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Can Less Be More? Open Trial of a Stepped Care Approach for Child and Adolescent Anxiety Disorders

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Abstract

This open trial presents a stepped care treatment approach for youths with anxiety disorders. In Step 1, 124 youths (65 girls; *M* age=9.7 years) participated in a low intensity computer administered attention bias modification (ABM) protocol. Statistically significant reductions in youth anxiety severity were found following Step 1. Youths and parents were then given the option to not continue with further treatment or step up to a higher intensity cognitive behavioral therapy (CBT) protocol (Step 2). Of 112 youths who completed Step 1, 67 (59.8%) discontinued treatment and 45 (40.2%) stepped up. Co-occurring ADHD and higher anxiety severity at baseline were significantly associated with the decision to step up. Of those youths who completed Step 2, additional statistically significant reductions in youth anxiety severity were found. Across the entire protocol, 68.6% of youths were rated as either very much improved or much improved on the Clinical Global Impressions-Improvement scale. In a hypothetical comparison in which all youths received CBT alone, the stepped care protocol resulted in approximately 50% less time in treatment sessions. These findings support the promise of initiating youth anxiety disorder treatment with low intensity treatment and then stepping up to higher intensity treatment as needed.

Keywords

Anxiety; Children; Adolescents; Attention Bias Modification; Cognitive Behavior Therapy

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1. Introduction

Over 30% of children and adolescents (hereon referred to as youth) meet lifetime criteria for a diagnosis of an anxiety disorder (Merikangas et al., 2010). In the absence of treatment, anxiety disorders are persistent and associated with poor school performance and dropout, peer and family relationship problems, and suicidal behaviors (Ezpeleta, Keeler, Erkanli, Costello, & Angold, 2001; Hill, Castellanos, & Pettit, 2011; Mojtabai et al., 2015). Although evidence based treatments for youth anxiety disorders exist, including cognitive behavioral therapy (CBT), serotonin reuptake inhibitors, and their combination (Silverman, Pina, & Viswesvaran, 2008; Walkup et al., 2008), the demand for treatment greatly exceeds available resources (Essau, Conradt, & Petermann, 2002; Kazdin & Blase, 2011). There is thus pressing need to develop and evaluate efficient treatment approaches. As we show in this open trial, stepped care holds promise as an efficient and beneficial approach for anxiety disorders in youth.

1. Stepped Care Approaches for Anxiety Disorders in Youth

Stepped care approaches aim for efficient use of limited resources by beginning with a low intensity treatment and then stepping up to higher intensity treatment(s) as needed. We know of only one stepped care study for anxiety disorders in young people (van der Leeden et al., 2011). A sample of 133 clinic referred children ages 8 to 12 completed up to three steps of CBT, with increasing levels of parental involvement at successive steps. In Step 1, all 133 children were allocated to a CBT protocol consisting of 10 child and four concurrent parent sessions. Following a post Step 1 evaluation, results of the evaluation were shared with families. Families were then given the option to either discontinue treatment or step up in treatment intensity. Sixty-two (46.6%) opted to step up to a five session Parent-Child Treatment for Anxiety (PCTA) protocol with active parental involvement (i.e., Step 2). Following a Step 2 post evaluation, results were shared with families. Families were again given the option to either discontinue treatment or step up in treatment intensity. Twenty-four (38.7%) opted to step up to five more sessions of PCTA (i.e., Step 3).

This first stepped care study by Van de Leeden et al. (2011) produced promising results on youth diagnostic recovery. Specifically, diagnostic recovery rates were 45% after Step 1, 17% after Step 2, and 11% after Step 3. However, the first step was high intensity (i.e., 10 child and four parent sessions of CBT). On one hand, we can see the merits of starting Step 1 with a high intensity treatment because, as is true of many dose-response relationships, starting strong might yield a more effective response (i.e., 'more might be more'). On the other hand, not all youth with anxiety disorders necessarily require a high intensity treatment from the 'get-go' (Kendall et al., 2016; Pettit, Silverman, Rey, Marin, & Jaccard, 2016); rather, starting Step 1 with a less intense treatment might be more effective and/or efficient (i.e., less might be more; Silverman, Pettit, & Lebowitz, 2016). The current open trial represents an initial effort to study this possibility.

1.2 Low Intensity First Step for Youth with Anxiety Disorders: Attention Bias Modification

Attention bias modification (ABM) is a computer-based training regimen based on theoretical models of the role of attentional processes in the development and maintenance

of youth anxiety (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van IJzendoorn, 2007; Lonigan, Vasey, Phillips, & Hazen, 2004; MacLeod, Rutherford, Campbell, Ebsworthy, & Holker, 2002). These models propose that youth who exhibit heightened attention to threatening stimuli are at increased risk for developing anxiety. In support of these models, extensive evidence documents that youth with anxiety disorders display significantly higher levels of attention to threat compared to youth without anxiety disorders (e.g., Dudeney, Sharpe, & Hunt, 2015), and levels of attention to threat are significantly correlated with anxiety symptom severity in youth (Abend et al., 2017). The most commonly used paradigm for assessing attention to threatening stimuli is the visual dot probe task. In the task, a pair of threatening and neutral stimuli is presented simultaneously and then followed immediately by a probe. The probe replaces the threatening stimulus on some trials and the neutral stimulus on others. An individual's difference in average response times when identifying the location of the probe following threatening stimuli versus neutral stimuli provides an index of attention to threat, with positive and higher scores indicating higher levels of attention to threat.

ABM is the translational treatment implication of these theoretical models and the extensive evidence supporting these models (MacLeod & Clarke, 2015; MacLeod et al., 2002). ABM aims to shape and modify attention away from threat using a repetitive computer-based training regimen (Bar-Haim, 2010). In ABM, youth complete the dot probe task described above, with the critical exception that the probe always replaces the neutral stimulus and not the threatening stimulus. Across repeated trials, this establishes a contingency between the neutral stimulus and probe location, facilitating reductions in attention to threat. Reductions in attention to threat are expected to result in diminished engagement of neural circuitry and downstream cognitive-affective processes subserving anxiety and its disorders.

ABM is ideal as a low intensity treatment in a stepped care approach for several reasons. First, it is brief, with the modal treatment course spanning four weeks with two 15-minute sessions per week. Second, it is portable and can be administered in clinics or using combinations of clinic based and home based administrations (Bechor et al., 2014; Eldar et al., 2012; Pergamin-Hight, Pine, Fox, & Bar-Haim, 2016; Rozenman, Weersing, & Amir, 2011). Third, it allows for efficient use of provider time and resources because the computer-based program does not require skilled clinicians. Finally, it shows promising anxiety reduction effects in youth with anxiety disorders. In open trials (Bechor et al., 2014; Cowart & Ollendick, 2011; Rozenman et al., 2011) and randomized controlled trials (Eldar et al., 2012; Pergamin-Hight et al., 2016) using samples of youth with anxiety disorders, ABM has resulted in statistically significant reductions in anxiety symptoms (for reviews, see Lowther & Newman, 2014; Price et al., 2016).

In this study, at Step 1, clinic referred youths who met for a primary anxiety disorder diagnosis were allocated to a low intensity, four-week ABM protocol -- the modal treatment course of ABM. Following a post ABM evaluation, and consistent with recommendations to involve families in decisions to discontinue treatment or step up treatment intensity (Salloum, 2010), we provided families with the evaluation results in order to allow them to make an informed decision about whether to discontinue treatment or step up to a high intensity, 12 to 14 week CBT protocol (Step 2) (see Method for additional details).

Importantly, this approach mirrors common clinical practice where families are typically key stakeholders in the treatment process, including decisions about when to discontinue treatment and when to pursue additional treatment approaches.

1.3. Higher Intensity Second Step for Youth with Anxiety Disorders: CBT

Families who decided to step up received a high intensity 12 to 14 week CBT protocol (Step 2). CBT involves psychoeducation, graduated exposure to feared stimuli or situations, and cognitive restructuring to target youth anxiety symptoms. CBT is well suited as a higher intensity treatment in a stepped care approach for several reasons. First, it is time-intensive, with the modal treatment course spanning 12 to 14 weeks with one 60-minute session per week and a “homework” assignment for families to complete out of session each week. Second, it requires direct involvement of skilled clinicians in each session. Finally, extensive evidence supports CBT’s efficacy in youth with anxiety disorders (Higa-McMillan, Francis, Rith-Najarian, & Chorpita, 2016; Silverman et al., 2008). Providing CBT at Step 2 thus ensured youths had access to a high intensity, evidence based treatment. Following Step 2, youths completed a post CBT evaluation. We expected that youth anxiety severity would be significantly reduced after each step.

We also assessed youth attention to threat at baseline and after each step. Based on the theory underlying ABM and past research (e.g., Price et al., 2016), we expected that attention to threat would be significantly reduced after Step 1 (ABM). Given mixed findings on the effects of CBT on attention to threat in anxious youth (Reinholdt-Dunne, Mogg, Vangkilde, Bradley, & Esbjorn, 2015; Waters, Wharton, Zimmer-Gembeck, & Craske, 2008), we did not make a hypothesis about levels of attention to threat after Step 2 (CBT).

1.4. Identification of Youths who benefit from Low Intensity Treatment at Step 1: A Move toward Personalized Approaches

In addition to examining overall reductions in youth anxiety severity, we were interested in identifying those youths who would benefit from receiving a low intensity treatment, ABM, as a first step in a stepped care model. Such information will move the field closer toward stepped care treatment development models and toward more personalized approaches. We could not find any studies that examined predictors of youth response to ABM. In the broader anxiety treatment literature, however, high anxiety severity at baseline, a primary diagnosis of social phobia, and co-occurring diagnoses of ADHD and unipolar depressive disorders are associated with poor treatment response (e.g., Compton et al., 2014; Halldorsdottir et al., 2015; Hudson et al., 2013; Pettit et al., 2016). We thus examined each of these characteristics at the baseline evaluation and expected that youths with each of these characteristics would be the ones who stepped up their treatment intensity to Step 2, CBT.

1.5. Time Spent in Stepped Care versus Time Spent if All Youths Received CBT Only: A Hypothetical Comparison

As we noted, stepped care approaches aim to do more with less. There are a number of ways ‘less can be more,’ and one way is being more efficient with time. For youth patients and their families, more efficient use of time translates into less personal burden in terms of convenience (e.g., fewer visits to the clinic, shorter treatment sessions) and likely in terms of

expense. For clinicians, more efficient use of time allows them to better meet the demand for treatment by selectively allocating their time and skills to patients in greatest need. We preliminarily looked at this issue of time, or efficiency, by first calculating the total amount of time youths spent in sessions across the entire stepped care protocol and then calculating the total amount of time youths would have spent in treatment sessions, had they all been allocated hypothetically, to CBT only. We expected stepped care would result in substantially less time in treatment sessions than CBT only.

2. Method

2.1. Participants

A flow chart of participant enrollment and retention is shown in Figure 1. Pediatricians, school psychologists, and other professionals were major referral sources. For study inclusion, participants were required to meet for a primary Diagnostic and Statistical Manual of Mental Disorders-4th Edition (DSM-IV; American Psychiatric Association, 1994) anxiety diagnosis using the Anxiety Disorders Interview Schedule for Children (Child and Parent Versions) (Silverman & Albano, 1996), with a clinician severity rating (CSR) of < 7 for the primary anxiety diagnosis on the ADIS-IV: C/P 0–8 Impairment/Interference scale. A CSR of < 7 was required based on our view of ABM as a low intensity treatment appropriate for youths with mild to moderate severity levels. Exclusionary criteria were developmental delays, psychosis/schizophrenia, or current involvement in another psychosocial treatment.

One hundred fifty-six youths and their parents (mostly mothers) were assessed for eligibility. One hundred twenty-four youths (65 girls; M age = 9.66 years; SD = 2.47) were eligible and enrolled in the open trial. Primary diagnoses were generalized anxiety disorder (33.1%), social phobia (28.2%), separation anxiety disorder (21.0%), specific phobia (14.5%), and panic disorder (3.2%). A majority (61.2%) met for a co-occurring anxiety disorder, 15.5% met for co-occurring ADHD, and 3.4% met for a co-occurring unipolar depressive disorder. Small proportions were on a stable dose of stimulant or nonstimulant medication for ADHD (10.3%) or serotonin reuptake inhibitors (2.6%). Youth ethnicity was as follows: 84.7% Hispanic/Latino; 9.7% European American; 0.8% African American; and 4.8% reported “other.” Annual family income was as follows: 11.3% less \$21,000; 42.6% between \$21,000 and \$61,000; 24.3% between \$61,000 and \$100,000; and 21.7% greater than \$100,000. Twenty-two youths assessed for eligibility were excluded: 14 did not meet for a primary anxiety disorder diagnosis and eight received CSRs ≥ 7 . Ten eligible families declined to participate.

2.2. Measures

The measures used in our study are widely used in the youth anxiety treatment literature and extensive support exists for the measures’ reliability and validity. Youth anxiety severity was assessed using a multi-informant approach: the clinician rated Pediatric Anxiety Rating Scale (PARS; RUPP Anxiety Study Group, 2002); the youth self-rated Screen for Child Anxiety Related Emotional Disorders – Child Version (SCARED-C; Birmaher et al., 1997); and the parent rated Screen for Child Anxiety Related Emotional Disorders – Parent Version (SCARED-P; Birmaher et al., 1997). Clinically significant improvement was assessed using

the Clinical Global Impressions – Improvement Scale (CGI-I; Guy, 1976). Current youth anxiety and related disorders at baseline were assessed using the ADIS-IV: C/P (Silverman & Albano, 1996) administered separately to youths and parents by trained evaluators. The anxiety disorder most interfering/impairing was primary and was targeted in youths who stepped up to CBT.

Youth attention to threat was assessed using 120 trials of the angry-neutral faces dot probe task (TAU-NIMH ABMT initiative; <http://tau.ac.il/~yair1/ABMT.html>). In each trial, a fixation cross appeared first, followed by two faces of the same actor, one above the other. One face depicted the actor emoting an angry expression and the other depicted the actor emoting no expression. After presentation of the faces for 500ms, a probe (< or >) appeared in the location of one of the faces. Participants indicated the type of probe (< or >) by pressing either the left or the right mouse button. The probe remained on the screen until participants responded. After responding, the next trial began. Consistent with past studies, attention to threat was calculated as the difference in response times to probes appearing in the location of the angry face relative to the neutral face.

2.3. Procedure

All parents and youths provided informed consent/assent prior to participation in the study's procedures. Outcome measures were completed at baseline, Step 1 post, and Step 2 post (see Figure 1). Following the Step 1 post evaluation, we met with parents and youths to provide them with information on youths' levels of anxiety symptoms and related impairment. First, using information obtained from the clinician interview (PARS) and youth and parent rating scales (SCARED – C/P), we summarized youths' anxiety symptoms and impairment from the baseline assessment. For example, "Before treatment, Sebastian became very distressed every morning before school, cried to his parents not to go school, and did not speak aloud in class because he was afraid other students and his teacher would think badly of him." Second, we summarized youths' current anxiety symptoms and impairment, highlighting areas of improvement since baseline and areas of continued anxiety symptoms and impairment. We did not share raw data or scores with families at this meeting. Instead, we described symptoms and impairment relevant to each youth and summarized improvement in terms that mirrored CGI-I ratings. For example, "Sebastian's fears and worries in social situations, including school, have *improved very much*; he does not cry before school and he speaks aloud in class with minimal distress when his teacher calls on him." Third, we discussed a potential step up to CBT, including the format and content of CBT, and allowed parents and youths to make a decision about whether to not continue with further treatment or step up (Step 2). Families who opted to discontinue treatment after Step 1 were informed that they could contact our clinic at any time to be evaluated for additional treatment and/or receive referrals for additional treatment in the community.

2.3.1. Step 1 (ABM)—Consistent with past ABM studies (e.g., Bechor et al., 2014; Pergamin-Hight et al., 2016), youths completed two weekly sessions of ABM over four weeks, for a total of eight sessions. Each session was no more than 15 minutes in duration. At each session, participants completed 160 trials of the ABM regimen. Trials of the ABM regimen were identical to trials of the attention to threat assessment task except that a unique

set of faces was used (i.e., different from those used in the assessment task) and the probe replaced the neutral face on 100% of the trials.

2.3.2. Step 2 (CBT)—Consistent with past CBT studies (e.g., Silverman, Kurtines, Jaccard, & Pina, 2009), youths completed 12 to 14 weekly sessions. Each session was approximately 60 minutes in duration. CBT targeted youth anxiety symptoms using exposures and cognitive strategies and was delivered in an individual youth format using a treatment manual developed in a past trial of CBT (Silverman et al., 2009). Therapists were doctoral level psychology graduate students. The first and second authors provided training and weekly supervision.

3. Results

In preliminary analyses, we identified one outlier that had no impact on study conclusions. Missing data comprised on average 7.0% of the sample. Missing data bias was assessed by computing a dummy variable representing the presence or absence of missing data for each variable. This dummy variable was then correlated with other variables including demographic variables. No significant correlations were observed, indicating no evidence of bias. Missing data were assumed to be missing at random and an expectation maximization (EM) algorithm was used to accommodate missing data (Gold & Bentler, 2000). There were no statistically significant differences between treatment completers and non-completers at baseline on sociodemographic and outcome variables.

3.1. Outcome Analyses

One hundred twelve youths (90.3%) completed all sessions of the Step 1 (ABM) protocol and a post evaluation. At the Step 1 post evaluation, statistically significant reductions in youth anxiety severity were found on the clinician rated PARS and the youth and parent rated SCARED-C/P, and a nonsignificant trend reduction was found in youth levels of attention to threat (see Table 1). On the clinician-rated CGI-I, 43 youths (38.4%) were rated as very much improved or much improved, 42 youths (37.5%) were rated as minimally improved, 18 youths (16.1%) were rated as no change, and nine youths (8.0%) were rated as minimally worse.

Of the 112 youths who completed Step 1, 67 (59.8%) opted to discontinue treatment and 45 (40.2%) opted to step up (CBT). At the Step 1 post evaluation, youths who discontinued treatment had significantly lower anxiety severity ratings on the PARS, $t(110) = 5.18, p < .001$, and the SCARED-C, $t(110) = 3.27, p < .001$, but not the SCARED-P, $t(110) = 1.01, p = .31$, compared with youths who stepped up. Youths who discontinued treatment also had significantly lower levels of attention to threat, $t(110) = 2.36, p < .05$, and CGI-I ratings, $t(110) = 3.68, p < .001$, compared with youths who stepped up.

Among the 67 youths who discontinued treatment after Step 1, effect sizes for pre to post reductions were large for the PARS ($d = 0.76$) and SCARED-C ($d = 0.90$), and medium for the SCARED-P ($d = 0.58$) and attention to threat ($d = 0.42$). Of these 67 youths, 38 (56.7%) were rated on the CGI-I as either very much improved or much improved, 17 (25.4%) were

rated as minimally improved, 9 (13.4%) were rated as no change, and 3 (4.5%) were rated as minimally worse.

Of the 45 youths who began Step 2 (CBT), 38 (84.4%) completed the Step 2 protocol and a post evaluation. At the Step 2 post evaluation, further statistically significant reductions in youth anxiety severity were found on the PARS and SCARED-P, but not the SCARED-C (see Table 2). Reductions in youth levels of attention to threat were not statistically significant. On the clinician-rated CGI-I, 34 youths (89.5%) were rated as either very much improved or much improved, three youths (7.9%) were rated as minimally improved, and one youth (2.6%) was rated as no change.

Across the entire stepped care protocol, 68.6% of youths were rated as either very much improved or much improved; 19.0% were rated as minimally improved; 9.5% were rated as no change; and 2.9% were rated as minimally worse. Mean scores on clinician ratings, parent ratings, and youth self-ratings of anxiety symptoms at the final completed evaluation were in the mild to moderate severity range: *MPARS* = 10.2 (SD = 5.8); *MSCARED-P* score = 20.23 (SD = 13.4), and *MSCARED-C* = 16.58 (SD = 14.2).

3.2. Baseline Predictors of Discontinuing Treatment after Step 1

Compared with youths who opted to step up their treatment intensity to Step 2, youths who discontinued treatment after Step 1 were significantly less likely to meet for co-occurring ADHD (22.2% vs. 8.9%), $\chi^2(1) = 3.87, p < .05$, received significantly lower baseline ratings on the PARS, $t(110) = 2.00, p = .04$, and trended toward being less likely to meet for a co-occurring anxiety diagnosis (71.1% vs. 53.7%), $\chi^2(1) = 3.413, p = .06$.

Sociodemographic variables (i.e., youth ethnicity, race, gender, age, and family income), primary anxiety diagnosis, parent and youth ratings of anxiety severity on the SCARED, youth levels of attention to threat, and diagnoses of social phobia and co-occurring unipolar depressive disorder were not significantly associated with the decision to discontinue treatment after Step 1.

3.3. Time Spent in Treatment

All 124 youths began with eight sessions of ABM at up to 15 minutes per session, for a total of 14,880 minutes in Step 1 treatment ($124 \times 8 \text{ sessions} \times 15 \text{ minutes per session} = 14,880 \text{ minutes}$). Forty-five youths further received 12 to 14 sessions of CBT (average of 13 sessions) at 60 minutes per session, for a total of 35,100 minutes in Step 2 treatment ($45 \times 13 \text{ sessions} \times 60 \text{ minutes per session} = 35,100 \text{ minutes}$). The total amount of time spent in treatment sessions across the entire stepped care protocol was 49,980 minutes (14,880 minutes in Step 1 + 35,100 minutes in Step 2). Across 124 youths, the average time spent in treatment sessions was 403 minutes, or 6.7 hours. If all 124 youths had been hypothetically allocated to CBT only, the average amount of time in treatment sessions would have been 780 minutes, or 13 hours ($124 \times 13 \text{ sessions} \times 60 \text{ minutes per session} = 780 \text{ minutes}$).

4. Discussion

The current study supports the promise and efficiency of a stepped care approach for anxiety disorders in youth. In this open trial of a low intensity treatment at Step 1 (ABM) followed

by higher intensity treatment at Step 2 (CBT), youths showed statistically significant reductions in anxiety severity at each step. Further, 60% of youths and families opted to discontinue treatment after only eight 15-minute computer sessions that required no direct clinician involvement (i.e., Step 1).

These findings represent an important “step” on the path to doing more with less. Although a compelling argument can be made for starting youth anxiety treatment with a high intensity approach like CBT to “nip it in the bud”, the mental health field currently faces a crisis in which demand for treatment massively exceeds available resources (Kazdin & Blase, 2011). Efficient treatment delivery approaches, including use of low intensity treatments, need to be developed if the field is to meet the growing demand. Compared with a well-established approach, CBT only, the stepped care approach presented in this study offers a substantial reduction (almost 50%) in clinician time that would enable clinicians to allocate more resources to youth who need more intensive treatment. It also offers a substantial reduction in time that youth and families invest in treatment. This approach also compares favorably with the only other study on a stepped care approach for youth with anxiety disorders, in which approximately 54% of children discontinued treatment following a relatively high intensity first step consisting of 10 child and 4 parent sessions of CBT (van der Leeden et al., 2011).

As the field progresses on the path to doing more with less, it will be essential to sidestep the potential pitfall of doing less, or even much less, with less (Davison, 2000; Silverman et al., 2016). Sidestepping this pitfall will require identifying which youth with anxiety disorders are – and are not – good candidates for starting with a low intensity treatment. In the present study, youths with higher clinician rated anxiety severity at baseline and co-occurring ADHD were significantly more likely to step up in treatment intensity than youths without these characteristics. These findings are consistent with the broader literature on predictors of youth anxiety response to psychosocial treatments (Compton et al., 2014; Halldorsdottir et al., 2015; Hudson et al., 2013; Pettit et al., 2016), although co-occurring ADHD does not predict poor response to serotonin reuptake inhibitors (RUPP Anxiety Study Group, 2003; Halldorsdottir et al., 2015). Youth with these characteristics may not be good candidates for psychosocial treatments, including ABM, at a first step. Instead, these youths may show superior response if allocated first to serotonin reuptake inhibitors and then stepped up to adjunctive psychosocial treatments as needed. We encourage future research to test this possibility.

We also encourage research to further examine which youth would most benefit from a step up in treatment intensity and the optimal timing of stepping up. In the current study, we adopted a pragmatic approach that emulates what occurs in typical clinical practice, in which parents and youths are involved in decisions about whether to discontinue treatment or step up treatment intensity. In future studies on stepped care approaches, researchers might a priori select potential tailoring variables that could be assessed regularly throughout treatment and provide information about final treatment response (Silverman et al., 2016). We recently illustrated an approach to identifying tailoring variables and generating decision rules in youth with anxiety disorders who were treated with CBTs (Pettit et al., 2016).

Researchers could apply this approach in future studies on stepped care to identify tailoring variables and generate decision rules about the optimal time to step up in treatment intensity.

Findings must be interpreted in light of several limitations. First, the absence of a control or comparison group prevents conclusions about the efficacy of this stepped care approach. Nevertheless, the rates of global improvement on the CGI-I and levels of anxiety severity reduction in the current study are largely consistent with those reported in controlled trials of CBT or serotonin reuptake inhibitor monotherapy (RUPP Anxiety Study Group, 2001; Walkup et al., 2008), and suggest comparable outcomes may be achieved using a more efficient, less resource intensive approach. Across the entire stepped care protocol, 69% of youths were rated as very much or much improved and mean scores on anxiety severity scales at the final evaluation completed were in the mild to moderate range. Second, evaluators who completed the Step 1 and Step 2 post evaluations were not masked to youths' treatment status; it is possible expectancy effects influenced evaluators' ratings. Third, the absence of a follow-up evaluation prevents conclusions about the maintenance of treatment outcomes in this stepped care approach. Although findings at immediate posttreatment strongly suggest the stepped care approach would be more efficient than CBT as a first line treatment in the short term, it is unknown whether this advantage would be maintained over the months and years following treatment. Related to this limitation, it is unknown how long treatment gains observed at the Step 1 post evaluation were maintained because youths who discontinued treatment after Step 1 did not complete another evaluation. Fourth, data were not available on families' satisfaction with treatment or families' reasons for discontinuing or stepping up treatment intensity after Step 1. Anecdotally, many families reported high satisfaction with treatment response following Step 1, although it will be important for future studies to systematically collect data on treatment satisfaction and reasons for discontinuing treatment or stepping up treatment intensity. Fifth, our estimate of time spent in treatment did not include time spent completing homework, time spent in travel to and from treatment sessions, or other potential time variables related to treatment. It will be important for further research to collect detailed data on time and resources expended in treatment to allow comparative cost analyses. Finally, a majority of the sample identified as Hispanic/Latino. Past research shows Hispanic/Latino samples respond similarly to psychosocial treatments, including CBT, as non-Hispanic/Latino samples (Pina, Silverman, Fuentes, Kurtines, & Weems, 2003), but it is important for further research to investigate the generalizability of the present findings.

In summary, the current open trial supports the promise of initiating youth anxiety disorder treatment with a low intensity treatment (ABM) and then stepping up to higher intensity treatment (CBT) as needed. Further, it provides an impetus to examine the efficacy and cost-effectiveness of the stepped care approach in a controlled trial, and to identify potential tailoring variables to inform decisions about when to step up in treatment intensity.

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Highlights

- We conducted an open trial of a stepped care treatment approach in 124 youths
- 60% discontinued treatment after low intensity attention bias modification (Step 1)
- 40% stepped up to higher intensity cognitive behavioral therapy (Step 2)
- Anxiety severity significantly decreased following each step
- Across the entire protocol, 69% were rated as very much improved or much improved

Figure 1.
CONSORT Diagram

Table 1

Means and Standard Deviations for Anxiety Symptoms and Attention to Threat at Baseline and Step 1 POST

Measure	Baseline	Step 1 POST	t	Cohen's <i>d</i>
PARS	17.11 (6.03)	13.88 (6.19)	5.29 ^a	0.53
SCARED-P	30.40 (13.51)	22.60 (13.34)	6.77 ^a	0.58
SCARED-C	28.17 (14.28)	18.30 (14.49)	8.63 ^a	0.69
Attention to Threat	0.79 (49.18)	-12.38 (51.20)	1.90 ^b	0.26

Note. N = 112. PARS = Pediatric Anxiety Rating Scale; SCARED-P = Screen for Child Anxiety and Related Disorders – Parent Version; SCARED – C = Screen for Child Anxiety and Related Disorders – Child Version. Means and standard deviations of Attention to Threat are presented in milliseconds. Positive and higher scores indicate higher levels of attention to threat.

^aStatistically significant at $p < .01$;

^b $p = .06$.

Table 2

Means and Standard Deviations for Anxiety Symptoms and Attention to Threat at Step 1 POST and Step 2 POST

Measure	Step 1 POST	Step 2 POST	t	Cohen's <i>d</i>
PARS	17.00 (5.53)	7.76 (5.36)	8.09 ^a	1.69
SCARED-P	23.27 (13.30)	18.02 (11.86)	2.44 ^b	0.40
SCARED-C	23.21 (16.19)	19.91 (15.66)	1.79	0.21
Attention to Threat	-0.38 (57.03)	-12.03 (65.15)	0.81	0.19

Note. N = 38. PARS = Pediatric Anxiety Rating Scale; SCARED-P = Screen for Child Anxiety and Related Disorders – Parent Version; SCARED – C = Screen for Child Anxiety and Related Disorders – Child Version. Means and standard deviations of Attention to Threat are presented in milliseconds. Positive and higher scores indicate higher levels of attention to threat.

^aStatistically significant at $p < .01$;

^bstatistically significant at $p < .05$.