



The Impact of Treatment Expectations on Exposure Process and Treatment Outcome in Childhood Anxiety Disorders

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Abstract

This study examined the relationship between caregivers' and youths' treatment expectations and characteristics of exposure tasks (quantity, mastery, compliance) in cognitive-behavioral therapy (CBT) for childhood anxiety. Additionally, compliance with exposure tasks was tested as a mediator of the relationship between treatment expectations and symptom improvement. Data were from youth ($N = 279$; 7–17 years old) enrolled in the Child/Adolescent Anxiety Multimodal Study (CAMS) and randomized to cognitive-behavioral therapy (CBT) or the combination of CBT and sertraline for the treatment of separation anxiety disorder, generalized anxiety disorder, and social phobia. Caregivers and youth independently reported treatment expectations prior to randomization, anxiety was assessed pre- and post-treatment by independent evaluators blind to treatment condition, and exposure characteristics were recorded by the cognitive-behavioral therapists following each session. For both caregivers and youths, more positive expectations that anxiety would improve with treatment were associated with greater compliance with exposure tasks, and compliance mediated the relationship between treatment expectations and change in anxiety symptoms following treatment. Additionally, more positive parent treatment expectations were related to a greater number and percentage of sessions with exposure. More positive youth treatment expectations were associated with greater mastery during sessions focused on exposure. Findings underscore the importance of addressing parents' and youths' treatment expectations at the outset of therapy to facilitate engagement in exposure and maximize therapeutic gains.

Keywords Anxiety · Treatment · Expectations · Exposure · Outcome

Approximately 15–20% of children and adolescents are affected by an anxiety disorder (Beesdo et al. 2009), causing notable impairment in social, academic, and family domains of life

(Langley et al. 2014; Swan and Kendall 2016). Cognitive-behavioral therapy (CBT) is an efficacious psychological treatment for childhood anxiety (Connolly et al. 2007; Walkup et al. 2008), producing large effect sizes for reductions in anxiety symptom severity from pre- to post-treatment (Reynolds et al. 2012). However, only 20% to 46% of youth achieve full remission of symptoms after a course of CBT (Ginsburg et al. 2011), with only half of these youth maintaining their remission months (Piacentini et al. 2014) and years (Ginsburg et al. 2014) after concluding therapy. Thus, research is still needed to elucidate potential factors that contribute to suboptimal CBT response for anxiety. Patient-level factors have been examined, with some evidence, albeit mixed, that anxiety symptom severity, caregiver/family stress, and specific anxiety disorder diagnosis predict outcomes (Compton et al. 2014; Lundkvist-Houndoumadi et al. 2014). However, less attention has been paid to therapy-specific variables, particularly as they relate to the role of the family and their attitudes towards treatment.

Treatment expectations have long been regarded as an important influence on patient motivation and engagement in

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therapy, potentially impacting treatment outcomes (Glass et al. 2001; Greenberg et al. 2006). Specifically, patient-held beliefs about the perceived efficacy of the treatment and expectations about subsequent symptom change have been shown to have downstream benefits (Lewin et al. 2011; Selles et al. 2017; Wu et al. 2016). Existing literature has largely focused on medical outcomes, establishing links between treatment expectations and outcomes of chronic pain treatment (Cormier et al. 2016) and surgery (Tilbury et al. 2018), for example. Parallel investigations in psychiatric populations have been sparse and with less consistent findings. For instance, more positive treatment expectations have been associated with larger reductions in adolescent and adult depressive symptoms (Beard et al. 2016; Curry et al. 2006; Rutherford et al. 2010) and pediatric OCD severity (Lewin et al. 2011; Vorstenbosch and Laposa 2015) after receiving CBT and/or pharmacotherapy (Beard et al. 2016; Curry et al. 2006; Rutherford et al. 2010). However, there have been mixed findings regarding the impact of expectations on the treatment of substance use disorders (Serafini et al. 2016).

Almost all studies of treatment expectations among patients with anxiety have been conducted with adults. Findings suggest that more positive treatment expectations are linked to improved outcomes in the acute phase (Newman and Fisher 2010; Price et al. 2008), as well as a higher rate of symptom reduction during therapy (Chambless et al. 1997; Price and Anderson 2012) for specific phobias, social anxiety disorder, and generalized anxiety disorder (GAD). Although the majority of studies have examined treatment expectations at the beginning of the therapy, some studies have assessed expectations towards the middle of treatment to determine potential differences in outcomes. Pre- and mid-treatment expectations have been shown to be positively correlated (Safren et al. 1997), and increases in expectations mid-treatment have been shown to mediate the relationship between baseline anxiety symptom severity and treatment outcomes (Newman and Fisher 2010), highlighting the impact of treatment expectations throughout therapy. However, it is unclear if these findings can be extended to pediatric populations, as there is a paucity of research on youth. This gap is important to address given developmental differences between youth and adults in external sources of motivation to seek therapy, self-awareness, and cognitive maturity (Dew and Bickman 2005). Additionally, caregivers play a prominent role in the child's treatment, so their own treatment expectations may affect engagement in therapy and treatment outcome (Morrissey-Kane and Prinz 1999); indeed, more positive child, parent, and therapist expectations have been linked with better treatment outcomes in childhood anxiety (Norris et al. 2019). Further research into treatment expectations of both the youth and the caregiver will help illuminate their impact on treatment outcomes.

Research on treatment expectations has often focused on the direct association between pretreatment expectations and

treatment outcome. However, it is important to consider the mechanisms by which expectations influence outcome more carefully. One aspect that may be informative is the nature of CBT itself. Exposure tasks, consisting of imaginal and/or in vivo exposures conducted both in and out of session, are recognized as a core component of CBT for childhood anxiety disorders (Ale et al. 2015; Kendall et al. 2006; Peris et al. 2015) yet they are by definition anxiety-provoking and challenging for patients, and often for family members as well. Consequently, it would be difficult to have families engage in these distressing therapeutic activities if they did not understand the important role that exposures play in decreasing anxiety symptom severity. Obtaining the family's buy-in prior to beginning therapy is likely critical for optimizing engagement. Families that expect exposures to be helpful for the child's anxiety may be more willing to engage in exposures, leading to increased opportunities to master these skills in and out of therapy sessions. Given that a higher dose of exposure has been associated with improved treatment outcomes (Peris et al. 2017), more nuanced considerations of exposure characteristics (e.g., number and difficulty of exposure tasks) and their links to expectation and outcome are timely (Craske et al. 2008, 2014).

Expectations about how helpful CBT and its constituent components (e.g., exposure tasks, cognitive restructuring, problem-solving) are in ameliorating symptoms may either temper or augment compliance (Lewin et al. 2011). Although the importance of adherence to homework assignments in CBT is well established, limited research has looked holistically at how expectations, exposure characteristics, and homework adherence interact (Hudson and Kendall 2002). This topic is important, because homework optimizes the quantity of exposure practice and the generalization of learning, leading to more positive therapy outcomes (Mausbach et al. 2010). Thus, it is possible that compliance with exposure tasks may mediate the link between treatment expectations and symptom change post-treatment. Consequently, examining the relationship between treatment expectations, exposure variables, and compliance have important implications for CBT outcomes (Westra et al. 2007) in childhood anxiety.

The present study investigates the relationship between treatment expectations (assessed prior to treatment randomization) and treatment outcome in childhood anxiety, and examines factors related to maximal treatment response in these youth. This study first examines the relationship between treatment expectations and various exposure variables; more positive expectations were hypothesized to be related to a higher number of exposures completed and a greater percentage of treatment sessions focused on exposures, along with greater mastery and compliance with these tasks. Treatment expectations were then tested as a predictor of compliance with exposure tasks, with more positive treatment expectations expected to predict greater compliance. Lastly, compliance with exposure tasks was tested as a mediator for the

relationship between treatment expectations and pre- to post-treatment anxiety symptom change. More positive youth and caregiver treatment expectations were expected to lead to higher compliance with exposure tasks, ultimately resulting in greater decreases in anxiety symptom severity following a course of CBT. Although this mediating effect has been demonstrated with adults with anxiety (Westra et al. 2007), it has yet to be investigated in the context of childhood anxiety.

Method

Participants

The current study used data from participants ($N = 279$; 48.4% male) in the Child/Adolescent Anxiety Multimodal Study (CAMS) (Walkup et al. 2008) who were randomly assigned to CBT (Coping Cat; $n = 139$) or the combination of CBT and sertraline (CBT + SRT; $n = 140$). Youths were 7 to 17 years old ($M = 10.8$, $SD = 2.8$) and had a principal DSM-IV diagnosis of separation anxiety disorder, generalized anxiety disorder, or social phobia. The majority of participants were non-Hispanic (86.7%). The racial breakdown of the sample was 79.6% ($n = 222$) White, 9.0% ($n = 25$) African American, 2.5% ($n = 7$) Asian, 1.4% ($n = 4$) American Indian, less than 1% ($n = 1$) Native Hawaiian/Other Pacific Islander, and 7.2% ($n = 20$) “other.” Not including anxiety disorders, the most common comorbid disorders were ADHD (10.0%, $n = 28$), ODD (10.0%, $n = 28$), and OCD (7.3%, $n = 20$). CAMS sample characteristics have been previously reported by Kendall et al. (2010).

Measures

Anxiety Disorders Interview Schedule-Child/Parent Versions (ADIS-IV-C/P) The ADIS-IV-C/P (Silverman and Albano 1996) is a clinician-administered, semi-structured interview for diagnosing anxiety disorders and common comorbidities using DSM-IV diagnostic criteria (American Psychiatric Association 2000), based on parent and youth reports. The ADIS-IV-C/P has well-documented reliability and validity (Silverman et al. 2001; Wood et al. 2002). Interrater reliability for diagnostic status was examined by reviewing 10% of video-recorded interviews in CAMS; intraclass coefficients ranged from 0.82 to 0.88.

Treatment Expectations Prior to randomization, parents and youth were independently asked to rate on a 1–7 scale how much they expected that CBT only, medication only, and the combination of CBT and medication would affect their anxiety. For the present study, the expectation ratings for the treatment condition to which participants were ultimately randomized were used (e.g., if a participant was randomized to CBT only, his/her expectations for CBT only were used in

analyses). Response options ranged from (1) very much improved to (7) very much worse, with the midpoint of the scale (4) reflecting an expectation that treatment would not lead to any change in anxiety problems.

Pediatric Anxiety Rating Scale (PARS) The PARS (Research Units on Pediatric Psychopharmacology Anxiety Study Group 2002) measures anxiety symptom severity in youth and was administered by an independent evaluator (IE) to the child and parent(s) together. The PARS consists of a symptom checklist (that encompasses separation, generalized, and social anxiety) and seven global items that assess the number and frequency of symptoms, severity of distress, and interference with functioning using a 0–5 scale. In CAMS, total scores were calculated by summing responses to six global items (the “Number of Symptoms” item was not included due to concerns that it may be not be reliably associated with anxiety symptom severity (Caporino et al. 2013; Johnco et al. 2015; Research Units on Pediatric Psychopharmacology Anxiety Study Group 2002)), with higher scores indicating more severe anxiety symptoms. The PARS has satisfactory psychometric properties (Research Units on Pediatric Psychopharmacology Anxiety Study Group 2002). Inter-rater reliability in CAMS ($r = 0.85$) was established based on a review of 10% of video-recorded administrations (Walkup et al. 2008).

CBT Session Summary Form Information about each session, such as session goals, the extent to which goals were accomplished, and number of exposure tasks completed since the last session, were recorded by the cognitive-behavioral therapist using a summary form developed for CAMS. Training to complete the form was provided to therapists before delivering CBT and reinforced through weekly supervision meetings. Therapists selected the primary and secondary focus for each session from among 15 elements of the Coping Cat (Kendall and Hedtke 2006)/C.A.T. Project (Kendall et al. 2002) protocols (e.g., coping self-talk, problem solving, exposures), distinguishing imaginal from in vivo exposure. For the current study, the number of treatment sessions focused on exposures was identified. Therapists also recorded the subjective intensity of the exposure (easy, medium, challenging), as indicated by the child. Therapists rated how well the child mastered the skill/information presented during the session using a 7-point scale (no mastery to excellent mastery); average mastery was calculated for treatment sessions focused on exposures. They similarly used a 7-point scale (poor to good) to indicate the youth’s overall compliance, defined as how well the child met the requirements of therapy as specified by the therapist (e.g., completed within- and between-session assignments) and how engaged the child was in the treatment process (e.g., if he/she resisted or dismissed the therapists’ suggestions); average compliance was calculated for treatment sessions focused on exposures. Therapists were asked to rate compliance without

consideration of improvement in anxiety symptoms and/or adverse events. The Session Summary Form has been previously used to examine therapist-reported characteristics of exposures in relation to treatment response (Peris et al. 2017).

Procedures

The Institutional Review Board at each study site approved all study procedures. Families were consented prior to participation, and a review of the study procedures included information about the various treatments (e.g., CBT involves exposure to anxiety triggers). Parents and youth each reported treatment expectancies prior to randomization. The PARS was administered pre- and post-treatment by IEs blind to treatment condition, trained to a pre-specified reliability criterion, and monitored for drift. Session summary data were recorded by the CBT therapist at the end of each session. CAMS design and procedures have been detailed by Compton et al. (2010).

CBT CBT included fourteen 60-min sessions over the span of 12 weeks. Treatment was adapted based on the youth's age, following the Coping Cat (Kendall and Hedtke 2006) protocol for children and the C.A.T. Project (Kendall et al. 2002) protocol for adolescents. These treatment programs involve skills-building for the management of anxiety symptoms (e.g., identifying “thinking traps” and using cognitive restructuring, problem solving; first 6 sessions in CAMS) and exposures to feared situations (last 8 sessions in CAMS). Youth were given between-session assignments to reinforce skills taught in session and provide opportunities for exposures in the natural environment.

Cognitive-behavioral therapists in CAMS participated in a series of didactic trainings, including a workshop with the

treatment developer, and were required to pass written tests. They also administered the Coping Cat protocol to at least one child under close supervision prior to treating an actual CAMS study case. Throughout CAMS, therapists participated in weekly on-site and cross-site supervision meetings, and an annual in-person workshop focused on recalibration training. Therapists were also supervised through quality assurance checks on randomly selected video-recorded sessions.

Combination Therapy (CBT + SRT) Combination therapy (CBT + SRT) contained all the components of the CBT and SRT conditions. For the SRT component, participants received eight 30- to 60-min sessions (during weeks 1–4, 6, 8, 12); these sessions included discussions about the participant's overall functioning, anxiety symptoms, treatment progress, and adverse events in a supportive manner. During weeks when there was no in-person session, pharmacotherapists checked in with participants by phone. Sertraline was prescribed on a fixed-flexible schedule beginning at 25 mg per day, titrating up to 200 mg per day by the eighth week of treatment. Dose increases were decided by the pharmacotherapist, with input from the CBT therapist. CBT and SRT sessions were scheduled on the same day whenever feasible to reduce participant burden.

Data Analytic Plan

Descriptive statistics are provided in Table 1. Pearson product-moment correlations were computed to examine correlations between treatment expectations, clinical characteristics, and exposure variables. All exposure variables examining the quantity of sessions (i.e., number of sessions and percentage of sessions) focused on exposure were analyzed separately for (1) sessions focused on any type of exposure, as well as

Table 1 Descriptive statistics for study variables

	<i>M</i>	<i>SD</i>	Range	<i>n</i>
Child treatment expectations ^a	2.28	1.26	1–7	272
Parent treatment expectations ^a	1.93	0.79	1–5	272
Number of sessions with challenging exposures	1.87	1.16	0–4	273
In vivo	1.31	1.16	0–4	273
Imaginal	0.56	0.83	0–4	273
Number of sessions with any exposures	5.34	1.98	0–8	273
In vivo	3.72	2.19	0–7	273
Imaginal	1.62	1.64	0–7	273
Percent of sessions with exposures	46%	16%	0–67%	273
In vivo	32%	18%	0–64%	273
Imaginal	14%	14%	0–58%	273
Cumulative number of exposures done out of session	15.83	13.59	0–79	273
In vivo	14.76	13.03	0–77	273
Imaginal	1.07	3.22	0–38	273
Average mastery	5.37	1.10	2–7	254
Average compliance	5.68	1.17	1–7	251
Pre- to post-treatment PARS total score change	10.23	6.41	–6 – 24	272

PARS Pediatric Anxiety Rating Scale

^a Lower scores on treatment expectations indicate greater expectations for symptom improvement

sessions that specifically focused on (2) in vivo exposure tasks or (3) imaginal exposure tasks, as computed by Peris et al. (2017); Table 1 contains the complete list of exposure variables. Hierarchical multiple regressions were conducted to examine child and parent treatment expectations as potential predictors of compliance with exposures. Relevant demographic and clinical variables (age, gender, primary diagnosis, presence of comorbid diagnoses, treatment condition, previous treatment history, socioeconomic status, parental psychopathology, and study site (Compton et al. 2014; Ginsburg et al. 2011; Piacentini et al. 2014) were included in the first step of the regression to control for any potential effects, and treatment expectations (both parent and child) were entered in the second step. Mediation was tested using bootstrapping techniques through the SPSS INDIRECT macro (Preacher and Hayes 2008), with resamples set at 5000. This bootstrapping technique was selected to allow for a direct test of the indirect effect (Zhao et al. 2010), and has been shown to be a powerful and valid test of the intervening effect (Mackinnon et al. 2004; Williams and Mackinnon 2008). The indirect effect in the mediational model was determined to be statistically significant if the 95% confidence interval (CI) did not contain 0 (Hayes 2009).

Six of the 279 participants randomized to CBT or combination therapy (CBT + SRT) began CBT early in the study, before the session summary form was used. Additionally, 19 participants were missing data on mastery and compliance during sessions primarily focused on exposure, because they did not have those types of sessions. A small number of participants were missing the PARS ($n = 1$), child treatment expectations ($n = 1$), parent treatment expectations ($n = 1$), and compliance ($n = 3$); these cases were excluded from analyses that used the missing measure, but were included in all other analyses. All other participants had complete data on all measures.

Results

Correlation analyses were conducted to determine whether baseline characteristics were related to child and parent treatment expectations. No baseline characteristics (child age, gender, anxiety symptom severity, functional impairment, global functioning, depressive symptoms, presence of comorbidities, parental psychopathology) were significantly correlated with child or parent treatment expectations, $ps > 0.05$.

Bivariate Relationships between Treatment Expectations and Exposure Variables

The correlation between parent and child treatment expectations was relatively small, $r = 0.14$, $p = 0.02$. When examining the relationships between youth treatment expectations and

exposure variables, expectations were not statistically significantly correlated with any of the variables examining the number/% of sessions that included exposures (total, in vivo, imaginal), $ps > .05$. However, youth treatment expectations exhibited significant correlations with average mastery ($r = -0.21$, $p < 0.001$) and compliance ($r = -0.26$, $p < 0.001$) scores for sessions that were primarily dedicated to exposures. That is, higher youth treatment expectations were associated with higher mastery and compliance, as higher treatment expectations are reflected by lower ratings (demonstrating negative correlations; see Method for a description of the treatment expectations measure).

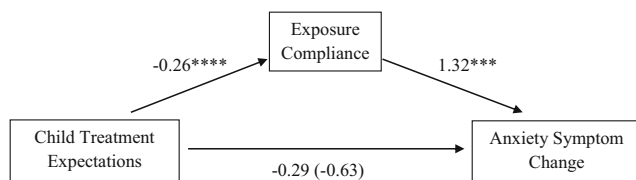
Parental treatment expectations were not significantly correlated with the number of sessions that included challenging exposures (when calculated as total number of sessions, as well as when broken down into in vivo and imaginal exposures), $ps > 0.05$. More positive parental expectations were correlated with a greater number of sessions with any exposures ($r = -0.16$, $p < 0.01$), though no relationship was found when considering in vivo and imaginal exposures separately, $ps > 0.05$. Parental treatment expectations were also correlated with the percentage of sessions including exposures ($r = -0.17$, $p < 0.01$), specifically those including in vivo exposures ($r = -0.13$, $p < 0.05$), though no significant correlation was found with the percentage of sessions including imaginal exposures. Parental treatment expectations were not correlated with the cumulative number of exposures done out of session (when calculated as total number of exposures, as well as when considering in vivo versus imaginary). Parental treatment expectations were statistically significantly correlated with the child's average compliance during weeks in which exposures were assigned ($r = -0.20$, $p < 0.01$), but not with average youth mastery during sessions that primarily focused on exposures, $p > 0.05$.

Predicting Compliance with Exposures Via Treatment Expectations

After controlling for age, gender, socioeconomic status, principal diagnosis, presence of comorbid diagnoses, treatment condition, previous treatment history, parental psychopathology, and study site, higher child and parent treatment expectations predicted greater compliance with exposures, $F(11, 231) = 5.40$, $p < 0.001$, accounting for 18% of the variance.

Mediation of Treatment Expectations and Treatment Outcome by Exposure Compliance

Compliance with exposure tasks was examined as a potential mediator of the relationship between treatment expectations and treatment outcome. Treatment outcome was computed by creating a difference score for anxiety symptoms using pre- and post-treatment PARS total scores. Mediation models were



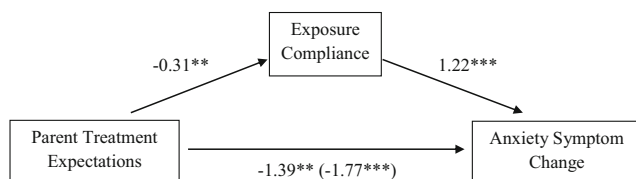
*** $p < .001$, **** $p < .0001$

Fig. 1 Mediation model for child treatment expectations, exposure compliance, and anxiety symptom change after treatment

examined separately for youth (Fig. 1) and parent (Fig. 2) treatment expectations.

First, the direct effect of youth treatment expectations on exposure compliance (*a* path) was statistically significant ($\beta = -0.26$, $t[248] = -4.29$, $p < 0.0001$, 95% CI $[-0.38, -0.14]$), as was the direct effect of exposure compliance on symptom change posttreatment (*b* path; $\beta = 1.32$, $t[248] = 3.92$, $p = 0.0001$, 95% CI $[0.66, 1.98]$). The total effect of child treatment expectations on symptom change posttreatment (*c* path) was not statistically significant, $\beta = -0.63$, $t[248] = -1.92$, $p > 0.05$, 95% CI $[-1.27, 0.02]$. Finally, the direct effect of youth treatment expectations on symptom change posttreatment (*c'* path) was not statistically significant either, $\beta = -0.29$, $t[248] = -0.87$, $p > 0.05$, 95% CI $[-0.94, 0.36]$. Exposure compliance was ultimately found to significantly mediate the relationship between child treatment expectations and anxiety symptom change, $\beta = -0.34$, 95% CI $[-0.60, -0.16]$.

Second, the direct effect of parent treatment expectations on exposure compliance (*a* path) was statistically significant ($\beta = -0.31$, $t[248] = -3.16$, $p < 0.01$, 95% CI $[-0.50, -0.12]$), as was the direct effect of exposure compliance on symptom change posttreatment (*b* path; $\beta = 1.22$, $t[248] = 3.74$, $p < 0.001$, 95% CI $[0.58, 1.87]$). The total effect of parent treatment expectations on symptom change posttreatment (*c* path) was also statistically significant, $\beta = -1.77$, $t[248] = -3.43$, $p < 0.001$, 95% CI $[-2.78, -0.75]$. The direct effect of parent treatment expectations on symptom change posttreatment (*c'* path) remained significant, $\beta = -1.39$, $t[248] = -2.71$, $p < 0.01$, 95% CI $[-2.40, -0.38]$. Exposure compliance was ultimately found to significantly mediate the relationship between parent treatment expectations and anxiety symptom change, $\beta = -0.38$, 95% CI $[-0.78, -0.12]$.



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

Fig. 2 Mediation model for parent treatment expectations, exposure compliance, and anxiety symptom change after treatment

Age (dichotomized between children [7 to 12 years old] and adolescents [13 to 17 years old]) and treatment condition (CBT versus CBT + SRT) were tested as potential moderators of these pathways using the SPSS PROCESS macro (Hayes 2017). Age did not moderate the direct effect between treatment expectations and anxiety symptom change, as indicated by a nonsignificant interaction effect when considering child expectations ($\beta = -0.81$, $t[244] = -0.89$, $p = 0.37$, 95% CI $[-2.59, 0.98]$) and parent expectations ($\beta = 0.02$, $t[244] = 0.01$, $p = 0.99$, 95% CI $[-2.06, 2.09]$). Also, treatment condition did not moderate the direct effect, as indicated by the nonsignificant interaction term when considering child ($\beta = -0.28$, $t[244] = -0.92$, $p = 0.36$, 95% CI $[-0.89, 0.32]$) and parent ($\beta = 0.39$, $t[244] = 0.73$, $p = 0.46$, 95% CI $[-0.66, 1.44]$) expectations; nor did treatment condition moderate the effect of child ($\beta = 0.00$, $t[245] = -0.02$, $p = 0.98$, 95% CI $[-0.12, 0.12]$) or parent ($\beta = 0.02$, $t[245] = 0.21$, $p = 0.83$, 95% CI $[-0.19, 0.24]$) treatment expectations on compliance. Ultimately, moderated mediation was not found when considering child ($\beta = 0.00$, 95% CI $[-0.34, 0.32]$) or parent ($\beta = 0.06$, 95% CI $[-0.49, 0.75]$) expectations.

Discussion

This study examined the relationship between caregiver and youth treatment expectations and characteristics of exposure tasks (quantity, mastery, compliance) in CBT for youth anxiety; more positive treatment expectations from both parents and youth were expected to be associated with a greater number of and percentage of sessions focused on exposures, as well as with higher mastery and compliance with these exposure tasks. As expected, child and parent treatment expectations each correlated with different aspects of therapy exposure tasks. Although youth treatment expectations were not related to the number of exposures completed, more positive expectations were associated with higher youth mastery. This suggests that if a child or adolescent believes that engagement in treatment will yield positive outcomes, he/she is more likely to persist with the assignments and develop proficiency with repeated exposure tasks. Mastering the skills needed to complete an exposure correctly requires several competencies, such as attentiveness during exposures, appropriate use of coping skills that are not contraindicated with learning (e.g., therapy-interfering behaviors such as “white-knuckling” exposures – gritting one’s teeth and tensely pushing through an exposure for the sake of getting it over with; engaging in safety behaviors – behaviors that attenuate the child’s anxiety and unfortunately do not allow them to fully confront the feared situation), and persistence while distressed, reflecting the importance of positive expectations.

From a different perspective, higher parent treatment expectations were related to a greater number and percentage of sessions with exposures, particularly when considering *in vivo* exposure tasks. It is possible that more positive parental treatment expectations may impart a more positive view of treatment for the youth. That is, if the parent is modeling calmer reactions to an otherwise anxiety-provoking situation (i.e., exposures), youth may be relatively less hesitant to complete these tasks (Burstein and Ginsburg 2010). Additionally, with beliefs that treatment can help with the management of child anxiety symptoms, parents may be advocating and/or facilitating the completion of more exposures themselves, as well as be less accommodating of their youth's anxious avoidance (Kagan et al. 2017; Kagan et al. 2018). If caregivers buy in to this therapy, they are likely to decrease accommodation and push more for the core components of treatment (i.e., *in vivo* exposures) with the long-term benefits in mind, even if it is more distressing for the child in the short-term. Given the differential relationships for youth versus parent treatment expectations, it is important to address them both early on, as they may be associated with the number of exposures completed and how well youth are able to complete them. However, it is interesting that neither youth nor parent expectations were related to exposure difficulty level. It may be that more positive expectations simply lead to the general "buy-in" of these tasks, without specific consideration of whether or not the task is particularly challenging. Alternatively, external factors beyond expectations may be impacting the difficulty level of the exposures, such as therapist preference and/or comfort with difficult exposures, the youth's level of anxiety sensitivity, and/or the breadth of anxiety symptoms to cover in treatment.

Both youth and parent treatment expectations predicted higher youth compliance with exposures, even after controlling for various demographic and clinical variables. Completion of exposures is paramount for ensuring that the youth is able to achieve maximal benefit from CBT (Hudson and Kendall 2002). Repeated practice and completion of between-session exposure assignments allows the youth to form more adaptive appraisals of the feared situations, generalize gains to various contexts, and rehearse coping strategies in times of distress, ultimately improving outcomes (Mausbach et al. 2010; Westra et al. 2007). Consequently, therapists should be thoughtful when presenting the rationale, execution, and potential benefits of CBT for youth anxiety at the outset of therapy, ensuring that families are aware of the benefits and importance of completing exposures within and between sessions (Kendall et al. 1999; Peterman et al. 2015). Specifically, discussing CBT efficacy is important in fostering motivation to complete exposure tasks, given that youth often feel overwhelmed when asked to face their fears (Bouchard et al. 2004) and express concerns that these tasks may be too difficult (Selles et al. 2017; Wu et al. 2016). Indeed,

specifically allotting time for families to voice concerns about exposures (e.g., safety concerns, tolerability) will provide opportunities for therapists to specifically address them and debunk any exposure-related myths.

Compliance with exposure tasks mediated the relationship between treatment expectations and treatment outcome. These findings highlight the importance of considering intermediate variables that may indirectly impact treatment outcomes (Hayes 2009; Zhao et al. 2010), and may (at least partially) account for previously mixed findings between youth treatment expectations and outcomes (Compton et al. 2014; Taylor et al. 2017). This echoes the importance of ensuring the family's compliance with the exposure tasks, which is initially impacted by their expectations of the extent to which CBT will be efficacious. Consequently, efforts to enhance treatment expectations in psychological therapy for youth (Shuman and Shapiro 2002) will be integral for optimizing compliance and subsequent decreases in anxiety symptomology. Particular attention should be paid to providing thorough psychoeducation about how and why exposures work, and also on clarifying common myths and misconceptions. Clinicians and families alike (Deacon et al. 2013; Whiteside et al. 2016) should be aware of the benefits of exposures and their key role in CBT for child anxiety (Ale et al. 2015; Whiteside et al. 2015), as they can be underutilized in treatment without proper psychoeducation (Deacon and Farrell 2013).

This study should be considered within several limitations. First, we used data on pretreatment expectations about therapy but did not assess for changes in treatment expectations later in therapy. As some studies in adult anxiety have linked early changes in treatment expectations with posttreatment outcomes (Newman and Fisher 2010), it is possible that changes in treatment expectations throughout therapy could have yielded different associations with compliance and treatment outcomes. For instance, a child who initially did not expect CBT to work could start to notice decreases in anxiety halfway through treatment, leading to an increase in his/her expectations, greater subsequent compliance, and better outcomes. Future studies should assess expectations at multiple time points during treatment of pediatric anxiety and examine the dynamic impact of these changes. Second, exposure variables were rated by the therapist on a measure developed specifically for the CAMS trial, which may have limited our ability to examine other potential variables of interest from other informants (e.g., parent's perception of child mastery of exposures). However, exposure data derived from the session summary sheet have been shown to produce vital, unique information about differential treatment outcomes for child anxiety (Peris et al. 2017), and therapists are uniquely positioned to recognize the clinical idiosyncrasies of each patient. Third, although the sample was recruited from various sites across the U.S., the predominance of non-Hispanic White participants may limit generalizability in the community. Fourth,

this study evaluated the relationship between treatment expectations and the exposure component of CBT only. Although exposures are generally considered to be the core ingredient of CBT (Ale et al. 2015; Kendall et al. 2006; Peris et al. 2015), future studies should consider the possibility that treatment expectations impact engagement in and compliance with other CBT tasks (e.g., cognitive restructuring) that may influence outcomes. Fifth, the correlational analyses are cross-sectional in nature, precluding inferences in causality. Additionally, parental expectations were not covaried in the mediational model examining the impact of child expectations (and vice versa). Both child and parent expectations have been shown to predict compliance, so it is possible that this pathway was slightly inflated when examining separate mediation models. However, the correlation between parent and child treatment expectations is low, and the regression model showed their unique effects. The current findings are intended to serve as a springboard for more nuanced investigations, considering other variables (e.g., anxiety sensitivity, therapist experience and credibility, therapist's own expectancies) that may impact the number or difficulty level of exposure tasks that are completed, as well as homework compliance and treatment outcome.

Findings highlight the importance of addressing expectations to enhance familial engagement and compliance with the therapeutic process, with the goal of improving treatment outcomes and services retention. Both the youth and the parent's expectations regarding CBT for anxiety should be considered; they have a relatively low correlation with one another and possess differential associations with varied aspects of exposures (e.g., number of exposures versus mastery of assigned exposures), and both impact downstream compliance with assigned exposures. All families should receive targeted, thoughtful psychoeducation regarding the role of exposures in CBT, and augmented psychoeducation may be indicated for families who do not expect a positive treatment response and/or have difficulty complying with therapeutic tasks. By establishing a solid understanding of CBT for pediatric anxiety and making a collaborative agreement at the outset of treatment, therapists can help facilitate optimal treatment outcomes for these youth and their families.

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Compliance with Ethical Standards

Ethical Approval Appropriate institutional review board approval at each study site and informed consent from the families were obtained prior to the commencement of any study procedures.

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