

Family Factors in the Development, Treatment, and Prevention of Childhood Anxiety Disorders

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Abstract It is now widely accepted that anxiety disorders run in families, and current etiological models have proposed both genetic and environmental pathways to anxiety development. In this paper, the familial role in the development, treatment, and prevention of anxiety disorders in children is reviewed. We focus on three anxiety disorders in youth, namely, generalized, separation, and social anxiety as they often co-occur both at the symptom and disorder level and respond to similar treatments. We begin by presenting an overview of a broad range of family factors associated with anxiety disorders. Findings from these studies have informed intervention and prevention strategies that are discussed next. Throughout the paper we shed light on the challenges that plague this research and look toward the future by proposing directions for much needed study and discussing factors that may improve clinical practice and outcomes for affected youth and their families.

Keywords Children · Anxiety · Family · Parenting · Treatment · Prevention

Anxiety disorders in children are among the most common psychiatric illnesses with prevalence rates averaging 10% of the youth population (Costello et al. 2004, 2005; Velting et al. 2002). These illnesses confer significant impairment in several domains of functioning. For instance, anxious children have academic difficulties (with under

performance, attendance, and classroom participation), struggle in social situations (making and maintaining friendships), experience conflict and disruption at home (with parents and siblings), and suffer personal distress that negatively impacts their self-image (e.g., Greco and Morris 2004; see Muroff and Ross 2011 for a review). The mean age of the onset of these illnesses is during early childhood (Kessler et al. 2005). Retrospective reports from adults and longitudinal studies of youth indicate that these disorders are chronic and, if untreated, increase the risk for adult anxiety, depression, substance abuse, and suicide attempts (e.g., Beesdo et al. 2007; Bittner et al. 2007; Boden et al. 2007; Gregory et al. 2007; Pine et al. 1998). In addition to the psychosocial impact of anxiety disorders, there is a high economic burden with the cost of treating these disorders among adults estimated to be \$42.3 billion annually (Greenberg et al. 1999). Given the high personal and economic burden associated with these disorders, identifying causes and effective intervention strategies are vital.

Similar to many psychiatric illnesses, anxiety disorders run in families and etiological models of child anxiety have identified both genetic and environmental pathways to disease expression. This paper focuses on the familial role in the development, treatment, and prevention of anxiety disorders in children. Two decades of active research have propelled the field forward, leading to new discoveries with respect to etiology and intervention. New data are rapidly emerging, and new technologies (e.g., fMRI and computer-assisted neurocognitive assessments) are poised to produce further breakthroughs in understanding many aspects of child anxiety.

To identify relevant published studies for inclusion in this review, literature searches were completed using the PsycINFO database. Key terms related to child anxiety (e.g., “child anxiety,” “child anxiety disorders,” “child

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social phobia,” and “child social anxiety disorder”) were paired with key terms related to each aspect of family environment included in this review. For example, a search was conducted by pairing the terms “child anxiety disorder” with each topic (e.g., “genetics,” “heritability,” “attachment,” “behavioral inhibition,” “parenting behaviors,” “parental control,” “family environment,” and “cohesion,” etc.). In addition, citations from published review papers were cross-referenced to identify additional papers. The full-text version of each paper was reviewed to determine relevance. To summarize our findings, we begin by providing a descriptive overview of a broad range of family factors associated with the etiology and/or maintenance of anxiety disorders. Findings from these studies have informed intervention and prevention strategies that are discussed next. Throughout the paper, we shed light on the challenges that plague this research, propose directions for much needed research, and discuss the clinical implications for affected youth and their families. In contrast to previously published papers that have reviewed the relationship between family factors and child anxiety, this paper defines family factors more broadly (e.g., includes sibling relations) and discusses the relevance of these factors to both prevention and treatment.

Heritability: Anxiety Runs in Families

Family aggregation studies assessing the prevalence of anxiety disorders in the offspring of anxious parents (i.e., top-down studies) or in the parents of anxious youth (bottom-up studies) reveal higher rates compared to families in which neither child nor parent has an anxiety disorder (e.g., Biederman et al. 1991; Hudson et al. 2011; Last et al. 1987, 1991; Livingston et al. 1985; Turner et al. 1987). For instance, Turner et al. (1987) compared the rates of anxiety disorders in the offspring (7–12 years old) of parents with anxiety disorders ($n = 16$), parents with dysthymia ($n = 14$), and parents with no psychiatric disorder ($n = 13$). Based on diagnostic interviews, they found that children of parents with anxiety disorders (44%) were 7 times more likely to be diagnosed with an anxiety disorder compared to children of parents with no psychiatric disorder (8%) and twice as likely to have an anxiety disorder compared to children of parents with dysthymia (22%). Although their sample was relatively small, the findings are consistent with numerous studies using larger samples.

While these studies are helpful in identifying family aggregation, they do not explain the mechanisms by which family influences anxiety development or the relative contributions of genetic and environmental factors. Examination of genetic and environmental influences

comes from studies of twins and adoptees. Similar to the family aggregation studies, this literature has several methodological limitations including variations in how anxiety was defined (e.g., fearfulness versus a diagnosis of anxiety disorder), what specific anxiety disorders were examined, and the measurement strategies used to assess anxiety symptoms and diagnosis. Despite these methodological shortcomings, recent reviews (Eley and Gregory 2004; Gregory and Eley 2007) estimate that genes account for approximately 30% of the variance in child anxiety while shared environments (i.e., factors that are similar for family members such as socioeconomic status) explain approximately 20% of the variance. Non-shared environments (i.e., factors that are unique to each individual such as peer group influences) and error explain the remaining 50% of the variance in child anxiety.

Additional research supporting the heritability of anxiety comes from studies examining the genetic basis of temperamental, personality, and cognitive vulnerabilities that purportedly mediate the relationship between genes and anxiety disorders. Behavioral inhibition (BI), for example, is a temperamental style characterized by increased physiological arousal and fear of novel stimuli (Kagan et al. 1984). BI is considered a risk factor for the development of anxiety disorders (Turner et al. 1996; van Brakel et al. 2006) and has been shown to have a strong genetic basis (Dilalla et al. 1994; Robinson et al. 1992). Personality factors, such as neuroticism, shyness, and emotionality, have also demonstrated a moderate to strong genetic basis and have been linked with anxiety disorders (Saudino et al. 2000; Thapar and McGuffin 1996). Finally, anxiety sensitivity, which refers to beliefs that anxiety symptoms will have devastating social, mental, or physical consequences, has been identified as a cognitive risk factor for the development of anxiety disorders (Reiss 1987, 1991; Reiss and McNally 1985). It is estimated that nearly half of the variance in anxiety sensitivity is accounted for by genes (Stein et al. 1999). These findings highlight the complexity of anxiety genetics research and suggest that there are multiple pathways for genes to influence phenotypic anxiety. The vulnerability factors reviewed here are examples of indirect pathways.

The next wave of heritability studies will examine ways in which genes and the environment interact with one another and influence the risk pathways of anxiety development. Research that clarifies which environmental factors confer the greatest risk to children who are genetically vulnerable (via gene-environment interactions) as well as the mechanisms that potentiate these interactions will enhance early detection and intervention for youth at risk. In this vein, Lau and Pine (2008) suggest further examination of specific brain functions and neurocognitive processes such as threat bias and maladaptive information

processing as these factors may help clarify processes underlying gene–environment interactions. In addition, future investigations of anxiety heritability will employ molecular genetics to identify associations and linkages with specific genes or gene segments. Advances in anxiety genetics research and discoveries that will facilitate decoding the genetic basis of anxiety disorders will produce innovative avenues for early identification, as well as novel methods of prevention and treatment for these disorders (Eley and Gregory 2004; Smoller et al. 2009).

Nonetheless, in light of the modest genetic contribution, etiological models of anxiety must consider other environmental factors that confer risk. Given that the family environment is critical for children for an extended period of time (Henderson 1980), researchers have attempted to uncover aspects of the family that may help explain the development of child anxiety. In the following sections, we briefly summarize the findings, limitations, and challenges of this literature including parent–child attachment, temperament, parenting behaviors, and family environment characteristics that may give rise to the development and/or maintenance of child anxiety.

Attachment and Temperament

The quality of the parent–child bond, referred to as attachment, has been theorized to play a role in the development of anxiety disorders. Specifically, it has been hypothesized that insecurely attached children have greater risk for developing anxiety disorders in general and social anxiety specifically (Bohlin et al. 2000; Brumariu and Kerns 2008, 2010). Theoretically, it is posited that early experiences with unpredictable caregiver responsiveness lead to chronic vigilance, distress, and fear of potential abandonment, thus impacting future social relationships (Bowlby 1973; Cassidy and Berlin 1994; Manassis et al. 1994, 1995; Shamir-Essakow et al. 2005). Numerous studies have found that an insecure attachment is associated with elevated anxiety symptoms (Bar-Haim et al. 2007; Muris et al. 2000; Roelofs et al. 2006; van Brakel et al. 2006) and higher rates of anxiety disorders (Manassis et al. 1994, 1995; Warren et al. 1997). A recent meta-analysis of 46 studies reported an overall medium effect size ($r = .30$) and concluded that there is a significant but moderate relationship between an insecure attachment and child anxiety (Colonnesi et al. 2011). In a seminal study spanning 16 years, Warren et al. (1997) classified the attachment style of 172 twelve-month-old infants using the Strange Situation Procedure (Ainsworth et al. 1978). Then, at age 17.5 years, adolescents were assessed using the Schedule for Affective Disorders and Schizophrenia for School-Age Children (Orvaschel et al. 1982) and classified

as securely (57.9%), avoidantly (22.6%), or ambivalently attached (19.5%). Results indicated that 15% ($n = 26$) of the total sample of adolescents had at least one current or past anxiety disorder. Based on attachment style, 12% ($n = 11$) of those with a secure attachment, 16% ($n = 6$) with an avoidant attachment, and 28% ($n = 9$) of those with an ambivalent attachment developed an anxiety disorder. Furthermore, an ambivalent attachment predicted childhood anxiety disorders even after accounting for maternal anxiety and temperamental variables. While these findings suggest that an insecure-ambivalent attachment style is associated with developing an anxiety disorder, the majority of youth classified as insecurely attached (70%) did not develop an anxiety disorder.

Understanding the risk associated with an insecure attachment is complicated by the co-occurrence of attachment with other predisposing factors that impact the parent–child relationship and subsequent child adjustment, such as BI and parental psychopathology. BI has been shown to predict anxiety symptoms over time (Mian et al. 2011) as well as anxiety disorders in general (Biederman et al. 2001; Turner et al. 1996; van Brakel et al. 2006) and social anxiety in particular (Biederman et al. 2001; Chronis-Tuscano et al. 2009; Hirshfeld-Becker et al. 2007; Muris et al. 2011). Manassis and Bradley (1994) proposed a model of anxiety development in which temperament and attachment equally confer risk, but the level of risk is greater for children who have both BI and an insecure attachment. More recently, Hudson et al. (2011) evaluated various risk factors for child anxiety. Specifically, they examined the relationships among child anxiety and BI, attachment, maternal anxiety, and parenting behaviors including overprotection, warmth, and criticism in a sample of 202 preschool-aged children (mean age = 4 years old). Based on parent self-report and tasks rated by independent observers (IOs), findings revealed that, compared to uninhibited children, children classified as BI were more likely to have an anxiety disorder, an insecure (ambivalent) attachment, and had mothers who were more likely to have an anxiety disorder and demonstrate negative parenting behaviors (overprotective, lacking in warmth, high in criticism). Moreover, maternal negativity (low warmth, high criticism) added to the prediction of child anxiety symptoms, even after controlling for maternal anxiety and BI, suggesting that these parenting behaviors may increase the risk of anxiety regardless of the child's temperamental status. Although an insecure attachment and high levels of parental overprotection were associated with child anxiety diagnosis, the relative contribution of these factors to the prediction of anxiety diminished after controlling for BI and maternal anxiety. These findings suggests that, in young children, BI and parenting behaviors characterized by low levels of warmth and high levels of criticism may

increase the risk for developing anxiety and that BI may be a more robust predictor of anxiety compared to attachment.

Challenges and Future Directions

Overall, the available evidence indicates that children with BI and/or an insecure attachment may have an elevated risk of developing an anxiety disorder, although there are mixed findings and the relationship among these (and other) risk factors remains poorly understood. A specific challenge to this literature is the absence of data on the directionality of the relationship. It is likely that child characteristics, such as temperament, personality, or anxiety level, shape parenting behavior and the parent–child bond (Hudson et al. 2009; Moore et al. 2004; Whaley et al. 1999). Moreover, the extent to which BI, attachment, and anxiety are unique is also unclear—BI is associated with anxious arousal and avoidance, and an insecure attachment is associated with limited frustration tolerance, difficulty being soothed, and distress when exploring the environment (Manassis 2001)—all characteristics of excessive anxiety. Despite these challenges and limitations, signs of BI and characteristics of an insecure attachment in a child are red flags for future risk of an anxiety disorder; thus early identification and intervention seem warranted. Indeed, there is emerging evidence that children with BI respond to early intervention strategies aimed at reducing anxiety symptoms (Rapee et al. 2005) and that attachment-based treatment strategies aimed at improving the quality of the parent–child attachment may be effective in reducing child anxiety (Choate et al. 2005; Siqueland et al. 2005).

Parenting Behaviors

In addition to the quality of the parent–child bond, specific parenting behaviors have been linked to higher levels of child anxiety. Reviews of these studies have generally examined parents of clinically anxious youth. Among the parenting variables examined, parental overcontrol has shown the strongest link to the levels of child anxiety (McLeod et al. 2007; Rapee 1997; Wood et al. 2003). Associations between child anxiety and other parental behaviors such as warmth and anxious modeling are mixed. The magnitude of the relationship between parenting behaviors and child anxiety is modest, with effect sizes ranging from .06 to .42 and accounting for <1 to 18% of variance in child anxiety (McLeod et al. 2007). A challenge to synthesizing this literature has been the inconsistencies in methodology including the ways in which parenting behaviors have been defined and measured. Furthermore, because most studies examining parenting behaviors failed to account for level of parent and child anxiety

simultaneously, the nature and direction of the relationships among parent anxiety, child anxiety, and parenting behaviors remain unclear. Below, we briefly review the literature on the most commonly researched parenting behaviors and conclude with recommendations for future research.

Overcontrol

The term overcontrol has been used synonymously with overprotection, restrictive behaviors, and behaviors that are associated with less autonomy granting, leading to inconsistencies and confusion when interpreting findings. Nonetheless, these behaviors are believed to increase child anxiety by restricting children's opportunities to experience new and challenging situations and minimizing the development of mastery and confidence in the ability to cope with challenges. Recent data provide at least indirect support for this theory (Affrunti and Ginsburg 2011). Mothers of anxious, compared to non-anxious, children (regardless of maternal anxiety status) are more likely to be perceived by their children (Bögels and van Melick 2004; McClure et al. 2001; Messer and Beidel 1994) and IOs (Barrett et al. 2005; Edison et al. 2011; Moore et al. 2004; Siqueland et al. 1996; Whaley et al. 1999) as overcontrolling and restrictive. There is newly emerging evidence demonstrating that parental overcontrol predicts later anxiety symptoms in children (Edwards et al. 2010; Ginsburg et al. 2004) and anxiety disorders in adolescents/young adults (Beesdo et al. 2010). Thus, fairly strong evidence supports the hypothesis that parental overprotection is associated with higher levels of child anxiety (McLeod et al. 2007; Wood et al. 2003).

When subdimensions of parental overcontrol were analyzed (McLeod et al. 2007), findings revealed that lower levels of autonomy granting and higher levels of overinvolvement explained 18% of the variance in child anxiety. A meta-analysis by van der Bruggen et al. (2008) found that while higher levels of child anxiety were associated with higher levels of parental overcontrol (effect size $d = .58$), a number of factors moderated this association. Specifically, higher levels of parental overcontrol were more strongly related to female gender for the child, higher socioeconomic status, school-aged children, and discussion tasks (compared to performance tasks). In contrast, parent anxiety was not associated with overcontrol, suggesting that parental overcontrol may be a consequence of child, rather than parent, anxiety. This informative review was limited to parental overcontrol. Similar analyses are needed for other key parenting behaviors.

Parental Warmth

Parental warmth refers to verbal and non-verbal behaviors that demonstrate positive affect, affection, and acceptance of the

child. Children of parents who do not attend to their emotional needs may lack a sense of support and affiliation that may increase anxiety. Overall, the evidence supporting the association between parental warmth and anxiety is modest and inconsistent (McLeod et al. 2007; Wood et al. 2003). In fact, McLeod and colleagues (2007) determined that parental warmth was weakly associated with child anxiety and explained less than 1% of variance in anxiety across studies. Inconsistent findings may be due to variability across informants. In one study that included multiple informants, Siqueland et al. (1996) obtained child, parent, and IO ratings of parental warmth in a sample of anxious ($n = 17$) and non-anxious ($n = 27$) children and their parents. Anxious children described their parents as significantly less warm, compared to non-anxious children; however, no differences were detected based on parent report or IO ratings. It is possible that anxious children may have a distorted or negative view of their parents, reflecting a reporting bias. Nonetheless, others have reported that parents of children with anxiety disorders were less warm based on IO ratings (Hudson et al. 2011; Hudson and Rapee 2001), and for others, this relationship was only apparent when both the parent and child were anxious (Whaley et al. 1999). The reciprocal relationships among parent and child characteristics and warmth require further exploration; however, in light of the overall modest effect, other parenting and family factors should be evaluated as they may be more robust predictors of child anxiety.

Criticism and Rejection

Parental criticism and rejection refer to behaviors that are overly hostile, disapproving, and dismissing of the child. It is hypothesized that parental criticism and rejection negatively impact the child by increasing parent–child conflict, reducing a child’s sense of self-competence and self-worth, and ultimately increasing the child’s level of anxiety (Ginsburg and Schlossberg 2002; Rapee 1997). Indeed, several studies have found that higher levels of parental criticism and rejection are associated with anxiety disorders (Hudson et al. 2011; Lieb et al. 2000) as well as higher levels of anxiety symptoms based on child report (Lieb et al. 2000), parent report (Hibbs et al. 1993), and IO ratings (Dumas et al. 1995; Festa and Ginsburg 2011; Hudson and Rapee 2001). Furthermore, in a longitudinal study, Ginsburg et al. (2004) found that IO ratings of maternal criticism predicted higher levels of child anxiety symptoms 6 years later. This was true for anxious, but not non-anxious, mothers—a finding which highlights the need to assess anxiety in parents and children. Overall, however, reviews have concluded that the association between parental criticism/rejection and child anxiety is relatively small, accounting for only 4% of the variance in child anxiety (McLeod et al. 2007; Wood et al. 2003).

Anxious Modeling

Parental anxious modeling refers to a parent’s tendency to demonstrate anxious thoughts, feelings, or avoidant behaviors in front of the child. It is theorized that parents who model anxious behaviors may inadvertently teach their children to be anxious and avoidant (Beidel and Turner 1997; Bögels and Brechman-Toussaint 2006; Capps et al. 1996; Fisak and Grills-Taquechel 2007; Rapee 2002). Correlational studies demonstrate a positive relationship between parent-reported modeling of anxious behavior and child-reported fears (Muris et al. 1996) as well as positive correlations between child reports of parental modeling and anxiety symptoms in non-clinically anxious children (Grüner et al. 1999; Muris and Merckelbach 1998; Roelofs et al. 2006; van Brakel et al. 2006). However, results are mixed, and there are considerable inconsistencies across studies, making it difficult to ascertain the magnitude of the association between parental modeling and child anxiety (see Fisak and Grills-Taquechel 2007 and Wood et al. 2003 for reviews). Nonetheless, some hypothesize that parents who model social inactivity/withdrawal in particular (perhaps due to their own desire to avoid social anxiety-provoking situations) may inadvertently increase social anxiety and avoidance in their children. Indeed, several studies have demonstrated that, compared to normal children, youth with social phobia report lower levels of family sociability (Bögels et al. 2001; Caster et al. 1999; Johnson et al. 2005). It is possible that children growing up in a socially isolated environment have limited opportunities to habituate to social interactions and to develop a sense of competence and mastery, thereby increasing their level of social anxiety (Fisak and Grills-Taquechel 2007). Recent findings also suggest that children with social difficulties (i.e., poor friendship quality and deficient social skills) are at greater risk for peer victimization that could further increase anxiety (Crawford and Manassis 2011).

In addition, higher levels of parent anxious communication are associated with child anxiety disorders (Barrett et al. 1996; Chorpita et al. 1996; Dadds et al. 1996; Shortt et al. 2001). One form of anxious communication that has received much empirical attention is parent–child transmission of threat bias when interpreting ambiguous stimuli. It is well established that anxious, compared to non-anxious, children are more likely to interpret ambiguous situations as threatening (Barrett et al. 1996; Bögels et al. 2003; Cannon and Weems 2010; Chorpita et al. 1996; Hadwin et al. 2006; Waters et al. 2008). Early investigations suggested that parents may play a role in the development of children’s threat bias by modeling, via verbal and non-verbal communication, their own threat biases and avoidant tendencies (Barrett et al. 1996; Chorpita et al. 1996). For instance, using an experimental design, Barrett et al. (1996) presented clinically anxious and non-anxious

children with ambiguous situations and asked them to provide an interpretation and response solution for each situation. Two situations were selected for family discussions, following which children were asked for their final solution. Compared to their non-anxious counterparts, anxious children perceived ambiguous situations as more threatening and demonstrated a strong preference for avoidant responses. Furthermore, for anxious children, avoidant responses dramatically increased following family discussion, and their parents were more likely to reward and reciprocate avoidant responses (Dadds et al. 1996). Recent findings suggest that parental level of anxiety may explain the positive correlations between parent and child threat bias (Lester et al. 2009). Although others have not found support for the hypothesis that family discussion enhanced children's preference for avoidant responses (Bögels et al. 2003; Cobham et al. 1999), overall findings suggest that aspects of parent–child communication may play a role in the transmission of threat bias (and subsequent anxiety) from parent to child. Taken together, this research provides some evidence that children may emulate the anxious behaviors and cognitions they observe in their parents.

Given that the extant literature is largely correlational, conclusions regarding the causality between parental modeling and child anxiety cannot be made. Of the few studies that have employed an experimental approach, infants and toddlers have been the focus. For example, de Rosnay et al. (2006) found that infant responses to a stranger mirrored the behavior of their mothers such that infants demonstrated more fear and avoidance of the stranger when their mother had previously shown fearful (as opposed to friendly or neutral) behavior toward the stranger. Similarly, Gerull and Rapee (2002) found that toddlers demonstrated more fear and avoidance of stimuli that were paired with a negative (rather than a neutral or positive) maternal facial expression. In the one study that included school-aged children (8–12 years old), Burstein and Ginsburg (2010) randomly assigned healthy child–parent dyads ($N = 25$) to two experimental conditions: an anxiety-provoking condition in which parents behaved anxiously before the child completed a spelling test and a non-anxiety-provoking condition in which parents behaved relaxed and confident before the spelling test. Findings revealed that children reported higher levels of anxiety and an increased desire to avoid the spelling test when parents expressed anxiety. Although replication with larger and clinically anxious samples is necessary, results from the extant experimental studies suggest that parents may directly impact the development of child anxiety by modeling such behavior.

Parental Cognitions

A primary feature of anxiety disorders in childhood is the presence of cognitive distortions, including negative self-

evaluations. A number of studies have supported a link between parental cognitions and child negative self-evaluations and anxiety. Specifically, parent's negative beliefs about their child's disposition, coping ability, and potential for success have been linked with children's low expectations for successful coping and higher levels of anxiety symptoms (Wheatcroft and Creswell 2007) and disorders (Kortlander et al. 1997). Studies have further demonstrated that parents of children with anxiety disorders report more negative expectations of their child's ability (skill, coping ability, and/or likelihood of experiencing distress) than do parents of non-anxious children (e.g., Barrett et al. 1996; Kortlander et al. 1997; Micco and Ehrenreich 2008; Shortt et al. 2001). Although maternal negative expectations predict higher levels of child anxious cognitions concurrently (Micco and Ehrenreich 2008) and over time (Creswell et al. 2006), the magnitude of these associations and the mechanisms by which parental cognitions influence child anxiety are poorly understood. Emerging evidence suggests that parental cognitions, characterized by beliefs that child anxiety symptoms are harmful, may mediate the relationship between parent and child anxiety (Francis and Chorpita 2011); however, the influence of these beliefs on parent behavior has not been assessed. Kortlander et al. (1997) hypothesized that when anxious children demonstrate difficulties with coping, their parents may learn to expect poor coping in the future regardless of child behavior and attempt to prevent distress by engaging in overprotective or overcontrolling behaviors. Such parenting behaviors may unwittingly decrease children's opportunities to learn how to cope with challenges, reduce their overall sense of self-efficacy, and increase anxiety. Becker and Ginsburg (2011) found that anxious, compared to non-anxious, mothers were more likely to expect their child to experience distress during a social-evaluative task. However, maternal expectations did not predict child distress, coping, or performance during the task. On the other hand, children's negative self-evaluations were associated with maternal overcontrol and anxious behaviors, suggesting that maternal expectations/cognition may play a role in child anxiety but only when they are conveyed to the child verbally or behaviorally. Additional studies that directly test this hypothesis are needed to shed light on the relationship between parental expectations, behavior, and child anxiety.

Parental Anxiety and Parenting Behavior

Because of the high rate of anxiety disorders in the offspring of anxious parents and the hypothesis that anxious parents may be more susceptible to parenting stress, thereby increasing their use of “anxiety-enhancing” parenting behaviors, a number of researchers have examined the behavior of anxious parents in relation to child anxiety

(Grüner et al. 1999; Lieb et al. 2000). In general, these studies provide only limited support for the claim that anxious, compared to non-anxious, parents tend to be overcontrolling, less warm, and model more anxious behavior (Bögels and Brechman-Toussaint 2006; Drake and Ginsburg 2011; Grüner et al. 1999; Wood et al. 2003). Indeed, although parental anxiety may influence parenting behaviors in some cases, there is emerging empirical evidence that higher levels of child anxiety evoke certain parenting behaviors (Hudson et al. 2009; Moore et al. 2004; Whaley et al. 1999). Future studies are needed to clarify the role of child anxiety in shaping parental behavior.

Challenges and Future Directions

Methodological variations across studies in terms of informant, measurement technology, child and parent characteristics (e.g., diagnostic status), as well as a lack of consensus regarding definitions of key parenting constructs, present challenges for the study of parenting behaviors and child anxiety. To address these challenges, definitions of key constructs need to be operationalized and paired with reliable measurement techniques that can be administered to multiple informants in order to standardize the behaviors under investigation and obtain data from multiple sources. A theoretically based and empirically derived system of assessing a broad range of well-defined parenting constructs across multiple informants using multiple methods would enhance the existing nomenclature and facilitate replication. In addition, future studies will need to examine a wider array of parenting behaviors such as intrusiveness, disciplinary practices, and coercive patterns of parent–child interaction. The interaction among parenting behaviors has yet to be explored, and to date, the majority of studies have examined mothers and not fathers, though a small body of this literature is emerging (Bögels and Phares 2008; Bögels and van Melick 2004; Hudson and Rapee 2002). Additional studies employing a prospective design with moderator/mediator analyses are needed to assess the direction of effects, the impact of parenting behaviors at critical developmental time periods, and the mechanisms by which these behaviors may influence child anxiety.

Family Environment

In addition to the parenting behaviors reviewed above, specific characteristics of the family environment have been explored in relation to the development and/or maintenance of child anxiety. These characteristics include a broad range of dimensions that reflect the functioning of

the family structure, the nature of relationships within the family, and how the family copes with stressors. Few studies have directly examined the relationship between dimensions of family environment and child anxiety. Of the studies that have been conducted, there is some evidence that certain family factors may be associated with higher levels of child anxiety; however, these findings are inconsistent across studies, and the magnitude of these associations is unclear. Nonetheless, there are a few dimensions of family environment that have been proposed as potential factors associated with the development of child anxiety that warrant further study, and these are discussed below.

Cohesion

Family cohesion refers to the extent of interconnectedness and affiliation among family members. Extremes of cohesion in either direction are theorized to be problematic for child development. Specifically, very low cohesion reflects estranged, emotionally disconnected relationships, and children raised in such disengaged families may experience a lack of support and warmth which could increase child anxiety. Alternatively, very high cohesion, which is characterized by fused and enmeshed family relationships (Bowen 1978; Peleg-Popko and Dar 2001), may also increase child anxiety because enmeshed families are associated with higher levels of parental overprotection and limited opportunities for children to experience challenges and develop coping skills (Barber and Buehler 1996). Studies have found that parents' reports of low (Stark et al. 1990) and high (Peleg-Popko and Dar 2001; Teichman and Ziv 1998) levels of cohesion were related to child anxiety symptoms, general fearfulness, social avoidance, and fear of negative evaluation in community samples of youth. These findings, however, were not replicated with samples of clinically anxious youth (Messer and Beidel 1994), and studies have not assessed family cohesion using IO ratings or prospective designs, making it difficult to assess the relative impact of cohesion on child anxiety development. Future studies are needed to refine current definitions of key constructs (e.g., cohesion, warmth, and overprotection) to ensure that they are sufficiently distinct and to clarify the role, if any, that family cohesion plays in the development of child anxiety.

Adaptability

Adaptability is defined as the degree of flexibility with respect to familial roles and the existing power structure in response to stressors (Peleg-Popko and Dar 2001). Families vary in the extent to which there is flexibility in the adherence to family member's roles, family rules, and the

consequences of rule violations. Extremes in either direction are associated with negative outcomes for children. On one hand, very high levels of adaptability indicate a lack of rules and chaotic family interactions (Ben-David and Jurich 1993), which may give rise to uncertainty concerning caregiver responsiveness (Barber and Buehler 1996) and increase child anxiety. Indeed, such family environments have been associated with higher levels of child anxiety symptoms (Teichman and Ziv 1998). On the other hand, very low levels of adaptability are associated with overly strict adherence to rules and rigidity and have been linked with excessive parental overcontrol (Barber and Buehler 1996). As mentioned earlier, children raised in overcontrolling households may have fewer opportunities to exercise independence and develop a sense of mastery and competence, leading to higher levels of anxiety. Although few studies have directly tested this assumption, there is some evidence that children raised in families with very low levels of adaptability report higher levels of fearfulness and anxiety symptoms (Bernstein et al. 1999; Peleg-Popko and Dar 2001). Taken together, there is some evidence that extremes of family adaptability (high or low) are associated with child anxiety symptoms. However, additional studies using clinically anxious samples and prospective designs are needed to clarify the role of adaptability with respect to the development of anxiety disorders.

Conflict

Family conflict refers to disagreements among family members that potentially increase child anxiety by increasing tension and straining the parent–child relationship. Higher levels of family conflict have been associated with higher levels of child anxiety symptoms based on child (Messer and Beidel 1994) and parent report (Stark et al. 1990). Prospective studies of this relationship are rare; however, one retrospective study found that higher levels of conflict during childhood predicted anxiety symptoms during adulthood (Rekart et al. 2007). This association was modest and only true for females. Furthermore, there was evidence that the relationship between conflict and anxiety was, in large part, accounted for by a pessimistic cognitive style (Rekart et al. 2007). It may be that other factors help explain or moderate the association between conflict and anxiety. For instance, parenting stress (van Oort et al. 2010), deficient problem solving skills (Hughes et al. 2008), or conflict in the marital relationship (Nomura et al. 2002) may increase conflict and subsequent child anxiety.

Marital Relationship

While a thorough review of the effects of marital/interparental conflict and related consequences such as

interparental violence, separation, and divorce is beyond the scope of this paper, these constructs have been linked to internalizing (and externalizing) disorders and symptoms in children (see Hudson 2005 for a review) and are briefly reviewed next. Empirical research examining the relation between marital conflict and child anxiety disorders specifically is limited and contradictory. For instance, one study found no differences in self-reports of marital quality between parents of children with anxiety disorders and a normal control group (Siqueland et al. 1996). In contrast, as part of a large 10-year longitudinal study, Nomura et al. (2002) found that poor marital adjustment (among the sample of non-depressed parents only) was associated with a fourfold increase in child anxiety disorders, even after controlling for child age and gender. However, in this study, marital discord was also associated with an increased risk for depressive and substance use disorders, raising questions about the specificity of this relation.

A more substantial literature, based on non-clinical community samples, has consistently shown that higher levels of interparental conflict is associated with higher levels of child anxiety symptoms (Bögels and Brechman-Toussaint 2006; Cummings 1994; Cummings et al. 2003; Tanaka et al. 2010). Longitudinal studies also indicate that both low marital satisfaction and high interparental conflict predict anxiety symptoms over time (Howes and Markman 1989; Jekielek 1998; McHale and Rasmussen 1998; Mechanic and Hansell 1989). For instance, McHale and Rasmussen (1998) reported that marital conflict at age 1 predicted teacher's reports of the child's anxiety at age 4 years.

An extension of marital conflict is maladaptive co-parenting among separated or divorced parents. Co-parenting behaviors can be positive and supportive (e.g., complimenting or praising the co-parent in front of the child when co-parent is present and absent) or negative (withdrawal, criticism, or hostility toward the co-parent). In studies examining this construct (e.g., Katz and Low 2004, McHale and Rasmussen 1998), negative co-parenting has been associated with higher symptoms of child anxiety (and other forms of psychopathology). Relatedly, in one of the larger studies in this field, Jekielek (1998) demonstrated that the strongest and most consistent predictor of later anxiety was exposure to ongoing marital conflict rather than divorce, suggesting that living with or being exposed to high levels of conflict in the co-parenting relationship likely increases the risk of developing excessive anxiety during childhood.

Several theories have been proposed to explain the mechanisms by which interparental conflict impacts child anxiety (e.g., Emery 1989). Data from various bodies of literature supports the hypothesis that interparental conflict negatively impacts parenting practices (e.g., greater

inconsistency, hostility), which in turn, negatively impacts child adjustment (e.g., Doyle and Markiewicz 2005). In the context of marital conflict, parental modeling of anxiety, withdrawal, poor coping, and maladaptive conflict resolution strategies have also been linked to child internalizing symptoms (e.g., Dadds et al. 1999). Data also support the notion that the impact of interparental conflict depends largely on child appraisals of the conflict. Specifically, the more children blame themselves for the conflict or perceive the conflict to be uncontrollable, unpredictable, threatening, and/or likely to lead to abandonment or danger, the more likely they are to experience symptoms of anxiety (Dadds et al. 1999; Grych et al. 2000; Jouriles et al. 2000). Increased interparental conflict is also believed to disrupt the quality of the parent–child bond leading to greater child insecurity and anxiety.

Taken together, while there are much data to support various mechanistic models, most studies are limited in that they do not control for genetics (i.e., heritability), parental or child premorbid psychopathology, or a host of other factors that may account for these relations. Moreover, the magnitude of the relation between interparental conflict and child anxiety is difficult to determine given the variations in methodologies used across studies. One early estimate, based on a meta-analysis, estimated the effect size of interparental conflict on child internalizing symptoms to be .31 (Buehler et al. 1997). However, the impact of interparental conflict also appears to vary by a number of factors including parents' use of conflict resolution styles (Cummings et al. 2003), the chronicity of the conflict (Cummings et al. 1989), and numerous child factors (e.g., age, gender, temperament, and cognitive appraisals). Thus, research elucidating the complex and reciprocal relations between marital conflict and child anxiety disorders is still needed.

Sibling Relationships

Sibling relationships are often long-lasting and intense relationships, having important developmental implications for one's social, emotional, and behavioral adjustment (Buhrmester et al. 1992; Dunn et al. 1994a, b; Stocker 1994; Volling 2003). Problems in the sibling relationship, especially those characterized by hostility, conflict, and control, are associated with higher levels of child anxiety. The mechanisms underlying this association are unclear but likely to be multi-determined. For instance, it may be that the anxious child's avoidance and related symptoms lead to difficulties in the sibling relationship (e.g., greater conflict, lower warmth). Alternatively, sibling jealousy and parental preference toward the anxious child may enhance hostility and conflict between siblings. Evidence from cross-sectional (Fox et al. 2002) and longitudinal (Kim

et al. 2007; Stocker et al. 2002) studies show that sibling relationship quality—that is, levels of intimacy, warmth, control, and/or conflict—is associated with children's internalizing problems including anxiety symptoms. Importantly, the association between sibling relationship quality and internalizing problems remains even after controlling for other influential factors such as marital conflict and maternal hostility (Stocker et al. 2002). Impaired sibling relationships are also associated with clinical levels of anxiety. In one study of 51 clinically anxious children and their sibling, researchers found that their interactions, relative to non-anxious healthy control sibling dyads, were characterized by higher levels of self-reported conflict, more observed control by both children, and less warmth from the anxious child (Fox et al. 2002). Children with anxiety disorders have also been found to report their siblings receive more parental preferential treatment (e.g., views parent as unfair in how they are treated compared to sibling, jealous about how much affection or attention sibling receives) than their non-anxious siblings (Lindhout et al. 2003, 2009), which may impair the quality of the sibling relationship perhaps due to jealousy and real or perceived deficits in parental attention. Taken together, there is evidence that the sibling relationship is associated with childhood internalizing problems across a broad range of severity, although the magnitude of this association and the implications for treatment require further investigation.

Challenges and Future Directions

The majority of studies examining the relationships among various family environmental factors and child anxiety have been cross-sectional, relied on the perspective of a single individual (usually a parent), and failed to include observational paradigms. Thus, findings have not been replicated across multiple informants or over time. Also, as highlighted in the preceding section, there is a lack of consistency in how key concepts are defined and measured. Finally, few studies have controlled for the influence of parent anxiety symptoms. This is especially important given findings from a recent study, which suggest that higher levels of parental anxiety symptoms were associated with more negative perceptions of general family environment (Hughes et al. 2008). All of these factors make it difficult to draw definitive conclusions regarding the significance of family environment in the development of child anxiety. A further challenge is disentangling the relationship between child anxiety and family functioning when comorbidities are present. It is well documented that children with anxiety disorders have high rates of comorbid anxiety disorders, depression, conduct disorder, oppositional defiant disorder, attention deficit hyperactivity

disorder (ADHD) (Angold et al. 1999; Costello et al. 2005; Jarrett and Ollendick 2008; Kovacs and Devlin 1998), learning disabilities (Sundheim and Voeller 2004), and medical illnesses (Chavira et al. 2008). Although the presence of comorbid conditions has been shown to contribute to higher levels of symptom severity, somatic complaints, and functional impairment relative to children without comorbidities (Chavira et al. 2008; Guberman and Manassis 2011; O’Neil et al. 2010), little is known about how co-occurring conditions impact the family environment or the parent–child relationship. Recently, however, a few studies have reported increased disruption in families of children with anxiety plus comorbid disorders. For instance, parents of children with anxiety disorders and medical comorbidities, compared to those without comorbidities, reported higher levels of caregiver strain (Chavira et al. 2008); children with comorbid anxiety and depressive disorders report greater family dysfunction and problematic affective responsiveness compared to children with anxiety disorders alone (Guberman and Manassis 2011; O’Neil et al. 2010), and families with children who have anxiety disorders and ADHD have been characterized as having higher levels of overprotection, overcontrol, and conflict and lower levels of cohesion compared to families without comorbidities (Kepley and Ostrander 2007; Piffner and McBurnett 2006). Future studies are needed to assess the impact of psychiatric and medical comorbidities and determine the direction of the impact (i.e., whether children reared in dysfunctional families have a greater risk for developing comorbid conditions or whether family functioning suffers in response to children who are more impaired due to having multiple conditions).

Although additional studies examining the impact of parenting behaviors and family environment, including sibling and marital relationships, on child anxiety are needed, a growing body of research has examined the role of the family in treatment. Findings from this literature are reviewed below.

Family Involvement in Treatment

Evidenced-based psychosocial treatments for child anxiety are based on cognitive behavioral therapy (CBT; see Silverman and Pina 2008 and Silverman et al. 2008 for reviews). The core components of CBT include psychoeducation, gradual in vivo exposure, cognitive restructuring, relaxation skills, and relapse prevention. Initial studies of CBT for anxiety disorders in children were child-focused (Kendall 1994). However, clinical observations of parent–child interactions, emerging data on the role of parents in the etiology and maintenance of anxiety, and the modest effect sizes of child-focused CBT prompted

numerous efforts to involve parents more centrally in the therapy of anxious youth (Ginsburg et al. 1995). In this section, we describe the common elements of treatments that involve parents (referred to hereafter as family-based CBT or FCBT), present the evidence for the efficacy of FCBT, and discuss what family or parenting factors have been found to predict treatment response. We conclude with a critique of this literature, outline the challenges of this work, and present ideas for future research.

Components of Family-based CBT

To enhance treatment outcome for children with anxiety disorders by including parents more centrally, several adjustments were made to existing CBT protocols. The most common elements of FCBT (i.e., the skills taught directly to parents) for anxiety include: psychoeducation, contingency management, parent anxiety management (i.e., strategies for lowering parents’ anxious and avoidant behavior and dysfunctional beliefs), problem-solving skills, and relapse prevention. These components are described below.

Psychoeducation

Psychoeducation with parents involves presenting facts about anxiety and its disorders such as key signs and causes. This information helps clarify for parents what is, and is not, anxiety and helps them identify which behaviors will be the focus of treatment for their child. Parents are taught that anxiety disorders are multi-determined (i.e., caused by *both* biological and environmental factors) and not usually caused by one specific event. Psychoeducation for parents also involves providing an overview of the treatment program (i.e., FCBT model, rationale, and goals). Describing the FCBT model lets parents know what treatment will involve for them (and their child) and what they will need to do to help reduce their child’s anxiety. When psychoeducation is done effectively, it instills hope and increases motivation. Most FCBT approaches describe the treatment model using a “team” metaphor in which the child, parent, and therapist are all working together, and the therapist is like a coach, teaching new skills, providing weekly assignments for parents and children to practise at home, and outlining the specific roles parents are expected to play.

Psychoeducation for parents may also include a description of specific parenting behaviors that maintain or increase anxiety in children (e.g., overcontrol, criticism, and anxious modeling). In our work, we refer to these behaviors as “parenting slips” and help parents identify whether they are present in their family and if so, we provide instruction on how to replace these behaviors with more helpful parental responses (e.g., encouraging child

autonomy and facing fears, setting realistic expectations, and modeling coping behavior). We emphasize that most parents do what they think is in their child's best interest (e.g., allowing a child with social anxiety to avoid a party with their peers). However, it is explained that parents' good intentions (e.g., parent speaking to a teacher because child is too shy to do so) can actually maintain or increase the child's anxiety level in the long run. Parents are then provided with instructions for changing parent behaviors that promote anxiety into behaviors that promote effective coping with anxiety.

Contingency Management

The basic principles of contingency management (CM) are based on operant learning theory. Simply stated, parents are taught that behaviors (including anxious, avoidant behaviors) are controlled by their consequences and that behaviors generally increase in frequency when followed by something positive (a reinforcer) and decrease in frequency when they are not reinforced. CM involves instructing parents to reward brave behavior and "ignore" (not reward or reinforce) anxious and avoidant behaviors. This helps parents shift their attention away from the child's anxious behaviors and toward their mastery of anxiety-provoking situations. To facilitate follow through with CM, parents and children create a list of different types of reinforcers (e.g., activities, social or tangible prizes) that are earned for demonstrating brave behavior and coping with anxiety. Parents can use written contracts to implement this reward system at home to reinforce children's brave behavior and extinguish anxious, avoidant behavior.

Parent Anxiety Management

As noted earlier, a significant proportion of parents with anxious youth struggle with their own anxiety (Biederman et al. 1997). This anxiety may be manifested in avoidant behavior (e.g., parent does not drive or use the phone) and distorted cognitions about the world (e.g., thinking all restaurants are unsafe) or their child (e.g., "my child is too frightened to attend this party, so it would be better for him to stay home"). Thus, several FCBT treatment studies view parents as co-clients in therapy (Kendall et al. 2000). In these situations parents are encouraged to use the CBT skills being taught to their child, including exposure, relaxation skills, cognitive restructuring, etc. Perhaps most important is that parents are coached on how to be a "coping model" who faces, rather than avoids, their fears despite feeling anxious.

Problem-solving

Another common element of FCBT is problem-solving skills. This skill encourages parents (and children) to develop a plan for coping with their anxiety (i.e., what the child and parent can do to make the situation less anxiety provoking so that they can complete exposures and engage in more effective coping) and solve other problems that may increase stress and anxiety (e.g., conflict). The steps to problem-solving are similar across treatments (based on the work of D'Zurilla and Goldfried 1971). In our own clinical work, we rely on the SOLVE acronym, where each letter stands for a specific problem-solving step. The steps of this problem-solving method are as follows: (1) Settle down (it is better to try to solve problems when you are calm), (2) Own the problem (identify the part of the problem that is under your control), (3) List solutions (brainstorm solutions without judging them), (4) Vote for one solution (after listing the pros and cons of each one), and (5) Engage in a solution (choosing the one that seems best, evaluate the outcomes, and repeat, if needed). Given that family conflict (e.g., fights with siblings, parents) often contributes to increased levels of anxiety, parents and children are encouraged to use the SOLVE steps to help resolve disagreements among family members.

Relapse Prevention

The goal of relapse prevention is to teach children and parents to anticipate recurrences of anxiety and develop plans for effective coping in order to prevent a full relapse of anxiety. Critical aspects of this component of treatment involve normalizing recurrences of anxious and avoidant behavior and encouraging parents to be proactive rather than reactive. Because parents' response to relapses can influence how quickly children "get back on track," treatment emphasizes that parents do not react with disappointment, criticism, or anger when the child experiences distress and/or wishes to avoid a previously conquered situation. Empathy and understanding in addition to maintaining the use and ongoing practice of the core elements of FCBT are accentuated. Some discussion of triggers, an action plan to manage the relapse, and planning ahead are incorporated in this component.

Efficacy of Family-based CBT

Over 15 randomized controlled trials (RCTs) have evaluated a FCBT for anxiety disorders in youth. The specific skills taught to parents varied across studies as did the number of sessions that included parents in the treatment and the format of treatment delivery (group, individual, and dyadic). Despite these differences, effect sizes of FCBT compared to waitlist (WL) were medium to large with

respect to anxiety reduction (see Barmish and Kendall 2005 for a review). These findings suggest that FCBT is efficacious for the majority of youth who receive them. However, when FCBT has been compared to child-focused CBT, results have been mixed with some studies showing that FCBT was superior (e.g., Spence et al. 2000; Wood 2006), others showing no differences between FCBT and child-focused CBT (Kendall et al. 2008; Nauta et al. 2003; Suveg et al. 2009), and at least one study showing that child-focused CBT was superior to FCBT (Bodden et al. 2008). Thus, the added benefit of FCBT over child-focused treatment remains unclear (see Barmish and Kendall 2005; Creswell and Cartwright-Hatton 2007; In-Albon and Schneider 2006; James et al. 2005 for reviews). The uncertainty about the added benefits of parental involvement in treatment may in part be due to methodological limitations, such as the small sample sizes and restricted statistical power used in these studies that compare two active and potent treatments. Moreover, it may be that family-based treatments are more effective depending on specific child or family characteristics such as child gender, parental psychopathology, or levels of family dysfunction. This conclusion was echoed in one of the few reviews of family-based treatments for youth with anxiety disorders conducted by Barmish and Kendall (2005). In this study, the authors evaluated nine CBT treatment outcome trials with anxious youth that included parents in the treatment. They concluded that current evidence does not yet support the notion that a family-based treatment (or a treatment that includes parents) is superior to a child-focused treatment. They highlight the need for large randomized controlled trials that address the wide variations in previous studies (e.g., number, content, format of parent and child sessions, and outcome measures) and testing theoretical models that underlie the reasons and methods for involving parents in their child's treatment. The authors also emphasize that the benefit of including parents in treatment may vary depending on child age (and perhaps diagnosis).

An equally important question in whether we need to routinely include parents in child treatment is whether there are benefits to the use of parent only treatments. For instance, a study by Waters et al. (2009) compared the efficacy of a 10-week-group CBT treatment delivered to either parents alone, both children and parents, or a wait-list control. Findings revealed that children in both active treatment conditions showed superior outcomes relative to the wait-list condition; however, there were no differences between the two active treatments. Specifically, approximately 55% of children in both active treatments no longer met criteria for their principal diagnosis at post-treatment, and the treatment gains were maintained in both treatment conditions at 6- and 12-month follow-up assessments. These findings are consistent with other studies that have shown that parent only treatments for childhood anxiety are

efficacious (Cartwright-Hatton et al. 2005; Mendlowitz et al. 1999; Thienemann et al. 2006) and highlight the need to explore this alternative treatment model and determine that families might benefit most from a parent only approach to treatment.

Parental and Family Predictors of Treatment

Examining familial and parental predictors or moderators of treatment response present the opportunity to personalize treatment and improve outcomes by targeting those factors that either reduce or enhance treatment response. One of the most frequently examined predictors has been parental (generally maternal) anxiety. Several studies have found that higher levels of parent anxiety symptoms or parental anxiety disorder predicted poorer treatment outcomes (Berman et al. 2000; Bodden et al. 2008; Crawford and Manassis 2001; Kendall et al. 2008; Southam-Gerow et al. 2001). However, this finding has not been consistent (Ginsburg et al. 2011; Wood et al. 2003). Alternatively, parental anxiety might moderate treatment response. For instance, some studies have demonstrated that anxious children with anxious parents benefited more from CBT that included parent anxiety management than from child-focused CBT with no parental involvement (Cobham et al. 1998; Kendall et al. 2008).

Other parental symptoms of psychopathology have been examined in relation to child anxiety treatment response. Southam-Gerow et al. (2001) found that higher levels of maternal-reported depressive symptoms were associated with poorer treatment response. Berman et al. (2000) found that higher levels of a broad range of parental symptoms including obsessive compulsive, psychoticism, depression, hostility, paranoia, and fear all predicted poorer treatment response. Again, elevated symptoms of psychopathology in parents have not uniformly been linked with poor treatment response (Rapee 2000). Parental psychopathology may also affect other aspects of the family environment or parent-child relationship that impact treatment response. For instance, Crawford and Manassis (2001) found that overall family dysfunction, parenting stress, and the frequency of parents becoming angry, critical, or irritable with their child predicted poorer treatment response. Future studies are needed to examine additional family and parental characteristics that influence treatment outcome as well as the mechanisms by which outcomes are affected. Toward this end, interventions can be enhanced by targeting malleable family factors that promote or hinder treatment response.

Challenges and Future Directions

Inconsistencies afflict the literature on family-based treatment for child anxiety disorders. Methodological

limitations such as small sample sizes, which limit statistical power, variations in the type of treatment components and delivery modality, differing sample characteristics (e.g., age, gender, and presence of comorbid disorders), and outcome measures used to assess parenting/family factors make synthesizing this literature challenging. The next wave of clinical trials should incorporate design features that address these issues and also examine mechanisms (i.e., If parents show improvements in their interactions with their children, do these changes account for improvements in child anxiety?). Indeed, in one of the few studies to assess the mediating role of parenting found that parental intrusiveness appeared to mediate treatment effects such that reductions in parental intrusiveness were associated with lower child anxiety (Wood et al. 2009). Finally, in light of the literature on sibling relationship quality showing that impaired sibling relationships are associated with increased child anxiety and conversely that a positive sibling relationship is protective, future research is needed to explore how siblings can be constructively involved in the treatment of anxiety disorders in children.

Prevention of Anxiety Disorders in Children

Given the success of psychosocial treatment approaches for childhood anxiety disorders, research on prevention has begun to emerge (e.g., Dadds et al. 1997; Ginsburg 2009; Rapee et al. 2005). Approaches to preventive can be classified into universal, indicated, and targeted models (Mrazek and Haggerty 1994). Universal interventions are delivered to an entire population regardless of risk status, indicated interventions are delivered to those with elevated symptoms or early signs of disease, and selective interventions are aimed at persons who are at high risk for illness based on known risk factors (e.g., parental psychopathology). Within the field of child anxiety, the majority of research has employed universal or indicated approaches that do not necessarily involve family members. However, two promising programs of research that focus on family-based approaches have recently been published and are presented here of examples of this work.

Rapee et al. (2005; Kennedy et al. 2009) conducted two RCTs aimed at preventing the onset of anxiety disorders in young children (ages 3–5 years old) who qualify as behaviorally inhibited (based on questionnaire and/or laboratory measures). In their brief 6–8 session group intervention for parents, they focused on educating parents about the nature of anxiety, reducing overprotective parenting, the importance of parents modeling competence and reducing parental anxiety (the second trial included parents with an anxiety disorder), the practice of gradual

exposure, and discussion of high-risk periods, such as the commencement of school. Findings showed that children receiving the intervention had fewer anxiety disorders at a 12-month follow-up assessment (Rapee et al. 2005; Kennedy et al. 2009).

Ginsburg (2009) developed a selective intervention to prevent the onset of anxiety disorders in children. In the child anxiety prevention study (CAPS), children with anxious parents were recruited from the community and randomized to either an 8 session prevention or a wait-list (WL) control ($N = 40$). The prevention was modeled after FCBT and included psychoeducation, relaxation training, gradual exposure, cognitive restructuring (for both parent and child), reducing anxiety-enhancing parenting behaviors, contingency management (to reward “brave” behaviors and use extinction techniques to reduce avoidant behaviors), strategies to recognize and reduce parental anxiety levels, and enhancement of specific problem-solving and communication skills in the family. At 1-year follow-up 30% of the children in the WL group developed an anxiety disorder, compared to 0% in the prevention group. These findings suggest that family-based prevention of anxiety in a high-risk sample is promising. A larger scale evaluation of the CAPS program is currently underway.

Limitations and Future Directions

The greatest challenge facing the field of prevention of child anxiety disorders lies in understanding when, how, and to whom interventions should be delivered, particularly in light of limited financial resources allocated toward prevention. Most extant studies have been school-based, universal interventions that can be costly and often target those who are not at risk. Thus, addressing these questions will likely yield more cost-effective interventions that have a greater impact. Research and development is needed to determine the ideal format for intervention delivery. For instance, preventive interventions delivered on the internet or via printed material, as opposed to therapist-delivered interventions with individual families, may be more cost-effective and yield similar results. Indeed, many bibliotherapy and web-based treatment studies for child and adult anxiety disorders have found positive results (e.g., Khanna and Kendall 2010; Leong et al. 2009; Rapee et al. 2006). Finally, though preventive interventions have demonstrated success in reducing anxiety symptoms and/or the onset of anxiety disorders, few have examined other aspects of functioning (e.g., academic outcomes), and, similar to treatment studies, few have examined moderators or mediators of prevention effects. All these issues await further study.

Summary and Conclusions

Over the past two decades, a number of biological and environmental risk factors have been implicated in the etiology and maintenance of child anxiety disorders. Specifically, children, particularly those who may have a genetic or temperamental vulnerability, who are reared in environments characterized by negative parenting behaviors and patterns of adverse familial interactions are at higher risk for developing anxiety disorders. The interactive associations (including gene-environment interactions) among these familial influences are far from understood, and studies designed to disentangle the complex pathways, including tests of mediational/moderational models, will provide critical insight into the development of child anxiety disorders. To the extent that future studies address these clinical and methodological issues, the next two decades should be as fruitful as the past two, and exciting advances will emerge to help the millions of children and families who struggle with excessive anxiety.

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