

Parenting and childhood anxiety: theory, empirical findings, and future directions

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Theories of anxiety development suggest that parental acceptance, control, and modeling of anxious behaviors are associated with children's manifestations of anxiety. This paper reviews research published in the past decade on the relation between parenting and childhood anxiety. Observed parental control during parent-child interactions was consistently linked with shyness and child anxiety disorders across studies. Mixed support for the role of parental acceptance and modeling of anxious behaviors was found in observational studies. However, there was little evidence supporting the contention that self-reported parenting style was related to children's trait anxiety. Because of limitations associated with past research, inferences about the direction of effects linking parenting and child anxiety cannot be made. A conceptual framework based on recent models of anxiety development (e.g., Vasey & Dadds, 2001) is presented to aid in the interpretation of extant research findings and to provide suggestions for future research and theory development. Improved methodological designs are proposed, including the use of repeated-measure and experimental designs for examining the direction of effects.

Are particular parenting styles or behaviors linked with childhood anxiety? Clinical anxiety is one of the most common psychiatric problems experienced by school-aged children (Bell-Dolan & Brazeal, 1993; Bowen, Offord, & Boyle, 1990; see also Schniering, Hudson, & Rapee, 2000). Although the problem is widespread and affects children throughout childhood and adolescence, the etiology and sequelae of childhood anxiety remain complex and elusive. One important area that has been emphasized as contributing to the development of childhood anxiety is parenting (e.g., Chorpita & Barlow, 1998; Craske, 1999; Vasey & Dadds, 2001). In support, behavioral genetic studies conducted in the past decade have suggested that the 'shared environment,' possibly including childrearing experiences, accounts for a significant amount of the variance in childhood anxiety symptoms and disorders (see Eley, 2001). Some naturalistic studies have also found a linkage between parenting behavior and childhood anxiety (e.g., Whaley, Pinto, & Sigman, 1999). But the consistency of this association across studies and the direction of effects remain in question, primarily because a current synthesis of the literature is lacking. A previous meta-analysis (Gerlsma, Emmelkamp, & Arrindell, 1990) and two review articles (Masia & Morris, 1998; Rapee, 1997) on this topic focused primarily on retrospective studies based on adult reports. Rapee's review also included some studies of children, but these were primarily from the 1970s and 1980s. To address this gap, this paper reviews and discusses the most recent empirical evidence regarding the relation between parenting and childhood anxiety. In doing so, we not only review current theories of child anxiety development,

but also expand upon such theory and provide recommendations to advance the field.

The definition of 'anxiety' varies across subdisciplines and studies. For this paper, we adopted Craske's (1999) definitions of and distinctions between trait anxiety (also referred to as negative affect or neuroticism, comprising nonspecific symptoms of fear, worry, and other negative mood states not unique to a single disorder) and anxiety disorders (e.g., social phobia, separation anxiety disorder). Trait anxiety is viewed as a continuous characteristic that, when elevated, represents a generalized vulnerability to mood disorders, but may not cause clinically significant functional impairment by itself, whereas anxiety disorders represent specific anxiety symptom clusters that cause distress or impairment. We review the relation between parenting and both trait anxiety and anxiety disorders in children, and use the term 'childhood anxiety' when referring to both. Distinctions between the two are noted when relevant.

Traditional perspectives on parenting and childhood anxiety

From the 1990s to the present, most studies examining the relation between parenting style or behavior and childhood anxiety have focused on three parenting dimensions: acceptance, control, and modeling of anxious behaviors. These categories – particularly the first two – are traditional groupings within the literature. The first parenting category, *acceptance*, refers to a general parenting approach characterized by interactional warmth and responsiveness (including acceptance of children's feelings

and behaviors, active listening, praise, use of reflection, etc.) as well as emotional and behavioral involvement in children's lives and activities (e.g., Maccoby, 1992). Some studies investigate the opposite of acceptance, namely parental criticism and rejection. It is hypothesized that parents who demonstrate acceptance of children's expressions of negative affect – rather than criticizing and minimizing children's feelings – help promote children's emotion regulation by allowing children to learn, through trial and error, to tolerate negative affect (Gottman, Katz, & Hooven, 1997), thus reducing children's sensitivity to anxiety.

The second parenting category, *control*, is defined as a pattern of excessive regulation of children's activities and routines, autocratic parental decision-making, overprotection, or instruction to children on how to think or feel (Barber, 1996; Steinberg, Elmer, & Mounts, 1989). Although the construct of control is a broad one and encompasses numerous facets of parent-child interactions, factor-analytic research suggests that these facets represent a single, higher-order construct that cohere together into a meaningful pattern of behavior (e.g., Schwarz, Barton-Henry, & Pruzinsky, 1985). The different manifestations of parental control each involve encouragement of children's dependence on parents, which is hypothesized to affect children's perceptions of mastery over the environment. Lack of mastery is posited to contribute to high trait anxiety by creating a cognitive bias characterized by perceiving events as out of one's control (Chorpita & Barlow, 1998). Parental granting of autonomy is viewed as the opposite of excessive parental control (e.g., Mattanah, 2001).

The third category, *modeling of anxious behavior*, has been less thoroughly studied. It refers to describing problems to children as irresolvable or dangerous, encouraging (rewarding) children to view problems in a catastrophic manner, and extinguishing or punishing children's expressions of coping thoughts and problem-solving strategies (Capps & Ochs, 1995; Whaley et al., 1999). Children of parents who frequently model anxious behavior may come to believe that there is no way of coping effectively with problems and are not likely to develop strategies that can reduce anxiety (Whaley et al., 1999).

Parenting style vs. behavior

Various researchers have contrasted parenting *style* with specific parenting *practices* or *behaviors* (e.g., Darling & Steinberg, 1993; Maccoby, 1992). Parenting 'style,' defined as a global set of parental attitudes, goals, and patterns of parenting practices, is hypothesized to create an emotional climate for the parent-child relationship. Children's openness to socialization by parents may be affected by global parenting *style*. However, parenting style has been

conceptualized as a moderator rather than a direct predictor of children's psychosocial outcomes (Darling & Steinberg, 1993). Parenting style is a general pattern of caregiving that provides a context for specific episodes of parental childrearing behaviors; but it does not refer to a specific act or set of acts of parenting. In contrast, parenting 'practices' or 'behaviors' are conceptualized as specific kinds of parental interactions with children in specific situations. Thus, a self-report item that assesses an accepting parenting *style* might be, 'My parent understands how I feel,' whereas an item assessing specific parenting *behaviors* might be, 'Today before school, my parent let me know s/he understood how I was feeling.' Parenting *practices* or *behaviors* are hypothesized to directly affect children's emotional and behavioral regulation (e.g., Darling & Steinberg, 1993).

How is parenting style differentiated from specific parenting behaviors? Parenting *style* is traditionally assessed with paper-and-pencil measures that require the respondent to evaluate global patterns of parenting style over long or unspecified periods of time (Holden & Edwards, 1989). Specific parenting *practices* or *behaviors* are generally measured with observational approaches or time-delimited self-report measures of parenting behaviors in particular situations (such as daily diaries; e.g., Repetti, 1996). Laboratory observational paradigms permit the assessment of parental conversational warmth, control, and modeling of anxiety during interactions with children in a specific kind of situation, namely, a novel and potentially stressful setting (i.e., due to the use of instructions and videocameras). Although it is possible to use both self-report and observational methods to measure either parenting style or parenting behaviors, a more limited measurement approach has characterized the parenting and childhood anxiety literature: Self-report measures have generally been used to assess parenting *style*, whereas observational approaches have been used to assess specific parenting *practices* or *behaviors*. Because parenting *style* and parenting *behavior* may play different roles in the development and maintenance of childhood anxiety, our review distinguishes between these two parenting constructs; however, it is important to note that these two constructs are confounded with self-report and observational methodology, respectively, in this literature.

Limitations of traditional models of the parenting-anxiety linkage

Traditional models of childhood anxiety sought to explain the development of anxiety in terms of single main effects (e.g., parental control, inherited traits). But these models have failed to explain more than a fraction of the variance associated with anxiety symptoms or disorders in children (cf. Vasey & Dadds, 2001). For instance, genetic traits and overly

controlling parenting are both statistically associated with childhood anxiety in numerous studies, but neither factor accounts for most of the variability in children's anxiety symptoms (e.g., Eley, 2001; Mattanah, 2001). The failure of these traditional models has led some to move towards a view that the ontogeny of childhood anxiety is a complex, multi-determined process (e.g., Craske, 1999; Vasey & Dadds, 2001).

Contemporary models of childhood anxiety and parenting

The rise of the developmental psychopathology perspective (e.g., Cicchetti & Cohen, 1995; Masten & Braswell, 1991) has provided researchers with a new conceptual framework for the study of childhood anxiety (e.g., Manassis & Bradley, 1994; Vasey & Dadds, 2001). Proponents of this perspective have synthesized the empirical findings from various fields (e.g., genetics, clinical, and developmental psychology) and have posited that both external (familial, social-environmental) and internal (genetic, cognitive) risk and protective factors contribute to the process and outcome of childhood anxiety. Parenting is posited to take on multiple roles depending upon the context in which it occurs (e.g., stage of development, presence or absence of other risk or protective factors). Thus, when attempting to single out the effects of parenting style or behavior on childhood anxiety, research must be guided by two concepts. The first concept, *multifinality*, suggests that a single risk factor (e.g., controlling parenting style) can have a variety of outcomes – including anxiety, other psychological problems, or successful adaptation – depending upon the context in which it operates. The second concept, *equifinality*, suggests that there are multiple pathways to the same anxiety disorder (e.g., social phobia) and that a single risk factor such as parenting cannot universally account for the development of a given disorder. These concepts suggest that it is important to identify the consistency and specificity with which different parenting styles or behaviors are associated with childhood anxiety.¹

If parenting is hypothesized to take on multiple roles in the development of childhood anxiety, what are these roles? When considering the role that parenting may play as a specific risk factor, there are

at least four plausible (and not mutually exclusive) pathways linking it with childhood anxiety: (a) some parenting styles or behaviors may directly cause or elicit childhood anxiety; (b) children's manifestations of fear and anxiety may elicit particular patterns of parenting style or behavior; (c) genetic similarity between children and their parents may act as a 'third variable' accounting for both parenting as well as childhood anxiety; or (d) genetic traits, parenting, children's anxiety symptoms, and other risk or protective factors may reinforce or moderate each other in a feedback loop. A major objective of this paper is to assess the evidence for these pathways by examining the current state of knowledge on the direction of effects linking parenting and the development of childhood anxiety.

The development and maintenance of childhood anxiety

The developmental psychopathology perspective not only emphasizes that specific risk factors can play multiple roles in the development of psychopathology, but it also posits that some risk factors help maintain psychopathology once it has developed. For example, genetic traits and temperament may play an important role in the development of social anxiety and withdrawal (e.g., Rubin & Stewart, 1996), but parenting could play an important role in maintaining this problem (e.g., by permitting school avoidance). Thus, an important distinction is made between the roles specific risk factors play in the development versus maintenance of psychopathology.

Consistent with these principles, Craske (1999) has proposed a theoretical model that helps specify the roles that parenting may play in the development and maintenance of childhood anxiety. Drawing on emotion theory and learning theory, this model suggests that parenting may be related to childhood anxiety in at least two ways. First, general parenting across contexts (i.e., parenting *style*, see above) is hypothesized to provide an environmental context that influences the development of *trait anxiety*. For instance, frequent parental criticism could increase a child's wariness and influence perceptions of self and the world in a negative manner (e.g., cognitive features of trait anxiety). Second, among children with high trait anxiety, specific parenting *practices* or *behaviors* that promote or reinforce children's experiences of anxiety in specific situations contribute to the development of a particular *anxiety disorder* by centering beliefs about threat and physiological arousal upon a specific theme or class of stimuli. Within Craske's (1999) model, the role of parenting *behavior* in the development of particular child anxiety disorders is more specific than in the development of elevated trait anxiety. Although general patterns of parenting *style* may exert a nonspecific influence on children's trait anxiety, situationally- and behaviorally-specific parenting *behaviors* are

¹ A number of additional theoretical approaches have sought to explain anxiogenesis (e.g., neural and animal models) and, more specifically, the role parenting behavior plays in the development of childhood anxiety (e.g., attachment theory). A comprehensive review of these and other theories of childhood anxiety is beyond the scope of this paper. We have chosen to focus on models stemming from developmental psychopathology, emotion theory, and learning theory, given the degree of specificity and applicability of these models to the topic of our review.

hypothesized to account for the development of specific anxiety disorders.

Four objectives of the review

Though the new models posit that parenting can play multiple roles in the development and maintenance of childhood anxiety, it is unclear whether there is empirical support for these models. Our aim, therefore, is to examine the existing literature to determine which aspects of these models have research support. We address four key theoretical questions in our review: (a) How consistent is the evidence suggesting that specific parenting *styles* or *behaviors* are risk factors for anxiety development or maintenance, either as a main effect or in conjunction with other risk factors, (b) to what degree do specific parenting *styles* or *behaviors* serve as risk factors specific to childhood anxiety, as opposed to other forms of child psychopathology, (c) what is the direction of effects linking parenting and childhood anxiety, and (d) does the evidence suggest that general parenting *styles* are linked with children's trait anxiety, whereas specific parenting *behaviors* are linked with specific child anxiety disorders?

Parenting and childhood anxiety: empirical findings

In order to address these four questions, the recent empirical literature, including studies published between 1990 and 2002, was reviewed. The review is presented in two sections. The first section focuses on the empirical evidence for the three traditional parenting categories: parental acceptance, control, and modeling of anxiety. To highlight potential differences between measures of parenting *style* and measures of parenting *behaviors*, the results of self-report versus observational studies are discussed separately in the first section. The second section focuses on the four theoretical questions discussed above by highlighting studies that have addressed these questions.

Study selection

Studies included in this review: (a) included a measure of the current (rather than retrospectively reported) parenting style or behavior of *one* parent towards a target child, or separate measures of *both* parents' style or behavior toward the child, (b) included a measure of current childhood anxiety (including shyness; excluding behavioral inhibition), (c) tested the relation between parenting style or behavior and childhood anxiety, and reported test statistics, and (d) reported a mean age of 18 years or younger for the participating children. Studies of attachment status and the family environment as

predictors of childhood anxiety were not included. Although attachment status may arguably reflect an aspect of the parent-child relationship, traditional attachment measures are based on observations of a *child's* behavior with a parent, rather than a parent's behavior with a child. Similarly, the family environment (e.g., family cohesiveness and adaptability) involves a complex interactive process among all family members and is *not* a direct measure of parenting style or behavior. Therefore, studies such as Stark, Humphrey, Laurent, Livingston, and Christopher (1993), employing measures of the global family environment, were excluded. Also excluded were studies including triadic family conversations in which mother-to-child and father-to-child interactions were not differentiated from mother-to-father interactions, such as in Dadds, Barrett, Rapee, and Ryan (1996).

We employed hand searches, literature trails, and the PsychInfo computer database, which indexes (with key terms) and abstracts all articles from 1887 to the present. The search covered a time period from 1990 to 2002. We used the following 12 anxiety-related key terms and synonyms: Internaliz- or Anxi- or Fear- or Obses- or Compul- or OCD or Panic or Phobi- or Worr- or Inhibit- or Shy- or Somat-. These terms were cross-referenced with the following parenting-related key terms: Father- or Maternal or Mother- or Parent- or Paternal or Rearing or Socializ-. These steps produced an initial pool of 5402 articles, which were reduced in a stepwise fashion using title, abstract, method section, and result section, to produce a pool of 21 studies published between 1991 and 2001 that met inclusion requirements, none of which were included in the Rapee (1997) or Masia and Morris (1998) reviews. The age of the children ranged between 4 and 18 years (see Table 1).

Measure definitions

Guided by theory (e.g., Maccoby, 1992), factor-analytic findings (e.g., Schwarz et al., 1985), and other reviews and meta-analyses of parenting (Rapee, 1997; Rothbaum & Weisz, 1994), we grouped measures of parenting style and behavior into three dimensions: acceptance versus criticism and rejection, control versus granting of autonomy, and modeling of anxious behavior (see above for construct definitions). Coding of these categories was performed by two judges (JW and BM) and interrater reliability was acceptable ($\kappa = .83$). Measures of anxiety included continuous or diagnostic measures of anxiety symptoms (including shyness) or disorders.

Review format

This review highlights studies that make use of separate informants for each construct under investigation. Studies that examine the association

Table 1 Summary of previous studies of parenting and childhood anxiety

Study	N	Age	Ethnicity	Parenting Informant	Anxiety Informant	Parenting Dimension	Anxiety Type	Hypothesis support		
								Mother's Parenting	Father's Parenting	Parenting
Dumas et al. (1995)	84 ^a	4.1	1	O	T	Control	Trait	1 of 1		
Gruner et al. (1999)	121	10.4	1	O	T	Acceptance	Trait	1 of 1		
				C	C	Modeling	Trait	1 of 1		1 of 1
Hernandez-Guzman & Sandez-Sosa (1996)	34-32	15-18	2	C	C	Acceptance	Trait	1 of 1		1 of 2
				C	C	Acceptance	Trait	1 of 2		1 of 2
Hibbs et al. (1993)	101 ^a	12-16	NA	P	Dx. Int.	Acceptance	Cog, Mot, Som	3 of 3		
Hudson & Rapee (2001)	75 ^a	10.7	NA	O	Dx. Int.	Control	OCD	1 of 1 ^b		
				O	Dx. Int.	Acceptance	Anx. Dx.	1 of 1		
Hummel & Gross (2001)	30 ^a	11.9	1	O	Dx. Int.	Acceptance	Anx. Dx.	1 of 1		
Kliewer & Kung (1998)	98	10.7	NA	C	C	Acceptance	Social	2 of 2 ^b		
				C	C+P	Acceptance	Trait	0 of 1		
Mattanah (2001)	91	9.7	1	C	T	Control	Trait	0 of 1		0 of 1
				C	T	Acceptance	Trait	0 of 1		0 of 1
Mills & Rubin (1998)	35 ^a	6-10	1	O	T+P	Control	Shyness	2 of 3		
Muris et al. (1996)	64	12	1	P	C	Acceptance	Fears	0 of 2		0 of 2
				C	C	Acceptance	Fears	0 of 2		0 of 2
Muris et al. (2000)	159	10.8	1	C	C	Modeling	Worry	1 of 1		1 of 1
				C	C	Control	Worry	1 of 1		0 of 1
Papini et al. (1991)	231	12.8	1	C	C	Acceptance	Worry	1 of 2		1 of 2
				C	C	Acceptance	Trait	1 of 1		1 of 1
Papini & Roggman (1992)	47	12.6	1	C	C	Acceptance	Social	3 of 3		2 of 3
				C	C	Acceptance	Physical	2 of 3		2 of 3
Pedersen (1994)	573	15-19	NA	C	C	Acceptance	Unspec.	1 of 1		1 of 1
				C	C	Control	Unspec.	0 of 1		0 of 1
Rubin et al. (1999) ^c	60	2	1	P	P	Control	Shyness	1 of 3		0 of 4
				P	P	Control	Shyness	3 of 6		1 of 4
Rubin et al. (2001)	188	4	1	O	P+O	Control	Shyness	1 of 2		
				C	T	Acceptance	Unspec.	1 of 1 ^b		
Scott et al. (1991)	2699	11-20	3	C	P	Acceptance	Unspec.	1 of 1 ^b		
				C	C	Acceptance	Unspec.	1 of 1 ^b		
Siqueland et al. (1996)	44 ^a	11	1	C	Dx. Int.	Acceptance	Anx. Dx.	1 of 1		
				C	Dx. Int.	Control	Anx. Dx.	0 of 1		
Stevenson-Hinde & Glover (1996)	126 ^a	4-4.5	NA	P	Dx. Int.	Acceptance	Anx. Dx.	0 of 1		
				P	Dx. Int.	Control	Anx. Dx.	0 of 1		
Tesser & Forehand (1991)	147	13.2	NA	O	Dx. Int.	Acceptance	Anx. Dx.	0 of 1		
				O	M+T+O	Control	Anx. Dx.	1 of 1		
				C	T	Acceptance	Shyness	2 of 8		0 of 2
				C	T	Acceptance	Trait	0 of 2		

Table 1 Continued

Study	N	Age	Ethnicity	Parenting Informant	Anxiety Informant	Parenting Dimension	Anxiety Type	Hypothesis support	
								Mother's Parenting	Father's Parenting
Whaley et al. (1999)	34 ^a	10.7	1	O	Dx. Int.	Acceptance	Anx. Dx.	3 of 6	
				O	Dx. Int.	Control	Anx. Dx.	2 of 2	
				O	Dx. Int.	Modelling	Anx. Dx.	1 of 2	

NOTE: All significant effects were in the expected direction except for Rubin et al. (2001) in which both effects were significant but one was in the opposite direction. Age is reported in years (either mean or a range). For ethnicity, 1 = primarily Caucasian, 2 = primarily Latino/Latina, 3 = multiple ethnicities/nationalities, NA = not available. For Parenting and Anxiety Informant, Dx. Int. = Diagnostic interview, C = Child, P = Parent, T = Teacher, O = Observer (multiple informants aggregated into a summary score are indicated by a '+'). For Parenting Dimension, Modeling = Modeling of anxious behaviors. For Anxiety Type, Anx. Dx. = children with any (or multiple) anxiety disorders, rather than a specific anxiety disorder, Unspec. = Unspecified measure of anxiety, Cog. Mot. Som = cognitive, motoric, and somatic anxiety. Under Hypothesis Support is reported the number of significant findings linking child anxiety with the specified parenting dimension of the number of statistical tests performed. Multiple lines for one study reflect different informants or different aspects of parenting that were measured in the same study.

^a Sample divided into anxious group and normal control group.

^b Ratings of mothers and fathers, separately, were combined into a composite measure of parenting.

^c The first row for Rubin et al. (1999) concerns analyses in which one parent rated child anxiety and the other parent rated parenting. The second row concerns analyses in which the same parent rated both constructs.

between two self-report measures from the same source (e.g., Papini & Roggman, 1992) are at risk for obtaining inflated correlations due to shared method variance (Campbell & Fiske, 1959). To provide a more conservative test that eliminates these potentially confounding effects, it is preferable for each construct (i.e., parenting, childhood anxiety) in correlational studies to be rated by different informants. However, studies that used only one informant for both constructs were also included in Table 1.

To provide an estimate of the consistency of effects across analyses and studies, we report the ratio of significant statistical tests (i.e., tests with a *p* value of .05 or lower) to total tests conducted in all of the multiple-informant studies. In addition, the percent of variance in anxiety accounted for by the parenting variables in these studies is discussed. Standard formulas were used to convert mean differences to correlations (and, then, to percents of variance explained, i.e., *r*²) in group-comparison studies.

Studies of parental acceptance

Child-report studies. Eleven studies were identified that used children's reports of accepting parental style (see Table 1). Of these, five included ratings of children's anxiety from teachers, parents, or clinicians. For instance, in a study of 2699 adolescents (age 11–20 years) recruited from community high schools located in a variety of countries (including Australia, China, United States, Germany, Japan, and Taiwan), adolescents who reported more parental nurturance (i.e., acceptance) tended to be rated by their parents and teachers as less anxious than did adolescents who reported less nurturance (Scott, Scott, & McCabe, 1991; see Table 1). In this study, the effects accounted for 1% and 3% of the variance in parents' and teachers' ratings of childhood anxiety, respectively, corresponding to Cohen's (1988) criteria for a 'small' effect. A notable weakness of this study was the use of brief unstandardized measures of parenting and anxiety, with some alpha coefficients as low as .44 (range .44–.77). Using a sample of 17 clinic-referred anxiety-disordered children (with one of several diagnoses) and 27 matched control children, Siqueland, Kendall, and Steinberg (1996) found children's ratings of maternal acceptance accounted for 21% of the variance in diagnostic status (a 'large' effect).

A majority of the 11 studies used community-based, school samples, and in these studies, 3 of 10 statistical tests yielded significant relations when children rated parental accepting style and a separate judge rated childhood anxiety, all of which were in the expected direction. However, the majority of effects were not statistically significant, suggesting that children's ratings of accepting parental style are

not reliably related to others' reports of children's anxiety.²

Parent-report studies. Four studies using parent reports of an accepting parenting style and a separate judge for ratings of childhood anxiety (i.e., children, teachers, etc.) were identified (see Table 1). Findings across these studies were inconsistent. For instance, in a study of 64 clinic-referred Dutch youth (age 8 to 18 years) presenting at an outpatient clinic with a diverse range of psychiatric problems (e.g., anxiety disorders, disruptive behavior disorders, and conditions not attributable to a mental disorder), the correlation between fathers' and mothers' self-reported positive and negative behavior on the EMBU (i.e., acceptance and aversiveness) and children's ratings of their own anxiety symptoms was not significant (Muris, Bogels, Meesters, van der Kamp, & van Oosten, 1996). A strength of this study was the use of standardized measures of each construct. In these studies, 2 of 9 correlations were significant and both were in the expected direction. Hibbs, Hamburger, Kruesi, and Lenane (1993) compared 49 children diagnosed with OCD with 41 normal control children, on parental expressed emotion (EE) as rated on a five-minute speech-sample test. Children with OCD were less likely than normal children to have both parents exhibit low EE (i.e., acceptance), and EE explained 5% of the variance in children's diagnostic status. Of course, because high EE was defined as high criticism or high emotional overinvolvement, these results do not indicate which aspect of EE may have played a more important role. In the Scott et al. (1991) study, parent reports explained less than 1% of the variance in children's self-reports of anxiety. Thus, most effects were not statistically significant, and the two that were fell in the 'small' range (Cohen, 1988). It should be noted that with the exception of Scott et al., the other three studies in this category used clinical convenience samples (i.e., Hibbs et al., 1993; Muris et al., 1996; Siqueland et al., 1996).

Observational studies. Five studies that used observer ratings of accepting parental behavior were identified (see Table 1). For instance, Whaley et al. (1999) examined the family interaction patterns of anxious mothers and their 7–14-year-old children. Anxious mothers were recruited from clinics and the community, and their diagnoses were confirmed with a structured diagnostic interview. Control mothers were recruited from the community and did not meet criteria for any disorders. In this primarily middle-class and Caucasian sample, mothers were asked to talk with their children about three topics (e.g., a parent–child conflict and something that made the child feel nervous) for 15 minutes. Trained

coders using a global 5-point scale rated maternal warmth, positivity, and criticism (i.e., lack of acceptance). Anxious mothers of children with an anxiety disorder ($n = 10$) were rated as less warm and positive, and more critical, than non-anxious mothers of children who did not meet criteria for an anxiety disorder ($n = 16$), and all of the effects were in the 'large' range (i.e., explaining more than 25% of the variance). However, anxious mothers of children with no disorder ($n = 8$) did not differ from anxious mothers with anxious children on these dimensions. A subsequent study, currently under review, included a group of non-anxious mothers with anxious children; the patterns found in Whaley et al. were replicated for maternal warmth and positivity, but criticism was entirely related to child anxiety status in this second study (Moore, Whaley, & Sigman, under review). These two studies suggest that maternal anxiety rather than child anxiety could be an underlying factor accounting for reduced maternal warmth and positivity, but that maternal criticism could play an important role in the development or maintenance of child anxiety disorders.

Using the same coding system for warmth, Siqueland and colleagues (1996) compared 17 clinically anxious children and 27 control children matched to the anxious children, and did not find group differences in ratings of maternal warmth. Another observational study grouped children into 'low,' 'medium,' and 'high' shyness categories on the basis of multiple informants and observations (Stevenson-Hinde & Glover, 1996). However, the sample size for the low shyness group was low for boys and girls ($n = 10$ for each gender group). Even when comparing only the medium-shy ($ns = 27$ and 32 , respectively) and the high-shy children ($ns = 24$ and 9 , respectively), observations of maternal positive style during unstructured interactions at home, and positive interactions during a structured drawing task at home, were significantly higher in the medium-shy group in only 2 of 6 tests of significance (the percent of variance explained could only be computed for one of these two tests, and it was 9%, a 'medium' effect). There were no significant group differences on maternal negative interactions during the drawing task (0 of 2 tests). Hudson and Rapee (2001) compared 43 clinic-referred anxiety-disordered children (with one of several disorders) to 32 control children recruited from the community. Ratings of maternal negativity during laboratory-based conversations revealed that mothers of anxious children were more negative (i.e., less accepting) than mothers of control children, accounting for 13% of the variance in diagnostic status (a medium effect). In a study of trait-anxious ($n = 42$) and normally developing ($n = 42$) preschoolers, identified by scoring above or below anxiety cutoff scores on a teacher rating scale, ratings of maternal positivity (i.e., acceptance) during a parent–child problem-solving game task were considerably higher for

² Predictably, the single informant self-report studies yielded a high proportion of significant effects (see Table 1).

mothers of normal as compared to anxious children, and 55% of the variance in group status was explained (Dumas, LaFreniere, & Serketich, 1995). In each of these studies, children's anxiety was assessed by structured interviews or normed questionnaire measures, and behavioral observations yielded acceptable inter-rater reliabilities. Therefore, this group of studies was characterized by superior methodological attributes.

Overall, the five observational studies showed significant relations between observer ratings of parental accepting behavior and self-reports or clinician diagnoses of childhood anxiety in 8 of 18 statistical tests, all of which were in the expected direction. This body of evidence is moderately consistent with the proposition that variations in parental acceptance, as rated by observers, are associated with variations in childhood anxiety. However, there is also evidence suggesting that maternal anxiety could act as a third variable explaining away this correlation, at least for maternal acceptance. In contrast, maternal criticism could be directly linked with children's anxiety.

Studies of parental control

Child-report studies. Results were inconclusive for studies of children's reports of controlling parenting style (see Table 1). All but two studies were based on children's ratings of both constructs, presenting the problem of respondent variance. In one of the studies in which separate judges (clinicians) rated childhood anxiety and children rated parental control, there was no significant association between group status (anxiety-disordered versus normal) and children's ratings of maternal control (Siqueland et al., 1996; see Table 1). In the second study, normal fourth-grade children's ratings of fathers' (but not mothers') granting of autonomy were positively associated with teacher's ratings of childhood anxiety, accounting for 9% of the variance – a medium effect (Mattanah, 2001). In these two studies, 1 of 3 statistical tests was significant (in the expected direction); due to the limited evidence pertaining to childhood anxiety and controlling parental style as rated by children, no definitive conclusions appear to be warranted concerning this aspect of the literature.

Parent-report studies. Two studies employed parent reports of controlling parental style and a separate rater of childhood anxiety (see Table 1). In the Siqueland et al. (1996) study, described above, there was no difference between the anxiety-disordered and control groups on mothers' ratings of maternal control on the Children's Reports of Parental Behavior Inventory. The second study involved 60 young children recruited from the community, and attained Q-sort ratings of parental control and multiple questionnaire ratings of children's shyness from both parents when the children were age 2 years and again at age 4 (Rubin, Nelson, Hastings, &

Asendorpf, 1999). Across the concurrent and prospective analyses, 1 of 7 tests (mother's ratings) was significantly and positively correlated with the other parent's ratings of children's shyness; 7% of the variance in shyness was explained in this test, a small effect. There is insufficient data to draw conclusions about the possible linkage between parent reports of controlling style and childhood anxiety.

Observational studies. More consistent findings were obtained in the six studies using observer ratings of parental controlling behavior versus autonomy-granting (see Table 1). In the Whaley et al. (1999) study, observers rated maternal psychological granting of autonomy during 15 minute conversations on a 5-point scale, based on mothers' solicitation of children's opinions, acceptance of differences of opinion, and other aspects of democratic parent-child interactions. Anxious mothers of clinically anxious children were rated as less granting of autonomy than anxious mothers of nondiagnosed children and non-anxious mothers of nondiagnosed children. This pattern of findings was replicated in the subsequent study (Moore et al., under review), suggesting that maternal control is related to child anxiety status rather than to mother's anxiety status. In the Siqueland et al. (1996) study, observers utilized the same coding system as in the Whaley et al. study, and also rated mothers of clinically anxious children as less granting of autonomy than mothers of nondiagnosed children. Mills and Rubin (1998), Rubin, Chea, and Fox (2001), Dumas et al. (1995), and Hudson and Rapee (2001) also reported significant effects using observational measures. As with the observational studies of parental acceptance, this group of studies was characterized by sound methodological characteristics such as the use of standardized measurement instruments and reliable observational rating systems.

In these six studies, 8 of 10 statistical tests yielded significant relations in the expected direction, with all effects except one in the medium (i.e., 9% or more variance in anxiety explained) or large (i.e., 25% or more of the variance) range. The one effect in the small range (3% of the variance in shyness) was reported by Rubin et al. (2001) in a study of 188 normal 4-year-olds recruited from the community. In this study, mother's oversolicitous (i.e., controlling) behavior during a free play interaction was positively associated with a composite measure of children's shyness based on mother's report and behavioral observation. One statistical test, also reported by Rubin et al., yielded a significant effect in the opposite direction – more parental oversolicitous behavior during a structured play period was associated with less child shyness. However, the authors had specifically predicted this finding for the particular observational task in question (a highly structured manipulative task that would have been

difficult to accomplish for preschoolers without considerable parental direction). The issue of situational context in determining the effect of parental behavior on children's anxiety is discussed below. Overall, these findings suggest that children who are clinically anxious or shy are likely to have mothers who are relatively more controlling and less likely to grant autonomy during parent-child conversations.

Studies of parental modeling of anxious behaviors

Child-report studies. No child-report studies were identified that used separate informants. Nonetheless, two recent studies using separate samples of normal Dutch school children as single informants found evidence that children's reports of 'anxious rearing' styles by both mothers and fathers, as exemplified by questionnaire items such as 'your parents warn you against all possible dangers,' were associated with children's reports of greater anxiety symptoms (Gruner, Muris, & Merckelbach, 1999; Muris, Meesters, Merckelbach, & Hulskenbeck, 2000). These findings suggest that further research may be of value. In these studies, 4 of 4 statistical tests were significant, suggesting that children who view their parents as engaging in less modeling of anxious behavior also experience less anxiety themselves.

Parent-report studies. We were unable to find any parent-report studies of parental modeling of anxious behaviors and children's anxiety symptoms.

Observational studies. Whaley et al. (1999) found that anxious mothers of clinically anxious children were more likely than control mothers of non-diagnosed children to discuss problems with their children in catastrophic terms that emphasized one's lack of control over the problem, or one's lack of ability to cope effectively with the problem. In fact, 47% of the variance in children's diagnostic status was explained by maternal catastrophizing. In the subsequent study (Moore et al., under review), a main effect for maternal anxiety was found, as well as an interaction effect suggesting that non-anxious mothers were more likely to catastrophize with clinically anxious children than with non-anxious children. These findings suggest one possible mechanism through which poor anxiety regulation skills may be passed from parents to their anxious children: Parents who model poor coping strategies, such as catastrophizing and avoidance, are more likely to have children who lack the ability to regulate fear and anxiety effectively.

Evidence for contemporary models of the ontogeny of childhood anxiety

Four main issues concerning the linkage between childhood anxiety and parenting style or behavior were raised in the introduction and are now addressed.

Evidence of main effects vs. interactions with other risk factors. Most studies examined parenting style or behavior in isolation, without considering potential interaction effects with other risk factors. Observer ratings of parental control showed the most consistent linkages with childhood anxiety in these studies, and specifically, with children's anxiety-disordered diagnostic status (in the case of three studies), shyness (in the case of two studies), and teacher-rated trait anxiety (one study). Observational ratings of parental acceptance also yielded a modestly consistent pattern of significant effects (in 8 of 18 statistical tests in five studies). Of course, the use of cross-sectional methodology has only established that these parenting behaviors *may* play a role as a risk factor for childhood anxiety in a simple, additive manner (i.e., independent of context).

Relatively few studies examined the role of context (e.g., the presence of other risk factors) in moderating or explaining the relation between parenting and childhood anxiety. As described above, Whaley et al. (1999) found that maternal anxiety disorders proved to be an important contextual factor accounting for the apparent association between maternal acceptance and children's anxiety disorder diagnostic status. Specifically, when mothers were clinically anxious, they were less warm and positive during interactions with their children, whether or not their children had an anxiety disorder. Papini, Roggman, and Anderson (1991) examined the moderating role of pubertal status in the relation between parental acceptance and adolescents' trait anxiety in a group of 231 seventh-graders, and found no evidence of an interaction effect. Finally, as mentioned above, Rubin et al. (2001) found that the context of the interaction situation itself moderated the relation between maternal oversolicitous parenting and children's shyness. Although oversolicitous, excessively controlling parenting during a free play period was linked with more shyness in children, the exact same kind of parenting in a structured play task was linked with *less* shyness, suggesting that the interactional context in which parental control emerges may have important implications for possible effects on children's regulation of shyness or social anxiety. Parents who are highly controlling during activities that could be directed by their children, such as free play, unintentionally deprive their children of control experiences in social contexts that are important for the development of confidence and assertiveness.

Inspection of the demographic characteristics of these studies provides little evidence of other moderating contextual processes. For example, mothers' and fathers' parenting were each associated with patterns of childhood anxiety in a comparable manner (see Table 1). Although the majority of the studies used primarily Caucasian samples, significant effects were also obtained in a sample of Mexican children (Hernandez-Guzman & Sanchez-Sosa, 1996) and a sample of Asian children (Scott et al.,

1991). Child age also did not appear to moderate the pattern of findings, as significant effects were reported for samples ranging from preschool age to adolescence (e.g., Pedersen, 1994; Stevenson-Hinde & Glover, 1996). So although few studies examined the moderating effects of context, it is clear that such studies can illustrate the mechanisms that influence how much parenting style or behavior may act as a risk factor for childhood anxiety.

Specificity of parenting to anxiety vs. other forms of psychopathology. Four studies included a non-anxious clinical comparison group as well as a normal control group. Such studies are useful for identifying whether particular parenting styles or behaviors are specific to child anxiety in particular, or are common to child psychopathology in general. In the Dumas et al. (1995) study, described above, an additional group of teacher-identified aggressive preschoolers ($n = 42$) were compared to the anxious sample ($n = 42$), and observational ratings showed that mothers of aggressive children were more positive and less controlling with their children than were mothers of anxious children.

The remaining three studies found nonsignificant results. In a study of 573 Norwegian adolescents recruited from the community and grouped into normal, anxious, delinquent, and anxious/delinquent groups on the basis of self-report measures, teens in the three 'problem' groups rated fathers and mothers lower in acceptance than did teens in the normal group (Pedersen, 1994). However, there were no significant differences among the three 'problem' groups on acceptance, suggesting that low acceptance was a risk factor for psychopathology in general, rather than just for anxiety. Similarly, Hudson and Rapee (2001; sample described above) found no difference between their anxiety-disordered group ($n = 43$) and oppositional-defiant disorder (ODD) comparison group ($n = 20$) on observed maternal acceptance and control, even though both groups differed from the control group on these measures, with one exception (the ODD group and control group did not differ on acceptance). In the Hibbs et al. (1991) study, in addition to the OCD and normal groups described above, children with disruptive behavior disorders ($n = 34$) were included as a clinical comparison group, and they did not differ from the OCD group in rates of parental high EE. Thus, although nonsignificant results from 3 of 4 studies do not provide conclusive evidence, a tentative synthesis of these studies suggests that a lack of parental acceptance and excessive parental control may be risk factors for various forms of psychopathology, and may not be specific to anxiety.

Direction of effects. Only three of the reviewed studies were longitudinal. Two of these provided prospective analyses (e.g., a time 1 measure

predicting a time 2 outcome) and none controlled for initial levels of anxiety when predicting later anxiety. In the study of 60 two-year olds conducted by Rubin et al. (1999; described above), a pattern emerged indicating that early shyness predicted subsequent parental control, rather than the reverse. Mothers and fathers who rated their children as more shy at age two were significantly more likely to rate their own level of control as higher than other parents' when children were age four, in 4 of 5 statistical tests (however, 3 of these effects were based on a single informant's ratings of both constructs). In contrast, initial parental control was not significantly associated with shyness at age four. The Pedersen (1994) study found that normal adolescents' ratings of mothers' and fathers' acceptance (but not control) predicted their self-reports of anxiety symptoms in the follow-up assessment approximately six months later. Of course, method variance could have accounted for this finding, since one informant was employed to rate both constructs. Finally, although Papini and Roggman (1992) obtained three sets of repeated measures from their sample of 47 12-year-olds between sixth and seventh grades, they only reported concurrent associations among the measures. However, they did examine patterns of change in the magnitude of the correlations and found evidence of an increase of the relation between parental acceptance and children's anxiety (a negative association) over time. These researchers hypothesized that the transition into junior high may have magnified the impact of a lack of parental acceptance on children's emotional well-being. It is unfortunate that longitudinal associations were not also examined. Few implications about the direction of effects linking parenting style or behavior and childhood anxiety are evident in this limited set of longitudinal findings.

Parenting determinants of trait anxiety vs. specific symptoms or disorders. Craske's (1999) model suggests that general parenting style across situations may contribute nonspecifically to child trait anxiety. The correlational studies reviewed above provided little evidence suggesting that children's and parent's reports of global parenting acceptance (across situations and time) were linked with children's trait anxiety, as measured by self-report measures such as the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978). None of the six statistical tests in the three multiple-informant self-report studies that examined this linkage were significant (i.e., Kliever & Kung, 1998; Mattanah, 2001; Tesser & Forehand, 1991). Additionally, there is too little evidence to evaluate the association between self-reported global parental controlling style or modeling of anxious behavior and children's trait anxiety. Only one study obtained self-reports of parental controlling style and children's trait anxiety from separate

informants, and a significant effect (in the expected direction) was found for fathers', but not mothers', parenting in this study (Mattanah, 2001). No studies met this basic criterion for parental modeling. Therefore, a conservative view would suggest that there is very little evidence for a linkage between an accepting parental style and children's trait anxiety, and there is also insufficient data to adequately test the association between parental controlling style or modeling and trait anxiety.

No studies have examined the role of situationally-specific parenting *practices* or *behaviors* as a contributing factor to the development of particular anxiety disorders in children with high trait anxiety (i.e., Craske's [1999] second pathway). However, three studies compared children who were already diagnosed with one of several anxiety disorders to normal control children using behavioral observation methodology (i.e., Hudson & Rapee, 2001; Siqueland et al., 1996; Whaley et al., 1999). Each of these studies demonstrated that parental controlling conversational behavior was more prominent in parent-child dyads that contained a child with an anxiety disorder. Whaley et al. (1999) also found that parents of anxiety-disordered children were less warm, more critical, and more likely to model anxious behavior than were parents of normal control children during laboratory-based conversations. It is unclear whether discomfort with the novel situation precipitated these parental interactional behaviors, or whether a long-standing pattern of these parenting behaviors in novel situations may have directly contributed to the development or maintenance of the children's specific patterns of anxiety.

Six studies examined parenting correlates of children's shyness and social anxiety (see Table 1). Although these studies did not diagnose the children in question, their focus on a specific constellation of anxiety symptoms merits comment. Four of these studies employed observational methodology that may reflect on parenting behavior in novel interaction situations. In a sample of 30 sixth-graders who were selected for either scoring in the clinical range on a self-report measure of social anxiety ($n = 15$) or for scoring in the normal range on this measure ($n = 15$), Hummel and Gross (2001) found a strong association between observed parental acceptance during conversations related to a puzzle task completed in children's homes and social anxiety group-status (7–85% of the variance in group status was explained by mothers' and fathers' acceptance across analyses). Mills and Rubin (1998) also grouped 6–10-year-old children ($n = 35$) into high-shy and low-shy groups and found evidence of more observed maternal control in the high-shy group. Rubin et al. (2001) and Stevenson-Hinde and Glover (1996), both discussed above, also found some evidence of greater parental control and less parental acceptance during videotaped interaction tasks with shy, socially inhibited children. Controlling or

critical parenting behaviors in novel conversational contexts, such as those involved in laboratory tasks, could be particularly influential in shaping children's patterns of sociability and shyness. But it is equally possible that shy, inhibited children influence their parents' patterns of communication with them in these contexts over the years.

Summary of findings

Several studies suggested that the context in which parenting *behaviors* occur – including the particular nature of the situation as well as the parent's own symptoms of anxiety – plays an important role in moderating or explaining linkages between parenting and childhood anxiety. Three studies indicated that parental warmth and control are not specifically related to anxiety problems in children, but rather to risk for psychopathology in general. This illustrates the concept of multifinality proposed by developmental psychopathologists, or the notion that the same risk factor (i.e., parenting) may have multiple outcomes (i.e., different kinds of psychopathology). Very few longitudinal examinations were conducted that might shed light on the direction of effects linking parenting behavior and childhood anxiety, and preliminary results appeared consistent with parenting as either a cause or an effect of children's manifestations of anxiety. There was very little evidence supporting the contention that general parenting *style* was related to children's trait anxiety. However, observed parental controlling *behaviors* during parent-child interactions was consistently linked with shyness and child anxiety disorder status across studies. The effect sizes in these latter studies were almost all in the medium or large range, indicating that at a minimum, parental control during parent-child conversations in novel situations represents a clinically significant area of intervention and further research.

Limitations of the extant literature

Although the models of Craske (1999) and Vasey and Dadds (2001) are useful for conceptualizing the different roles that parenting *style* and *behavior* play in the development of childhood anxiety and its disorders, these models are relatively new and have not guided much empirical research to date. Furthermore, previous research does not provide a satisfactory test of most aspects of these models. Four characteristics of the empirical literature limit the conclusions and action implications that can be drawn from the results: (a) the studies generally employed nonrepresentative samples, (b) the studies relied primarily upon self-report methodology, (c) nearly all of the studies were cross-sectional, and (d) most of the studies employed global, rather than specific, measures of parenting.

Representativeness of samples

One limitation was the homogeneity of the samples. Most of the studies employed samples that were predominantly Caucasian, and few studies examined the relationship between parenting style or behavior and childhood anxiety among different ethnic and cultural groups (see Scott et al., 1991 for a notable exception). Ethnic differences in parenting may therefore limit the generalizability of the findings from the reviewed studies. For example, there is debate over whether Baumrind's (1971) parenting typologies (e.g., authoritative, authoritarian, and permissive) apply equally to other ethnic and racial groups (e.g., Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Steinberg, Dornbush, & Brown, 1992); concepts such as 'strictness' and 'control' may have different meanings for people of different cultures (e.g., overinvolvement, parental concern, or organizational control). Therefore, it is unclear whether the findings reviewed above apply to children from different cultures.

Reliance on self-report measures

The majority of the reviewed studies used self-report data as the sole measure of parenting, and the validity of this type of data has been questioned. Child-report measures may make unrealistic demands on long-term memory and information-processing skills by asking children to make generalizations about patterns of past interactions (Holden & Edwards, 1989). Furthermore, children who are anxious at the time of assessment may provide biased reports of their parents' behavior, possibly resulting in more negative appraisals of parenting. A social desirability bias may limit the accuracy of parent-report data as well. As noted above, measures of parenting *style* were confounded with self-report methodology, as were measures of parenting *practices* or *behaviors* with observational methodology. Given the limitations of typical self-report parenting measures, the role of parenting *style* in contributing to child trait anxiety may have been underestimated in these studies.

A limitation of the self-report anxiety questionnaires employed in many studies is that these measures (e.g., RCMA; Reynolds & Richmond, 1978) have limited validity information and have not generally been found to discriminate between children with other clinical problems, such as attention deficit/hyperactivity disorder (cf. Reiss, Silverman, & Weems, 2001). Current self-report child anxiety measures with better validity data were not employed in most of the reviewed studies, but should be considered for future research (e.g., the Multi-dimensional Anxiety Scale for Children [MASC]; March, 1998; March, Parker, Sullivan, Stallings, & Conners, 1997; Wood, Piacentini, Bergman, McCracken, & Barrios, 2002).

Additionally, the studies using diagnostic groupings of children were at risk for (a) obtaining exaggerated results due to the use of extreme groups and (b) obtaining non-generalizable results due to the use of convenience samples. Thus, studies of anxiety-disordered children may have little application to the effects of parenting style and behavior on variations of anxiety symptoms in the general population.

In addition to the four studies of clinically diagnosed children discussed above, four additional studies using continuous measures of child anxiety or shyness created arbitrary groups of children (e.g., with a median split; Dumas et al., 1995; Hummel & Gross, 2001; Mills & Rubin, 1998; Stevenson-Hinde & Glover, 1996). The use of median splits may have artificially reduced meaningful variance in anxiety, leading to reduced statistical power.

Cross-sectional designs

Cross-sectional designs are generally employed to establish basic relations between target constructs (e.g., childhood anxiety and parenting). Such designs cannot, however, establish the direction of effects. Given the prevalence of cross-sectional designs, and the lack of prospective or experimental studies, it appears that there may have been a misconception in the field about the kind of information provided by a cross-sectional design. The use of cross-sectional designs has demonstrated that a relation between specific parenting behaviors and childhood anxiety disorders or shyness may exist, but the direction of this relationship cannot be elucidated with this design. Without empirical data supporting the direction of effects, the applicability of this body of research to theory development or clinical use is limited.

Global parenting measures

The broad nature of the existing theoretical categories of parenting style and behavior (e.g., acceptance and control) limit the direct clinical, theoretical, and empirical applications to be derived from research findings. Establishing a general relation between global parental accepting style and current child anxiety symptoms advances the field little because such findings do not help refine clinical practice or theoretical models. For example, questionnaire items designed to measure an accepting parental style refer to speaking to one's child in a warm and friendly voice. But this parenting approach may not always protect children from anxiety. Speaking to a child in a warm and friendly voice for a prolonged period immediately following the child's avoidance of a feared situation may reinforce the anxious behavior (i.e., by acting as a reward for avoidance). As Rubin et al. (2001) demonstrated, high levels of parental control in certain interaction

situations could inhibit children's sociability, whereas in other situations, parental control may provide children with needed structure, suggesting that interactional contexts can influence the impact of parenting behavior on children's anxiety. Greater specificity of parenting *behaviors* may help to further define the role of parent-child interactions in influencing childhood anxiety, as well as provide clinicians and parenting specialists with more practical advice for parents. The use of broad, generic parenting categories such as 'acceptance' in past research may have resulted from the lack – until very recently – of theoretical models that provide a framework for conceptualizing the role of specific parenting *behaviors* in particular contexts as a causal factor in childhood anxiety.

Summary of limitations

The methodological characteristics of past studies limit conclusions about the nature of the relationship between parenting style or behavior and childhood anxiety. The use of nonrepresentative samples, self-report measures, and cross-sectional designs constrains our understanding of the generalizability, validity, and direction of effects of previous findings. Perhaps most significantly, the reliance on nonspecific theories and measures of 'parenting style' may have contributed to a lack of precision in previous studies, leading to the relatively inconclusive state of the research literature. However, the consistent findings in the observational research on specific parenting *behaviors*, and particularly parental control, provide an important basis for conducting future research.

Future directions

The limitations of the extant literature and the questions raised about contextual factors, the direction of effects, and the specificity of particular parenting behaviors to childhood anxiety necessitate further evaluation and refinement of our theoretical models. In this section, we present suggestions for refining and extending models of the relation between parenting and childhood anxiety, as well as recommendations for research designs that could clarify issues of timing and the direction of effects.

Further specification of theories and hypotheses

Greater theoretical specificity is needed to guide research on the role that parents may play in the development of child anxiety disorders, as well as to inform intervention and prevention programs targeting childhood anxiety. Contemporary models of anxiety development (i.e., Chorpita & Barlow, 1998; Craske, 1999; Vasey & Dadds, 2001) are useful for conceptualizing the multiple pathways through

which parenting style and behavior may contribute to children's trait anxiety and anxiety disorders. Some theoretical works have highlighted specific conditioning mechanisms that might link parenting behavior to the development of anxious states and patterns of avoidance in children (e.g., Ollendick, Vasey, & King, 2001). However, there are few theory-derived hypotheses proposed in the literature about specific situations in which particular parenting behaviors might impact children's experiences of anxiety.

Two heuristics to guide research and clinical interventions with anxious children. We propose two heuristics for the development of research and clinical hypotheses intended to identify specific parenting *behaviors* that might elicit or maintain manifestations of child anxiety in specific situations. Because the reviewed studies consistently found observed parental control to be related to childhood anxiety disorders and shyness, these heuristics explore two specific ways in which controlling, oversolicitous, or overinvolved parenting may contribute to particular child anxiety symptoms.

We offer one heuristic based on human and animal models of control and mastery as determinants of anxiety (e.g., Chorpita & Barlow, 1998; Ray & Sapolsky, 1992): When parents fail to provide children with the opportunity to engage in age-appropriate self-help behaviors (e.g., dressing and grooming) and to experience developmentally appropriate parent-child boundaries at home (see Sroufe, Jacobvitz, Mangelsdorf, DeAngelo, & Ward, 1985), children may not develop a sense of control, mastery, and autonomy. Instead, children may experience an increasing sense of dependence on the parents. Among children with high trait anxiety, this dependence and the pattern of contingencies that reinforce it might result in separation anxiety.

This heuristic provides a framework for generating specific, testable hypotheses. Specifically, children who are below age-norms in adaptive functioning and independence from parents may be at risk for developing a sense of helplessness, which has been associated with increased anxiety (cf. Chorpita & Barlow, 1998). For example, when children are at the age of middle-school entry (i.e., 11 years old), it is normative in American culture for children to dress, bathe, and sleep independently and privately, and for physical affection between parents and children to be less intense (e.g., less frequent lap-sitting). An 11-year-old who has not reached these age-norms might experience lowered self-efficacy and a lessened sense of mastery when comparing his or her repertoire of adaptive and independent behaviors to those of his/her peers. Parental participation in the child's self-help routines and initiation of (or responsiveness to) frequent, intense physical affection might reinforce and maintain the child's immature level of functioning, and thus, his/her lowered

self-efficacy and mastery – even if the parent's behavior was not the initial cause of these routines or the child's anxiety. Because the child's anxiety about his/her lack of mastery may be temporarily diminished when the parents are present to assist and comfort the child, the child may develop a specific anxiety about separation from the parents. Parental encouragement of normative self-help skills and parent-child boundaries may therefore represent a fruitful area for further research, as well as an important area of assessment and intervention in clinical work with anxious children.

A second heuristic is suggested in the writings of Kenneth Rubin and his colleagues (e.g., Rubin, Hastings, Stewart, Henderson, & Chen, 1997). These researchers propose that excessive parental responsiveness and oversolicitousness in a situation that initially elicits anxious responses in a child can reinforce child anxiety and sensitize children to the situation, preventing exposure and habituation. This process may occur in novel contexts such as the first day(s) of kindergarten, at which time oversolicitous parental reactions to initial child shyness might perpetuate social anxiety over time. For instance, parents might stay with their children at school in response to early signs of child wariness and distress, unintentionally rewarding the anxious behavior with parental attention and simultaneously interfering with (a) trial-and-error learning of social approach behaviors and (b) habituation to the novel social context of being separated from parents and confronted with peer social interactions. Conversely, parents who encourage their children to participate in social activities and remove rewarding consequences for initial shyness or distress may help to inoculate children with high trait anxiety against becoming phobic of social interaction in such situations. There are probably many other specific situations in which parental regulation of contingencies and opportunities for habituation could affect their shy or inhibited child's development of specific anxious and avoidant responses (e.g., parental reactions to children's reticence about spending the night at a friend's house). Observational studies of parenting behaviors in developmentally significant naturalistic situations, such as in the classroom during the first week of kindergarten – rather than in the laboratory – may help further our understanding of the ontogeny of specific anxious reactions in children who are already high in trait anxiety. As noted by Whaley et al. (1999), parental anxiety may be one factor contributing to specific patterns of parenting behavior. Parents with high trait anxiety or previous experiences with traumatic events might be especially likely to respond in an oversolicitous, protective manner to manifestations of anxiety and distress in their children. The temporary reduction of children's anxiety in response to such parenting behavior may, in turn, reinforce the parent. Furthermore, children who are profoundly inhibited in

most social contexts, such as those described by Rubin et al. (1997), may be very slow to habituate to novel situations and thus may extinguish alternative parenting behaviors (such as pushing for and reinforcing children's social approaches) that could potentially lead to increased child sociability over time. Therefore, parental anxiety and the pervasiveness of children's inhibition may provide important contexts for the emergence of excessively responsive parental reactions to children's anxiety that eventually contribute to the development of a specific set of fears and patterns of avoidance in children.

In comparison to the relatively nonspecific traditional parenting style categories that may have few practical implications for the treatment of childhood anxiety, the identification of specific parenting behaviors contributing to particular manifestations of fear and anxiety in children could inform our research and clinical practice by identifying important mechanisms of change in child anxiety development and maintenance that are partially or wholly under parental control. The two heuristics proposed above are intended to extend theories of child anxiety development by identifying particular parenting behaviors that may influence children's feelings of mastery and their ability to regulate anxiety in specific situations.

Issues of timing and sequencing. Few theoretical formulations have specified the time frame in which a specific parenting behavior might lead to increased childhood anxiety. Although oversolicitous parenting responses to children's expressions of anxiety may reward anxiety (i.e., through operant mechanisms) while preventing exposure and habituation (i.e., via classical conditioning mechanisms), the timing of this process is not specified. Based on operant and classical learning mechanisms, manifestations of childhood anxiety could be shaped by the onset and repetition of parenting behavior in a relatively short time frame (i.e., following several 'trials' over the course of minutes, hours, or days). In contrast, theoretical models that focus on cognitive mediators imply a longer time frame. Experiences with excessive parental control may lead to a loss of perceived mastery and personal control in children and, in turn, increased childhood anxiety (Chorpita & Barlow, 1998). But, changes in perceptions of personal control could take months or years to occur.

Before such theories can be tested, it will be necessary to specify the temporal processes involved and posit whether the expected effect would be on children's *state anxiety* (i.e., anxiety on a given day or week), *situationally specific anxiety* (i.e., consistently experienced anxiety or avoidance associated with one or several specific situations that persists over time), or *trait anxiety* (i.e., an increase in non-specific anxiety and negative affect across situations, persisting over months or years). For example, a single instance of parental criticism could lead to a

brief increase in state anxiety on the same day, with no long-term implications. In sum, the field would benefit from further refinement of existing models to include a more definitive statement about the expected duration of time between a given parenting behavior (or set of behaviors) and the onset of increased child state or trait anxiety.

Clarifying the direction of effects

To evaluate the possible pathways linking parenting behavior and childhood anxiety, we need to move from basic correlational research to methodologies that can reveal more about the direction of effects. Because a specific sequence of events is a necessary, but not sufficient, precondition to establishing a directional pathway (e.g., children's separation anxiety eliciting parental overprotective behavior), utilizing repeated measures of parenting behavior and childhood anxiety at theoretically meaningful time-intervals can help test initial hypotheses about the direction of effects. Second, experimental methods can be employed to directly evaluate the effects of manipulating parenting behavior on childhood anxiety, and vice versa.

Longitudinal approach. Repeated-measures longitudinal research could help elucidate the temporal sequence of events linking systematic changes of parenting behavior and situational or global changes in childhood anxiety. Ideally, such research designs would employ more than two time-points of data for both specific parenting behavior in particular situations (e.g., as suggested above, oversolicitous parenting behavior in the kindergarten classroom) and specific child anxiety symptoms. Statistical modeling (e.g., hierarchical linear modeling) of the change in the trajectory of parenting on the change in the trajectory of anxiety symptoms, and vice versa, could then be implemented. Although some longitudinal studies have been conducted (e.g., Papini & Roggman, 1992), we are not aware of any that have tested the effects of change in parenting behavior on change in childhood anxiety. One challenge facing researchers using this approach is identifying an appropriate time interval during which to administer repeated measures. The time interval should be long enough to permit a stable change in parenting behavior, but not so long that multiple changes would have occurred. Intervals of less than one year are advisable and the selection of developmentally significant time points (e.g., entry into preschool, kindergarten, or middle-school), may help ensure that meaningful change in parenting behavior will be observed. Of course, though suggestive, longitudinal designs do not provide evidence of cause-and-effect relationships (Cowan & Cowan, 2002).

Experimental design. Short-term experimental designs may provide weight to the rationale for

hypotheses concerning the role of child anxiety in eliciting specific types of parenting behavior. Several studies have experimentally evaluated the effects of hyperactive or noncompliant child behavior on the subsequent behavior of parents (e.g., Pelham et al., 1998). For instance, Pelham and colleagues have investigated whether exposure to a compliant versus noncompliant child confederate in a laboratory interaction task led to differential short-term patterns of alcohol consumption in parents of externalizing children. A similar approach might examine the effects of specific anxious child behaviors on the interactional style of parents of anxiety-disordered children. For instance, parents might be randomly assigned to teach an 'anxious' or 'normal' child confederate a specific skill, and then to play freely with the child. The child confederate might be assigned to either act in a shy, indecisive, and/or clingy manner, or in a sociable and confident manner. Group differences between the parents in their interactional styles with the child confederates could provide valuable experimental evidence about the potential role that child anxious behavior may play in eliciting specific parenting behaviors such as excessive control and intrusiveness.

Intervention design. Intervention designs can help clarify the direction of effects between family interaction patterns and childhood anxiety. Such research designs seek to alter family interaction patterns to assess the resulting impact on children's developmental outcomes (Cowan & Cowan, 2002). Though intervention designs cannot provide information regarding the initial causes of childhood anxiety, such designs can test whether altering *current* family interaction patterns affects *current* childhood anxiety, which may have implications for the role that parents can play in maintaining childhood anxiety disorders.

In an intervention design, subjects are randomly assigned to either a condition that alters family interaction patterns, or a condition that does not (Cowan & Cowan, 2002; Brent & Kolko, 1998). Children's behavior and family interaction patterns are measured before and after the intervention. Strong evidence exists for family interactions playing a maintaining role in children's anxiety if (a) the family intervention improves the child outcome measure more than does the child intervention, (b) the family intervention improves family interactions more than does the child intervention, and (c) improvements in the child outcome measure are mediated by improvements in family interactions. Of course, even results that meet these three conditions do not 'prove' that family interactions maintain or elicit a given child outcome. However, such results provide more convincing evidence that family interactions *could* play a role in the maintenance of child anxiety disorders than do correlational results.

To date, four studies have compared 'family-focused' with 'child-focused' cognitive behavioral therapy (CBT) programs for clinically anxious children (Barrett, 1998; Barrett, Dadds, & Rapee, 1996; Mendlowitz et al., 1999; Spence, Donovan, & Brechman-Toussaint, 2000). The family treatment condition in each of these studies included specific parent-training modules intended to improve family interaction patterns. In each study, there was evidence of superior child anxiety outcomes among children assigned to the family treatment condition (although there was only a marginally significant post-treatment difference between groups on anxiety disorder status in the Spence et al. study). This evidence fulfills Cowan and Cowan's (2002) first condition, demonstrating that a family intervention program alters a given child outcome measure in a more favorable manner than a non-family intervention. Surprisingly, these studies have not tested the second and third conditions of the model; no research on the effects of these interventions on family interaction processes exists. The next empirical step is to test whether parent-child interactions are improved by family CBT. Clearly, an expansion of the research program comparing family CBT to child CBT represents a fruitful step for examining the role of parenting behavior as a maintaining influence in childhood anxiety disorders.

Summary

Are parental warmth, control, and modeling of anxious behaviors associated with the development and maintenance of childhood anxiety? The extant research offers no definitive conclusions, but a few consistent patterns have emerged. Relatively greater observed parental control during parent-child interactions in laboratory tasks was consistently linked with more child shyness and a higher risk for meeting criteria for an anxiety disorder in children and adolescents. This association tended to be of a medium or large magnitude, with clinically significant implications. Contextual determinants of the relationship between parenting and child anxiety, such as situational characteristics and parental anxiety, play important moderating roles. Recent models of anxiety development provide a broad conceptual framework for more programmatic theory development and empirical evaluation of the relation between specific parenting behaviors and particular manifestations of childhood anxiety. Although the methodological characteristics of past studies limit conclusions about nature of this relationship, advances in the past decade in the field of developmental psychopathology suggest that researchers in this area may soon be able to critically assess contemporary models of the effects of parenting style and behavior on childhood anxiety.

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