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Youth Anxiety and Parent Factors Over Time: Directionality of Change Among Youth Treated for Anxiety

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Abstract

Objective—The relationship between improvements in child anxiety and changes in parent factors (e.g., parental anxiety, parenting behaviors) is poorly understood. The present study investigated the directionality of change for child anxiety and parent factors among youth treated for anxiety disorders.

Method—Structural equation modeling examined these relationships pre- to post-treatment and at 1-year follow-up for 111 youth aged 7–14 (57% male, 84% Caucasian). Child anxiety was measured using the Anxiety Disorders Interview Schedule for Children and the Child Behavior Checklist. The State-Trait Anxiety Inventory, Children's Report of Parental Behavior Inventory, and Family Assessment Device were used to measure maternal anxiety, psychological control, behavior control, and family affective involvement.

Results—Findings suggest that decreases in mother-reported child anxiety led to decreases in maternal anxiety. Decreases in maternal psychological control and family affective involvement preceded decreases in clinician-rated child anxiety. Youth who showed the most reductions in anxiety over the course of treatment were those who tended to have lower family affective involvement, behavior control, and maternal anxiety at pretreatment. Stability of the parent factors and child anxiety over time suggest that stability was greater for behavior control and maternal anxiety relative to affective involvement and psychological control.

Conclusions—The findings are consistent with previous research indicating the importance of these parent factors as they relate to anxiety in youth. Furthermore, results indicate that changes in child anxiety may precede changes in parent factors and suggest that psychological control and affective involvement are important treatment targets for youth with anxiety disorders.

Keywords

anxiety disorders; children; parenting; cognitive-behavioral therapy; direction of change

Anxiety disorders are among the most common psychopathologies in childhood (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003) and are associated with significant impairment in academic achievement and peer relationships (Greco & Morris, 2005; Van Ameringen, Mancini, & Favolden, 2003). Research suggests that parent factors, such parental overprotection or control and parental modeling of anxiety, play an important role in the development and maintenance of anxiety in youth (see Rapee, 2012 for a review). Though existing theoretical models of the development and maintenance of child anxiety disorders stress the reciprocal relationships between parent and child factors in the context of environmental stressors (e.g., Ballash, Leyfer, Buckley, & Woodruff-Borden, 2006; Chorpita & Barlow, 1998; Rapee, 1997), most of the research focuses on the influence of parent factors on treatment outcome in youth with anxiety. Studies have found that clinical levels of parental anxiety predict poorer treatment outcome for anxious youth who receive cognitive-behavioral therapy (CBT) compared to youth who have parents with lower levels of anxiety (e.g., Bodden et al., 2008; Cooper, Gallop, Willetts, & Creswell, 2008; Creswell, Willetts, Murray, Singhal, & Cooper, 2008), and a similar influence has been found at 1-year follow-up (e.g., Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg, 2008). Family dysfunction and an overinvolved parenting style may also negatively impact treatment outcome for anxious children (Crawford & Manassis, 2001; Creswell et al., 2008). Given the role of parents in the development and maintenance of child anxiety, parent behavior is sometimes targeted in CBT for child anxiety as improvement in parenting is assumed to reduce child anxiety. Research results, however, are mixed regarding the benefit of including parents in CBT for child anxiety (see Breinholst, Esbjørn, Reinholdt-Dunne, & Stallard, 2012 for a review).

In contrast, there is a paucity of research examining the role of child anxiety on parent factors, particularly in the context of treatment. In an important first examination of the direction of parent-child change in child anxiety treatment, Silverman, Kurtines, Jaccard, and Pina (2009) examined whether changes in youth anxiety precede changes in parent factors (i.e., negative parent behavior, conflict in parent-child relationship, parental anxiety). Results suggested a youth-to-parent influence such that improvement in youth anxiety preceded improvement in negative parenting. In addition, studies have found that adolescents' self-reported anxiety symptoms predict later parental control (Wijsbroek, Hale, Raaijmakers, & Meeus, 2011) and youth anxiety may shape maternal behavior during brief interactions (Hudson, Doyle, & Gar, 2009). These findings highlight the need for additional research on *the direction of change* between child and parent behavior. As called for by Silverman and colleagues (2009), further research on this topic is necessary given our limited understanding of the mechanisms of action in interventions for youth (e.g., Kazdin, 1999; Silverman & Kurtines, 1997; Weisz & Kazdin, 2010). Investigators have specifically called for research that moves beyond basic correlation research and measures parenting behavior and child anxiety at multiple, theoretically meaningful time points to investigate the direction of effects and evaluate potential links between parenting behavior and anxiety in youth (Wood, McLeod, Sigman, Hwang, & Chu, 2003). As noted by Silverman and colleagues (2009), such investigations will aid the identification of critical child and parent factors for change in CBT for child anxiety.

The present study builds on previous findings by investigating the directionality of relationships between changes in parent factors, namely, parental psychological control, behavior control, family affective involvement, and parental anxiety, and improvement in

youth anxiety among children treated for anxiety disorders. As in prior studies (e.g., Silverman et al., 2009), parental anxiety and parenting behaviors are examined. However, the present study makes a unique contribution to the literature by additionally examining *specific* parenting behaviors with demonstrated relationships to child anxiety, factors not previously examined in studies of directionality of change in youth anxiety. Knowledge of how these specific parenting behaviors are related to changes in child anxiety in the context of CBT may lead to more precise recommendations regarding parent factors to address in child anxiety treatment.

Review of Parenting Behaviors and Child Anxiety

Behavior and psychological control

Behavior control can be conceptualized as the degree to which parents regulate and structure the behavior of their child (Soenens & Vansteenkiste, 2010). Parents who show high levels of behavior control tend to be overprotective and control behavior by direct means, such as making rules and insisting that regulations are followed (Ballash et al., 2006; McLeod, Wood, & Weisz, 2007). Theoretical models posit that parent behavior control contributes to the development and maintenance of child anxiety by preventing children's development of self-efficacy for coping with uncertain situations. Higher levels of parental behavior control and overprotection have been positively related to child anxiety (e.g., McLeod et al., 2007; van der Bruggen, Stams, & Bögels, 2008). Similarly, youth exposed to parental psychological control (control attempts, such as guilt induction or withdrawal of love that intrude into the psychological and emotional development of the child; Barber, 1996) are at risk for greater anxiety (e.g., Hale, Engels, & Meeus, 2006; Hudson & Rapee, 2001; Lieb et al., 2000; Wijsbroek et al., 2011). Psychological control limits youth's ability to manage their emotions (Barber, 1996) and reduces their perceived control over stressors (Chorpita, Brown, & Barlow, 1998). Psychological control often takes the form of parental rejection and criticism or lack of parental emotional warmth, which promotes a sense of helplessness (Garber & Flynn, 2001) and undermines self-esteem (Hammen, 1992).

Affective involvement

High affective involvement is proposed to be a key characteristic of families of children with anxiety disorders (Ginsburg, Siqueland, Masia-Warner, & Hedtke, 2004). Affective involvement refers to the degree to which the family as a whole shows interest in and values individual family members, with a focus on how much and in what way family members invest themselves in each other (Miller, Ryan, Keitner, Bishop, & Epstein, 2000). Families who show excessive affective involvement have members who are overly involved in each other's activities in a dysfunctional manner such that individual family members' independence is compromised. Parents of youth with anxiety disorders report significantly higher levels of affective involvement relative to parents of nonanxious youth (Hughes, Hedtke, & Kendall, 2008).

Parental psychopathology

Research indicates that up to 80% of parents of youth with anxiety disorders also meet criteria for an anxiety disorder (Ginsburg & Schlossberg, 2002). Some studies suggest that parents who struggle with their own anxiety may behave in ways that put their children at risk for developing anxiety. For example, anxious parents are more likely to catastrophize during interactions with their children (Moore, Whaley, & Sigman, 2004; Whaley, Pinto, & Sigman, 1999) and verbally transmit a greater number of anxious beliefs to their children relative to nonanxious parents (Muris, van Zwol, Huijding, & Mayer, 2010). Parents with anxiety disorders have also been found to show more disengagement and withdrawal during parent-child interactions (Woodruff-Borden, Morrow, Bourland, & Cambron, 2002).

The Present Study

The present study examined the directionality of change for child anxiety and parent factors over time for youth who received CBT for the treatment of anxiety disorders. Parent factors included maternal anxiety, maternal psychological control, family affective involvement, and family behavior control. A cross-lagged model shown in Figure 1 tested the predictive effects between change in child anxiety and change in parent factors. Multi-informant and multi-method assessment of child anxiety was utilized. Modest levels of cross-informant agreement (e.g., Achenbach, McConaughy, & Howell, 1987), which may arise as a result of discrepant perspectives about the child's behavior (De Los Reyes & Kazdin, 2005) or various informants reporting on contextually-dependent behavior (Achenbach et al., 1987), underscores the need for multi-informant assessment of youth's psychopathology. Furthermore, we examined both the child's principal anxiety disorder severity and overall anxiety severity because there were high rates of comorbidity with other anxiety disorders among youth in the sample. Given the emphasis on reciprocal relationships in theoretical models of the development and maintenance of anxiety disorders in youth, it was hypothesized that bidirectional relationships exist such that (a) changes in parent factors impact child anxiety and (b) reductions in youth anxiety influence parent factors. The model also enabled exploration of the stability of child anxiety and parent factors over the course of the intervention and at 1-year follow-up, informing our understanding of relative change over time in child anxiety and parent factors, as well as examination of whether initial levels of parent factors predict change in child anxiety between pre- and post-treatment, and vice versa.

Method

Participants

Participants were 111 youth who received 16 weeks of CBT as part of a randomized clinical trial (RCT; Kendall et al., 2008). Youth ranged in age from 7–14, though the majority (70%) were ages 8–11. Age did not moderate treatment response (Kendall et al., 2008). Of the 111 participants, 55 received individual CBT (ICBT) and 56 received family CBT (FCBT). The ICBT and FCBT groups were analyzed together in the current study for several reasons. First, results of the RCT indicated comparable child outcomes for the two CBT conditions (Kendall et al., 2008). Furthermore, independent samples t-tests indicated that difference scores on parent factors between each time point were not significantly different between the two treatment conditions (all p's > .05), indicating that the parent factors explored in the current study were not differentially affected by treatment condition. The RCT was conducted at a university-based anxiety disorders clinic in the mid-Atlantic area. Exclusion criteria were: psychotic symptoms, mental retardation, a disabling medical condition, participation in concurrent treatment, anti-anxiety or antidepressant medications, and non-English speaking parents. Children and their parents were assessed at pretreatment, posttreatment (16 weeks later), and 1-year follow-up.

Youth met criteria for a principal diagnosis of generalized anxiety disorder (GAD; n = 52), social phobia (n = 33), or separation anxiety disorder (SAD; n = 26). Comorbidity was common: 23% of children were comorbid with GAD, 40% with social phobia, 35% with SAD, 48% with specific phobia, 31% with attention-deficit/hyperactivity disorder, 13% with oppositional defiant disorder, 6% with dysthymia, and 6% with major depressive disorder. This high degree of comorbidity is consistent with rates found in other samples of youth with anxiety disorders (e.g., Kendall et al., 2010). Fifty-seven percent of the children were male. Regarding race, 84% were Caucasian, 12% were African American, 1% were Hispanic, and 3% identified as "other" or mixed race. Children aged 7–10 years comprised 59% of the sample, and the remaining 41% were 11–14 years old (mean age = 10.39, SD =

1.80). Family income was reported as below $20,000 (2.9%), $20,000–40,000 (15.6%), $40,000–60,000 (21.4%), $60,000–80,000 (22.4%), and above $80,000 (37.9%). Mothers' education level was reported as did not complete high school (1%), high school graduates without college (29%), some college education (22%), completed a 4-year college (31%), attended graduate school (16%), or "other" (1%).

Measures

Child Anxiety

Anxiety Disorders Interview Schedule for Children (ADIS-C/P; Silverman & Albano, 1996): The ADIS-C/P is a semi-structured interview that assesses DSM-IV anxiety disorders in youth. Interviews were independently administered to parent and child, and combined for a composite report using the either/or rule, such that diagnoses were assigned if either the parent or child reported a disorder of clinical severity. Given low parent-child agreement in the assessment of anxiety in youth, it is recommended that clinicians employ the either/or rule when integrating reports and assigning diagnoses (Comer & Kendall, 2004). Interviewers provide clinician severity ratings (CSRs) for each diagnosis on a 0–8 scale (≥ 4 required for a diagnosis). Studies indicate favorable psychometrics (March & Albano, 1998), including high inter-rater reliability (Chavira, Stein, Bailey, & Stein, 2004; Lyneham, Abbott, & Rapee, 2007), retest reliability (Silverman, Saavedra, & Pina, 2001), convergent validity (Wood, Piacentini, Bergman, McCracken, & Barrios, 2002), and sensitivity to treatment (e.g., Kendall et al., 2008). Interviewers for the RCT were required to meet inter-rater reliability of 0.85 (Cohen's κ). The child's principal anxiety disorder CSR was the measure of clinician-rated child anxiety in this study.

Child Behavior Checklist (CBCL; Achenbach, 1991): The CBCL is a 118-item checklist that asks parents to make ratings from 0 to 2 depending on the extent to which a particular statement describes their child: 0 = *not true*, 1 = *somewhat or sometimes true*, and 2 = *very true or often true*. Kendall and colleagues (2007) developed an anxiety scale (CBCL-A) derived from items on the CBCL to increase the utility of the CBCL for making DSM-IV anxiety diagnoses in children. This scale has been found to discriminate between youth with and without anxiety disorders and to significantly correlate with several other measures of anxiety (Kendall et al., 2007). The CBCL-A was the measure of mother-reported youth anxiety for this study. Internal consistency of the CBCL-A in this sample was α = .76 at pretreatment, α = .82 posttreatment, and α = .85 at 1-year follow-up.

Parent Factors

State-Trait Anxiety Inventory (STAI; Spielberger, 1983): The STAI is a self-report measure comprised of two, 20-item scales designed to measure state and trait anxiety. Participants respond using a 1–4 scale ranging *from not at all* to *very much so*. On the state version, individuals rate how they currently feel in regard to each item (e.g., worry, calm). Good psychometric properties have been reported for the STAI (Spielberger, 1983). Studies have identified a clear relationship between the state form of the STAI and psychiatric diagnoses based on the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition revised (American Psychiatric Association, 2000; Kvaal, Ulstein, Nordhus, & Engedal, 2005). In the current study, the STAI state form was the measure of self-reported maternal anxiety. The internal consistency of the STAI state form was good to excellent in this sample: α = .90 at pretreatment, α = .88 at posttreatment, and α = .91 at follow-up.

Children's Report of Parental Behavior Inventory (CRPBI-30; Schuldermann & Schuldermann, 1988): To assess maternal psychological control, the psychological control subscale from the 30-item version of the CRPBI was used. This subscale measures the

extent to which parents control their children through indirect psychological methods such as instilling guilt, withdrawing love, and inducing anxiety. Examples of items include, "I tell my child about all the things I have done for him/her" and "I am less friendly with my child if I do not see things his/her way". Mothers rated how similar they were to the behaviors described on a 1–3 scale ranging from *not at all like me* to *a lot like me*. Internal consistency of the CRPBI psychological control subscale across time points was generally acceptable: α =.64 at pre-treatment, α =.69 at posttreatment, and α = .68 at follow-up.

Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983): Mothers reported on family functioning using the FAD, a self-report measure of family functioning based on the McMaster model of family functioning (MMFF; Epstein, Bishop, Ryan, Miller, & Keitner, 1993). The model describes features of family organization, structure, and communication that have been shown to be related to family health. The FAD consists of 60 items rated on a 4-point Likert scale. Scores on the affective involvement and behavior control subscales were examined as the constructs tapped by these subscales are believed to be more relevant for families with anxious youth (Ginsburg et al., 2004). The affective involvement subscale measures the extent to which families members are interested in and place value on each other's activities and concerns. The healthiest families have intermediate scores on this subscale, with high scores reflecting dysfunction associated with excessive affective involvement. Internal consistency on the affective involvement scale in this sample was acceptable to good (Cronbach's alpha ranging from .75 to.83). The behavior control subscale reflects the extent to which a family maintains standards for the behavior of its members by enforcing compliance with rules. Different patterns of control in various types of situations are considered. Higher scores on this subscale indicate higher levels of behavior control. The FAD shows acceptable psychometric properties (e.g., Cronbach's alpha ranges from .72 to .90 between subscales; Miller, Epstein, Bishop, & Keitner, 1985). Internal consistency was also acceptable to good on the behavior control scale in this sample (Cronbach's alpha ranging from .77 to .81).

Analytic Approach

Structural equation modeling (SEM) examined the underlying dynamics between child anxiety and parent factors using Amos 6.0 (Arbuckle, 2005). A cross-lagged model was constructed to examine the reciprocal effects of child anxiety and parent factors over time, as depicted in Figure 1.[1] Cross-lagged modeling can be used to assess the causal direction between variables in data derived from longitudinal research designs (Finkel, 1995). Theoretically, lagged effects are of interest given that it may take time for changes in one variable to work their way through and produce changes in another variable (Silverman et al., 2009).

Data were screened for violation of statistical assumptions prior to analysis. Univariate and multivariate outliers and normality were examined for all variables, and inspection of these assumptions revealed no meaningful violations[2]. All variables were screened for missing data. Data for at least one child anxiety or parent variable were missing for 5 families at pretreatment, 13 families at posttreatment, and 45 families at 1-year follow-up. Data were deemed missing completely at random (MCAR), as the absence of data on any one variable was unrelated to any other variable in the data set. Thus, analysis using full information maximum likelihood estimation (FIML) was deemed appropriate. FIML is a method for

[1]An alternate model that controlled for treatment condition was tested and results did not differ from those of the original model across all analyses.

[2]Values of skew and kurtosis were within normal limits with the exception of one variable at one time point (STAI at 1-year follow-up). A sensitivity analysis was conducted to assess the impact of outliers, and results were unchanged, indicating that outliers did not influence results.

handling missing data that enables data to be analyzed without dropping cases. In contrast to multiple-imputation methods, FIML does not estimate missing values, but instead uses all available data to generate the most likely parameter estimates given the data. Under most conditions, the FIML approach produces less biased parameter estimates than alternative approaches in the presence of missing data (Schafer, 1997).

To evaluate overall fit of the models tested, the model chi-square, root-mean-square error of approximation (RMSEA; Steiger, 1990), and comparative fit index (CFI; Bentler, 1990) were used. Multiple indices were selected to address limitations in each individual index. Each index provides different information for evaluating model fit, and using the indices in conjunction with one another provides a more conservative and reliable evaluation of the various models (e.g., Jaccard & Wan, 1995). The indices selected are consistent with conventional approaches. Chi-square analysis tests the hypothesis that the specified model fits the observed covariances, though this test is influenced by model parameters including sample size and number of variables. Acceptable fit is indicated with *p*-values greater than .05. RMSEA is an absolute fit index that assesses how well the model fits the sample data. Values ranging from .08–.10 represent mediocre fit, values of .05–.08 represent reasonable fit, and values under .05 indicate close approximation (Hu & Bentler, 1999). The CFI is a measure of comparative fit that assesses the improvement in fit associated with using the hypothesized model rather than a more restrictive model that lacks correlations between observed variables. CFI values range from 0 to 1, with values greater than .9 indicative of acceptable fit and values greater than .95 indicative of superior fit (Hu & Bentler, 1999).

Results

Descriptive statistics for the six analyzed variables are shown in Table 1. At a descriptive level, values of all measures decreased over time. Separate analyses were conducted for both measures of child anxiety (i.e., clinician-reported CSR and mother-reported CBCL-A) in relation to each of the four parent variables. Examination of fit indices shown in Table 2 revealed that the model fit the data well in all versions of the model: the model chi-square was not significant, the CFI was above .99, RMSEA was less than .06, and the close-fit hypothesis was not rejected because the lower bounds of the confidence intervals were less than .05. However, since the upper bounds of the confidence intervals typically exceeded .10, the poor-fit hypothesis cannot be rejected. This type of mixed outcome is likely to happen in smaller samples. RMSEA may favor larger models with a greater number of variables and degrees of freedom (Breivik & Olsson, 2001). However, it also should be noted that the model chi-square analysis is biased towards non-significance in smaller samples (Kline, 2011). Examination of correlation residuals, or standardized residual covariances, revealed that few were greater than .10, which is supportive of good model fit (Kline, 2011). Taken together, the results suggest that these models fit the data well.

Regarding interpretation of path coefficients, path *a* in the model represents the correlation between child anxiety and the parent factor at pretreatment. Paths *b*, *d*, *e*, and *g* are stability coefficients that reflect the stability of child anxiety and parent factors from pretreatment to posttreatment (paths *b* and *e*) and from pretreatment to follow-up (paths *d* and *g*). Paths *c* and *f* are stability coefficients that reflect the extent to which change in a variable from pre- to post-treatment is associated with change in the same variable from posttreatment to follow-up. Of particular interest are paths *j* and *k*, which reflect lagged effects. Path *j* estimates the extent to which changes in parent factors from pretreatment to posttreatment are associated with changes in child anxiety from posttreatment to follow up, whereas path *k* estimates the extent to which changes in child anxiety from pretreatment to posttreatment are associated with changes in parent factors from posttreatment to follow-up. Path *h* reflects whether change in child anxiety between pretreatment and posttreatment is associated with

the initial level of parent factors, and path *i* reflects whether change in parent factors between pretreatment and posttreatment is associated with the initial level of child anxiety. Paths *l* and *m* represent the disturbance covariances between child anxiety and the parent factors. Covariances are included between these disturbances to account for the possibility that the omitted causes of child anxiety and parent factors at posttreatment and 1-year follow-up are related to one another.

Maternal Anxiety

Analysis of the model was first conducted using the CBCL-A as the measure of child anxiety, and maternal anxiety based on the STAI as the parent factor. The path coefficients of the models for paths *b* through *k* are shown in Table 3. Regarding direction of effects, path *k* was statistically significant in a way that implied that reductions in youth anxiety between pre- and post-treatment were predictive of reductions in mother anxiety between posttreatment and follow-up, whereas path *j*, representing the lagged effect from mother anxiety to child anxiety, was not significant. These results suggest that changes in youth anxiety may lead to changes in mother anxiety rather than vice versa.

In terms of the stability of constructs over time, examination of stability coefficients revealed significant stability effects for mother-reported child anxiety from pre- to post-treatment (path *b*); however, the stability coefficient from pretreatment to 1-year follow-up (path *d*) failed to reach significance, indicating that child anxiety is less stable over this longer period of time. Path *c* was significant, which suggests that children who showed the most decreases in child anxiety from pre- to post-treatment were most likely to show decreases in anxiety between posttreatment and follow-up. Maternal anxiety showed stability from pre- to post-treatment (path *e*), but path *f* was not significant, indicating that mothers who showed the most decreases in anxiety from pre- to post-treatment were not most likely to show decreases in anxiety between posttreatment and 1-year follow-up. This suggests that mothers who showed relatively less reductions in anxiety symptoms from pre- to post-treatment may have evidenced greater changes during the posttreatment to follow-up period. Overall, maternal anxiety showed a significant stability effect from pretreatment to follow-up (path *g*). Regarding predictors of change between pre- and post-treatment, path *h* was significant, indicating that change in child anxiety between pre- and post-treatment was associated with the initial level of maternal anxiety, such that youth who showed the most decreases in their anxiety from pre- to post-treatment were those who had mothers with lower pretreatment anxiety.

Analysis of the model was repeated using the principal anxiety diagnosis CSR as a measure of child anxiety. In contrast to the results indicating a youth-to-parent influence based on mother-reported child anxiety, no significant lagged effects were found when examining clinician-rated child anxiety. Regarding stability over time, similar results were found for child anxiety, with significant stability effects from pre- to post-treatment (path *b*), yet a non-significant stability effect from pretreatment to 1-year follow-up (path *d*). Path *c* was again significant, indicating that based on clinician ratings, children who showed the most decreases in their principal anxiety disorder severity from pre- to post-treatment were most likely to show decreases in their principal anxiety disorder severity between posttreatment and follow-up. In terms of predictors of change between pre- and post-treatment, change in child anxiety between pre- and post-treatment was not significantly associated with the initial level of maternal anxiety (path *h*), in contrast to results based on mother-reported child anxiety.

Maternal Psychological Control

Rows three and four of Table 3 show estimates for the path coefficients for analysis of the model using maternal psychological control in place of maternal anxiety. Examination of direction of effects revealed that path *j* was significant when principal anxiety disorder CSR, but not mother-reported child anxiety, was the measure of child anxiety. Specifically, decreases in maternal psychological control between pre- and post-treatment predicted decreases in youth anxiety between posttreatment and follow-up. By contrast, path *k* was not significant. This is suggestive of a parent-to-youth influence for psychological control.

Significant stability effects were found for maternal psychological control from pre- to post-treatment, though not from pretreatment to follow-up. Path *f* was significant, indicating that mothers who showed the most decreases in psychological control from pre- to post-treatment were most likely to show decreases in psychological control between posttreatment and 1-year follow-up. Taken together with the finding that the psychological control stability effect is not significant from pretreatment to follow-up, these findings suggest that mothers who show decreases early on in psychological control are more likely to continue to show decreases in psychological control, and mothers' scores on this measure are less likely to be stable over the longer period of time relative to the intervention period alone. Regarding predictors of change over the intervention period, initial level of maternal psychological control did not significantly predict child anxiety and vice versa, based on both clinician- and mother-rated child anxiety.

Family Affective Involvement

In terms of direction of effects, results showed that path *j* was significant when principal anxiety disorder CSR was examined, such that reductions in family affective involvement from pre- to post-treatment were associated with reductions in child anxiety between posttreatment and follow-up. However, the opposite relationship was not found, as reductions in clinician-rated child anxiety did not have a significant cross-lagged effect on family affective involvement. This suggests that changes in families' levels of affective involvement impact changes in youth anxiety rather than vice versa. Significant cross-lagged effects were not found when examining mother-reported child anxiety.

The pattern of stability estimates for family affective involvement was similar to that seen for maternal psychological control. Specifically, significant stability effects were found from pre- to post-treatment, but not from pretreatment to follow-up. Furthermore, families who showed the most decreases in affective involvement from pre- to post-treatment were most likely to show decreases in affective involvement between posttreatment and 1-year follow-up. Results regarding predictors of change from pre- to post-treatment indicated that there was a trend for path *h* to be significant, $p = .051$, when using the CBCL-A as the measure of child anxiety, but not when examining principal anxiety disorder CSR. This indicates that change in mother-reported child anxiety between pretreatment and posttreatment tended to be associated with the initial level of family affective involvement, such that children who showed the most reductions in their anxiety from pre- to post-treatment based on mother report were those with lower family affective involvement at pretreatment.

Family Behavior Control

Final analyses focused on family behavior control. Regarding directionality, no significant lagged effects were found based on either clinician or parent-rated child anxiety. In terms of stability over time, results indicated that behavior control showed significant stability effects from pre-to post-treatment and from pretreatment to follow-up. In addition, families who showed the most decreases in behavior control from pre- to post-treatment were also most likely to show decreases in behavior control between posttreatment and follow-up. The

pattern of results for predictors of change over the course of treatment was similar to that found for affective involvement. Specifically, there was a trend for path *h* to be significant when the CBCL-A, but not principal anxiety disorder CSR, was used as the measure of child anxiety, $p = .055$, indicating that change in mother-reported child anxiety between pretreatment and posttreatment tended to be associated with the initial level of family behavior control. Findings suggest that youth who showed the most reductions in anxiety from pre- to post-treatment were those whose mothers tended to report lower levels of family behavioral control at pretreatment.

Discussion

The present study builds on previous research and addresses a gap in the child anxiety literature by examining the directionality of change over time for anxiety among youth treated with CBT and several parent factors, specifically, maternal anxiety, psychological control, behavior control, and family affective involvement. Results were consistent with a lagged effect linking reductions in mother-reported child anxiety between pre- and post-treatment with reductions in maternal anxiety between posttreatment and follow-up. These results suggest that decreases in youth anxiety may lead to reductions in maternal anxiety rather than vice versa. Though one cannot conclude that youth anxiety has causal significance for maternal anxiety solely on the basis of this result, findings in regard to maternal and child anxiety suggest the potential for a youth-to-parent influence in the context of child-focused CBT, which is consistent with previous research indicating that changes may flow from youth to parents (e.g., Silverman et al., 2009; Wijsbroek et al., 2011). It is important to note that results were consistent with a youth-to-parent influence based on a measure of mother-reported rather than clinician-rated youth anxiety, perhaps indicating that it is mothers' perceptions of reductions in their child's anxiety that has a beneficial influence on maternal anxiety.

There was also evidence for a parent-to-youth influence for maternal psychological control and family affective involvement, as reductions in both parent factors between pre- and post-treatment were predictive of reductions in clinician-rated child anxiety between posttreatment and follow-up. Given that youth who experience psychological control may have limited ability to manage emotions (Barber, 1996) and diminished ability to develop skills to cope with stressors, theory would suggest that reductions in maternal psychological control would promote youth's self-efficacy for coping with feared situations and therefore reductions in anxiety. Furthermore, results are consistent with previous research indicating that youth anxiety symptoms are more strongly related to parental psychological control than behavior control (Wijsbroek et al., 2011) as lagged effects were not found for behavior control in the present study. Similar to psychological control, decreases in families' levels of affective involvement may lead to increases in youth's independence and ability to cultivate individual coping skills for facing anxiety-provoking situations. Evidence for a parent-to-youth influence was based on clinician ratings of youth's principal anxiety disorder but not mother-reported youth anxiety, which may suggest that mothers view changes in these parent factors as independent of later changes in their child's overall anxiety.

Though further research in this area is needed, the direction of effects results have potential clinical implications, as they suggest the importance of addressing these parent factors during the course of treatment for child anxiety. Specifically, this study adds to the idea that youth whose families are high on these parent factors may benefit from interventions that specifically target these constructs – by addressing these parent factors (e.g., psychological control, affective involvement) in the context of either individual or family CBT, the rate of anxiety reduction for the child may be increased. Assessing parent factors prior to the start of therapy could enable clinicians to identify which families may benefit from intervention

modifications, allowing for treatment personalization. For example, facilitating family problem-solving discussions in session or examining how parents typically handle their child's anxious behavior would enable therapists to help parents consider alternative ways of communicating and interacting with their child. Therapists could also highlight how patterns of family functioning may negatively influence the child and ask parents to practice implementing strategies that foster a moderate degree of family involvement. Therapists can encourage parents to promote youth's psychological autonomy by allowing children to express their opinions even when they differ from those of the parent and accepting these differences (e.g., Siqueland, Rynn, & Diamond, 2005). Such approaches would need to be tailored to meet the specific processes characteristic of a particular family (Ginsburg et al., 2004).

Regarding stability of the constructs over time, behavior control and maternal anxiety demonstrated greater stability from pretreatment to follow-up relative to the stability of both clinician- and mother-reported child anxiety, psychological control, and affective involvement. For the latter constructs, participants who began to show the greatest changes during the course of treatment were also the most likely to continue to show changes after treatment. Interestingly, maternal anxiety was the only factor for which greater reduction from pre- to post-treatment did not predict greater reduction between posttreatment and follow-up. This suggests that mothers who showed fewer changes in anxiety from pre- to post-treatment may have showed relatively more changes in anxiety from posttreatment to follow-up. Thus, intra-individual rate of change in maternal anxiety may be distinct from that of the other constructs examined: mothers who do not show large reductions in anxiety during the course of the intervention may nonetheless show meaningful reductions after treatment. Given that the findings suggest that changes in child anxiety precede changes in maternal anxiety, the delayed impact of reductions in youth anxiety on maternal anxiety may in part account for maternal anxiety being the least stable factor within individual mothers.

In terms of whether initial levels of parent factors are associated with changes in child anxiety over the treatment period, results indicated that change in child anxiety between pre- and post-treatment was associated with the initial level of maternal anxiety. Specifically, children who showed the most decreases in anxiety from pre- to post-treatment based on mother report were those whose mothers self-reported lower anxiety at pretreatment. This suggests that high levels of maternal anxiety may negatively impact treatment outcome for youth with anxiety disorders, which is consistent with previous research (e.g., Creswell et al., 2008). Results also revealed a trend for change in mother-reported child anxiety between pre- and post-treatment to be associated with the initial level of family affective involvement, such that children who showed the most anxiety reductions from pre- to post-treatment were those who at pretreatment tended to have lower family affective involvement. Perhaps youth who begin treatment with lower levels of family affective involvement are better equipped from the start to apply skills learned in therapy to everyday life, as they have the freedom to develop an individual coping style that may differ from that of the family. Similarly, there was a trend for change in mother-reported child anxiety between pretreatment and posttreatment to be associated with the initial level of family behavior control. Youth who showed the most reductions in anxiety from pre- to post-treatment were those with lower levels of family behavior control at pretreatment. Children whose parents grant them appropriate autonomy may have more opportunities to face feared situations, which would also lead to greater reductions in anxiety.

These results regarding parent factors as predictors of changes in youth anxiety suggest that in addition to maternal anxiety, family affective involvement and behavior control may also influence a child's responsiveness to treatment, and suggest the potential merits of addressing these parent factors prior to or in the beginning stages of implementing CBT with

anxious youth. Indeed, these parent factors may in part account for why approximately one-third of youth treated for anxiety disorders with CBT do not show clinically meaningful improvement at posttreatment (e.g., Walkup et al., 2008). Given that parental anxiety may be influenced by decreases in child anxiety, targeting parental anxiety per se may not be necessary unless parental anxiety is highly associated with other parent behaviors that are likely to interfere with or slow down the rate of progress in treatment. Potential clinical implications of the present study are consistent with prior research indicating that the treatment of maternal anxiety disorders does not improve treatment outcome among youth treated with CBT for anxiety (e.g., Creswell et al., 2008). However, given that results were found based on mother-reported youth anxiety rather than clinician ratings, it is also possible that mothers who are less anxious and those who show lower affective involvement and behavior control at pretreatment may be more likely to perceive positive change in their child's anxiety symptoms than mothers with less adaptive levels of these parent factors. Additional research utilizing multiple informants of youth anxiety and parent factors could help rule out this potential explanation.

Study limitations warrant consideration. One limitation is missing data at 1-year follow-up. However, data were found to be missing completely at random, indicating that the results are not biased by missing data. Nonetheless, replication would strengthen the current findings. Further research in more ethnically diverse samples is needed, though it should be noted that the majority of participants in the study by Silverman and colleagues (2009) identified as Hispanic or Latino. Future studies that assess youth anxiety and parent factors at more frequent time points would enable a more thorough examination of relationships. Also, youth who received ICBT and FCBT were combined in the analyses as examining these conditions separately was not possible in the current study due to power limitations. This is not an extensive limitation because no significant differences in child outcomes were found between the two CBT conditions (Kendall et al., 2008), changes in parent factors were not differentially affected by treatment condition, and results of an alternate model that controlled for treatment condition yielded equivalent results. However, it would be interesting to know more about the role of parental involvement in child-focused CBT as it relates to changes in parent factors and whether changes in youth anxiety influence parents even when parents are minimally involved in treatment.

Another limitation is that results varied based on the informant of child anxiety. In light of findings that discrepancies often exist among informants of youth psychopathology (see De Los Reyes & Kazdin, 2005), such variation in results is not surprising. Parental psychopathology may contribute to informant discrepancies (De Los Reyes & Kazdin, 2005), indicating that parental reports of child anxiety may be influenced by the parent's own level of anxiety. Thus, it is important to note the informant of child anxiety when interpreting results. Last, measures were largely based on mother-report, and future studies with data on both mothers and fathers from multiple informants, including clinicians or independent observers, would further strengthen conclusions.

Overall, results suggest that the relationship between improvements in child anxiety and changes in parent factors implicated in the development and maintenance of child anxiety is bidirectional. Youth and parents likely influence one another in numerous, complex ways. Findings suggest that parental psychological control and family affective involvement may be particularly important treatment targets for youth with anxiety disorders given that reductions in these parent factors are associated with later decreases in child anxiety. However, reductions in youth anxiety are also likely to effect change in parent factors such as parental anxiety, indicating that parents may personally benefit in terms of their own functioning from interventions designed for the treatment of their children.

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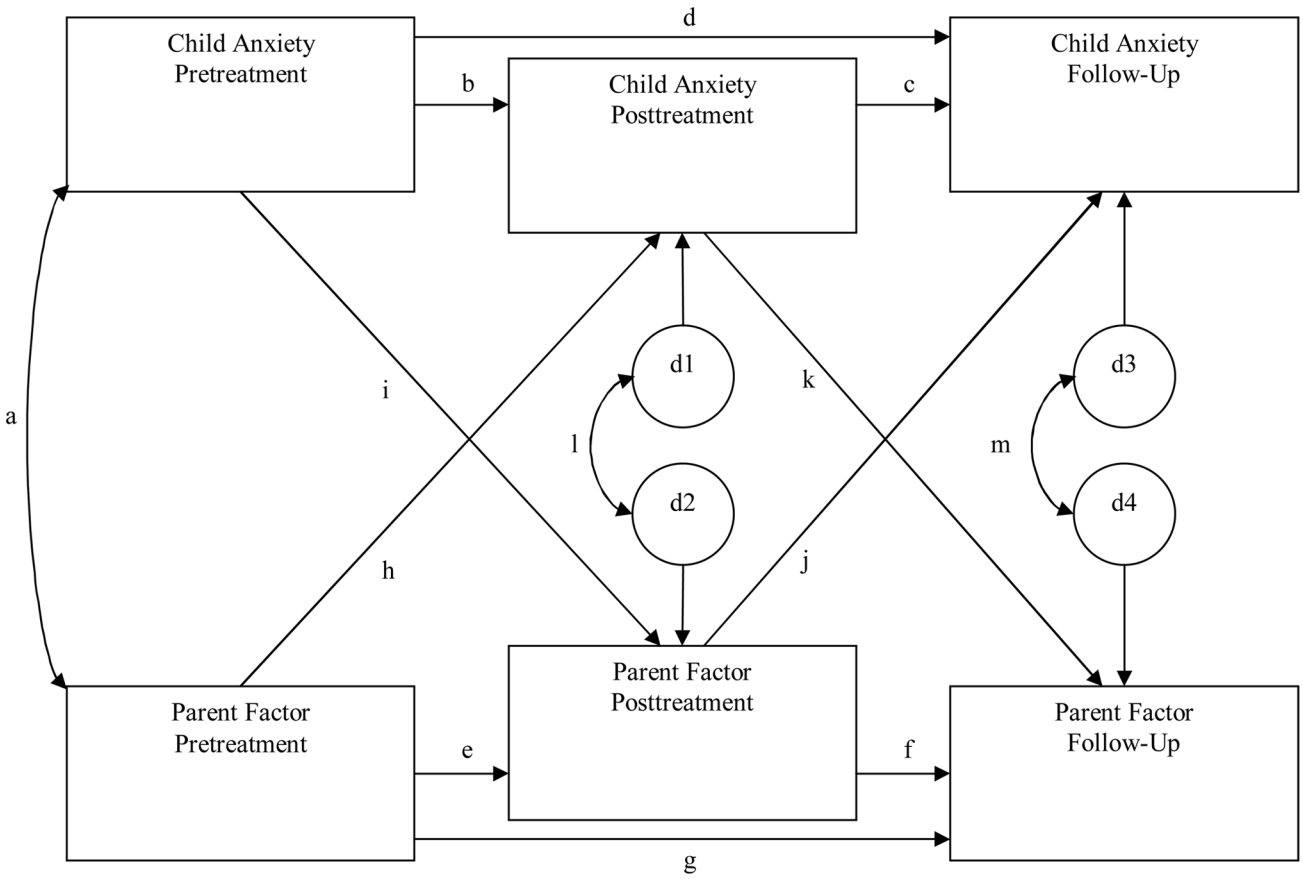

Figure 1.

Path model for effects of child anxiety and parent factors. Child Anxiety = Child Behavior Checklist – Anxiety Scale (CBCL-A) and Child Principal Anxiety Disorder Clinician Severity Rating (CSR) based on the Anxiety Disorders Interview Schedule for Children (ADIS-C/P). Parent Factors = State-Trait Anxiety Inventory (STAI) – State scale, Children's Report of Parent Behavior Inventory (CRPBI) – Psychological Control subscale, and Family Assessment Device (FAD) – Affective Involvement and Behavior Control subscales.

Table 1

Means and Standard Deviations for Child Anxiety Measures and Parent Factors at Pretreatment, Posttreatment, and Follow-Up

	Pretreatment		Posttreatment		Follow-Up	
Measure	***M***	***SD***	***M***	***SD***	***M***	***SD***
Child Anxiety						
CBCL-A	14.45	5.78	9.72	5.11	8.21	5.54
Principal Anxiety Disorder CSR	5.88	0.90	2.65	2.56	1.81	2.28
Parent Factors						
STAI-State	29.53	10.18	27.22	8.91	24.02	9.72
CRPBI Psychological Control	17.33	2.64	16.90	2.62	16.21	2.53
FAD Affective Involvement	14.79	3.23	14.17	3.48	13.71	3.47
FAD Behavior Control	15.91	3.41	15.24	3.41	14.71	3.46

Note. Posttreatment = 16 weeks after pretreatment; Follow-up = 1 year after pretreatment. CBCL-A = Child Behavior Checklist – Anxiety Scale; CSR = Clinician Severity Rating based on the Anxiety Disorders Interview Schedule for Children (ADIS-C/P); STAI = State-Trait Anxiety Inventory; CRPBI = Children's Report of Parent Behavior Inventory; FAD = Family Assessment Device.

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Table 2

Fit Indices for Analyses Using Structural Equation Modeling

Model	χ^2	CFI	RMSEA	90% CI	*p* close
STAI-State and CBCL-A	.251	1.000	.000	.000–.091	.909
STAI-State and Principal Anxiety CSR	.693	1.000	.000	.000–.138	.767
CRPBI Psychological Control and CBCL-A	2.775	.995	.059	.000–.208	.341
CRPBI Psychological Control and Principal Anxiety CSR	.229	1.000	.000	.000–.086	.916
FAD Affective Involvement and CBCL-A	.821	1.000	.000	.000–.145	.731
FAD Affective Involvement and Principal Anxiety CSR	.518	1.000	.000	.000–.125	.821
FAD Behavior Control and CBCL-A	.843	1.000	.000	.000–.147	.724
FAD Behavior Control and Principal Anxiety CSR	.917	1.000	.000	.000–.150	.704

Note. Chi-square is a goodness of fit index based on maximum likelihood criterion (model degrees of freedom = 2); CFI = Comparative Fit Index; RMSEA = root mean square error approximation test; *p* close = *p* value for close fit associated with the RMSEA; CBCL-A = Child Behavior Checklist – Anxiety Scale; CSR = Clinician Severity Rating based on the Anxiety Disorders Interview Schedule for Children (ADIS-C/P); STAI = State-Trait Anxiety Inventory; CRPBI = Children's Report of Parent Behavior Inventory; FAD = Family Assessment Device. All χ^2's are non-significant at $p > .05$.

Table 3

Unstandardized and Standardized Path Coefficients for Key Paths in Figure 1

Model	Path *b*	Path *c*	Path *d*	Path *e*	Path *f*	Path *g*	Path *h*	Path *i*	Path *j*	Path *k*
STAI-State and CBCL-A	.481 (.545) *	.503 (.451) *	.194 (.197)	.487 (.553) *	.132 (.120)	.256 (.262) *	.090 (.179) *	.202 (.130)	.010 (.016)	.472 (.243) *
STAI-State and Principal Anxiety CSR	.729 (.257) *	.440 (.474) *	.468 (.178)	.499 (.566) *	.240 (.215)	.263 (.267) *	.006 (.023)	−.433 (−.044)	.002 (.006)	.703 (.180)
CRPBI Psychological Control and CBCL-A	.502 (.569) *	.464 (.419) *	.198 (.203)	.680 (.686) *	.462 (.474) *	.198 (.204)	.203 (.106)	.044 (.098)	.238 (.111)	.033 (.065)
CRPBI Psychological Control and Principal Anxiety CSR	.708 (.249) *	.381 (.411) *	.383 (.146)	.669 (.681) *	.470 (.478) *	.212 (.219)	.051 (.053)	−.173 (−.060)	.388 (.426) *	−.042 (−.042)
FAD Affective Involvement and CBCL-A	.496 (.563) *	.476 (.430) *	.196 (.201)	.666 (.614) *	.674 (.669) *	.093 (.085)	.254 (.161) [a]	.048 (.079)	.091 (.056)	−.026 (−.038)
FAD Affective Involvement and Principal Anxiety CSR	.704 (.248) *	.409 (.443) *	.493 (.188) [a]	.680 (.631) *	.659 (.656) *	.093 (.086)	.054 (.068)	−.508 (−.132)	.147 (.217) *	−.028 (−.021)
FAD Behavior Control and CBCL-A	.504 (.575) *	.456 (.457) *	.204 (.210)	.756 (.736) *	.465 (.457) *	.306 (.292) *	.237 (.259) [a]	.044 (.072)	.187 (.116)	.073 (.104)
FAD Behavior Control and Principal Anxiety CSR	.713 (.251) *	.430 (.457) *	.491 (.184) [a]	.745 (.730) *	.518 (.507) *	.277 (.266) *	.046 (.062)	−.144 (−.037)	.119 (.172)	−.053 (−.039)

Note. Standardized coefficient shown in parentheses. Letters of paths refer to paths in Figure 1. CBCL-A = Child Behavior Checklist – Anxiety Scale; CSR = Clinician Severity Rating based on the Anxiety Disorders Interview Schedule for Children (ADIS-C/P); STAI = State-Trait Anxiety Inventory; CRPBI = Children's Report of Parent Behavior Inventory; FAD = Family Assessment Device.

* $p < .05$;

[a] trend for significance, $p < .06$.