

Parental Anxiety and Child Psychopathology: The Role of the Family Environment

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ABSTRACT

A sizeable proportion of adults suffer from an anxiety disorder and many of those adults are parents. Parental anxiety, as well as dysfunctional family environment, contributes to both internalizing and externalizing problems in children. Specifically, family control, conflict, and cohesion have been shown to predict child internalizing and externalizing symptoms to varying degrees. However, few studies have examined the association between all three components in the same study: parental psychopathology, family environment, and child outcomes. The current study tested the relationships among these variables in a sample of 189 children (66% male, 93% Caucasian, mean age = 10.34 years). Family conflict predicted child externalizing symptoms for both mothers and fathers, and mediated the relationship between maternal anxiety and child externalizing symptoms. Family cohesion predicted child externalizing problems based on maternal report and mediated the relationship between maternal anxiety and child externalizing symptoms. Furthermore, family cohesion moderated the relationship between maternal anxiety and child internalizing symptoms. These findings provide preliminary support for the role of the family environment in the relationship between parental anxiety and child psychopathology, and these environmental variables may be important targets of intervention in families with elevated parental anxiety.

Table of Contents

Chapter 1: Introduction	1
Chapter 2: Methods.....	9
Chapter 3: Results	12
Chapter 4: Discussion	15
References.....	21
Tables.....	31
Appendix A.....	33
Appendix B.....	34
Appendix C.....	35

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Introduction

An extensive body of research has established that psychopathology in parents is associated with a variety of negative outcomes in children, including the development of psychopathology in the children themselves. Although prevalence rates of mental disorders vary widely across samples, types of disorders, and measurement methods, epidemiologic studies conducted in the United States and Great Britain have shown that up to 40% of youth meet criteria for a mental disorder at some point during their childhood and adolescence (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Ford, Goodman, & Meltzer, 2003; Merikangas et al., 2010). Additionally, national surveys conducted in Australia and Canada found between 12 and 23% of children have a parent with a mental illness of one type or another (Bassani, Padoin, Philipp, & Veldhuizen, 2009; Maybery, Reupert, Patrick, Goodyear, & Crase, 2009).

More specifically for purposes of this study, 28.3 to 49.5% of adults are reported to suffer from an anxiety disorder and parental anxiety is associated with both internalizing (i.e., anxiety, depression) and externalizing (i.e., conduct, oppositional, and inattentive) disorders in their children (Moffitt et al., 2010). The link between parental anxiety and child internalizing disorders is strongly supported, with numerous studies finding parental anxiety to predict both child anxiety and depression. This association has been found for both sons and daughters, and for children of varying ages ranging from preschool through adolescence. Additionally, these associations have been demonstrated both longitudinally and concurrently (Burstein, Ginsburg, & Tein, 2010; Rapee, Schniering, & Hudson, 2009; Spence, Najman, Bor, O'Callaghan, & Williams, 2002; Vostanis et al., 2006; Wichstrøm, Belsky, & Berg-Nielsen, 2013).

Research considering the connection between parental anxiety and child externalizing disorders is less clear, however. Interestingly, Vostanis and colleagues (2006) found mothers' self-report of internalizing symptoms such as anxiety and depression to be predictive of conduct disorders in their offspring whereas hyperkinetic disorders were predicted by lower maternal internalizing scores. In contrast, Chronis and colleagues (2003) found maternal anxiety to be predictive of ADHD, as well as comorbid ADHD and disruptive behavior in three to seven-year-old children. Additionally, O'Connor and colleagues (2002) found sons of highly anxious mothers to demonstrate high levels of inattention and hyperactivity while daughters of highly anxious mothers were rated as having higher levels of conduct problems, and Vera, Granero, and Ezpeleta (2012) found both maternal and paternal anxiety to be related to child rule-breaking behavior in children ages eight to seventeen. However, using a sample of 48 parents (primarily mothers) with an anxiety disorder, Burstein, Ginsburg, and Tein (2010) found parental anxiety to be significantly related to both child anxiety and depression, but not child externalizing problems. Thus, overall, although the connection between parental anxiety and child externalizing disorders is mixed, there remains substantial evidence supporting the association.

Despite substantial support for the association between parental anxiety and both internalizing and externalizing symptoms in children, the mechanisms behind that association are less clear. Numerous variables have been considered as mediators (e.g., parental social support, parent-child relationship quality, child emotion regulation) or moderators (e.g., socioeconomic status, maternal support, family structure, child gender) of the relationship between parental and child psychopathology (McCarty & McMahan, 2003; Spence et al., 2002; Suveg, Shaffer, Morelen, & Thomassin, 2011); however, few researchers have examined these mechanisms for parental anxiety specifically (Borelli et al., 2005; Ginsburg, Grover, & Ialongo, 2004; Spence et

al., 2002). In addition to the mechanisms listed above, the family environment is known to play an important role in childhood outcomes, not only in the realm of psychopathology but also in academic success, self-esteem, and participation in risky behaviors (e.g., alcohol, tobacco, and drug use), as well as peer relationships (see Mounts, 2001, and Parker & Benson, 2004).

Specifically, youth with clinical problems generally report higher levels of family dysfunction, especially when they meet criteria for multiple clinical diagnoses (Guberman & Manassis, 2011; O'Neil, Podell, Benjamin, & Kendall, 2010). Although there are numerous measures of family environment, family environments are commonly conceptualized as existing along continua of overprotection/control, cohesion, and conflict.

The term over-control has been used synonymously with over-protection and restricted autonomy-granting. Regardless of the term used, when parents are excessively controlling or protective, their children may come to view the world as threatening and their abilities to cope with challenging situations may be compromised. The connection between over-protection and control and childhood anxiety is well-supported in both child and parent self-report as well as observational studies, and across a variety of age ranges (Beesedo, Pine, Lieb, & Wittchen, 2010; Edwards, Rapee, & Kennedy, 2010; Rapee, 2012). Additionally, de Wilde and Rapee (2008) found that children whose mothers were instructed to act highly protective and controlling demonstrated more overt anxiety during a speech task, regardless of whether they met criteria for an anxiety disorder before this manipulation.

Furthermore, McLeod and colleagues (2007) analyzed 47 studies which examined the relationship between parenting and childhood anxiety. They used Pearson-product moment correlations as a measure of effect size and found the parenting dimension of over-control to have a weighted mean effect size of .25, a medium effect accounting for 6% of the variance in

childhood anxiety across these studies. Moreover, the sub-dimension of restricted autonomy-granting had a weighted mean effect size of .42, a large effect. However, support for the association between over-control and anxiety is not entirely clear and varies based on the measure used as well as the informant. Specifically, some studies have found differences when behavioral and psychological control are considered separately, although both have been found to be associated with internalizing problems in children (Edwards, Rapee, & Kennedy, 2010; McClure, Brennan, Hammen, & Le Brocque, 2001).

Research looking at other components of family environments is more limited; however, the association between family conflict and cohesion and child problems has been supported by several studies. Similar to control, conflict within families has been found to relate to internalizing symptoms; although more support has been found for the association between family conflict and externalizing symptoms. Notably, as suggested by social learning theory (Bandura, 1977), in families characterized by high levels of conflict, children are exposed to aggressive and conflictual interactions which they may subsequently begin to imitate (Johnston, Gonzalez, & Campbell, 1987; Stocker & Youngblade, 1999). In addition to the parental modeling of inappropriate behaviors, family conflict is also indicative of lack of support among family members, as well as an inconsistency in discipline and structure which may further the development of externalizing behavior in children (Buehler & Gerard, 2002; Krishnakumar & Buehler, 2000).

For example, high levels of family conflict were related to maternal ratings of externalizing problems on the Child Behavior Checklist (CBCL) in 4 to 11-year-old children, as well as to both maternal and paternal ratings of conduct problems on the CBCL in 10 to 16-year-old children (Formoso, Gonzales, & Aiken, 2000; Koblinsky, Kuvalank, & Randolph, 2006;

Lucia & Breslau, 2006). Additionally, in their study of Brazilian school-aged children with and without Attention Deficit/Hyperactivity Disorder (ADHD), Pheula, Rohde, and Schmitz (2011) found family conflict to be significantly associated with the presence of an ADHD diagnosis.

In regards to cohesion, both low and high levels within family relationships have also been hypothesized to be problematic for child development. Very low levels of cohesion reflect emotional distance and lack of affiliation among family members while very high levels reflect enmeshed family relationships. However, on measures of family cohesion, higher ratings typically reflect healthy levels of cohesion rather than enmeshment (e.g., the Family Environment Scale, The Family Adaptability and Cohesion Evaluation Scales). Healthy levels of cohesion are characterized by commitment and support within the family (Barber & Buehler, 1996; Moos, 1974). These appropriate levels of cohesion within families can encourage children to discuss and process their thoughts and feelings, thus allowing them to deal effectively with both emotional (internalizing) and behavioral (externalizing) difficulties. Additionally, feeling supported by family members may further allow these children to problem solve difficulties they are experiencing, while receiving the necessary assistance from their family.

Multiple studies have supported the association between family cohesion and both internalizing and externalizing problems children. For example, children whose mothers reported high levels of cohesion on the Family Environment Scale (FES) demonstrated lower levels of both internalizing symptoms and attention problems, as rated by both their mothers and teachers (Lucia & Breslau, 2006). Also measuring cohesion using the FES, Pheula and colleagues (2011) found low levels of family cohesion to be related to ADHD-I diagnoses. Additionally, Richmond and Stocker (2006) observed family cohesion to be negatively associated with adolescents' externalizing behavior. In a longitudinal study of 580 adolescents,

low family cohesion was associated with both internalizing and externalizing disorders as measured by the Schedule for Affective Disorders and Schizophrenia in School-Age Children (K-SADS-P; Cuffe, McKeown, Addy, & Garrison, 2005).

Although negative family environments have been shown to affect children in many diverse ways, whether or how these environments are influenced by parental psychopathology is not as well researched, specifically in regards to parental anxiety. Nonetheless, multiple studies have found anxious parents to be more controlling of their children than nonanxious parents. This has been supported by both observational and child-report studies (Lindhout et al., 2006; Whaley, Pinto, & Sigman, 1999). Additionally, during structured, anxiety provoking tasks, Woodruff-Borden, Morrow, Bourland, and Cambron (2002) found anxious parents to respond to negative affect in their children by attempting to control the situation significantly more frequently than non-anxious parents. Studies examining other family environment variables (i.e., conflict and cohesion) in families of anxious parents are sparse. However, in at least one study, Turner, Beidel, Roberson-Nay, and Tervo (2003) reported that anxious parents reported significantly higher levels of conflict and lower levels of cohesion on the FES than nonanxious parents.

Overall, although the association between parental and child psychopathology and family environment and child psychopathology has been reasonably well established, few studies have considered the relationship among all three components in the same study. However, two studies have tested the mediating effects of family environment on the maternal depression and child psychopathology association. In one notable study, Burt and colleagues (2005) found the family conflict subscale of the Self-Report Family Inventory (Hampson, Beavers, & Hulgus, 1989) to mediate the relationship between maternal depression and child CBCL total (internalizing +

externalizing) scores when both measures were assessed at the same point in time. Additionally, in the same study, total scores on the Home Observation for the Measurement of the Environment scale (Bradley, Caldwell, Rock, Hamrick, & Harris, 1988) when the children were six years of age, partially mediated the relationship between maternal depression and a symptom composite measure from the K-SADS, administered when the children were 17 years of age. Notably, both of these analyses were only significant for families with sons and the variables measured child psychopathology and negative family environment broadly without considering specific dimensions of the environment or clinical symptoms.

In the second study, Elgar, Mills, McGrath, Waschbusch, and Brownridge (2006) considered the roles of parental rejection, nurturance, and low monitoring. In their sample of 4,184 parents and 6,048 children, the children reported on their parents' behavior and their own internalizing and externalizing symptoms, two years after their parents had been assessed for depression. Parental nurturance and rejection mediated the link between parental depressive symptoms and externalizing problems while parental rejection and poor monitoring mediated the link between parental depressive symptoms and internalizing problems.

In addition to these studies, Knappe and colleagues (2009) examined the additive effect of parental psychopathology (DSM-IV diagnosed depression, anxiety disorders, and alcohol use disorders) and poor parental rearing behavior and found an interaction between parental psychopathology and parental rearing (overprotection, rejection, and warmth). In their sample of over 1,000 14-17 year olds, the children were at significantly higher risk of developing social phobia when their parents were affected by an anxiety, depressive, or substance use disorder, and reported poorer parental rearing behaviors.

The current study seeks to further elucidate select family environmental variables which may influence the association between parental psychopathology and child psychopathology. Specifically, parental anxiety will be examined. Although, the relationship between parental depression and child outcomes is well-established, and at least two studies (discussed above) have supported the mediating role of parenting and family variables in this relationship, the effects for parental anxiety have not been studied at this time. Despite previous research supporting the associations between parent anxiety, family environment, and child psychopathology, no studies were identified which considered the role of parenting behavior in the relationship between parental anxiety and child outcomes.

As discussed above, parental over-control, poor family cohesion, and high levels of conflict have all been associated with negative psychosocial outcomes in children. Additionally, a few studies have found a relationship between parental anxiety and these family variables. Nevertheless, currently, the nature of the relationship between parental anxiety, family environment, and child outcomes remains unclear. Understanding the interplay among these factors can further expand our understanding of the etiology of psychopathology in children, as well as help plan interventions for children at risk for, and already demonstrating, emotional and behavioral problems.

Before proceeding to our hypotheses, it is necessary to make one additional point regarding the literature to date: the notable lack of father participation. The vast majority of studies exclusively included mothers, or only included fathers when a maternal figure was unavailable. Importantly, the current study will include both mothers and fathers, and consider the relationship among their anxiety symptoms, their report on control, cohesion, and conflict within their family, and their child's internalizing and externalizing symptoms. In line with previous

research, it is hypothesized that parental control will predict child internalizing symptoms (Hypothesis 1), family conflict will predict child externalizing symptoms (Hypothesis 2) and cohesion will predict both internalizing and externalizing symptoms (Hypothesis 3). However, given the current lack of clarity surrounding the relations between these variables and parental anxiety specifically, there is insufficient evidence to differentially support a moderating or mediating effect at this time. Therefore, the role of these variables will be explored empirically in both moderation and mediation analyses in the current study to hopefully lay the foundation for additional research that will clarify these relations.

Methods

Participants

Children and their parents participated in a comprehensive psychoeducational assessment involving intellectual and achievement testing, a clinical interview, and several self-report measures. One clinician interviewed the parent(s) and administered the parental measures described below while a second clinician separately completed the child assessment. Participants include 189 children (66% male, 93% Caucasian) from 7 to 16 years old (mean age = 10.34 years), and both their mothers and fathers. All children lived with both parents in predominantly middle-class families (mean family income = \$58,022, range = \$1,200 – 300,000). The participants presented with a wide range of internalizing (e.g., generalized anxiety disorder, separation anxiety disorder, specific phobias, major depressive disorder) and externalizing (e.g., attention deficit/hyperactivity disorder, oppositional defiant disorder, conduct disorder) disorders, as well as high rates of comorbidity (76.2% of children were diagnosed with more than one disorder). All diagnoses were based on DSM-IV criteria. The primary clinical

diagnoses of the sample are presented in Table 1. All participants were evaluated at the Child Study Center, Virginia Tech.

Measures

The Symptom Checklist-90-Revised is a 90-item self-report scale, measuring a wide range of symptoms of adult psychopathology and somatic complaints (SCL-90-R; Appendix A; Derogatis, 1983). The SCL-90-R is normed for adolescents and adults, 13 years and older, and participants rate the personal distress level of each item on a 5-point scale ranging from 0 (not at all) to 4 (extremely). Mothers and fathers completed the SCL-90-R in regards to their own personal distress. The SCL-90-R yields scores for nine primary symptom dimensions and three global indices of distress. The anxiety subscale includes 10 items and *T* scores from this subscale served as the measure of parental anxiety in this study. Derogatis, Rickles, and Rock (1976) found the anxiety subscale to have an internal consistency (Cronbach's alpha) of .85 and subsequent studies have found similar reliabilities in a variety of samples (Barker-Collo, 2003; Bonicatto, Dew, Soria, & Seghezzo, 1997).

The Family Environment Scale measures social-environmental characteristics of families using 90 true-false items that are classified into 10 subscales with 9 items each (FES; Appendix B; Moos & Moos, 1981). Both parents completed the FES and specifically, the control, cohesion, and conflict subscales were used to measure those respective domains in the current study. The control subscale measures behavioral control: the extent to which set rules are imposed and used to run family life. The cohesion subscale measures the degree of commitment, help, and support family members provide one another. The conflict subscale measures openly expressed anger, aggression, and conflict among family members. Each item endorsed as "true" received a score of one, the items for each subscale are totaled to create raw total scores, and the

raw total scores are converted to standard scores (see Appendix A in Moos & Moos, 1981).

Moos and Moos (1981) report internal consistencies (Cronbach's Alpha) of .67, .78, and .75 for the control, cohesion, and conflict scales respectively.

The Child Behavior Checklist (CBCL; Appendix C; Achenbach, 1991) is a 113-item parent-report measure of internalizing and externalizing behavior in children. Items are scored from 0 (not true) to 2 (very true) and map on to eight syndrome scale scores, six DSM-oriented scales, and three other scale scores. Raw scale scores are transformed to *T*-scores to allow for comparison with children of the same age and gender. *T*-scores on these subscales falling between 65 and 70 are considered to be in the borderline clinical range, while *T*-scores at or above 70 are in the clinically significant range. Children's internalizing behaviors were represented by the internalizing problem total score which is comprised of the anxious/depressed, withdrawn/depressed, and somatic complaints syndrome scale scores. Children's externalizing behaviors were represented by the externalizing problems total score which is comprised of the rule-breaking behavior and aggressive behavior syndrome scale scores. The CBCL is widely used and has excellent validity and reliability (Achenbach, 1991).

Analytic Plan

Moderation was tested using hierarchical regression analyses. SPSS PROCESS (Hayes, 2013) was used for all mediation analyses. Indirect effects were assessed using 5,000 bootstrap samples to estimate 95% bias-corrected confidence intervals. Specifically, confidence intervals exclusive of zero were considered supportive of significant indirect effects. Parental anxiety and the three family variables were mean centered, and child ethnicity, family income, and family size were controlled for in all analyses. Maternal and paternal-report variables were analyzed in separate models.

Results

Please see Table 2 for means and deviations of all study variables and Tables 3 and 4 for the intercorrelations among study variables.

Hypothesis 1 – Family Control and Internalizing Problems

In simple regression models, maternal report of family control did not predict maternal report of child internalizing symptoms ($B = .12, p = .21$); moreover, paternal report of family control also did not predict paternal report of child internalizing symptoms ($B = .07, p = .40$).

Moderation and mediation analyses were then explored. Hierarchical regression analyses indicated that maternal anxiety predicted child internalizing symptoms ($B = .38, p < .001$) but this relationship was not moderated by maternal report of control ($\Delta R^2 = .00, F(1, 181) = .82, p = .37$). Similar results were found for fathers; paternal anxiety significantly predicted internalizing symptoms ($B = .35, p < .001$) but a moderating effect of control was not found ($\Delta R^2 = .00, F(1, 181) = .08, p = .78$).

Regarding mediation, the indirect effect through maternal report of family control was not significant ($B = .01, CI [-.02, .05]$), thus mediation was not supported. Similarly, for fathers, the indirect effect through family control was not significant ($B = -.004, CI [-.04, .005]$).

Hypothesis 2 – Family Conflict and Externalizing Problems

In simple regression models maternal report of family conflict predicted maternal report of child externalizing symptoms ($B = .31, p < .001$); moreover, paternal report of family conflict similarly predicted paternal report of child externalizing symptoms ($B = .28, p < .001$).

Moderation and mediation analyses were then explored. Hierarchical regression analyses did not support moderating effects of family conflict for either mothers ($\Delta R^2 = .00, F(1, 181) = .00, p = .95$), or fathers ($\Delta R^2 = .00, F(1, 181) = .08, p = .78$).

Mediation was supported when examining family conflict as a mediator between maternal anxiety and child externalizing behavior while controlling for child race, family size, and family income. Mothers who reported higher levels of anxiety also reported high levels of family conflict ($B = .52, p < .001$), and those who reported higher levels of conflict reported that their children exhibited more externalizing behavior problems ($B = .25, p < .001$). The indirect effect through family conflict was significant ($B = .13, CI [.06, .22]$) and the direct effect of maternal anxiety on child externalizing behavior remained significant ($B = .25, p = .004$). This relationship did not hold for fathers, however. The direct effect of paternal anxiety on child externalizing behavior was significant ($B = .27, p < .001$), but the indirect effect through family conflict was not ($B = .03, CI [-.01, .10]$). Notably, although paternal report of family conflict similarly predicted paternal report of child externalizing symptoms, paternal anxiety did not significantly predict fathers' report of family conflict ($B = .11, p = .195$).

Hypothesis 3 – Family Cohesion and Internalizing/Externalizing Problems

In simple regression models maternal report of family cohesion did not predict their report of their child's internalizing symptoms ($B = -.08, p = .07$). Similarly, paternal report of family cohesion did not predict their report of their child's internalizing symptoms ($B = -.01, p = .87$).

Hierarchical regression analyses indicated that maternal anxiety predicted child internalizing symptoms ($B = .3731, SE = .0872, p < .001$) and this relationship was moderated by maternal report of cohesion ($\Delta R^2 = .03, F(1, 181) = 6.20, p = .01$). Specifically, at low levels of maternal anxiety, low levels of cohesion predicted higher levels of child internalizing symptoms, however this difference was not seen at high levels of anxiety. Additionally, paternal anxiety

significantly predicted internalizing symptoms ($B = .37, p < .001$) but a moderating effect of cohesion was not found ($\Delta R^2 = .00, F(1, 181) = 0.15, p = .70$).

Regarding mediation, the indirect effect through maternal report of family cohesion was not significant ($B = .01, CI [-.06, .07]$), thus mediation was not supported. Similarly, for fathers, the indirect effect through family cohesion was not significant ($B = -.01, CI [-.07, .04]$).

In simple regression models maternal report of family cohesion predicted their report of their child's externalizing symptoms ($B = -.17, p < .001$). However, paternal report of family cohesion did not predict their report of their child's externalizing symptoms ($B = -.08, p = .069$).

Hierarchical regression analyses indicated that maternal anxiety predicted child externalizing symptoms ($B = .31, p < .001$) but this relationship was not moderated by maternal report of cohesion ($\Delta R^2 = .01, F(1, 181) = 1.54, p = .22$). Similar results were found for paternal anxiety and their report of family cohesion and their children's externalizing symptoms; paternal anxiety significantly predicted externalizing symptoms ($B = .28, p < .001$) but a moderating effect of cohesion was not found ($\Delta R^2 = .00, F(1, 181) = 0.25, p = .62$).

Mediation was supported when examining family cohesion as a mediator between maternal anxiety and child externalizing behavior while controlling for child race, family size, and family income. When including family cohesion in the model, mothers who reported higher levels of anxiety reported low levels of family cohesion ($B = -.65, p < .001$), and those who reported lower levels of cohesion reported that their children exhibited more externalizing behavior problems ($B = -.12, p = .02$). The indirect effect through family cohesion was significant ($B = .08, CI [.0158, .1469]$) and the direct effect of maternal anxiety on child externalizing behavior remained significant ($B = .31, p < .001$). This relationship did not hold for

fathers, however; the indirect effect through family cohesion was not significant ($B = .02$, CI [- .02, .08])

Discussion

The present study explored the relationship between parental anxiety, family environment, and child outcomes by examining the predominantly unstudied mediating and moderating effects of family control, conflict, and cohesion in a sample of clinic-referred children.

Although both maternal and paternal anxiety predicted internalizing symptoms, control did not moderate or mediate these associations. This is not surprising in light of the finding that family control did not predict maternal or paternal report of their children's internalizing symptoms. Nonetheless, these findings are unexpected when considering the substantial evidence base supporting the influence of parental anxiety on the level of over-protective and controlling behaviors parents exhibit and of these behaviors on child psychopathology. These findings are not ubiquitous however, and the general lack of clarity may result from the lack of a clearly defined definition of family and parental control.

Over-control, over-protection, and restricted autonomy-granting are all used to describe parenting behaviors which limit the independence of a child. However, the various definitions of these variables, and the measures used to capture them, vary widely across studies. The control subscale of the FES, used in the current study, measures the general level of regulation of family members' behavior in daily life (e.g., "There is one family member who makes most of the decisions," "There is a strong emphasis on following rules in our family"). However, other studies measure controlling parental behaviors in brief interaction tasks in the lab (de Wilde & Rapee, 2008; Ginsburg, Grover, & Ialongo, 2004), or via parental-report in which parents are

asked to describe how generally over-protective they are when their children are exposed to threat or harm (Beesedo, Pine, Lieb, & Wittchen, 2010; Edwards, Rapee, & Kennedy, 2010). In addition, these terms are also used interchangeably to refer to both behavioral and psychological control. Although both behavioral and psychological control have been shown to relate to internalizing symptomatology, it appears that the association between psychological control and internalizing symptoms is stronger than that between behavioral control and internalizing symptoms (measured in the current study) (McClure, Brennan, Hammen, & Le Brocque, 2001; van der Bruggen et al., 2008). Overall, the lack of a uniform definition limits the generalizability of each independent finding, and could be contributing to overestimation of the effect of family control.

As anticipated, family conflict was found to predict child externalizing symptoms based on both maternal and paternal report. Furthermore, evidence of mediation was found for mothers. This finding extends Burt and colleagues (2005) work from maternal depression to maternal anxiety. The lack of support for a mediating effect for fathers may be due to the lack of association between paternal anxiety and family conflict. Interestingly, the one identified study which has looked at the influence of parental anxiety on family conflict predominantly included mothers (Turner, Beidel, Roberson-Nay, & Tervo; 2003). Further research replicating this work and specifically considering fathers will need to be conducted to better understand these findings.

Also, as anticipated, family cohesion was found to predict child externalizing symptoms when reported by mothers. However, this was not the case for fathers, or for internalizing symptoms for either parent. Family cohesion was found to partially mediate the relationship between maternal anxiety and child externalizing symptoms, indicating that the level of support and commitment anxious mothers provide may have an important impact on their children's

externalizing behaviors. Additionally, although family cohesion did not predict child internalizing symptoms overall, it did moderate the relationship between maternal anxiety and child internalizing symptoms. Specifically, at low levels of maternal anxiety, low levels of cohesion predicted higher levels of child internalizing symptoms; however, this difference was not seen at high levels of anxiety. Thus, it appears that family cohesion predicts child internalizing symptoms for only a subset of mothers, those personally experiencing generally low levels of anxiety. It is possible that family cohesion plays a secondary role in influencing internalizing symptoms and thus its effects are only seen at low levels of anxiety.

In the current study, the family environment did not significantly affect the relationship between paternal anxiety and child psychopathology. Overall, although studies have begun to consider the relationship among paternal psychopathology, parenting behaviors, and child psychopathology, this research is still in its infancy. Specifically, the influence of paternal depression on father's parenting behaviors has been studied (see Wilson & Durbin, 2010 for a review) but similar research considering paternal anxiety is not as well studied (Fisher, 2016). Nonetheless, Bogels and Melick (2004) found that paternal autonomy-granting/overprotection was significantly related to child anxiety and Bogels, Barnelis, and Van der Bruggen (2008) found that fathers with anxiety disorders were more controlling of their children during a discussion task than fathers without an anxiety disorder. However, the sample size in the second study was small ($n = 18$).

Additionally, although paternal anxiety was correlated with both child internalizing and externalizing symptoms in the current study, this result is not always found. For example, in a sample of families drawn from a birth cohort in Queensland, Australia, McClure and colleagues (2001) found maternal anxiety to be associated with child anxiety but did not find paternal

anxiety disorder diagnosis to be associated with child anxiety; however, their sample included only 44 fathers. Similar results were found by Pfiffner and McBurnett (2006) in a comparably small sample size; of the 142 fathers who participated in the study, only 11 met criteria for an anxiety disorder. Overall, research involving fathers is still limited both in scope and in the number of fathers included in the studies. However, research to date has increasingly identified the important role fathers play in child outcomes (Bogels & Phares, 2008; Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008; Wilson & Prior, 2011). Thus, future research would benefit from continuing to explore this topic and recruiting larger samples of fathers, particularly those with anxiety disorders or other psychopathology.

Notably, the current study did not consider the potential moderating factors of child age and gender in the relationship between the family environment and child outcomes. Age specifically may impact this relationship as the family environment may be more critical in the lives of younger children who are more dependent on their parents than older children and adolescents. Thus, variations in the family environment, particularly poorer family functioning, may have a larger impact on the mental health outcomes of younger children. Gender also may influence the relationship between the family environment and child outcomes as there are differences between boys and girls in both the nature and severity of psychopathology as well as how they may respond to family influences. For example, girls typically demonstrate higher levels of anxiety sensitivity than boys and thus may be more susceptible to poorer family functioning (Muris, Schmidt, Merckelbach, & Schouten, 2001; Silverman, Goedhart, Barrett, & Turner, 2003). Furthermore, parents may parent girls and boys differently. For example, parents tend to execute more control with girls than boys (Leaper, 2005). This could potentially lead to a ceiling effect for girls although the relationship between parental anxiety and control and child

outcome could remain noteworthy for boys. Overall, exploring these child characteristics as potential moderators of the relationships discussed in the current study is an important area of future research.

This study is not without limitations. A noteworthy weakness of the study is the limited generalization of the findings due to a sample of largely middle class, Caucasian, clinic-referred families. Furthermore, only two-parent families were included in order to best assess the differing relationships between maternal and paternal anxiety on child outcomes. However, as 35% of children in the United States are reported to live in single-parent households, similar analyses should be conducted within single-parent families in order to further generalize the findings (The Annie E. Casey Foundation; 2014).

Additionally, the current sample was comprised of children who were being assessed for a wide range of internalizing, externalizing, developmental, and cognitive disorders, and the majority of children met criteria for more than one disorder. Because internalizing and externalizing symptom levels were measured by the CBCL, these scores captured a wide range of symptoms in children who both did and did not meet criteria for a clinical diagnosis of an internalizing or externalizing disorder. Thus these findings apply to internalizing and externalizing symptomatology broadly and future studies should consider whether these relationships explicitly hold for children meeting criteria for clinical diagnoses (i.e. in samples of children diagnosed with internalizing or externalizing disorders).

A second limitation includes the reliance on purely parental-report data. Future research would benefit from using a multi-informant (e.g., include the child's report of his/her internalizing symptoms) and multi-method (e.g. observation of family environment and parenting variables) approach. Importantly, Burt and colleagues (2005) and Elgar and colleagues

(2006) found support for mediation when the family environment variables were measured by both single-informant, and multi-informant and multi-method approaches. The use of multiple measurement methods strengthened their findings and it will be important for future studies to extend beyond single-informant data wherever possible. In addition to all data being parental-report in the current study, it was collected at a single timepoint, requiring cautious interpretation of mediational analyses (Maxwell, Cole, & Mitchell, 2011). The mediating effects of family conflict and family cohesion support the need for longitudinal data that could further explore these effects. One additional limitation relating to the nature of the data results from the lack of item-level data in this re-analysis of an existing data set which subsequently prevents the calculation of internal consistency scores. Although previous research has found all measures and subscales used in the current study to have appropriate levels of internal consistency, the lack of internal consistency scores for the current sample limits the interpretation of the findings. Despite these limitations, the present study provided beginning support for the role of the family environment in the relationship between parental anxiety and child psychopathology, particularly for mothers. Early interventions targeting the modification of these family variables in anxious parents could have important positive outcomes on the children of these parents. Because of this, future research should consider other common family environment and parenting variables that were not examined in this study (e.g., parental warmth, positive involvement). Although the biological transmission of anxiety from parent to child is well-known, unlike biological factors, the family environment can be directly targeted in psychosocial treatments. This potential to mitigate some of the risk experienced by children of anxious parents supports the need for further research of these modifiable variables.

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Table 1.
Primary Diagnoses of the 189 Participants

Diagnoses	<i>n</i>
Anxiety Disorders	41
Mood Disorders	7
PTSD and Adjustment Disorders	8
OCD	2
ADHD	72
ODD and CD	13
Specific Learning Disorders	20
Autism Spectrum Disorder	11
Mild Intellectual Disability	2
No Diagnoses Assigned	13

Note. PTSD = Posttraumatic Stress Disorder; OCD = Obsessive-Compulsive Disorder; ADHD = Attention-Deficit/Hyperactivity Disorder; ODD = Oppositional Defiant Disorder; CD = Conduct Disorder

Table 2.
Variable Means and Standard Deviations

	<i>M(SD)</i>	
	Mothers	Fathers
Parental Anxiety	49.06(10.37)	50.67(10.68)
Family Control	53.92(9.80)	53.67(10.14)
Family Conflict	50.33(12.83)	50.89(12.10)
Family Cohesion	51.28(17.23)	49.48(15.81)
Child Internalizing Symptoms	59.77(11.49)	57.17(11.30)
Child Externalizing Symptoms	58.62(11.58)	57.02(10.89)

Table 3.
Partial Correlations Among Study Variables (Controlling for Child Ethnicity, Family Income, and Family Size)

	1	2	3	4	5	6
1. Parental Anxiety	–	-.05	.10	-.28***	.34**	.30***
2. Family Control	.17*	–	.07	.18*	.06	.14
3. Family Conflict	.41***	.15*	–	-.41***	.24**	.37***
4. Family Cohesion	-.37***	-.03	-.61***	–	-.05	-.16*
5. Child Internalizing Symptoms	.32***	.09	.24**	-.13	–	.52***
6. Child Externalizing Symptoms	.33***	.10	.36***	-.27***	.51***	–

Note. Intercorrelations for paternal variables are presented above the diagonal and intercorrelations for maternal variables are presented below the diagonal.

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.

Partial Correlations Among Maternal and Paternal Report of Study Variables (Controlling for Child Ethnicity, Family Income, and Family Size)

	1f	2f	3f	4f	5f	6f
1m. Parental Anxiety	.38***	.01	.31***	-.39***	.19**	.26***
2m. Family Control	-.10	.39***	-.01	-.04	-.01	.03
3m. Family Conflict	.15*	-.09	.58***	-.39***	.11	.29***
4m. Family Cohesion	-.22**	.23**	-.41***	.52***	.04	-.17*
5m. Child Internalizing Symptoms	.17*	-.00	.20**	-.07	.55***	.36***
6m. Child Externalizing Symptoms	.21**	.07	.39***	-.21**	.36***	.78***

Note. 1m – 6m = Maternal report of study variables; 1f – 6f = Paternal report of study variables

* $p < .05$, ** $p < .01$, *** $p < .001$

Appendix A

Symptom Checklist-90-R

Derogatis, L. R. (1983). SCL-90-R administration, scoring, and procedures manual II. Towson, MD: Clinical Psychometric Research.

Available for purchase at:

<http://www.pearsonclinical.com/psychology/products/100000645/symptom-checklist-90-revised-scl-90-r.html>

Appendix B

Family Environment Scale

Moos, R. H., & Moos, B. S. (1981). Manual for the family environment scale. Palo Alto, Calif.: *Consulting Psychologists Press*, 50, 33-56.

Available for purchase at:

<http://www.mindgarden.com/96-family-environmentscale#horizontalTab1>

Appendix C

Child Behavior Checklist

Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 profile* (p. 288). Burlington, VT: Department of Psychiatry, University of Vermont.

Available for purchase at:

<http://store.aseba.org/>