



## 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.

### 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.

#### 1.1. 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 8–12 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

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five more sessions of PCTA (i.e., Step 3).

This first stepped care study by van der 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-min 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, 12–14 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 12–14 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 12–14 weeks with one 60-min 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

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