently meet behavior benchmarks until after

9   introducing the EG. Participating therapists also reported that they found the EG valuable and

10   used it with non-study patients. Although these results support the initial promise of the EG as a

11   training tool, they need to be confirmed in a larger sample of therapists and youth.

12   **Summary and Current Study**

13   New training approaches are needed to develop capacity for EBP delivery, support EBP

14   sustainability, and yield improved outcomes in practice. Exposure therapy is a striking example

15   of an opportunity to close this science-practice gap: it is highly efficacious but underutilized in

16   practice, therapists report it as difficult to implement, and even high doses of "gold-standard"

17   training have not improved the quality or sustainability of exposure delivery. Training that

18   focuses on specific in-session therapist behaviors—rather than on treatment protocols alone—is

19   a good match for professional development needs in practice settings and for the behavioral

20   learning mechanism presumed to underlie exposure therapy. Evidence from exposure in clinical

21   trials points to specific therapist behaviors that may contribute to clinical outcomes, yet

22   therapists in practice report using high rates of proscribed and low rates of prescribed behaviors.

23   A new therapist training tool (the EG) shows initial promise for changing these behaviors to

1   match clinical trial benchmarks, but to date has only been tested in a small multiple baseline trial.

2   The current study is part of a series that was designed together to identify and test

3   specific therapist behaviors as a mechanism—or target—through which the EG might improve

4   exposure effectiveness in practice settings. The overarching conceptual model and work to date

5   are presented in Figure 1. Although there are many ways to test mechanisms (see Kazdin, 2009

6   for a review), this series uses an experimental therapeutics framework, which emphasizes a

7   specific set of steps carried out across sequential studies. The goal of the current study is to

8   examine *target engagement* (i.e. demonstrate that therapist behaviors, the hypothesized

9   mechanism, can be experimentally manipulated)--a necessary step before proceeding to a fully

10   powered trial for evaluating clinical outcomes. Importantly, though conceptualized here as a

11   mechanism, therapist behavior also represents a key implementation outcome in its own right

12   (i.e., an indicator of treatment quality; Proctor et al., 2011). Similarly, the EG can be viewed as a

13   quality monitoring and/or training implementation strategy (Proctor et al., 2013). Studies that

14   compare implementation strategies for impacting relevant implementation outcomes are essential

15   for advancing knowledge about implementation effectiveness and mechanisms (Proctor et al.,

16   2011).

17   Sixteen community therapists were randomly assigned to receive "gold-standard"

18   exposure training (GS) or "gold-standard" training plus the EG (EG). Primary aims were to

19   examine training feasibility and acceptability (Aim 1; therapist-level) and to determine whether

20   the training conditions produced significantly different therapist behaviors during exposure (Aim

21   2, target engagement; patient-level). Specifically, we hypothesized that EG training (vs. GS

22   training alone) would result in more therapist fear-increasing behaviors and fewer fear-

23   decreasing behaviors. A secondary aim was to determine whether fear habituation differed by

1   training arm (Aim 3; patient-level). Although this study was not designed to detect significant

2   group differences in patient clinical outcomes, we also aimed to describe rates of patient

3   treatment response by training arm (exploratory Aim 4; patient-level).

4   **Method**

5   Procedures were approved by an Institutional Review Board. Therapist participants and

6   parents of youth participants provided informed consent prior to enrollment (youth over age 8

7   provided assent). This trial was registered before enrollment (NCT02202915); enrollment took

8   place between September 2015 and March 2017, with follow-up through June 2017.

9   **Practice Settings and Therapist Participants**

10   Initially, we partnered with two nonprofit Community Mental Health Agencies (CMHAs)

11   accepting private and state-funded insurance. Approximately three months into the study, one

12   CMHA closed its outpatient department and four of five enrolled therapists at this agency

13   transitioned to private practice (PP). This mirrors a national trend with private practice being an

14   increasingly chosen setting for social workers (Lord & Iudice, 2012) and the most common

15   setting for psychologists providing health services (APA, 2016). Interestingly, little is known

16   about EBP use or training needs in PP settings (Lord & Iudice, 2012), suggesting a critical need

17   to include them in service-related research. In light of this gap and the unplanned closure of our

18   CMHA partner, we elected to continue working with these therapists in their new PP setting. We

19   originally planned to enroll 12 therapists (based on power to detect between-group differences in

20   therapist behaviors), but with this change we recruited four additional PP therapists so that we

21   might explore the role of setting (CMHA or PP). All previously enrolled youth at the closed

22   CMHA (n=4) continued to be seen by their therapist in PP and continued in the study.

23   Therapists employed at a partner CMHA or in PP voluntarily enrolled in the study; we

1   enrolled consecutive therapists expressing interest (none declined or were excluded; Fig. 2). PP

2   therapists were recruited through a local professional association. Therapists were compensated

3   per usual for sessions (e.g., insurance). All therapists accepted third-party insurance; however,

4   specific carriers accepted varied by each therapist in both settings. The study provided

5   compensation for study activities (i.e., completing questionnaires, training/consultation

6   attendance). The therapist sample ($n = 16$) included 8 in each training condition, with an average

7   age of 44.75 years (SD=9.99). Therapists were predominantly female (81.3%), White (56.3%;

8   6.3% Black, 6.3% Asian, 31.3% did not report), and non-Latinx (62.5%; 37.5% did not report).

9   Most were masters-level (62.5%) and the rest were doctoral-level (37.5%); licensure included

10   Clinical Psychologist (31.3%), Licensed Clinical Social Worker (25.0%), Licensed Mental

11   Health Counselor (31.3%), and unlicensed (12.5%). Therapists identified theoretical

12   orientation(s) as CBT (93.8%), family-systems (56.3%), eclectic (31.3%), humanistic (31.3%),

13   psychodynamic (18.8%), and other (18.8%). Therapists reported an average of 16.22 years of

14   clinical experience (SD=10.29). At the start of the study, half reported having "never" (n=3) or

15   "rarely" (n=5) used exposure, and the other half reported "sometimes" (n=5) or "often" (n=3)

16   using exposure. Therapists did not differ by condition on any measured characteristics. Six

17   therapists withdrew from the study, primarily due to position turnover (Fig. 2).

18   **Youth Participants**

19   Youth participants age 5-17 were recruited through community referrals of families

20   seeking treatment at an anxiety specialty clinic in a hospital-based setting. Interested families

21   completed an initial assessment with study staff to determine eligibility. Those eligible were

22   matched to a participating therapist based on typical practices including provider availability,

23   location, and accepted insurance. Inclusion criteria were (a) primary diagnosis of anxiety

1   disorder (separation anxiety, panic disorder, social anxiety, specific phobia, or agoraphobia) or

2   OCD and (b) insurance type accepted by a participating therapist. Exclusion criteria were (a)

3   concurrent psychotherapy for anxiety or OCD, (b) diagnosis of psychosis, autism spectrum

4   disorder, or moderate to severe intellectual disability, and/or (c) change in psychotropic

5   medication in the previous six weeks.

6   Youth participants ($n = 46$, Figure 3) identified as 60.9% female with a mean age of

7   10.24 years ($SD = 3.11$). The majority of youth participants identified as White (82.6%) and

8   17.4% declined to report race. Most participants identified as Non-Hispanic/Latinx (92.5%) and

9   7.5% as Hispanic/Latinx. Participants had primary diagnoses of OCD (n=27, 58.7%), Separation

10   Anxiety Disorder (n=9, 19.6%), Social Anxiety Disorder (n=6, 13.0%), Panic Disorder (n=2,

11   4.3%), or Specific Phobia (n=2, 4.3%). The majority of the sample (n=41, 89.1%) had at least

12   one comorbid diagnosis (Specific Phobia 50.0%, Generalized Anxiety 41.3%, Separation

13   Anxiety 28.3%, Social Anxiety 28.3%, Agoraphobia 23.9%, Tourette's/Tic Disorder 19.6%,

14   Panic 15.2%, ADHD 10.9%, Major Depression 8.7%, Oppositional Defiant 8.7%, and OCD

15   6.5%). Average baseline severity was moderate to markedly ill as rated by the CGI-S ($M = 4.53$,

16   $SD = .66.$), and 26.0% of youth had tried therapy and/or medication for symptoms in the past.

17   Four participants were taking psychotropic medication for anxiety (stable > 6 weeks at baseline).

18   **Exposure Therapy**

19   Therapists in both conditions were trained to provide exposure-based treatment using a

20   flexible, principle-based treatment manual (available from corresponding author upon request).

21   This manual provided basic treatment elements that could be developmentally tailored to support

22   family-based exposure treatment for youth including psychoeducation, using a reward system,

23   hierarchy building, exposure, and relapse prevention. Therapists were encouraged to incorporate

1   exposure during most treatment sessions after psychoeducation and hierarchy building, but were

2   free to order, combine, or omit procedures as needed (e.g., revisiting hierarchy development

3   when a new treatment target has been identified, using rewards as-needed for addressing

4   adherence). Length of treatment followed typical practice and was variable depending on the

5   needs of each youth (Number of sessions: $M = 14.29$; $SD = 10.78$; Range = 1-48).

6   **Study Design and Rationale**

7   Therapists were randomly assigned to one of two training conditions: "gold-standard"

8   training plus the Exposure Guide (EG) or "gold-standard" training alone (GS). Randomization

9   was performed by the statistician (last author) using an adaptive biased-coin design to achieve

10   balance across groups with respect to setting. Given that we aimed to specifically target therapist

11   behaviors during exposure with the EG, conditions were designed to ensure that all other factors

12   remained the same across groups. To create a rigorous test that would help determine the value

13   of the EG over current effective training approaches, other factors likely to influence exposure

14   delivery or outcome were maximized in both conditions. These included use of "gold-standard"

15   training formats (i.e. active learning strategies, ongoing consultation, and structured feedback),

16   emphasis on high rates of exposure use, encouraging application of exposure principles, and

17   feedback using video review. However, we also made every effort to minimize training time

18   while retaining an empirically-supported training model. In a recent systematic review of

19   "standard" and "intensive" training models (including both community training initiatives and

20   training research trials), Frank et al. (2020) report that workshop hours range from 4 to 32 hours

21   (standard) or 22 to 180 hours (intensive), consultation hours range from 1.5 to 76 hours

22   (standard) or 5 to 56 hours (intensive), and many models include tape review (19% of standard

23   and 50% of intensive models). In relation to these, training elements used in the present study are

1   of low to moderate intensity. Training components by condition are presented in Table 2.

2   Group assignment was masked for all study staff except for the statistician and the

3   consultants providing therapist training. Therapists were necessarily aware of their assigned

4   training condition but were not aware of specific study hypotheses. Prior to randomization, all

5   therapists attended an eight-hour workshop focused on exposure components and principles.

6   Therapists were then randomized and attended a second workshop (4 hours) specific to their

7   group, following which they began treating study patients and received weekly one-hour group

8   consultation until meeting "maintenance" criteria (see Table 1 and group descriptions for more

9   detail). Consultation attendance was high (> 80%) and did not differ by training group.

10   Following each session with participating youth, therapists completed a self-feedback tool

11   specific to their training condition. Completion of self-feedback forms was high (> 80%) and did

12   not differ by condition. Consultants discussed therapist self-feedback during consultation,

13   including convergence or divergence with consultant ratings (based on videotape review) as a

14   way to promote learning. Video review was used in 25% of consultation meetings and did not

15   differ by training condition. Consultation was provided by the first, second, and fifth authors;

16   each provided consultation for both training conditions and both settings. A consultation protocol

17   (available from the corresponding author upon request) was used to ensure consistency across

18   consultants and adherence to the training model during each study phase (> 90% adherence),

19   based on consultant-rated activities during each consultation meeting.

20   ***"Gold-standard" training group***

21   In workshop day two for therapists in the GS group, content focused on treatment

22   components for psychoeducation, hierarchy building, exposure sessions, and relapse prevention.

23   For exposure sessions, therapists learned core procedures that included preparing for exposures,

1   exposure selection, conducting exposures, and processing exposures with families. Materials

2   additionally addressed maintaining therapeutic alliance during exposure treatment and

3   troubleshooting common problems (e.g., crises of the week). After completing workshop 2,

4   therapists began treating participating youth and completed a self-feedback form after each

5   session that focused on <u>adherence</u> to exposure and CBT procedures. This form is similar to

6   adherence checklists used in clinical trials (Freeman et al., 2014), and asked therapists to

7   determine whether each of the following exposure procedures had occurred: (1) identify

8   appropriate exposure target using brief assessment, (2) prepare child for exposure, (3) complete

9   exposure, (4) process exposure with child and/or family, and (5) assign exposure for homework.

10   These five items were used as criteria for entering the maintenance phase of training (see Table

11   1). Other items on the adherence form asked therapists to reflect on general CBT procedures

12   (e.g., set agenda, problem-solve homework compliance) as well as any additional treatment

13   content included (e.g., relapse prevention, parenting principles). Consultants used the same

14   adherence form to provide feedback during consultation. Consultants emphasized broad

15   application of exposure principles and encouraged therapists to use these to guide in-session

16   activities. In order to ensure that EG content was isolated to the EG condition, therapists in the

17   GS group did not receive training or feedback using the therapist behavior framework outlined

18   on the EG. Although clinical researchers recommend a focus on these behaviors, *these*

19   *recommendations have never been tested using an experimental design*. After study participation

20   was complete, therapists in the GS group were offered the opportunity to receive EG training.

21   ***"Gold-standard" training plus Exposure Guide (EG) group***

22   In workshop 2 for therapists in the EG group, content was identical to that in the GS

23   group but incorporated a focus on using the EG to guide exposure delivery. Afterward, therapists

1   began treating participating youth and completed an EG for self-feedback after each session.

2   Consultation content and format was identical to that in the GS group except that it included a

3   specific focus on therapist behaviors during exposure as outlined on the EG, and consultant

4   feedback was based on the EG rather than the adherence form. The EG provides an explicit

5   framework for learning therapist behaviors with a fear-increasing or decreasing function during

6   exposure.

7   **Exposure Guide.** The EG is a written tool that integrates the underlying principles of

8   exposure with elements of adherence and specific delivery behaviors. It was developed through

9   an iterative process that considered therapist behaviors recommended by specialists and with

10   empirical support, community stakeholder feedback, and review by a panel of exposure

11   treatment developers for theoretical fidelity (see Benito et al., 2020 and Benito et al., under

12   review). The EG incorporates content from the adherence form used in the GS group (e.g.,

13   identifying an appropriate exposure target, whether an exposure occurred, post-exposure

14   processing) but uses a format designed to support therapist decisions about next steps. For

15   example, if an exposure did not occur, the EG directs therapists to evaluate various barriers that

16   may have been present. If an exposure did occur, therapists rate their use of specific behaviors on

17   a 3-point scale ("none," "some," or "a lot"). These behaviors are grouped by short-term function

18   on youth fear to encourage reflection about using them for "titration" during exposure. The final

19   page of the EG provides brief troubleshooting related to potential problem areas. For example, if

20   an exposure was "too hard," suggestions are provided to address this in the next session (e.g.,

21   revisiting the hierarchy to choose an easier task, using intensifying behaviors judiciously). The

22   EG and accompanying manual are available from the corresponding author upon request.

23   *Maintenance Consultation*

1   Both training conditions included a maintenance phase designed to reduce consultation

2   use over time. Therapists meeting maintenance criteria within their assigned arm (Table 1) began

3   attending consultation at a reduced frequency of once per month. Consultation during this phase

4   was otherwise identical; therapists continued to attend the same consultation group within their

5   training arm. Therapists re-entered weekly consultation when they had difficulty continuing to

6   meet the maintenance criteria (see criteria for returning to weekly consultation in Table 1).

7   Maintenance criteria were designed to ensure that therapists were regularly using exposure, had

8   practiced using exposure with multiple symptom presentations, were reliably rating the relevant

9   self-feedback tool (adherence form or EG), and consistently meeting some basic delivery goals

10   assessed during self-feedback. The six therapists who withdrew from the study did not meet the

11   first maintenance criterion (complete 12 exposures with two clients), but all other therapists

12   successfully transitioned to the maintenance phase. Only one therapist in the GS condition

13   returned to weekly consultation (due to difficulty completing regular exposures). This therapist

14   attended two consultation meetings before returning again to maintenance.

15   **Measures**

16   *Independent observer ratings: Therapist behaviors*

17   Therapist behaviors were observed using videotape of each exposure session throughout

18   the study period.

19   **Exposure Process Coding System** (EPCS; Benito et al., 2012)**.** EPCS is a microanalytic

20   coding system measuring therapist, parent, and child behaviors, as well as fear levels during

21   exposure. EPCS uses software (Noldus Observer, Version XT 11) that links coded observations

22   to video and generates a time-stamp for each variable coded. Variables of interest can be

23   calculated for frequency and/or duration. EPCS is applied during the exposure task and not

1   during other portions of an exposure session. Variables of interest in this study were therapist

2   behaviors (defined in Table 2) and fear habituation. To measure habituation, EPCS samples

3   observer-rated fear continuously on a 0 (no fear) to 5 (maximum fear) scale; as coders rate

4   patient fear, they also judge whether each instance of fear decrease was associated with an

5   observable antecedent likely to explain the reduction (e.g., rituals, avoidance, reduction of task

6   difficulty, unplanned change in exposure stimulus, focus on anticipation of exposure end). Fear

7   decreases not better explained by such antecedents (i.e., occurring "on their own" are more likely

8   to signal an internal learning process and judged by coders as habituation. Given the complexity

9   of habituation measurement considerations, we refer readers to Benito et al., 2018 for detailed

10   figures illustrating the calculation method and rationale. EPCS has demonstrated good inter-

11   coder reliability and predictive validity with treatment outcome in a small sample of young

12   children with OCD ($n= 18$; Benito et al., 2012) and in a larger sample of children and

13   adolescents with OCD ($n = 111$; Benito et al., 2018; Benito et al., 2020).

14   ***Coder training and reliability.*** Coders were bachelor-level research assistants masked to

15   therapist condition and clinical outcomes. Coder training included guided reading of the EPCS

16   manual, observing trained coders, coding with supervision by trained coders, and independent

17   coding of training tapes to criterion ($K > .70$ on all variables). Trained coders attended weekly

18   meetings to discuss EPCS implementation and prevent drift. Ten percent of tapes were double-

19   coded for inter-coder reliability, which was excellent in the present sample ($K = .85$ to 1.00). To

20   prevent drift, an additional 10% of tapes were subject to ongoing review by the first author.

21   ***Independent evaluator (IE) ratings: Clinical symptoms***

22   Youth participants completed clinical assessments at pre-and post-treatment. IEs were not

23   aware of therapist training condition or in-session behaviors and were otherwise not involved

1   with this study. They were psychology residents or licensed psychologists who were trained to

2   criterion on all measures ($K > .80$).

3   **Mini International Neuropsychiatric Interview** (MINI-KID; Sheehan et al., 2010)**.** The

4   MINI-KID is a structured diagnostic interview that assesses for DSM-V and ICD-10 psychiatric

5   diagnoses in children and adolescents and has demonstrated adequate reliability and validity. The

6   MINI-KID was used to determine diagnosis for inclusion/exclusion criteria.

7   **Clinical Global Impressions (CGI) Scale: Severity** (CGI-S; Guy, 1976)**.** The CGI-

8   S assesses overall clinical impressions of the youth's current presentation based on symptoms

9   observed and impairment using a 7-point scale (higher scores indicate worse severity). The CGI-

10   S was used to characterize overall clinical severity of the sample at baseline.

11   **Children's Yale-Brown Obsessive-Compulsive Scale** (CY-BOCS; Scahill et al., 1997)**.**

12   The CY-BOCS is a semi-structured clinician-rated interview assessing for current OCD

13   symptoms and severity. It is considered to be the "gold standard" for assessing pediatric OCD

14   severity with excellent psychometric properties in school-age children and adolescents (Scahill et

15   al., 1997; Storch et al., 2004). Youth with primary OCD were considered treatment responders if

16   there was a 25% reduction in CY-BOCS score, as established by Storch et al. (2010).

17   **Pediatric Anxiety Rating Scale** (PARS; Research on Pediatric Psychopharmacology

18   Anxiety Study Group, 2002)**.** The PARS is a clinician-rated measure with a checklist of anxiety

19   symptoms followed by global items assessing frequency, impairment, severity, distress,

20   avoidance, and interference. The PARS has excellent psychometric properties including

21   sensitivity to treatment change. Youth with a primary anxiety disorder were considered treatment

22   responders if there was a 35% reduction in PARS score, as established by Caporino et al. (2013).

23   **Missing Data**

1   Although therapists completed session recordings at a very high rate (91.4%), some

2   sessions were not recorded. Similarly, some exposures occurred out of the office and were not

3   recorded for privacy reasons (13.5%). Therapist behavior variables used in this study reflect a

4   mean rate per session that does not include these sessions because they could not be coded

5   without videotape. Eleven youth (23.9%) did not receive exposure because they attended fewer

6   than four sessions (Fig. 3); treatment response rate for this group was 0%. This rate of patients

7   with low session attendance is consistent with that in practice settings (Pellerin et al., 2010), and

8   was not different by training condition or setting (p > .05). Analyses for Aims 2-4 were

9   conducted with the remaining 35 patients because the target of interest (therapist behaviors) can

10   only occur during exposure. Additionally, eight of these youth (22.9%) could not be reached for

11   post-treatment assessment; of these, five had reached the end of treatment (per therapist report;

12   Figure 2). We calculated treatment response rates (exploratory Aim 4) among youth who

13   completed a post-treatment assessment (n = 27), and also for the full sample of youth receiving

14   exposure (n = 35; using the last observation carried forward; LOCF).

15   **Analytic Plan**

16   Analyses were conducted using Generalized Linear Mixed Models (GLMMs) in SAS 9.4

17   (SAS Institute, Cary, NC, 2003) in PROC GLIMMIX. Distributions and link functions were

18   chosen based on theory (e.g. Poisson for count) and examination of model residuals (e.g.

19   heterogeneity of variance across linear predictions). Models used classical sandwich estimation

20   to conservatively adjust standard error estimates. A random intercept for therapist was included

21   in each patient-level model to account for clustering within therapist (*M* patients per therapist =

22   2.33, *SD* = 1.18). Models did not include other random effects due to insufficient sample size for

23   stable estimates at each of multiple nested levels (i.e. exposures within sessions, sessions within

1   patients, patients within therapists). We modeled the main effects and interaction of training

2   group (GS or EG) by setting (CMHA or PP) on therapist behaviors (fear-increasing, fear-

3   decreasing, or fear-neutral; Aim 2; negative binomial model) and youth fear habituation (Aim 3;

4   negative binomial model) at the patient-level (mean rate per session). For exploratory Aim 4, we

5   calculated patient-level treatment response rates by training condition.

6   <div align="center">**Results**</div>

7   Preliminary analyses did not find training arm or setting differences for youth sex,

8   gender, or baseline symptom severity ($ps > .05$). There was a significant difference of insurance

9   type by treatment setting such that a higher proportion of CMHA patients had public insurance

10   compared with those in PP ($F(42) = 5.72$, $p = .02$; CMHA $= 39.1\%$, PP $= 4.0\%$). There was a

11   significant difference in age by training arm such that patients in the EG condition were older

12   than those in the GS condition ($F(42) = 15.34$, $p = .0003$; EG $M = 11.71$ $SD = 3.09$; GS $M = 8.64$

13   $SD = 2.24$). Recent meta-analyses have found better treatment outcomes among younger patients

14   (Olatunji et al., 2013); therefore, we conducted a parallel set of analyses that included age as a

15   covariate. No study results changed with inclusion of patient age in the model; results below do

16   not include this covariate.

17   **Aim 1: Feasibility and acceptability**

18   Therapists met maintenance criteria at identical rates across training conditions (62.5%).

19   Consultation attendance rates were high and did not differ across groups (> 80% of protocol

20   consultation meetings attended, $p > .05$). However, therapists in the EG group used fewer

21   consultation hours before reaching maintenance ($M = 22.38$, $SD = 9.77$) compared with the GS

22   group ($M = 33.14$, $SD = 9.48$), $t(15)= -2.16$, $p = .05$, $d = 1.12$. Informal interviews conducted

23   with therapists after training completion suggests that therapists in the EG group found the EG to

1   be simple and useful (e.g., "It's a way to streamline it all," "[It] helps you keep track of all the

2   things to do," and "It's useful because it gives a framework"). In addition, they found EG self-

3   feedback motivating ("I felt a sense of pride when I didn't have to circle any of the less desirable

4   tools") and felt that it promoted longer-term learning ("After a while I memorized it…it became

5   second nature"). After a brief orientation to the EG at the end of the study, therapists in the GS

6   group reported that it would have been valuable for their training (e.g., "It absolutely would have

7   been helpful," "I would have had this out during my sessions," and "It would have made me feel

8   better"). They also said that it seemed simple to use ("It seems like an easy and simplified place

9   to look,"), and that they intended to use it in their own practice ("I think this will help my

10 practice now").

11 **Aim 2: Therapist behavior outcomes**

12   There was a significant main effect of training condition on therapist fear-increasing

13 behaviors ($F(1,19) = 13.88$, $p = .001$, $d = 1.32$, *difference est.* $= 0.46$ [0.20, 0.72]) such that those

14 in the EG group used more, but there was no main effect of setting and no condition x setting

15 interaction ($ps > .31$). There was a significant main effect of training condition on therapist fear-

16 decreasing behaviors ($F(1,19) = 31.35$, $p < .0001$, $d = 1.98$, *difference est.* $= -1.20$ [-1.65, -0.75])

17 such that those in the EG group used fewer, but there was no main effect of setting and no

18 condition x setting interaction ($ps > .47$). There were no significant differences by group for

19 therapist fear-neutral behaviors ($ps > .39$). Descriptive statistics by training arm are in Table 3.

20 **Aim 3: Patient fear habituation**

21   There was a significant main effect of training condition on fear habituation ($F(1,19) = $

22 10.12 $p = .005$, $d = 1.18$, *difference est.* $= 1.96$ [0.67, 3.25]) such that youth participants in the

23 EG group showed greater habituation, but there was no main effect of setting and no condition x

1   setting interaction (ps > .29).

2   **Exploratory Aim 4: Patient treatment response**

3   Among all youth who received exposure (n=35, using LOCF), there was a 66.7%

4   treatment response rate for those treated by EG-trained therapists and a 58.8% response rate for

5   those treated by GS-trained therapists. Among youth who completed post-treatment assessment

6   (n=27), response rates were 83.3% (EG) and 60.0% (GS).

7   **Discussion**

8   The primary aim of this study was to determine whether adding a training tool, the EG, to

9   "gold-standard" training can significantly change therapist delivery behavior versus "gold-

10   standard" training alone. Consistent with hypotheses, therapists who received the EG spent more

11   time engaged in fear-increasing behaviors and a less time engaged in fear-decreasing behaviors.

12   These results are consistent with preliminary findings from Benito et al (under review) and

13   confirm that addition of the EG helps therapists learn specific delivery behaviors. In addition to

14   significant group differences, therapists in the EG group exceeded the clinical trial benchmark

15   for fear-increasing behavior whereas those in the GS group were below it. Similarly, therapists in

16   the EG group did not use fear-decreasing behaviors more than those in a clinical trial sample,

17   whereas therapists in the GS group used fear decreasing behavior three times more often. The

18   EG group also exhibited less variability in these behaviors relative to both the GS group and the

19   trial benchmark. This suggests that the EG could improve delivery consistency beyond that seen

20   in efficacy trials, which is notable considering that the present study included a number of

21   therapists who had rarely used exposure, a diagnostically heterogeneous patient group, and a

22   flexible treatment. This suggests that the EG could be used in efficacy trials to reduce variability

23   in the delivery of exposures. It may also be of value in other training settings (e.g., degree-

1   granting clinical programs) for helping students to develop exposure delivery skills. It is also

2   important to note that therapist behaviors were measured independent of the number of

3   exposures or sessions completed—thus, therapist behavior results cannot be attributed to more

4   general delivery factors. As intended, these general factors and other aspects of delivery (e.g.,

5   therapist use of fear-neutral behaviors) were not different across training groups. Altogether,

6   these results suggest that the EG can be used to improve key indicators of exposure quality (i.e.

7   therapist behaviors previously linked to clinical outcomes) to a level seen in efficacy trials.

8   As hypothesized, we found evidence that patients of therapists in the EG group

9   experienced a higher rate of habituation per session. We did not find a difference by training

10   condition in the number of exposures conducted per session; thus, the difference in rates of

11   habituation cannot be attributed to overall differences in exposure frequency between training

12   groups. Prior work established a relationship between habituation and multiple clinical outcomes

13   (Benito et al., 2018) and between therapist delivery behaviors and habituation (Benito et al.,

14   2020). Methods used in the present study (i.e. experimental manipulation of therapist behaviors)

15   support the existence of a causal relationship in which specific therapist behaviors supported by

16   the EG influenced the rate of patient fear habituation. Importantly, we defined habituation as the

17   sum of all fear decreases occurring "on their own" throughout an exposure task; this metric

18   parses out fear decreases with an observable antecedent (e.g., change in exposure stimulus,

19   escape) that are unlikely to reflect learning. Although habituation is commonly thought of as

20   specific to one variant of exposure mechanistic theory (i.e. emotional processing theory; Craske

21   et al., 2014), when measured this way, it is conceptually consistent with nearly all mechanistic

22   variants. It could be viewed as fear reduction occurring through fear toleration, as a way to

23   disconfirm beliefs or violate expectancy about the permanence of fear, or simply as ensuring that

1   exposures do not end with escape. The present study adds to a body of work that points to

2   habituation as a highly practical proximal outcome that might signal initial learning in exposure

3   therapy. There are a number of advantages to measuring a proximal outcome in practice,

4   including for therapist feedback and tailoring for individual patients.

5   In addition to improving the quality of exposures, results demonstrated that the EG was

6   an acceptable and efficient supervision tool. The rate of consultation attendance and completion

7   of feedback forms was equally high in both training groups (> 80%). This was likely influenced

8   by methods used in the current study (e.g., compensation for consultation time), yet underscores

9   the acceptability of both training conditions and suggests that study findings were not driven by

10   therapist expectancy (i.e. training placebo) effects. Therapists in both groups participated in

11   weekly consultation until meeting criteria for stepping down to maintenance (i.e. monthly)

12   consultation. These criteria emphasized regular use of exposure, accuracy on self-feedback

13   forms, and meeting a basic threshold for adherence to session components (GS group) or to

14   specific delivery behaviors (EG group). Although maintenance criteria were more complex in the

15   EG group (i.e. required more nuanced self-feedback accuracy and meeting specific behavioral

16   goals in addition to exposure completion), the number of therapists who reached the maintenance

17   phase was identical across groups. Surprisingly, therapists in the EG group required 33% *fewer*

18   consultation meetings to reach maintenance vs. those in the GS group. Thus, the EG not only

19   helped therapists learn the targeted delivery behaviors, it also helped them reach an *a-priori*

20   threshold for quality and consistency at a faster pace. Though maintenance criteria were

21   seemingly more complex, our experience suggests that the EG may have accelerated practice

22   change by addressing an unmet training need. Therapists in the GS group regularly asked for

23   more detailed guidance about exposure process, which circumstances warranted the use of a

1   particular behavior or technique, and how those choices may affect the quality of the exposure.

2   Although both groups learned to use important treatment components (e.g., psychoeducation,

3   hierarchy building, exposure selection) and to apply the core principles of exposure, we

4   speculate that the EG helped therapists feel better prepared to use principles at a detailed process

5   level by systematically linking them with concrete in-session behaviors. In effect, the EG may

6   have helped to simplify the learning process rather than simplifying the content to be learned. It

7   also became clear over the course of consultation that therapists wanted detailed information

8   about how to individualize and optimize treatment. The EG was designed to help guide therapist

9   decisions about "what to do when," consistent with the model of coordinated strategic action,

10   which emphasizes integration of science and context (Chorpita and Daleiden, 2018). It is

11   possible that this decision-making framework helped prepare therapists to use exposure

12   principles flexibly in different contexts. Consistent with these ideas, informal feedback from

13   therapists at the end of the study suggests that the EG was simple to use, helped therapists feel

14   prepared, and became "second nature" over time. This is also consistent with therapist feedback

15   in a prior training study with the EG (Benito et al., under review), and supports both EG utility

16   and ease of use—factors that predict uptake and sustained use of innovations in practice

17   (Venkatesh et al., 2016). However, future studies will need to explore this interesting finding

18   further. In general, there is little evidence about how best to identify and promote evidence-based

19   delivery processes during training, or about therapist perceptions of unmet training needs; this is

20   a critical element of the training literature that needs further testing. Overall, present results

21   support the feasibility and acceptability of EG training in both CMHA and PP settings.

22   Although this study did not include enough participants to power a formal test of

23   treatment response by training group, descriptive data show a somewhat higher response rate in

1   the EG condition (66.7% EG vs. 58.8% GS). As might be expected, this was more pronounced

2   when looking only at youth who completed a post-treatment assessment (83.3% EG vs. 60.0%

3   GS). Unlike in trials where treatment is provided by the study team, most youth with missing

4   post-treatment data in the present study did complete treatment and were lost only to assessment.

5   However, these youth could differ in some other important way (e.g., family functioning), and it

6   is unknown whether their outcomes would align with those of assessment completers. Similarly,

7   response rates in this study may not generalize to larger samples and will need to be tested

8   further (Kraemer et al., 2006). Overall, the rate of treatment response among EG-trained

9   therapists appears promising but will need to be tested in future studies that are designed and

10   fully powered for this purpose.

11   **Limitations**

12   There are a few considerations for interpreting these findings and applying them to

13   typical practice settings. First, therapists received ongoing consultation and all treatment sessions

14   were taped. While consistent with the intensity of effective models reported in the literature, this

15   model of training is not feasible in many practice settings without additional resources. In

16   general, low-burden training is not effective and it will be critical for future research to focus on

17   understanding the minimum training dose needed, identifying organizational characteristics that

18   can support higher-burden but more effective training models, and developing innovative

19   approaches to scaling up (e.g., through innovative reimbursement models, immersive training

20   technology). Therapists in this study may have delivered exposure more frequently and carefully

21   knowing their sessions were taped and intermittently reviewed by a study consultant. These

22   factors likely contributed to the high rate of exposure use in this sample, which differs from that

23   typically reported in practice. However, that we found group differences despite a uniformly

1 high rate of exposure use underscores the potential value of EG training for improving clinical

2 outcomes. We also note that six therapists withdrew from the study; five of these did so due to

3 position turnover (e.g., left position, agency closure), which fits with rates and reasons for

4 turnover common to practice settings (Woltmann et al., 2008). Early in the project one partner

5 CMHA closed its outpatient department; we followed all but one of the therapists at that location

6 as they transitioned to private practice. Although this study was not originally designed to

7 examine two settings (PP and CMHA), we viewed this as an opportunity to learn about the PP

8 setting, which is under-studied but provides a large proportion of services nationally (U.S.

9 Department of Health and Human Services, 2017). Except for a significant difference in

10 insurance type (CMHA patients were more likely to have public insurance), we did not find

11 differences by setting for any study variables. This may relate to the fact that many PP therapists

12 in this sample had recently worked in a CMHA, although we did enroll additional therapists who

13 had been in PP for some time. Our experience in this and other training studies suggests that

14 therapists often transition from CMHA to PP settings (and vice-versa), and even split time in

15 both. However, studies that characterize PP therapists, training needs, and other setting

16 characteristics are critically needed. Although we found few sample differences by setting, it

17 should be noted that the patient sample as a whole lacked in minority inclusion; most were White

18 (82.6%) and identified as non-Hispanic/Latinx (92.5%). Although these rates are consistent with

19 the catchment area of our practice settings and with reported demographics of treatment-seeking

20 youth with anxiety disorders (Manseau & Case; 2014), there are a number of barriers that

21 prevent minority youth from seeking treatment (e.g., stigma, under-recognition of anxiety

22 symptoms; Gary, 2005). Results may not generalize to more diverse patient groups and

23 additional research in this area will be critically important. Finally, results should be interpreted

1   in light of missing data for youth who attended a small number of sessions and never received

2   exposure. Although this was not related to our training intervention and is consistent with session

3   attendance patterns in community settings (Pellerin et al., 2010), these youth could not be

4   included in analyses because the primary outcome of interest (therapist behaviors during

5   exposure) did not occur. We also observed a somewhat higher rate of missing post-treatment

6   data in the EG group, although most of these youth did complete treatment. It seems likely that

7   this occurred by chance given that this was a small sample and there are many barriers to

8   completing assessments in community settings. However, we cannot rule out the possibility that

9   this relates to differential clinical outcomes (e.g., patients no longer want to participate because

10   they have improved and no longer need treatment, or because they have failed to improve).

11   Future training studies will need to examine this and may benefit from incorporating formal

12   implementation strategies designed to specifically support retention of youth through treatment

13   and assessments (e.g., use of telehealth or transportation assistance).

14   **Summary and Future Directions**

15   Findings confirm the effectiveness of EG training for improving specific, observed

16   therapist delivery behaviors, above and beyond "gold-standard" training. Patients treated by EG-

17   trained therapists also showed increased rates of in-session habituation, a proximal outcome

18   theorized to signal exposure learning and previously linked to better clinical outcomes.

19   Descriptive statistics suggest that these patients could have a higher rate of treatment response,

20   although future studies will be needed for formal hypothesis testing. Rates of exposure use were

21   high in both training groups, suggesting that results are driven by differences in therapist

22   behaviors rather than by exposure use. Together, the studies in this experimental therapeutics

23   series provide evidence for a conceptual model in which key delivery processes influence

1   outcomes in exposure therapy (Figure 1). Study one established links between therapist behavior,

2   habituation, and patient outcomes in clinical trials (Benito et al., 2018; Benito et al., 2020). Study

3   two developed the EG with community stakeholders and provided preliminary evidence that it

4   could help therapists improve key delivery behaviors that related to outcome in study one

5   (Benito et al., under review). Study three—the present study—confirms that EG training

6   improves those delivery behaviors as well as a proximal clinical outcome. These results

7   implicate specific therapist behaviors that might be used to optimize delivery of exposure

8   therapy and suggest that a training tool designed to promote these behaviors in real time is a

9   feasible and effective adjunct to "gold standard" training. Beyond implications for exposure

10 therapy and therapist training, this study series may be helpful as one model for systematically

11 testing delivery quality and retaining it through forward translation—first identifying factors that

12 contribute to high quality in clinical trials and then iteratively testing a training approach that

13 supports feasible replication of those factors across settings.

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Tables

Table 1. *Training components and maintenance criteria by condition*

Training Component	Description	
Workshop 1 (8 hours)	Focus on anxiety symptoms, principles of exposure, and using components in the flexible treatment manual; emphasis on active learning strategies (e.g., role play)	
Randomization	**EG**	**GS**
Workshop 2 (4 hours)	Core procedures of exposure (e.g., preparing, exposure selection, processing), exposure troubleshooting, using the *EG*	Core procedures of exposure (e.g., preparing, exposure selection, processing), exposure troubleshooting, using the *adherence form*
Feedback Tool	*EG: Written tool for therapist self-feedback about exposure delivery, including therapist behaviors*	*Adherence Form: Written tool for therapist self-feedback about adherence to core procedures of exposure*
Consultation Format	1 hour weekly until reaching maintenance; in-person group format; emphasis on active learning	1 hour weekly until reaching maintenance; in-person group format; emphasis on active learning
Consultation Content	Case consultation and troubleshooting using principles of exposure, consultant feedback using the *EG*; explicit focus on *EG therapist behaviors*	Case consultation and troubleshooting using principles of exposure; consultant feedback using the *adherence form*; explicit focus on *adherence to exposure components*
Criteria for entering maintenance (monthly) consultation	(1) Completed 12 exposures with 2 clients, and (2) Used exposure in 2 of 3 most recent sessions,* and (3) 70% overlap with consultant ratings on the *EG* for 3 consecutive sessions, and (4) *No scores of "a lot" on EG fear-reducing behaviors,* for 3 consecutive sessions	(1) Completed 12 exposures with 2 clients, and (2) Used exposure in 2 of 3 most recent sessions,* and (3) 70% overlap with consultant ratings on the *adherence form* for 3 consecutive sessions, and (4) *At least four adherence procedures used,* for 3 consecutive sessions
Criteria for returning to weekly consultation	(1) Used exposure in 1 or fewer of 3 most recent sessions,* or (2) 50% or lower overlap with consultant ratings on the *EG* in 3 most recent sessions*, or (3) *Two or more scores of "a lot" for fear-reducing behaviors* in 2 of 3 most recent sessions	(1) Used exposure in 1 or fewer of 3 most recent sessions,* or (2) 50% or lower overlap with consultant ratings on the *adherence form* in 3 most recent sessions*, or (3) *Three or fewer procedures used* in 2 of 3 most recent sessions

Note: differences by condition appear in *red italics*; *Sessions for which exposure was planned

Table 2. *Therapist Behaviors included in the Exposure Guide (EG) and Exposure Process Coding System (EPCS)*

Behavior	Definition
Fear Increasing[a]	
Encourage Approach	Facilitates contact with the exposure, including redirection to the task (e.g., "Keep looking at the video"), discouraging avoidance/rituals (e.g., "Try to resist asking for reassurance"), requests to describe fear content (e.g., "What are the worries saying?"), discussion of the stimulus (e.g., "The trash can is out").
Intensify	Changes the exposure task to make it more difficult (e.g., contaminant on both hands instead of one) or makes a statement likely to increase fear by providing <u>new</u> relevant information (e.g., "This carpet hasn't been washed in forever") or opinion (e.g., "Wow, that is *a lot* of vomit").
Reduce Parent Accommodation	Discourages family accommodation during the exposure; either independent of or in response to-actual occurrence of accommodation (e.g., "Your mom is going to resist answering questions").
Fear Decreasing[a]	
Accommodation	Changes the exposure task to make it less difficult (e.g., instructs decrease contact with the stimulus) or makes a statement likely to decrease fear by providing <u>new</u> relevant information (e.g., "I eat this all the time and nothing bad happened to me") or opinion (e.g., "I think you'll be ok").
Unrelated Talk	Engages in talk not related to the current exposure and could serve to decrease focus on the exposure task. Content may be general (e.g., "What are you guys up to this weekend?") or include CBT components with limited relevance for patient experience in current task (e.g., planning homework).
Encourage Relaxation	Encourages relaxation techniques, such as deep breaths, muscle relaxation, or pleasant imagery (e.g., "Remember how to control your breathing?").
Fear Neutral[b]	
Teaching	Therapist provides information about a CBT principle or symptom that relates to the current exposure
Externalizing	Therapist refers to OCD or anxiety as being separate (e.g., "You're the boss of Mr. Worry").
Changing Anxious Thoughts	Therapist leads the child to use a cognitive or coping strategy to manage fear during the exposure (e.g., evaluating the likelihood of a feared consequence, using coping statements).

[a]Bolded items indicate inclusion in benchmarks

[b]Therapist training in current study did not focus on neutral behaviors; we have included them in this table because they appear as items on the EG

Table 3. *Outcome means (SD) by training condition, alongside clinical trial benchmarks*

	Current Study (N = 34)		Clinical Trial Benchmark[a] (N = 111)
	"Gold-Standard"	"Gold-Standard" + Exposure Guide	
Fear Increasing Behaviors (% time)	22.17 (11.43)	34.46 (9.49)	26.36 (16.81)
Fear Decreasing Behaviors (% time)	18.69 (12.10)	5.74 (4.12)	5.59 (10.08)
Fear Neutral Behaviors[b] (% time)	3.68 (5.23)	3.25 (3.12)	7.23 (9.44)
Patient Fear Habituation (cumulative sum per session)	0.11 (0.19)	0.79 (0.73)	0.90 (1.31)

[a]Benito et al., 2020.

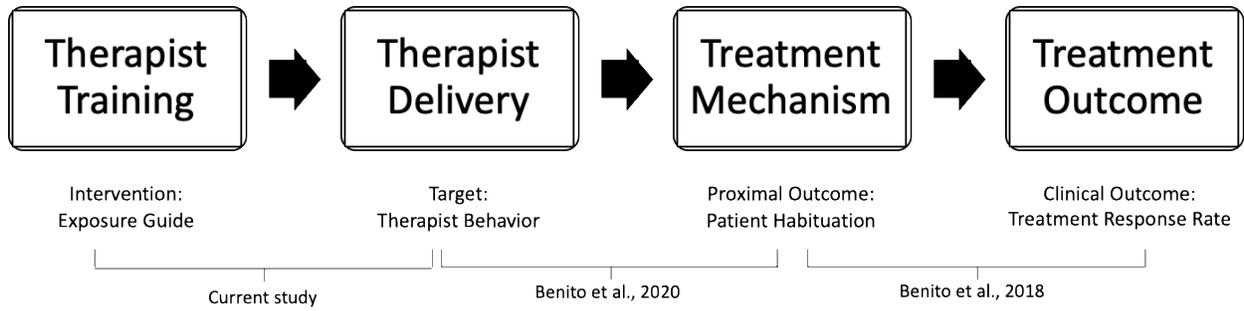[b]Therapist training in the present study did not explicitly target neutral behaviors

Figures

Figure 1. Conceptual model guiding the current study and past studies in this experimental therapeutics series

Enrollment

17 Employed in CMHA or PP
and interested in study

0 declined or excluded

17 Enrolled;
Attended 8-hour workshop

1 withdrew (scheduling conflict)

Randomization

16 Randomized to Training Condition

8 Assigned to <u>EG</u> training;
Attended 4-hour workshop

8 Assigned to <u>GS</u> training;
attended 4-hour workshop

1 withdrew (agency closure)

8 Treated study patients
(included in analyses)

7 treated study patients
(included in analyses)

3 withdrew
(left position and/or agency)

2 withdrew
♦ 1 left position and/or agency
♦ 1 scheduling conflict

5 reached maintenance criteria
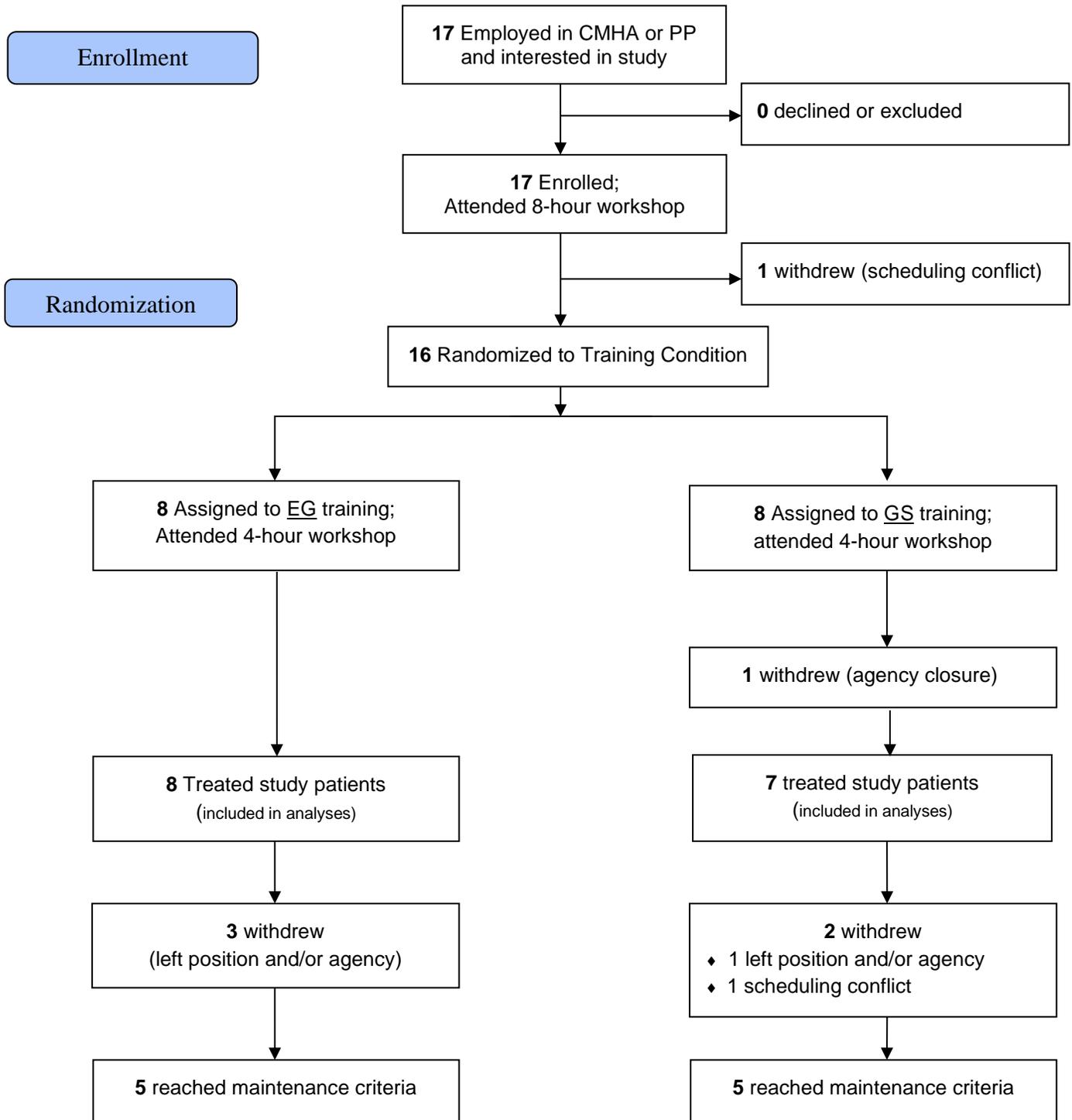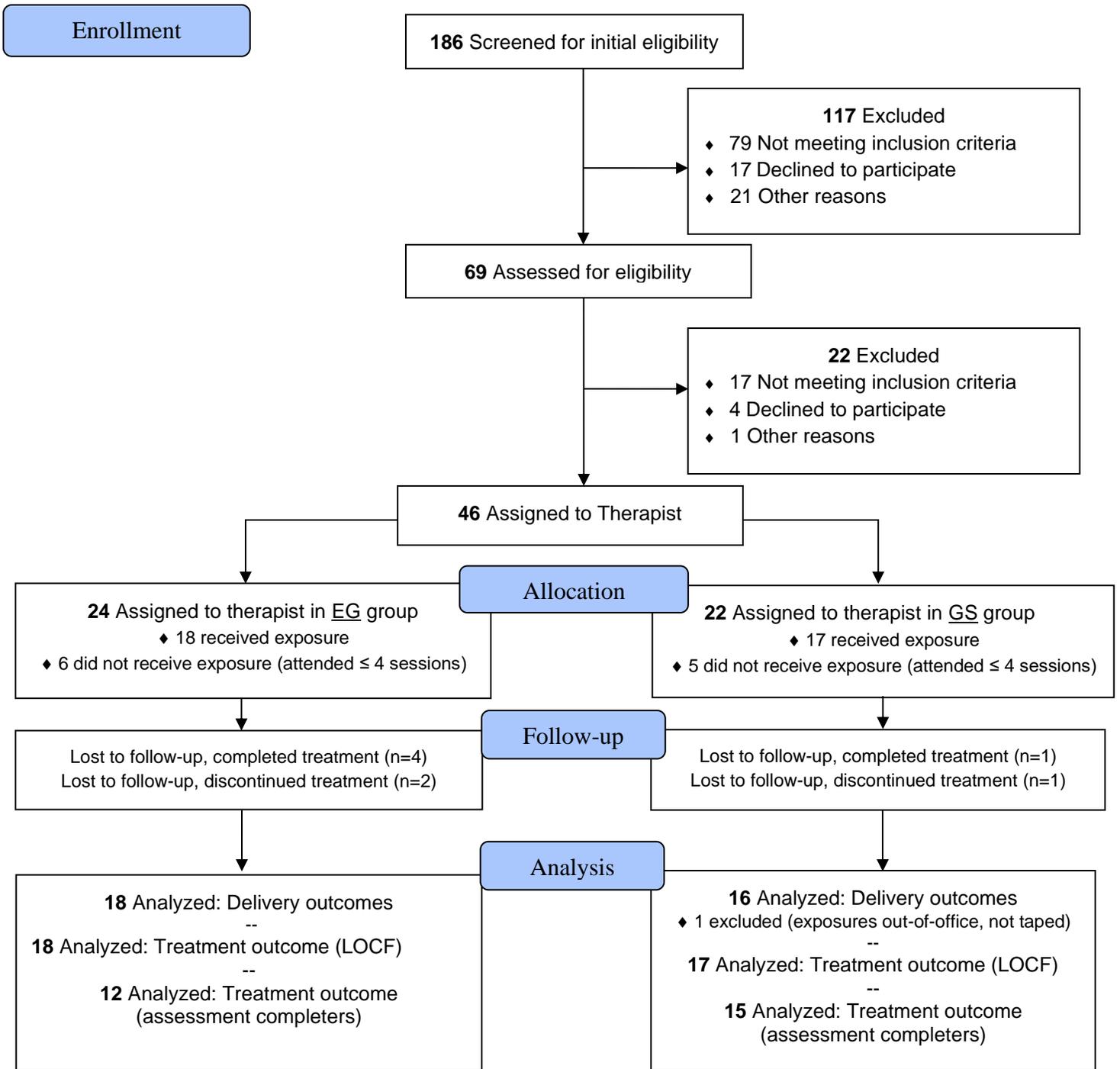
5 reached maintenance criteria

Figure 2. Therapist enrollment and study flow

Figure 3. Patient enrollment and study flow