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Social relationships are posited to contribute to child social anxiety (e.g., Rapee & Spence, 2004) and depression (e.g., Kaufman, 1991). What social relationships are important and in what ways do they affect specific child outcomes? Research suggests that parents and teachers influence children in many ways, but the specific relations of parental behaviors and teacher-child relationships to child social anxiety and depression have not been examined thoroughly. The current study, therefore, used structural equation modeling to test a cognitive-mediated model that investigates the contributions of parental warmth, parental control, and teacher-child relationships to both child social anxiety and depression. A multi-rater (parent, child, teacher) multi-method (interview, questionnaire, observation) design was used with 76 4th graders who are part of an ongoing longitudinal study (Gazelle, 2006). Participants also included each child's teacher and parent. The final model included pathways indicating that maternal overcontrol directly predicts child social anxiety, and maternal rejection and the closeness of teacher-child relationships directly predict child depression. In contrast, the associations of maternal rejection and teacher-child closeness to child social anxiety were mediated by children's interpretations. This overall model demonstrates good fit to the data. These results support the "affectionless control theory" (Parker, 1984) and suggest that maternal overcontrol and rejection are both related to child *social* anxiety. These results also add greatly to the literature by suggesting that teacher-child relationships are

important for children's internalizing disorders even when including parental relationships in the model, and this association may be similar to the relationships between child internalizing and parental behaviors. Overall, this model represents an extension of the literature on parental behaviors and a novel contribution to our understanding of teacher-child relationships.

A COGNTIVE-MEDIATED MODEL OF CHILD SOCIAL ANXIETY AND

DEPRESSION: EXAMINING CHILDREN'S RELATIONSHIPS

WITH PARENTS AND TEACHERS



by

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To my loving husband, thank you for your unconditional love, constant support, and

endless understanding. To my wonderful family, thank you for your infinite

encouragement and compassion. I appreciate you all so very much.

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CHAPTER I

INTRODUCTION

The current study investigated factors contributing to child social anxiety and depression by testing a model examining associations with parental behaviors and teacher-child relationships. Most research in this domain has been conducted looking at children with *general* anxiety, which often includes a sample with a variety of types of anxiety. The first objective of the current study was to examine the association of parental warmth and control specifically with child *social* anxiety. Second, parental behaviors have been examined often in relation to child outcomes (see Wood, McLeod, Sigman, Hwang, & Chu, 2003 for a review); yet, research on the effects of other important social relationships—such as teacher-child relationships—remains lacking. The current study examined these links in fourth grade children; during middle childhood, the quality of teacher-child relationships has been shown to be associated with child outcomes (e.g., Crosnoe & Elder, 2004; Howes, Matheson, & Hamilton, 1994; Little & Kobak, 2003; Wentzel, 1994). Thus, the second objective of the current study was to examine the importance of teacher-child relationships when considered in the same model with parental behaviors. Third, in addition to parental behaviors and teacher-child relationships, the current model examines the role of children's interpretations in these associations (see Figure 1 for theoretical model).

Children's interpretations of situations are associated with their experience of anxiety and depression (e.g., Epkins, 1996; Magnusdottir & Smari, 1999; Shortt et al., 2001; Wichmann et al., 2004) and may serve as a mechanism by which parental behaviors are related to child outcomes (Barrett et al., 1996; Choripita & Barlow, 1998). Thus, the final objective of the current study, therefore, was to examine the possible mediating role of children's interpretations in the association between parental behaviors and both child social anxiety and depression. Furthermore, close teacher-child relationships may alter children's interpretations, possibly moderating the association between parental behaviors and children's interpretations. To examine these objectives, the current paper reviews literature connecting parental warmth and control, teacher-child relationships, and children's interpretations with both child social anxiety and depression.

*Children's Internalizing*

*Child social anxiety.* Anxiety disorders are the most prevalent childhood psychiatric disorders (Kashani & Orvaschel, 1990). In particular, social anxiety disorder affects approximately 3-4% of children (McGee, Feehan, Williams, & Partridge, 1990). Child social anxiety represents a fear of social or performance situations in which embarrassment may occur (e.g., Taylor & Wald, 2003) and is reflected by physical, behavioral, emotional, and cognitive symptoms. These social situations may include interactions with parents, adults, peers, or strangers. Symptoms of social anxiety are associated with many types of impairment, including general emotional overresponsiveness, social fear and inhibition, dysphoria, loneliness, and general

fearfulness (Beidel, Turner, & Morris, 1999). These significant impairments highlight the need for investigating factors that may contribute to child social anxiety.

Etiologic models posit several risk and protective factors related to the development and maintenance of child social anxiety. Child characteristics such as genetics, temperament, social skills, and information processing influence child social anxiety (see Lonigan & Phillips, 2001, for a review). Although child characteristics were not a focus of this study, acknowledging the bidirectional influence of child and parent characteristics is imperative. For example, a child with a behaviorally inhibited temperament may elicit certain caregiver responses. In addition, environmental factors such as parental behaviors, social relationships, and negative life events also contribute to child social anxiety (e.g., Rapee & Spence, 2004).

*Child depression.* Childhood depression encompasses many of the same characteristics as adult depression such as depressed mood, diminished interest in activities, and sleep disturbances (Hammen & Rudolph, 2003). In addition, childhood depression is often characterized by irritability (e.g., Goodyer, & Cooper, 1993) and somatic complaints (Kashani, Rosenbery, & Reid, 1989). Although clinical levels of depression in children are relatively infrequent (1-2% of children; Costello et al., 1996), experiencing subsyndromal depressive are much more common (20.7% of females ages 11 to 16 years; Coooper & Goodyer, 1993). Furthermore, childhood depressive symptoms may put children on a trajectory that has been shown to lead to multiple negative outcomes (Birmaher et al., 1996), which highlights the need for understanding contributing factors.

Many factors have been shown to be related to the development of child depression, including both child and environmental factors. Children with depression exhibit negative cognitions (Beck, 1987) and may experience negative life events related to the onset of depressive symptoms (e.g., Garber & Hilsman, 1992). In addition, parental behaviors and genetics have been shown to be related to child depression (e.g., Kaufman, 1991), and parental behaviors may interact with child characteristics to affect child outcomes (Pomerantz, 2001).

Examining simultaneously all factors associated with child social anxiety and depression is beyond the scope of this study. However, Bronfenbrenner's ecological model (1979a) identifies the utility of examining children's functioning within specific environmental contexts. Environmental "microsystems," characterized by children's direct interactions with others, are theorized to facilitate learning and development (Bronfenbrenner, 1979b). In particular, children's interactions with their parents greatly influence the development of early social skills, as parent-child interactions represent their first social relationships (Bogels, van Oosten, Muris, & Smulders, 2001). Indeed, many parental factors, such as parental behaviors, parent anxiety, and parent interpretations of social situations, influence what children feel, think, and learn in their environment.

*Parental Behaviors*

Warmth and control are the two basic dimensions of parenting (Baumrind, 1971; Maccoby & Martin, 1983; Parke & Buriel, 1998) and have been related to *general* child anxiety (see Wood et al., 2003 for a review). The social nature of parent-child

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relationships and their influence on children's subsequent social relationships may make parental warmth and control specifically salient for child *social* anxiety (Vertue, 2003). In addition to anxiety, parental behaviors are associated with child depression. Two recent parallel review articles that discuss parenting suggest that parental control is more closely related to child anxiety (McLeod, Wood, & Weiz, 2007), and parental rejection is more closely related to child depression (McLeod, Weisz, & Wood, 2007). Thus, the first objective of the current study was to examine a model testing the relation of parental warmth and control to both child *social* anxiety and depression.

*Parental warmth.* Parental warmth is a dimension of parenting behavior that represents responsiveness; parental behaviors along this dimension range from sensitive to hostile (Maccoby & Martin, 1983). Warmth in parent-child relationships is reflected by high levels of parental physical and verbal acceptance, availability (Wood et al., 2003), lovingness, responsiveness, involvement (Gray & Steinberg, 1999), and low levels of criticism and rejection (Rohner, 1986, 2004; Rohner & Rohner, 1980). As in the current study, previous research often equates parental rejection with low parental warmth (Rohner, 1986, 2004; Rohner & Rohner, 1980). Research has established that parental warmth is associated positively with child adjustment, (Amato & Fowler, 2002), peer acceptance (Davidov & Grusec, 2006), and psychosocial development (Gray & Steinberg, 1999), and associated negatively with child emotional distress (Operario, Tschann, Flores, & Bridges, 2006), behavior problems (Amato & Fowler, 2002), and internalizing disorders (Bayer, Sanson, & Hemphill, 2006; Lila, Garcia, & Gracia, 2007).

Thus, research collectively indicates that children whose interactions with their parents are characterized by low warmth are at risk for psychopathology.

Although parental warmth may influence children's broad risk for psychopathology, a mixed consensus exists regarding its relation to child anxiety. Two competing theories of parental warmth and child anxiety have been empirically supported. First proposed by Parker (1984), the theory of "affectionless control" posits that the combination of low parental warmth and high parental control contributes to child anxiety. More recent research suggests that parental warmth and control contribute to child anxiety via two separate pathways (Chorpita & Barlow, 1998). In contrast, the "affectionate control" theory posits that parental control—but not necessarily parental warmth—is related to child anxiety (Becker, 1964; Rubin & Mills, 1991). The central difference between these theories is the contribution of parental warmth to child anxiety. Many studies support the "affectionless control" theory (e.g., Dadds, Barrett, Rapee, & Ryan, 1996; Dumas, Lafreniere, & Serketich, 1995; Moore, Whaley, & Sigman, 2004; Wiborg & Dahl, 1997; see Wood et al., 2003), whereas other findings support the "affectionate control" theory (e.g., Rubin & Mills, 1991, Denham et al., 2001, Park, Belsky, Putnam, & Crnic, 1997). Thus, findings regarding the contribution of parental warmth to child anxiety are mixed (see DiBartolo & Helt, 2007, for a review).

With regard specifically to child *social* anxiety, research on parental warmth remains sparse. Despite the limitations of retrospective studies, (see Brewin, Andrews, & Gotlib, 1993), these reports suggest an association between rejecting parental behavior and child *social* anxiety (Arrindell, Emmelkamp, Monsma, & Brilman, 1983; Bruch,

Heimberg, Berger, & Collins, 1989). Specifically, parental hostility and criticism are linked with children having a higher need for approval (Allaman, Joyce, & Crandall, 1972), which is related to social anxiety (Jones, Briggs, & Smith, 1986; Watson & Friend, 1969). Furthermore, Suchman, Rounsaville, DeCoste, and Luthar (2007) found that if parents are warm and encouraging, then their children may learn to expect similar behavior from others, experience less psychological distress, and exhibit better adjustment. If parents reject and criticize their children, however, then children may become hypervigilant and hypersensitive to negative evaluation by others (Alessandri & Lewis, 1993). Thus, low parental warmth may lead to a fear of negative evaluation, negative expectations of social situations, and lower confidence in one's social abilities; these characteristics are often encompassed in the experience of social anxiety and suggest a connection with parental warmth. The current study, therefore, extends research on parental warmth by specifically examining its relation to child *social* anxiety.

The current study also examined how parental warmth is related to child depression. Children's perceptions of low parental warmth have previously been shown to be associated with child depression (e.g., Cole & Rehm, 1986; Muris, Meesters, Schouten, & Hoge, 2004). Furthermore, in research examining child resilience, maternal warmth has been found to be a protective factor for children at risk for depression (Brennan, Le Brocque, & Hammen, 2003). The effects of parental warmth on social anxiety and depression overlap considerably. Some studies address this overlap by combining measures of anxiety and depression into a single factor of general emotional distress (e.g., Operario et al., 2006), which is related to maternal warmth. Other studies

suggest that parental rejection may be connected specifically to child depression (Rapee, 1997; Muris et al., 2004; McLeod et al., 2007). The current model, therefore, examines how parental warmth may differentially predict child *social* anxiety and depression.

*Parental control.* Parental control is the second dimension of parenting and represents demandingness (Baumrind, 1971; Parke & Buriel, 1998); parental behaviors along this dimension range from restrictive demands to a lack of supervision. Parental overcontrol reflects excessive regulation of children's activities and routines, directive decision making, overprotection, or directing children on how to think or feel (Barber, 1996). Parental overcontrol is also characterized by intrusive behavior, low autonomy granting, constraining individuality, and the use of excessive demands (Ginsburg & Schlossberg, 2002). Through intrusive and overcontrolling behaviors, parents can deprive their children of exploring the environment and developing a personal sense of control (Chorpita & Barlow, 1998; Chorpita, Brown, & Barlow, 1998), which may lead children to feel more anxious in subsequent situations (e.g. Barlow, 1988; Beck & Emery, 1985). Indeed, parental overcontrol may increase children's risk for developing internalizing disorders (Chorpita et al., 1998) and has been associated with *general* child anxiety and depression (Dumas et al., 1995; Gruner, Muris, & Merckelbach, 1999; Hudson & Rapee, 2001; Hummel & Gross, 2001; Khrone & Hock, 1991; Mills & Rubin, 1998; Moore et al., 2004; Rubin, Cheah, & Fox, 2001; Wood et al., 2003).

Parental control may be related specifically to the maintenance of child *social* anxiety, as controlling parents "protect" their children from new social experiences. Parents may restrict children's interactions because they want to shield their child from

the anxiety that may occur in social situations. Children with parents who are overcontrolling, therefore, may have fewer social interactions, fewer chances to habituate to their anxiety, and fewer opportunities to obtain positive feedback. Thus, high levels of parental control may maintain or exacerbate child inhibition and social withdrawal (Rubin, Hastings, Steward, Henderson, & Chen, 1997). Although the research base is limited, retrospective studies support a relationship between parental control and child *social* anxiety (e.g., Arrindell et al., 1983; Bruch et al., 1989). In addition, preliminary research suggests that fathers of children with high social anxiety are more controlling than fathers of children with low social anxiety (Greco & Morris, 2002). To date, the relationship between maternal overcontrol and child *social* anxiety is not known to have been examined. Thus, the current model furthers extant research by examining parental control specifically in relation to child *social* anxiety.

Preliminary research also suggests that parental control is related to child depression. A retrospective study found that people who had recovered from depression rated parents as being more protective than did a control group (Perris et al., 1986). In addition, less controlling parental behaviors have been found to be a resilience factor for children at risk for depression (Brennan et al., 2003). Other research suggests that parental overcontrol is more closely related with *general* child anxiety than with child depression (Muris et al., 2004; Rapee, 1997). The current model includes both child *social* anxiety and depression to understand how their associations with parental control may differ. Parental behaviors, however, are merely one way in which parents may

contribute to child social anxiety. Thus, the current study also examined the contributions of parent anxiety and interpretations.

*Parent anxiety and interpretations.* Heritability estimates for social anxiety range from .4 to .65 (Beatty, Heisel, & Hall, 2002; Ollendick & Hirshfeld-Becker, 2002). At least one parent of a child with social anxiety disorder often has social anxiety (Brown & Lloyd, 1975; Bruch et al., 1989). Indeed, child social anxiety has been shown to be influenced by other parent variables through social learning, modeling of socially anxious behavior (Brown & Lloyd, 1975; Bruch et al., 1989; Mineka & Zinbarg, 2006), information transfer, and reinforcement of anxious or avoidant behaviors (Fisak & Grills-Taquechel, 2007). Thus, the current model also includes parent social anxiety and negative interpretations, which have been shown to be associated with child anxiety (e.g., Bogels et al., 2001). One way in which these parent variables likely influence child anxiety is through their influence on parental behaviors. For example, parents who are anxious in social settings may be more controlling and less likely to facilitate social interactions for their children (e.g., Daniels & Plomin, 1985). The current model, therefore, includes parent anxiety and interpretations as predictors of parental behaviors. Direct effects of parent anxiety will also be examined statistically; however, the current model primarily examines how parent anxiety and interpretations contribute to parental behaviors, which in turn affect children's interpretations, social anxiety, and depression.

In sum, parental warmth and control are posited to be related to both child *social* anxiety and depression. Although the influence of parent factors may be primary for child internalizing and has received considerably more empirical attention, it is reasonable to

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expect that parent-child relationships do not explain all of the relationship variance in child social anxiety and depression. Thus, other social relationships may also affect children's social anxiety and depression. Could teachers represent such an influence? The next section will draw on the mentorship literature to examine the possible association of teacher-child relationships to child social anxiety and depression.

*Teacher-Child Relationships*

Bronfenbrenner's (1979b) theory of ecological development posits that children develop in multiple contexts. Parental behaviors likely affect child outcomes; yet, relationships with parents are not the only important interactions in children's "microsystems." Mentor relationships represent children's interactions with unrelated adults, and they have been shown to enhance children's social knowledge (Hamilton, Hamilton, & Hirsch, 2006) and serve as protective factors for at-risk children (e.g., Evans, Wilson, Hansson, & Hungerford, 1997). Aspects of mentor relationships that develop trust and support include shared activities, likeability, frequent interaction, and familiarity (Flaxman & Ascher, 1992). Indeed, teacher-child relationships often possess many of these qualities, and teachers are frequently examined in the mentoring role (e.g., Hamilton et al., 2006).

Teachers may serve as mentors when they advise and support their students—in addition to providing them with formal education (Hamilton et al., 2006). Teachers who are positive, consistent, available, trusting, and caring may be viewed by students as mentors (Dallos & Comley-Ross, 2005). Research on the association of teacher-child relationships with children's academic achievement illustrates the importance of the

teacher's role. Specifically, teacher-child relationships influence the amount at-risk students learn (Muller, 2001) and are associated with children's academic achievement (Crosnoe & Elder, 2004; Graziano, Reavis, Keane, & Calkins, 2007). This association is posited to stem from teachers providing children with an "arena of comfort," which is a "supportive interpersonal context that enhances their ability to cope with challenges in other settings" (Crosnoe & Elder, 2004, p., 572). Children who have a positive relationship with their teacher perceive that their teacher will act in their best interest (Muller, 2001). In contrast, directive and demanding teacher behavior is not only associated with lower academic engagement by students, but is also related to child anxiety and withdrawal (Assor, Kaplan, Kanat-Maymon, & Roth, 2005; Flanders, 1952; Hartmut, 1978). No research to date is known to have examined the association between teacher-child relationships and child depression. Supportive teacher qualities, however, have been associated with positive attitudes toward teachers (Hartmut, 1978). Furthermore, these relational aspects of teacher-child interactions may be particularly related to *social* anxiety because children may use this relationship as a basis for exploring social relationships (Howes, 2000).

Teacher-child relationships are also influenced by the relationships that children have with their parents (e.g., Howes, 2000; Pianta, 1997). Children whose parents exhibit appropriate warmth and control see themselves as likely to have positive relationships with others and are able to approach others with positive expectations (Howes et al., 1994). This association highlights the bidirectionality of both child and environmental characteristics, as children may elicit positive relationships with their teachers (Howes &

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Hamilton, 1992b). As such, children's relationships with their parents and teachers may be similar. Yet, the importance of teacher-child relationships is likely independent of the parent-child relationship. For some children, close relationships with teachers may protect against parent-related risk factors (Crosnoe & Elder, 2004). This protection may occur through the influence of both parents and teachers on children's interpretations, which represent children's explanations of social events (Crick & Dodge, 1994; Dodge, 1991). Parental behaviors shape children's interpretations (Barrett & Holmes, 2001; Ziv, Oppenheim, & Sagi-Schwartz, 2004), and children's interpretations have been suggested to be a mechanism by which parental behaviors are associated with child outcomes (Barrett et al., 1996; Chorpita & Barlow, 1998). Although not yet examined empirically, teachers may also influence children's interpretations. The current model, therefore, examines not only how children's interpretations are related to child social anxiety and depression, but also how parental behaviors and teacher-child relationships are related to children's interpretations.

*Children's Interpretations*

Children's negative cognitions represent not only a symptom of anxiety but also a potential mechanism leading to anxiety. Alfano, Beidel, and Turner (2002) differentiate between cognitive content (actual thoughts) and cognitive process (the procedures that produce these thoughts). Social Information Processing Theory (Crick & Dodge, 1994; Dodge, 1991) proposes that cognitive processing occurs during a series of six stages, which culminate in behavior. One stage that has been shown to be particularly important for child anxiety is the interpretation stage. When interpreting social information,

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children evaluate the information that has been perceived from the environment to determine the meaning, explanation, and likely outcome (Crick & Dodge, 1994; Vasey & MacLoed, 2001). Theory and research suggest that anxiety alters children's interpretations (Clark & Wells, 1995; Daleiden & Vasey, 1997; Fenigstein, Scheier, & Buss, 1975; Hadwin, Garner, & Perez-Olivas, 2006; Rapee & Heimberg, 1997; Trower & Gilbert, 1989). In particular, children may commit cognitive errors when they are making cognitive interpretations, which is evident in the content, or the resulting thoughts. Beck (1976) proposed a model of the development and maintenance of depression and anxiety that is based on the existence of cognitive errors. Overgeneralization, selective abstraction, catastrophizing, and personalizing are among the cognitive errors he asserted perpetuate anxiety. Overgeneralization is one's belief that the same negative outcome will occur in all similar situations. For example, if a child is selected last for a kickball team, then he may think he will be the last choice every time teams are picked. Selective abstraction occurs when one gives attention only to the negative aspects of a situation. Catastrophizing occurs when children think the worst possible outcome will occur (e.g., "If I am picked last for the kickball team, then everyone will think that I am a dork and I will never have any friends ever again"). Finally, personalizing occurs when a child attributes the cause of a negative event to himself. These cognitive errors have been found to be related to child anxiety (e.g., Bogels & Zigterman, 2000).

*Child social anxiety and interpretations.* If children interpret situations negatively, then they are more likely to feel anxious in that situation. Children with anxiety often exhibit errors when interpreting situations. In particular, children with

anxiety tend to interpret ambiguous information as threatening (e.g., Barrett et al., 1996; Hadwin, Frost, French, & Richards, 1997; Suarez & Bell-Dolan, 2001), perceive greater numbers of threatening stimuli (Chorpita, Albano, & Barlow, 1996), and judge negative events as being likely to happen to them in the future (Suarez & Bell-Dolan, 2001; Weems, Berman, Silverman, & Saavedra, 2001). Children with high levels of anxiety are also likely to think an event is their fault, will happen again, and is out of their control (e.g., Bell-Dolan, Last, & Strauss, 1990), and they often provide more self-defeating explanations of social situations than do children with low levels of anxiety (Wichmann et al., 2004). Although most research focuses on *general* child anxiety, support for negative interpretations has also been provided for child *social* anxiety (e.g., Magnusdottir & Smari, 1999; Shortt et al., 2001; Wichmann et al., 2004).

Recent research raises the question of whether negative interpretations of social situations by children with anxiety accurately reflect negative aspects of their social environments (e.g., Blote & Westenberg, 2006). For example, children with social anxiety have been found by an observer to be treated negatively when they are giving a class presentation, independent of anxiety exhibited during the presentation (Blote, Kint, & Westenberg, 2007). To date, this research has compared interpretations and peer relationships; yet, social anxiety is multidimensional and is also related to social interactions with teachers and parents. Thus, the actual or perceived nature of negative interpretations related to interactions with parents and teachers may be an avenue for future research. Assumptions from cognitive behavioral theories and results from empirical research, however, suggest that anxiety is characterized by interpretation errors

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(e.g., Beck, 1976; Beck & Emery, 1985; Clark & Wells, 1995; Rapee & Heimberg, 1997; Schlenker & Leary, 1982; Trower & Gilbert, 1989). Negative interpretations in social situations may predispose children to be anxious (Mogg & Bradley, 2004)—regardless of the actual or perceived nature of the threat. For children with social anxiety, these interpretations are particularly important because they likely influence subsequent behavior. If children interpret situations negatively, then they are more likely to withdraw from the situation (Alden & Bieling, 1998; Beck & Emery, 1985). This avoidance elicits negative reactions from others (Alden & Bieling, 1998; Gazelle & Ladd, 2003), prevents habituation to anxiety, and interferes with the honing of social skills (Rapee & Spence, 2004). Thus, negative interpretations in social situations—whether founded or unfounded—are proposed to be related to the development and maintenance of children's social anxiety (Clark & Wells, 1995).

*Child depression and interpretations.* Depression and anxiety are often represented by similar cognitive symptoms, including negatively biased interpretations (Ambrose & Rholes, 1993; Epkins, 1996; Dineen & Hadwin, 2004). This overlap is particularly important to note when attempting to parse factors that contribute to social anxiety but not depression. The current study empirically examined this overlap in cognitive interpretations as related to child social anxiety and depression, and examined the "content-specificity hypothesis" (Beck et al., 1983). This theory, extended from research with adults (Beck, 1976), posits that negative cognitions associated with depression and anxiety are composed of different content. Cognitions related to depression focus on perceived loss, whereas cognitions related to anxiety focus on threat

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of future loss (Beck et al., 1983). Consistent with this hypothesis, children with social anxiety are expected to exhibit negative interpretations in social situations, whereas children with depression are expected to exhibit negative interpretations in both social and non-social situations. This pattern of negative cognitions has been exhibited in adults (e.g., Voncken, Bogels, & Peeters, 2007) and children (Taylor & Wald, 2003). Yet, examining the content specificity hypothesis in child populations has provided mixed results (see Beck & Perkins, 2001 for a review). Although some research has suggested that overgeneralizing (believing that the same negative outcome will occur in all similar situations) and personalizing (attributing the cause of a negative event to one's self) are cognitive errors that specifically predict anxiety (Epkins, 1996), other research finds that cognitions related to anxiety and depression overlap considerably in children (e.g., Ambrose & Rholes, 1993) but vary based on the situations in which they occur (Schneiring & Rapee, 2004). Thus, the relation of children's negative interpretations to child social anxiety and depression may vary based on the context of the situation.

Although many factors influence children's interpretations, a specific association has been suggested between children's interpretations and their relationships with their parents (Lemerise & Aresenio, 2000). Parental warmth and control are proposed to be a key contributor to children's interpretations (Bretherton, 1999; Ziv et al., 2004) and may be one mechanism through which parental behaviors influence child social anxiety (e.g., Barrett, Rapee, Dadds, & Ryan, 1996; Chorpita & Barlow, 1998) and child depression (e.g., Ingram, Miranda, & Segal, 1998; Muris et al., 2004; Rapee, 1997). Thus, the third objective of the current study was to connect findings linking parent-child interactions

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with children's interpretations (e.g., Bogels, van Dongen, & Muris, 2003) and children's

interpretations with child social anxiety (e.g., Magnusdottir & Smari, 1999; Shortt,

Barrett, Dadds, & Fox, 2001; Wichmann, Coplan, & Daniels, 2004) and child depression

(Ambrose & Rholes, 1993; Dineen & Hadwin, 2004; Epkins, 1996). The current model,

therefore, examines children's interpretations as a possible mediator of parental warmth

and control to both child social anxiety and depression.

*Parental behaviors and children's interpretations.* Parental behavior that is

characterized by low warmth and high control may set the stage for children to negatively

interpret social situations. Parental behaviors shape children's internal working models;

these "mental representations of the self and others" (Ziv et al., 2004, p. 328) are built on

children's expectations of the accessibility, availability, and responsiveness of their

parent (e.g., Siegler, DeLoache, & Eisenberg, 2006). Children's internal working models

represent the degree to which they feel confident that they will be accepted by their

parents and by others, provide the foundation for later familial and extrafamilial

relationships (Bowlby, 1973), and predict children's interpretations in subsequent

situations (Barrett & Holmes, 2001). Starting in infancy, warm and responsive parenting

may lead to the development of a positive parent-child relationship and child

interpretations reflecting self-competence, worthiness, and trust in others (Sroufe, Fox, &

Pancake, 1983). These types of positive interpretations often lead to engagement in social

situations (Rose-Krasnor et al., 1996). On the other hand, parenting characterized by

overcontrol may lead children to interpret situations as being out of their control

(Chorpita & Barlow, 1998) and encourage social withdrawal (Rose-Krasnor, Rubin,

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Booth, & Coplan, 1996). Thus, parental behaviors guide children's general expectations and perceptions of relationships and influence specific social interactions (Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996; Trinke & Bartholomew, 1997).

Parental warmth has been examined empirically in relation to children's interpretations. Children with parents who express more hostility than warmth have been shown to form negative cognitive representations of their parents as being untrustworthy and unsupportive (Paley, Conger, & Harold, 2000). Retrospective research on emotional maltreatment, which includes being rejected, isolated, or denied emotional responsiveness by one's parent, indicates that these types of parenting behaviors are associated with the development of negative cognitive styles in children (Gibb, 2002). Although research in this area is scarce, negative cognitions have been shown to partially mediate the relationship between parenting and negative social behavior and low peer acceptance (Paley et al., 2000)—both of which are related to child social anxiety. Thus, the current findings regarding the possible mediating role of cognitions on the relation between parental warmth and child social anxiety warrant clarification.

Parental control is also related to children's interpretations of social situations. If parents exhibit excessive control, then their children may develop negative expectancies about subsequent social interactions (Baldwin et al., 1996). Furthermore, parental control can lead to anxiety by creating a cognitive bias whereby children perceive events as being out of their control (Chorpita et al., 1996). In children with anxiety, cognitive representations of control have been shown to mediate the relationship between parental control and child anxiety (Chorpita et al., 1998). Parents exhibiting overcontrolling

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behaviors appear to convey to children a sense of poor self control over situations, which can influence their reactions to environmental stressors (Chorpita & Barlow, 1998). Thus, children's interpretations of their parents' controlling behavior may influence their experience of anxiety.

The current study tests a model investigating the mediating role of interpretations in the relationships of parental warmth and control to both child social anxiety and depression. Empirical evidence suggests separate links between children's interpretations and parental warmth and control (Barrett & Holmes, 2001), social anxiety (Magnusdottir & Smari, 1999; Shortt et al., 2001; Wichmann et al., 2004), and child depression (Ambrose & Rholes, 1993; Epkins, 1996; Dineen & Hadwin, 2004). The integrated model in the current study simultaneously examines these relationships. Furthermore, this model investigates the association of teacher-child relationships on children's interpretations.

*Teacher-child relationships and children's interpretations.* Teacher-child relationships may serve as a protective factor against parent-related risk factors (Crosnoe & Elder, 2004); thus, the current model also examines the association between teacher-child relationships and children's interpretations. As do positive parent-child relationships, close teacher-child relationships may affect children's interpretations based on previous experiences. For example, if a child's interactions with her parents are characterized by low warmth and high control, then she may negatively interpret situations and expect negative outcomes in subsequent social situations. If she has a positive relationship with her teacher, however, then she may feel supported and

comfortable exploring peer interactions, habituate to her anxiety, and gain positive social experiences at school. Thus, close teacher-child relationships may provide a secure environment that alters children's negative interpretations and social anxiety. To our knowledge, previous research has not examined the association of teacher-child relationships and children's interpretations. Reviewing research regarding how teachers influence children's social behavior, however, may provide insight regarding teacher-child relationships, child social anxiety, and child depression. Children who feel emotionally secure with their teachers exhibit low levels of emotional reactivity to negative social events (Little & Kobak, 2003). Furthermore, teacher support predicts children's efforts to achieve academic and prosocial goals (Wentzel, 1994). Indeed, the quality of teacher-child relationships has been shown to predict children's peer outcomes (Pianta et al., 1997) and may be particularly important for social functioning because teachers regulate the context of children's peer interactions (Howes, Hamilton, & Matheson, 1994).

The association between teacher-child relationships and child outcomes likely changes across developmental periods (Kazdin, 1989; Ollendick & Hirshfeld-Becker, 2002; Sroufe & Rutter, 1984). At different ages, the influence of parent and classroom social environments on social anxiety may differ (Coie et al., 1993). Although many relationships between social anxiety and age remain uncertain, the differential influence of social environments on information processing may contribute to variation over time. Thus, children's interpretations may be more or less associated with the quality of their relationships with parents and teachers depending on children's age. Current research in

this area is scarce. Based on the importance of early parent-child interactions, parent factors may be expected to have the highest influence on children's interpretations and social anxiety during early childhood when parents may comprise the majority of children's social interactions (Pianta et al., 1997). Parent-child interactions have been shown to influence children's friendships and peer acceptance (Clark & Ladd, 2000). In addition, teacher characteristics may be expected to be influential for older children (Lynch & Cicchetti, 1997; Morris, 2004). As children's social experiences increase they may encounter more opportunities to disprove expectations based on their interactions with their parents. As this occurs, teacher-child relationships may also be closely related to child social anxiety. Although the evidence is not conclusive (Pianta, Nimetz, & Bennett, 1997), teacher-child relationships have been shown to predict peer outcomes even after accounting for the influence of parent-child relationships (Howes et al., 1994).

Through their relationships with children, teachers may encourage or discourage children's negative interpretations of social situations that stem from parental behaviors. For example, if a child has a positive relationship with her teacher, then the child may feel less anxious during peer interactions because she expects that her teacher will be supportive of any difficulties. Thus, her interpretations of social situations may be influenced by the support provided by her teacher. Teacher-child relationships may also influence children's subsequent social interpretations and behavior; for example, social withdrawal in the second grade is predicted by teacher relationships that are high in conflict and low in closeness during preschool (Howes et al., 1994). Thus, parent-child

relationships and teacher-child relationships may both influence child social anxiety, with interpretations as a possible mechanism for this relationship.

An empirical gap also exists regarding the association between teacher-child relationships and child depression. Similar to parental warmth, close teacher-child relationships may lead children to interpret situations positively and experience fewer depressive symptoms. The current study, therefore, examines how teacher-child relationships may be related to children's interpretations and both child social anxiety and child depression when considered in the full model with parental behaviors.

*Summary and Current Study*

Theory and research suggest that parental warmth and control, the two basic dimensions of parenting (Baumrind, 1971; Maccoby & Martin, 1983; Parke & Buriel, 1998), influence the development and maintenance of *general* child anxiety (see Wood et al., 2003 for a review). Less research has examined parental warmth and control in relation to child *social* anxiety; yet parental behaviors may be particularly important for child *social* anxiety (Vertue, 2003) because parent-child relationships may shape children's cognitive interpretations in social situations (Barrett & Holmes, 2001; Ziv et al., 2004). Thus, the relationship between parental warmth and control and child *social* anxiety may be mediated by children's interpretations (Chorpita et al., 1998; Paley et al., 2000). Parental behaviors have also been found to be related to child depression (e.g., Muris et al., 2004). The current model, therefore, examined separate pathways to child social anxiety and depression. In addition to parent-child interactions, many social interactions are likely to occur in environments outside the home—such as school.

Positive teacher-child relationships, therefore, may decrease the likelihood that children will interpret situations negatively.

The current study used a multi-method (questionnaire, interview, observation), multi-reporter (child, parent, teacher, observer) design and used structural equation modeling to examine the fit of the overall model (see Figure 1). This model examines the extent to which parental warmth and control are related to child social anxiety and depression through their contributions to children's negative interpretations. The effects of positive teacher-child relationships are also investigated, as teachers may provide children with alternate social explanations, safety, and encouragement, which may alter their likelihood of interpreting situations negatively and developing or maintaining social anxiety. Two basic hypotheses encompass the predictions of this model. Hypothesis one predicted that the relationship between parental warmth and control and child social anxiety would be mediated by children's negative interpretations. Within this prediction, the model also examines direct effects and posits that parental warmth is associated negatively with children's negative interpretations, social anxiety, and depression, and parental control is posited to be associated positively with children's negative interpretations, social anxiety, and depression. Hypothesis two predicted that the relation of parental warmth and control to children's interpretations would be moderated by the teacher-child relationship. The corresponding direct effects predicted by the model examine the association between teacher-child relationships, children's interpretations, and child social anxiety.

CHAPTER II

METHOD

*Participants*

 *Child participants.* Participants in the current project, the Child Social Anxiety

Project (CSAP), were recruited from an ongoing longitudinal study conducted by Dr.

Heidi Gazelle, and funded by NIMH (grant # 1K01MH076237-01A1). Participants in the

longitudinal study were selected from children attending seven public schools in Forsyth

County, North Carolina, whose parents provided signed consent, demographic, and

contact information. After screening 688 children, 163 children were selected during the

fall of their 3<sup>rd</sup> grade year based on peer nominations of anxious solitary behavior. Based

on subsequent nominations, 33 children were added during their 4<sup>th</sup> grade year; thus, the

total longitudinal sample was comprised of 196 children. Anxious solitary behavior has

previously been classified by the display of shy and solitary behavior with familiar peers,

and passive, anxious withdrawal (Gazelle & Ladd, 2003). For the current study, no

specific hypotheses examined children classified as being anxious solitary versus non-

anxious solitary. These classifications, however, are outlined here to demonstrate the

sampling methods of children participating in the longitudinal study from which the

current participants were recruited.  In the longitudinal study, children were classified as

anxious solitary based on sociometric indications by their peers that they 1) "act really

shy around other kids, seem to be nervous or afraid to be around other kids, don't talk

much, and often play alone at recess," 2) "watch what other kids are doing but don't join in and at recess watch other kids playing but they play by themselves," and 3) "are very quiet and don't have much to say to other kids." Children classified as anxious solitary were then matched on demographic variables with non-anxious solitary children to form a control group. Thus, based on previous research and the current classification, children selected as anxious solitary exhibit behaviors associated with social anxiety and may represent an at-risk group of children.

Researchers attempted to contact parents of all children in the longitudinal study during the 4th grade to request participation in the CSAP. Through repeated attempts, verbal contact was made with approximately 149 families (75%). A total of 76 children, from the 197 children in the longitudinal study, participated (approximately 39%). Approximately 16% of families (n = 31) initially consented but, despite being contacted multiple times, did not schedule an appointment (n = 11; 14%) or scheduled an appointment but did not attend the data collection session (n = 20; 26%). In an attempt to contact parents who were not available by telephone, letters were mailed and then sent home from school with children.

Girls and boys equally comprised half of the sample (n = 38 for girls and boys). Child CSAP participants ranged from 9.0 years to 10.9 years of age in the fall of the 4th grade (M = 9.71 years). There were no differences in age ($F(1,193) = 2.16$, $p = .14$) between the CSAP and longitudinal samples. Socioeconomic status (SES) was measured by examining the number of children receiving free or reduced school lunch. In North Carolina public schools, children are eligible for free or reduced lunch if their parents

meet the limits on Federal Income Guidelines or if they live in households receiving food

stamps or Temporary Assistance for Needy Families (TANF; NC Department of

Education, 2007). Although the current sample included fewer children receiving free

lunch ($\chi^2 = 6.04$, $p < .05$) than the longitudinal sample, 21% of the CSAP sample receive

free/reduced lunch (n = 16).

For the initial enrollment in the longitudinal study, parents provided information

on children's ethnicity. Based on this information, the CSAP sample was composed of

76.3% Caucasians (n = 59), 7.2% African Americans (n = 14), 1.5% Hispanics (n = 3),

and 1% Asians (n = 1).  Although the CSAP sample included more Caucasian children

than the longitudinal sample ($\chi^2 = 12.75$, $p < .001$), it was composed of 24% minorities. In

the full longitudinal study, parental participation was not necessary, although parents

were requested to complete a packet. In contrast, the Child Social Anxiety Project

parental participation. The rates of parent participation in the two sections, therefore,

were compared. Results indicate that fewer Hispanic families participated in the CSAP

($\chi^2 = 26.69$, $p < .001$) than the longitudinal study. The lower diversity in parent

participation for both studies primarily stems from fewer Hispanic participants. Specific

efforts were made to recruit Spanish-speaking families by training a Spanish-speaking

research assistant to conduct recruitment phone calls. Despite these efforts, lower

participation by Hispanic families in the CSAP resulted in a less diverse sample.

Children were recruited from participants classified in the longitudinal study as

being in the anxious solitary and control groups. These classifications were conducted for

the longitudinal study during both the third and fourth grades. The current sample

contained 20 children (26%) who were classified as anxious solitary in the fall of the 4th grade. In contrast, 53% of the current sample (n = 40) was classified as anxious solitary at some point during the 3rd or 4th grade. Classifications of anxious solitary behavior were not associated with children's reports of social anxiety on a self-report measure (SPAI-C) in the fourth grade ($r = .13$, $p = .29$) or at any point during the third or fourth grade ($r = .13$ $p = .27$). In addition, no differences were present in the number of boys or girls in the anxious solitary group ($\chi^2 = 0.90$, *ns)*.

*Parent participants.* Participation of one parent was required, and we requested that mothers attend the session whenever possible due to research findings that maternal behaviors are more closely related to child psychopathology than paternal behaviors (e.g., Ingram, Overbey, & Fortier, 2001; Ingram, & Ritter, 2000). For 85% of families (n = 65) only mothers accompanied their child to the visit, and for 15% families (n = 11) only fathers accompanied their child to the visit. If both parents attended (n = 1), then the mother completed the interaction and questionnaire measures. Specific differences between mothers and fathers who participated in the Child Social Anxiety Project (CSAP) are discussed in the procedure section. More specific ethnic and socioeconomic data (e.g., income) were not gathered for the parents due to the focus on child demographic information.

*Teacher participants.* Thirty-two 4th grade teachers completed questionnaires regarding specific children in their classrooms. Eighty-seven percent of children had female teachers (n = 66), and twelve percent of children had male teachers (n = 9). The match between teacher sex and child sex was higher for girls (n = 36, 94.7%) than for

boys (n = 7, 18.4%). However, male and female teachers both reported higher teacher-child closeness with girls than with boys (F(1, 50) = 9.51, $p$ = .003 for female teachers; F(1, 7) = 3.48, $p$ = .10 for male teachers). The teacher sample in the current study was composed of 9% male teachers (n = 3), which is similar to the percentage of male teachers reported in all Forsyth County public schools (n = 124; 7%; NC Department of Education, 2006).

*Measures*

   *Child social anxiety.* The *Social Phobia and Anxiety Inventory for Children* (SPAI-C; Beidel, Turner, & Morris, 1995) was used to assess child social anxiety. This measure consists of 26 items that focus on obtaining the child's distress level across various social situations (e.g., "I feel scared when I have to join in a social situation with a large group of boys and girls). The SPAI-C is scored based on the child's responses, (0) "never or hardly ever" to (2) "most of the time or always." The score for each question is summed, with a total score over eighteen suggesting possible social phobia. This measure exhibits good test-retest reliability ($r$ = .86 for two weeks) and excellent internal consistency in past research ($\alpha$ =. 95; Beidel, Turner, & Morris, 1998) as well as the current study ($\alpha$ = .94). The SPAI-C has been shown to differentiate children with social anxiety from a control group and a comparison group of children with externalizing disorders ($F(2,125)$ = 29.79, $p < .00005$), thus exhibiting discriminant validity. To examine convergent validity, the SPAI-C has been compared to daily diaries, which track a child's socially distressing events, the location of those events, and the behavioral

response to those events. Correlation with distress ratings from these diaries and SPAI-C scores are moderate ($r =. 41, p < .07$).

Child social anxiety was also measured using the *Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent interviews* (ADIS-C & ADIS-P; Albano, & Silverman, 1996). This structured diagnostic interview includes separate child (ADIS-C) and parent versions (ADIS-P) that assess affective difficulties across many domains. In accordance with typical protocol, parents and children in the current study were interviewed separately concerning children's symptoms of various anxiety and other clinical problems. All interviews were conducted by the current author or another doctoral level graduate student who are both clinical therapists and have received training in the diagnosis of childhood disorders and child and family therapy. Based on each interview, a dimensional total of the number of criteria endorsed for each disorder was computed. The current study did not use diagnoses given the emphasis on dimensional data. This interview exhibits good reliability and excellent inter-rater agreement (Albano & Silverman, 1996; di Nardo, Barlow, & Rapee, 1993; Lyneham, Abbott, & Rapee, 2007). In addition, reports of social phobia, separation anxiety disorder, and panic disorder on the Multidimensional Anxiety Scale for Children (MASC; March, 1998) indicate concurrent validity with the ADIS-C (Wood, Piacentini, Bergman, McCracken, & Barrios, 2002).

*Children's interpretations*. The *Children's Negative Cognitive Errors Questionnaire* (CNCEQ*;* Leitenberg, Yost, & Carroll-Wilson, 1986*)* was used to assess four principal cognitive errors: catastrophizing, overgeneralization, personalizing, and

selective abstraction. The 24 items present hypothetical situations followed by a negative interpretation such as, "You play basketball and score 5 baskets but miss two real easy shots. After the game you think, I played poorly." The child rates on a 5-point scale how similar this thought would be to his or her own thought; responses range from (1) "not at all like I would think" to (5) "almost exactly like I would think." This measure has acceptable test-retest reliability ($r = .65$ for a 4-week interval; Leitenberg et al., 1986). Furthermore, previous research has shown the CNCEQ's overall internal consistency to be good ($\alpha = .89$) and ranges from .60 to .71 for the four types of errors.

The current sample exhibited excellent internal consistency for the total score ($\alpha = .91$) and ranged from ($\alpha = .61- .74$) for the separate cognitive errors. Although the internal consistency for the separate subtypes is not particularly strong, this measure is commonly used for research on anxiety and depression (e.g., Leung & Wang, 1999; Watts & Weems, 2007). The CNCEQ also categorizes items based on the context in which they occur; situations are defined as being purely social, academic, or athletic based on content. For social, athletic, and academic situations, the current study exhibited acceptable internal consistency ($\alpha = .80, .74,$ and $.77$, respectively).

*Children's depression.* The *Child Depression Inventory* (CDI; Kovacs, 1981) was used to measure child depressive symptoms. The CDI is a 27-item measure that provides children with three statements, such as "I look O.K.; There are some bad things about me; I look ugly." Children choose one response that describes how they have been feeling in the past two weeks. These 27 items comprise the following subscales: negative mood, interpersonal difficulties, negative self-esteem, ineffectiveness, and anhedonia. This

factor structure has been replicated with a large community sample (Craighead, Smucker, Craighead, & Ilardi, 1998), and the CDI has exhibited good test-retest reliability and construct validity (see Sitarenios & Kovacs, 1999) for a review). Specific examination of differentiation with a child self-report measure of anxiety yielded good discriminant validity (Ruggerio, Morris, Beidel, Scotti, & McLeer, 1999). Furthermore, the CDI has good internal consistency in past research ($\alpha$ = .89; Helsel & Matson, 1984) and in the current study ($\alpha$ = .82).

   *Parent-child relationships*. The *Parenting Styles and Dimensions Questionnaire* (PSDQ; Robinson, Mandleco, Frost Olsen, & Hart, 2001) was used to examine parental behaviors. In the longitudinal study, a 32-item shortened version including statements, such as "I readily intervene if there is a chance that my child will fail at something," was administered. The parent rates each item on a 5 point scale from (1) "never" to (5) "always." Parents' responses produce scores on three subscales that correspond with Baumrind's (1971) parenting styles—authoritative, authoritarian, and permissive. The authoritative, authoritarian, and permissive subscales exhibit good internal consistency ($\alpha$ = .91, .86, .75, respectively; Robinson et al., 2001). For the current study, specific items comprising the parental warmth and parental overprotectiveness subscales were examined ($\alpha$ = .67, and .52 respectively). These subscales include fewer items than the combination of subscales comprising the parenting styles, which likely explains the lower internal consistency. It is also important to note that these variables were not retained in the final model due to the focus on child-report measures.

The *Children's Report of Parent's Behavior Inventory* (CRPBI; Schaefer, 1965) measures children's perceptions of mothers' and fathers' parenting behaviors on three dimensions—acceptance versus rejection, psychological autonomy versus psychological control, and firm control versus lax control. The child is provided with items such as, "likes me to choose my own way of doing things," and rates on a 3-point scale if this is (1) "not at all true" to (3) "very true." For the current study, children completed the CRPBI separately for their mothers and fathers. Previous research indicates that the internal consistency for this measure is acceptable ($\alpha = .71$), and the current study found acceptable internal consistency for the maternal overcontrol ($\alpha = .76$), maternal rejection ($\alpha = .70$), paternal overcontrol ($\alpha = .75$), and paternal rejection ($\alpha = .74$) subscales. Parents and children often exhibit poor agreement regarding family variables (e.g., Jessop, 1981); thus, as would be expected for the CRPBI, inter-rater agreement between mothers, fathers, and children is low ($r = .31$; Schwarz, Barton-Henry, & Pruzinsky, 1985). The factor structure of the CRPBI, however, has been shown to be consistent across multiple raters (e.g., mothers, fathers, siblings, children; Schwartz, Barton-Henry, & Pruzinsky, 1985), and has been shown to correspond with other measures of parental behaviors (Ellis, Thomas, & Rollins, 1976). Furthermore, the subscales of this measure consistently assess parental behaviors across varied cultures (Renson, Schaefer, & Levy, 1968).

The *Teaching Task Rating Scale* activity (Egeland & Heister, 1993) is a 15-minute task during which parents and children interactively engage in three unstructured play activities—an etch-n-sketch picture, geometric puzzle, and card game. These

interactions were coded for *parental autonomy granting* and *supportive presence*
according to the Toy Box Activity Coding Manual (National Institute of Child Health and
Human Development Early Child Care Research Network, 2003), which was adapted
from Egeland and Heister (1993). Furthermore, *positive affect* and *negative affect*
dimensions were adapted from criteria specified by Burks, Siqueland, and Diamond
(2002; See Appendix A for specific coding criteria). The inclusion of positive and
negative affect dimensions enabled examination of emotional characteristics of parental
behaviors that may also be related to parental warmth. For example, smiling and laughing
when interacting with their child may correspond with higher levels of parental warmth.
Undergraduate research assistants, who had been well trained on each dimension of the
coding system, coded specific behaviors for parent's *Supportive Presence, Respect for
Child's Autonomy, Negative Affect, and Positive Affect*. *Supportive Presence* was
reflected by behaviors expressing positive regard and emotional support of the child.
*Respect for Child's Autonomy* reflected the degree to which the parent acted in a way that
recognized and respected the validity of the child's individuality, motives, and
perspectives. Observations of *Positive Affect* noted parent's facial, vocal, or gestural
behaviors that serve as behavioral indicators of positive feelings toward their child. Such
behaviors included laughing, smiling, using humor, and being happy. In contrast,
*Negative Affect* measured facial, vocal, or gestural behaviors such as scowling, frowning,
yelling, signs of frustration, anger, guilt, hostility, and sadness. Coding for each parent-
child interaction was completed by two research assistants to enable calculation of Kappa
coefficients for each parent-child interaction. *Supportive Presence* ($\kappa = .98$), *Autonomy*

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*Granting* (κ = .94), *Positive Affect* (κ = .93), and *Negative Affect* (κ = .86) each exhibited strong agreement.

  *Teacher-child relationship.* The *Security Scale for Teachers* (SST; Kerns, Klepac, & Cole 1996; Kerns, Tomich, Aspelmeier, & Contreras, 2000) was used to assess the degree to which children think that their teacher is responsive and available, tend to rely upon their teacher in times of stress, and report ease and comfort in communicating with their teacher. Items, such as "It's easy to trust my teacher," are rated on a 4-point scale from (1) "not at all true" to (4) "very true." This 15-item child report measure was adapted from a version measuring security of parent-child attachment (Kerns et al., 1996). The internal consistency was examined by Verschueren and Marcoen (2002) and Kerns and colleagues (2000) for the parent version (α = .74 for mothers; α = .60 for fathers). The current study indicated that this scale exhibits acceptable internal consistency when measuring teacher-child relationships (α = .70), which has not been examined previously.

  The *Student-Teacher Relationship Scale* (STRS; Pianta, 1988; Pianta & Nimetz, 1991; Pianta, & Steinberg, 1992) was completed by teachers to assess their relationship with each specific child. This scale is composed of 35 items such as "This child feels that I treat him/her unfairly." Teachers rate their responses on a 5-point scale ranging from (1) "definitely not" to (5) "definitely." Subscales of this measure include closeness, dependency, and conflict/change. For purposes of the current study, closeness will be examined. Previous research presents acceptable internal consistency for the total score (α = .85); yet, these values are lower for the closeness, dependency, and conflict/change

subscales (α = .59, .64, and .66 respectively; Pianta & Nimetz, 1991). The current study, however, used only the closeness scale, which exhibited good internal consistency (α = .87).

*Parent anxiety and interpretations.* The *Social Phobia Scale* and *Social Interaction Anxiety Scale* (SPS/SIAS; Mattick & Clarke, 1998) were used to measure two dimensions of parent social anxiety. The SPS is a 20-item self-report measure that assesses fears of being scrutinized during routine activities (e.g., eating in front of a stranger at a restaurant). The SIAS is also composed of 20 self-report items and measures fears of general social interaction (e.g., meeting people at parties). For both the SIAS and the SPS, items are rated on a seven-point Likert scale and range from (1) "strongly disagree" to (7) "strongly agree." The SPS and SIAS demonstrate good internal consistency in previous literature (α = .86 - .94; Heimberg et al., 1992; Mattick & Clarke, 1998; Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998) as well as in the current study (α = .88). In addition, the test-retest reliability for 4 to 12 weeks is acceptable. ($r$ = .66 - .93; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clarke, 1998). These scales measure both fears of social scrutiny and fears of social interactions; using them together is suggested because they are highly intercorrelated ($r$ = .72; Mattick & Clarke, 1998) and represent two main components of social anxiety that are often encompassed in other measures. Thus, the current study used an integrated total for the SPS and SIAS to measure parent social anxiety.

The *Ambiguous Social Situations Interactions Questionnaire* (ASSIQ; Stopa & Clark, 2000) is a 24-item questionnaire that measures negative interpretations related to

anxiety. The ASSIQ was developed by Stopa and Clark (2000) based on formats used by Butler and Mathews (1983) and Clark and colleagues (1997). Items include ambiguous social situations such as "You ask a friend to go out for a meal with you in a couple of days and they refuse, why?" and provide three interpretations that are numbered from 1-3 in terms of "How likely they would be to come to your mind." In addition to the ambiguous social situations, this measure provides 10 control situations to determine how interpretations in non-social situations differ from interpretations in social situations. Previous research indicates that people with social anxiety report more negative interpretations for social situations but not for control situations ($F(92, 37) = .71$, $p <$ .005; Stopa & Clark, 2000). For the current study, only parents' interpretations of social situations were examined. Although it has not yet been examined, the current study found that the ASSIQ exhibits good internal consistency ($\alpha = .89$).

*Procedure*

The Child Social Anxiety Project (CSAP) was composed of participants who were recruited from children participating in an ongoing longitudinal study. The longitudinal study included school visits during the fall and spring of children's third and fourth grade years; these data are examined along with data collected during the CSAP lab visits. During school visits for the longitudinal study, research assistants helped children complete measures of child internalizing (SPAI-C, CDI), teacher-child relationships (SST), and parental behaviors (CRPBI). Teachers subsequently completed the Student Teacher Relationship Scale. For their participation in the longitudinal study, children received small gifts and teachers received gift certificates.

The lab-based Child Social Anxiety Project was conducted during children's 4th grade school year and the following summer. The primary researcher and well trained research assistants initiated telephone contact with parents of children in the longitudinal study. Staff provided an in-depth explanation of the project and answered parents' questions. In an attempt to contact parents who were not available by telephone, letters were mailed and sent home from school with children. Parents who agreed to participate in the CSAP were compensated $40 for participation and $10 for travel to UNCG. If a lab visit was not possible, then parents were given the option of a home visit. Home visits were completed for 5% of families (n = 4), and parents were compensated $40 for their participation. For their participation, children were given a prize bag and a coupon for a food item from a local business. Due to the small number of home visits, a statistical comparison of main study variables was not possible. However, examination of group means suggests that child social anxiety, children's negative interpretations, and all observer-rated parent-child interactions did not differ. Home and lab visits were scheduled to maximize convenience for each family. Furthermore, the protocol for home and lab visits did not vary, as the parent and child interviews, parent and child questionnaires, and parent-child interactions were all completed in the same order.

Parental consent for child participation, parent consent, and child assent specific to the CSAP were obtained before beginning each visit. Doctoral level graduate students, who were well trained with a background in diagnostic procedures, administered the ADIS-P and ADIS-C. Trained research assistants subsequently read aloud the CNCEQ to children, and they marked their responses. Parents completed the ASSIQ, SPS, SIAS,

and PSDQ self-report questionnaires. The researcher provided parents with instructions for the three activities comprising the 15-minute Teaching Task activity. Parents then provided instructions and completed each task with their child, which was videotaped. Performance on these tasks (e.g., successful completion of the puzzle) was not important for analyses; instead, focus was placed on the parent-child interaction.

Each CSAP data collection required the presence of at least one parent. Eighty five percent of visits were conducted with mothers (n = 65), and 15% of visits were conducted with fathers (n =11). An ANOVA was computed to examine whether mothers and fathers behaved differently during the interaction tasks. Results of the observations indicated that mothers and fathers did not differ in their autonomy granting ($F(8, 53) =$ 2.66, *ns*), supportive presence ($F(10, 62) = 1.33$, *ns*), positive affect ($F(5, 67) = .67$, *ns*), or negative affect (F(6, 64) = .31, *ns*). An additional ANOVA was conducted to examine whether there were differences in child reported parental behaviors based on the parent who attended the lab visit. For example, did mothers or fathers who are overcontrolling attend? Did mothers or fathers who are rejecting not attend? Analyses examining these questions found that on a questionnaire measure children reported no differences for paternal rejection (F(11, 61) = 1.15, ns), paternal overcontrol (F(14, 73) = .69, ns), maternal rejection (F(12, 57) = .35, ns), or maternal overcontrol ($F(12, 69) = 1.44$, ns) based on the parent who attended the visit. Given the lack of differences, we included data from all families in the SEM model regardless of whether the mother or father participated.

*Multiple rater agreement.* This study used a multi-method (questionnaire, interview, observation), multi-reporter (child, parent, teacher, observer) design. Because the analyses encompassed multiple measurements of similar constructs, family-wise corrections for examining multiple correlations were conducted within each construct. This type of family-wise correction is advocated as a method to control Type I error inflation (e.g., Williams, Jones, & Tukey, 1999; see Appendix B). For example, because there were three measures of child social anxiety, the level required to reach statistical significance for child social anxiety was divided by three ($p < .02$).

Gathering information from multiple raters using multiple methods creates a comprehensive diagnostic picture (e.g., Ollendick & Hersen, 1993). Information from multiple raters and methods, however, provides a complex picture, as parent-child-observer and multi-method agreement are often poor. In particular, multiple-rater agreement is lower for internalizing disorders, such as anxiety or depression, than for externalizing disorders (Costello & Edelbrock, 1985; Edelbrock, Costello, Dulcan Conover, & Kalas, 1986; Jensen, Rubio-Stipec, Canino, et al., 1988; Orvaschel et al., 1981; Silverman & Eisen, 1992). This difference may exist because internalizing symptoms are inwardly-focused and may not be observable by others or directed toward others (Grills & Ollendick, 2003). The current study focused on children's interpretations related to social anxiety; due to the private nature of such cognitions, parents may not be aware of the full range of anxiety symptoms that children experience. For example, children may regularly worry in social situations or interpret situations negatively but not tell their parents about these thoughts or engage in avoidance; thus, parents may not be

aware of children's internal experiences. Appendix C provides a description of multiple-rater agreement related to the current study and depicts the poor fit of latent variables for child social anxiety and children's interpretations. Thus, because the current study focused on children's anxiety and interpretations and due to the poor parent-child agreement, child report was used as the main measurement for children's interpretations and social anxiety.

Research has also found a lack of agreement between multiple reporters regarding parental behaviors (e.g., Bogels & van Melick, 2004; Demo, Small, & Savin-Williams, 1987; Gonzales, Cauee, & Mason, 1996; & Tein, Roosa, & Michaels, 1994). Researchers examining parental behaviors posit several different suggestions for determining the most "accurate" reporter. Although aggregation of scores across reporters is sometimes conducted (e.g., Bogels & van Melick, 2004), other authors argue that this approach is inappropriate because it ignores third variables that may be accounting for differences (Tein et al., 1994) and ignores the unique perspectives of different informants (Edelbrock et al., 1986). After reviewing extant literature, Tein and colleagues (1986) challenge researchers to deliberately decide which reporters to use and how to use them. Thus, the current study examined the research base on child versus parent reports and considered carefully the nature of the construct being measured when deciding whether to use child or parent reports.

Relevant to the current study, mothers have been shown to report more positive parental behaviors than their children, partners, (Bogels & van Melick, 2004), or observers (Gonzales et al., 1996; Siqueland, Kendall, & Steinberg, 1996), resulting in

higher agreement for children and outside raters. Furthermore, children's perceptions of parental behaviors, regardless of whether they match parents' reports, have specific associations with child outcomes (e.g., Demo et al., 1987). This relationship has been shown specifically with child self-esteem—which is related to child anxiety (e.g., Ginsburg, La Greca, & Silverman, 1998). The importance of children's perceptions of parental behaviors is likely similar for children's interpretations and social anxiety. Thus, child report of parental behaviors was used as the main method of measurement.

CHAPTER III

RESULTS

*Sample Characteristics*

     *Preliminary analyses*. Initial analyses examined the means, standard deviations, internal consistency, skew, and kurtosis for each measure (See Table 1). It is important to note that the current sample was recruited from a larger sample composed of approximately half children classified as anxious solitary and half children classified as a control group. Thus, the current population was over-sampled for children exhibiting anxious solitary behaviors, which are posited to be related to child social anxiety (e.g. Gazelle & Ladd, 2003).

     Outliers on each measure were considered for validity. Specifically, outliers were inspected to determine whether elevated questionnaire data corresponded with elevated reports from clinical interview data. Based on this process, elevated scores that were consistent across measures were maintained for analyses. For all measures the skew was less than two, suggesting an adequately normal distribution. In contrast, the kurtosis for child-reported paternal rejection (CRPBI), parent-reported parent interpretations (ASSIQ), warmth (PSDQ), and social anxiety (SPS/SIAS) was greater than two, suggesting a non-normal distribution. A square root transformation was performed on these variables to increase normality. This transformation resulted in a skew and kurtosis below 2 for paternal rejection and parent anxiety. Parents' negative interpretations

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parent report of warmth, however, remained leptokurtic (see Table 2 for transformed data). Specifically, parents reported having fewer negative interpretations than average (ASSIQ), and they reported exhibiting more parental warmth than average (PSDQ).

Means, standard deviations, skew, and kurtosis were examined separately for the anxious solitary and control groups. Table 3 depicts measure characteristics for children placed in the anxious solitary group during the fall of 4th grade, when many of the other measures were completed, and children placed in the anxious solitary group at any time during the 3rd or 4th grade. Additionally, Table 4 depicts the measure characteristics for children placed in the control group during the fall of 4th grade and children placed in the control group at any time during the 3rd or 4th grade. Between group comparisons indicated that parents of children classified as anxious solitary in the fall of the 4th grade showed a trend towards reporting more parent social anxiety ($F(1,60) = 3.15$, $p = .08$), and fathers of children classified as anxious solitary at any time in the 3rd or 4th grade showed a trend toward being more rejecting than fathers of children in the control group ($F(1,71) = 3.79$, $p = .06$). Because no specific hypotheses for the current study predicted differences between anxious solitary and control groups, all subsequent analyses include children from both anxious solitary and control groups. Due to the inclusion of children classified as anxious solitary in the current sample, however, ($n = 20$ at 4th grade, $n = 40$ at all time points) this sample may represent an at-risk population.

*Sex differences*. To examine sex differences for main study variables, ANOVA's were conducted (see Table 5). Results indicated that in the current sample girls reported a significantly higher level of social anxiety than boys on the Social Phobia Anxiety

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Inventory for Children (SPAI-C; $F(1, 71) = 12.37$ $p = .001$), which is consistent with previous research in both community and clinical populations (e.g., Beidel, Turner, Hamlin, & Morris, 2000; Epkins, 2002). Parents' responses on the ADIS-P also indicated that parents reported more symptoms of social anxiety disorder for girls than for boys ($F(1, 72) = 5.23$, $p = .03$). Similarly, parents' reports of social anxiety disorder (ADIS-P) showed a trend toward girls being diagnosed more often than boys (F(1, 73) = 2.51, p = .12). Mixed findings exist for sex differences regarding the diagnosis of social anxiety. For example, Beidel and colleagues (1999) did not find significant sex differences using the ADIS-C to diagnose child social anxiety disorder; yet women report an overall lifetime prevalence of social anxiety disorder that is higher than men (Weinstock, 1999). In the current study, children's report of their own social anxiety disorder symptoms on the ADIS-C indicated that girls more often met diagnostic criteria than boys ($F(1, 73) = 6.9$ $p = .01$), and girls showed a trend toward endorsing more symptoms of social anxiety disorder than boys ($F(1, 72) = 2.4$, $p = .13$). Collectively, these results suggest that fourth grade girls experience more social anxiety than boys, which is consistent with most previous literature.

The current study also found differences between boys and girls with regard to teacher reported teacher-child closeness. Specifically, teachers reported higher teacher-child closeness with girls than with boys ($F(1, 59) = 14.92$ $p = .0001$). This sex difference has also been found in previous research using the STRS closeness subscale (Kesner, 2000). When examined using regression, both teacher sex and child sex were significant predictors of teacher-child closeness after controlling for demographic variables ($F(4, 56)$

= 5.74, $p$ = .001). Based on child-report, however, the closeness of teacher-child relationships did not differ for boys versus girls ($F(1, 70)$ = .88, *ns*) or for male versus female teachers ($F(1, 71)$ = .03, *ns*).

The only report of parental behavior that varied based on child sex was child report of paternal overcontrol (CRPBI). Specifically, boys reported that their fathers exhibit more controlling behaviors than did girls ($F(1, 71)$ = 4.55 $p$ = .04). Previous research indicates that fathers exhibit differential parenting behaviors for daughters and sons more so than do mothers (Lytton & Romney, 1992). Specifically, fathers are more restrictive and more likely to use physical punishment with their sons than with their daughters, which is consistent with the current data.

Based on comparisons with previous research, sex differences for child social anxiety, teacher-child closeness, and paternal rejection in the current sample do not vary significantly from previous findings. Sex differences were not a specific focus of the current study, and explaining these sex differences is beyond the scope of this paper. Although the current study did not focus on specific sex differences, the mechanisms (i.e., interpretations) by which parental behaviors influence child outcomes were of particular interest. Sex differences in the rate of social anxiety have been found previously and exist in the current sample; yet, the current study focused on mechanisms leading to social anxiety, which did not differ based on sex (See Appendix D).

*Multiple informants.* Specific a-priori hypotheses examined the associations between child social anxiety, child interpretations, parent social anxiety, parent interpretations, parental behaviors, and teacher-child closeness using one-tailed

correlations (see Table 6). Correlations that are relevant to main study hypotheses are discussed in detail. Correspondence between the varied methods of measurement and multiple informants was examined at the zero-order level (see Table 7). Results indicated that children's endorsement of social anxiety disorder criteria on the ADIS-C is correlated positively with children's report of social anxiety on the SPAI-C ($r = .36$, $p <.01$). In contrast, parent's report of child social anxiety on the ADIS-P is not correlated significantly with child report of social anxiety on either the ADIS-C ($r = .14$, *ns* ) or the SPAI-C ($r = .05$, *ns* ; see Table 7). Such discrepancies in multiple informant agreement have been noted previously in the literature (e.g., Achenbach, McConaughy, & Howell, 1987; Choudhury, Pimentel, & Kendall, 2003; Grills & Ollendick, 2002). Also consistent with previous literature, results indicate that children's negative interpretations of social situations are correlated positively with children's report of social anxiety disorder criteria on the ADIS-C ($r = .54$, $p <.01$) and the SPAI-C self report questionnaire measure of social anxiety ($r = .38$, $p <.01$). These correlations represent acceptable correspondence and support the hypothesis that children who interpret social situations negatively report higher levels of social anxiety based on a structured diagnostic interview (ADIS-C) and a child self-report measure (SPAI-C).

As with previous research, the current study also exhibited poor agreement between raters for measures of parental behaviors. Children's report of maternal and paternal overcontrol was not correlated significantly with parents' report of overprotectiveness [r = .00, *ns* (maternal) $r = -.04$, *ns* (paternal)]. Furthermore, parental report of warmth was not correlated significantly with children's report of maternal

rejection ($r = -.15$, *ns*) or paternal rejection ($r = -.06$, *ns*). Although these correlations are not as strong as would be expected, previous findings suggest that child reports of parental behaviors and child reports of their own internal thoughts may be more appropriate (see Grills & Ollendick, 2002). Furthermore, the current study found that child report of maternal overcontrol and maternal rejection are related to children's negative interpretations ($r = .27$, $p < .05$; $r = .27$, $p < .05$, respectively). These findings support previous literature and indicate that maternal rejection and overcontrol are associated with children interpreting social situations negatively. Discrepancies between parent and child reports have been noted in previous literature and were also present in the current study; these results suggest that children's views about their parents' behaviors may not correspond to how parents perceive their own behaviors.

Disagreement between raters was informed by using observational methods to examine parental behaviors. Reports from an outside rater represent a more objective measure of parental behavior than child-report or parent-report. For the current study, parents were observed interacting with their children on three tasks for a duration of fifteen minutes. Correlational analyses (see Table 7) indicated that observation of autonomy granting was not significantly related to child or father report of paternal overcontrol, and observation of parental support was not related significantly to child or father report of paternal rejection. Observation of support was also not related to child or mother report of maternal rejection. Maternal overcontrol, however, was related to observation of autonomy granting based on both child report ($r = -.27$ $p < .05$) and parent

report ($r = -.28$, $p < .05$). Thus, parent, child, and observer reports of only parental overprotection exhibited adequate agreement.

*Parent anxiety and interpretations.* The current study also sought to understand factors associated with parental behaviors. Parent anxiety and parent interpretations of social situations are two factors that have been linked previously with parental behaviors (e.g., Bogels et al., 2001). In the current study, parent anxiety and parent interpretations were not significantly related to parental behaviors based on parent report, child report, or observation. Parents' negative interpretations of social situations, however, were correlated positively with children's negative interpretations of social situations ($r = .28$, $p < .05$). This finding supports extant literature (e.g., Barrett, Dadds, & Rapee, 1996) suggesting that parents' interpretations are related to children's interpretations of social situations. Thus, children may learn to interpret situations negatively based on modeling by their parents. Interestingly, parent social anxiety was associated with parents' report of child social anxiety disorder criteria on the ADIS-P ($r = .25$, $p < .05$), but not with children's report of their own social anxiety on the ADIS-C ($r = .01$, ns) or the SPAI-C ($r = -.06$, ns). This finding suggests that parents' anxiety may be a key factor associated with parents' report of child social anxiety.

Parents' social anxiety was also associated positively with parents' negative interpretations of social situations ($r = .34$, $p < .01$). Research has found that children with anxious parents are seven times more likely to develop an anxiety disorder than children with non-anxious parents (Turner, Beidel & Costello, 1987; Turner, Beidel, & Epstein, 1991). Although approximately 13% of this association can be attributed to genetics,

environmental factors account for about 35% of the variance (Kendler, Myers, Prescott, & Neale, 2001). The current study suggests that parent interpretations and parent anxiety may be such environmental factors that are associated with parents' report of child social anxiety.

*Structural Equation Models*

The current study examined models predicting that parental behaviors and teacher-child relationships are important for children's interpretations, social anxiety, and depression. This question was examined with structural equation modeling (SEM) using AMOS version 7.0 (Analysis of Moment Structures; Arbuckle, 2006). Structural equation modeling determines how well a model accounts for the covariance among variables of interest. The fit of the models was evaluated using Bentler's (1989, 1990) comparative fit index (CFI) because of its tendency to avoid underestimation of fit in small samples (Byrne, 1995). Typically, CFI above .90 has been judged to reflect sufficient fit (Byrne, 2001). However, Hu and Bentler (1999) determined that CFI values over .95 and root mean square error of approximation (RMSEA) values under .06 are more reflective of "good" fit. Thus, the current analyses adapted a CFI cut off of .95 and a RMSEA cutoff of .06. Many authors suggest that to conduct structural equation modeling, the sample size should exceed 100 participants (e.g., Loehlin, 1992; Hoyle, 1995; Schumaker & Lomax, 2004). The current sample size was 76; thus, due to the relatively small number of participants, Hoelter's N statistic (Hoelter, 1983) was computed for each model. Hoelter's N statistic estimates the sample size necessary for each model and focuses specifically on the adequacy of sample size—not on model fit (Byrne, 2001).

Conventionally, sample size is judged to be adequate if Hoelter's N exceeds 200 (Hoelter, 1983). Computation of Hoelter's N statistics indicated that the sample size was adequate for all models at the .01 level of significance. For the current study, SEM was conducted using a two stage process outlined by Anderson and Gerbing (1988).

*Measurement model.* For the first step, measurement models describing the latent variables were constructed using confirmatory factor analysis. Table 8 examines the confirmatory factor analysis loadings for children's interpretations. Children's specific negative cognitive errors (catastrophizing, overgeneralizing, personalizing, selective abstraction) are the item parcels that were used to create the latent variable of children's interpretations (see Coffman & MacCullum, 2005 regarding the advantages of using parcels instead of total scores). These parcels represent a total of a set of homogenous items from a larger scale (i.e., a miniscale) (Kline, 2005). As in the current model, partial disaggregation models use item parcels as indicators. In contrast, models in which all items of a scale load on the same factor are called total disaggregation models (Bagozzi & Heatherton, 1994; Leone, Perugini, Bagozzi, Pierro, & Mannetti, 2001). In previous literature, conducting a partial disaggregation model has been suggested to be a preferred method, as this type of model decreases the number of observed variables and parameters; thus, smaller sample sizes can be used, and computational problems are less frequent (Leone et al., 2001; Little, Cunningham, Shahar, & Widaman, 2002*).*

The lack of agreement between informants, as previously discussed, hindered the use of multiple measures to construct latent variables representing child social anxiety, parental warmth, and parental overcontrol (see Appendix C). This difficulty is typical for

SEM models using multiple raters (Tein et al., 1994). Due to poor agreement, these factors in the model were examined using observed variables. Although the current model encompasses primarily observed variables, using SEM allows the examination of how constructs, such as children's interpretations, are related to multiple dependent variables (Kline, 2005). Specifically, the current study examined the prediction of child social anxiety and child depression simultaneously. Due to the relatively small sample size and the limited number of latent variables used, corresponding regression analyses were computed to supplement SEM findings when possible.

*Children's interpretations as a mediator.* The measurement model was used to test a series of nested structural equation models. The full mediational model (see Figure 2) tested whether parent interpretations of social situations and parent anxiety predict child-reported parental overcontrol and rejection. In addition, the relationship between child-reported parental overcontrol and rejection and child social anxiety, as mediated by children's interpretations, was examined. The full model also included child depression as a dependent variable to examine differences in predictors. This comprehensive model demonstrated good fit to the data ($\chi^2$ (32) = 39.78, $p$ = .34, CFI = .98, RMSEA = .02, Hoelter's N = 299). Further examination of significant paths indicated that maternal overcontrol directly predicts child social anxiety ($\beta$ = .33, $p$ = .01), and maternal rejection directly predicts child depression ($\beta$ = .28, $p$ = .008). These findings correspond with previous research indicating that parental overcontrol is associated specifically with child anxiety (see Wood et al., 2003) and parental rejection is associated specifically with child depression (McCleod, Weiss, & Wood, 2007). In addition, the current model supports the

hypothesis that children's interpretations predict child *social* anxiety ($\beta = .34$, $p = .005$) and child depression ($\beta = .33$, $p = .004$).

Indirect effects were examined using Sobel's test as recommended by Kline (2005) for samples containing missing data; examination of indirect effects was not conducted using bootstrapping techniques due to the presence of missing data in the current sample. This analysis indicated that the indirect effect of maternal rejection on child social anxiety through children's interpretations was statistically significant ($z = 1.73$, $p < .05$; See Table 9). The mediation of interpretations on the relationships between maternal rejection and child depression also showed a trend toward significance ($z = 1.33$, $p < .10$). No other indirect effects were significant. These results suggest that maternal overprotection exerts a direct influence on child social anxiety and maternal rejection exerts a direct influence on child depression. The relationship between maternal rejection, child social anxiety, and child depression, however, is mediated by children's interpretations.

A series of alternate structural equation models were tested to examine differential fit between models (see Appendix E). This process was conducted to test whether the hypothesized model represents the combination of predictors that best fits the data. First, parent anxiety and parent interpretations were removed from the full model. Second, parent anxiety and interpretations were tested as direct predictors. Next, paternal overprotection and rejection were removed from the full mediational model. Finally, the direct effects of children's interpretations were tested. Each iteration did not result in significant difference in fit from the full model.

*Teacher-child relationships as a moderator.* Research suggests that parent-child relationships may be related to teacher-child relationships (Howes & Hamilton, 1992b; Pianta & Nimetz, 1991). In the current study, child-reported maternal overcontrol and rejection were negatively correlated with teacher-child closeness (see Table 6). Thus, children's interactions with their parents may influence their interactions with their teachers. In addition, children's report of teacher-child closeness was correlated negatively with children's report of negative interpretations of social situations ($r = -.25$, $p < .05$). This association supports the prediction that children who have a positive teacher-child relationship are less likely to negatively interpret social situations. A follow-up regression analysis was conducted to further examine the importance of teacher-child relationships. A trend toward significance suggested that children's report of the closeness of the teacher-child relationship predicted children's interpretations after accounting for demographic variables (sex, ethnicity, and free lunch) and children's report of parental behaviors ($F(8, 59) = 1.81$ $p = .09$; see Table 10). This association suggests that teacher-child relationships may affect children's interpretations of social situations even after accounting for the influence of parental behaviors.

Hypothesis two predicted that teacher-child relationships moderate the association between parental behaviors and children's interpretations. Moderation was examined using SEM by creating an observed variable depicting the interaction between teacher-child relationship and maternal behaviors. Only maternal overcontrol and rejection were examined due to non-significant main effects for paternal behaviors. Figure 3 depicts the full moderation model, which did represent a good fit to the data ($\chi^2 (34) = 64.36$, $p =$

.001, CFI = .90, RMSEA = .07, Hoelter's N = 167). According to Kline (2005), however, this model exhibits some statistics reflecting an acceptable fit (e.g., CFI = .90). Examining the significant pathways, however, indicated that the interaction terms were not significant. Thus, it is likely that the direct contributions of parental behaviors and teacher-child closeness increased the fit of this model. Because these fit statistics suggested a trend toward significance, moderation effects were also examined using linear regression. Regression analyses also indicated that teacher-child relationships did not moderate the association of maternal behaviors on children's interpretations ($F$(10, 50) = 1.33, ns). These data suggest that the effects of teacher-child relationships on children's interpretations are direct, as captured in the regression analysis depicted in Table 10.

Due to the hypothesized importance of teacher-child relationships for child outcomes, structural equation modeling was used to explore the potential mediation of children's interpretations on the direct effects of teacher-child relationships, maternal overprotection, and maternal warmth (see Figure 4). Results indicated that this model adequately fits the data ($\chi^2$ (20) = 26.30, $p$ = .16, CFI = .97, RMSEA = .04, Hoelter's N = 278). Conducting a $\chi^2$ difference test indicated that the model including teachers showed a trend toward being a better fit than the model including only maternal behaviors ($\chi^2$d (6) = 10.8, $p$ = .10). Analysis of specific indirect effects (see Table 11) illustrated that children's interpretations showed a trend toward mediating the association between teacher-child relationships and child social anxiety. In contrast, teacher-child relationships were a direct predictor of child depression. Similar analyses were conducted

using regression; when considering the influence of parental behaviors, teacher-child relationships did not directly predict child social anxiety ($F(8,55) = 3.17$, $p = .005$; see Table 12). However, children's report of teacher-child relationships did predict child depression over and above the effects of parental behaviors ($F(8, 55) = 3.17$, $p = .005$; see Table 13). These results suggest that more secure teacher-child relationships are related negatively to child depression after considering the effects of parental behaviors; in contrast, the association between teacher-child relationships and child social anxiety is mediated by children's interpretations.

*Differential Relationships of Children's Interpretations and Internalizing*

Understanding how predictors may be differentially related to child internalizing also requires examining how children's interpretations are differentially related to children's social anxiety, generalized anxiety, and depression. Children's endorsement of criteria for these three types of internalizing on the ADIS-C represents an equivalent method of measurement across disorders. After controlling for sex, ethnicity, and free lunch, children's negative interpretations were predicted specifically by child social anxiety ($F(6, 61) = 4.55$, $p = .001$; see Table 18), over and above general anxiety or depression. Children's interpretations, however, were related to both child social anxiety and child depression in the full SEM model (see Figure 4) and at the zero-order level; thus, a closer examination is warranted to understand the distinction between children's negative interpretations and social anxiety versus depression.

Four separate types of children's cognitive errors were measured— catastrophizing, overgeneralizing, personalizing, and selective abstraction. Results

indicated that all types of cognitive errors were associated with child-report questionnaire measures of social anxiety (SPAI-C) and depression (CDI; See Table 15). In addition, examining cognitive errors in regression analyses indicated that when entered together, cognitive errors predicted child social anxiety on the SPAI-C ($F(7, 61) = 3.26$, $p = .005$ and child depression on the CDI ($F(7, 62) = 2.84$, $p = .01$); no specific cognitive errors, however, separately predicted social anxiety or depression. These results, therefore, primarily support theories suggesting that the type of cognitive error does not vary for anxiety and depression, but the context in which the child experiences the negative cognitions does vary.

Interestingly, child report on the ADIS-C structured interview yielded slightly different results. All four cognitive errors were associated with children's endorsement of social anxiety disorder and generalized anxiety disorder criteria; yet, only selective abstraction was related significantly to children's endorsement of depression criteria. These results provide very limited support for previous studies indicating that children experiencing depression are more likely to commit selective abstraction errors (Weems, Costa, Watts, Taylor, & Cannon, 2007). In contrast, regression analyses indicated that children's cognitive errors, when entered together, predicted child social anxiety ($F(7, 61) = 4.29$, $p = .001$), but not child general anxiety ($F(7, 61) = 1.95$, $p = .08$) or depression ($F(7, 61) = 1.57$, $p = .16$). The context of the situations in which cognitive errors occurred was also examined. Although all of the hypothetical situations on the CNCEQ encompass a social component, these situations are grouped into specific social, academic, and athletic settings. Examining separately the context in which interpretation errors occur

indicated that after entering demographic variables, academic, and athletic situations in a regression analysis, negative interpretations in *social* situations best predicted child social anxiety (F( 6, 62) = 5.52, *p* = .0001, r² = .35, r²Δ = .09, *p* = .005). In contrast, *academic* situations uniquely predicted child depression (F(6, 62) = 2.68, *p* = .02, r² = .21 r ²Δ = .15, *p* = .001) after entering demographic variables, social, and athletic situations. When predicting general anxiety, however, no specific situations were differential predictors (F(6,62) = 2.25, *p* = .05). These findings partially support the content-specificity hypothesis (Beck et al., 1983) and suggest that children with social anxiety, general anxiety, and depression may commit similar cognitive errors; yet, the situations in which these negative cognitions occur are likely to vary for social anxiety, general anxiety, and depression. These results also highlight the importance of measurement methods, as regression analyses predicting child-report symptoms of social anxiety on the SPAI-C self-report measure found that social situations did not explain a significant amount of additional variance from academic and athletic situations (*F*(6, 62) = 3.98, *p* = .002, r² = .28, r²Δ = .03, *p* = .15). Furthermore, academic situations showed only a trend toward explaining more variance in child depression on the CDI than social or athletic situations (*F*(6, 63) = 3.35, *p* = .01, r² = .17, r²Δ = .05, *p* = .06). These results suggest that cognitive errors in different situations may vary based on the type of measurement used.

Differential relationships were also examined for parental behaviors in the SEM model. Results indicate that maternal overprotection predicted child social anxiety, and maternal rejection predicted child depression. Correspondingly, three regression analyses were conducted to examine whether children's report of maternal overprotection,

maternal rejection, paternal overprotection, and paternal rejection significantly predict symptoms of social anxiety, generalized anxiety, and depression. These parental behaviors did not significantly predict children's generalized anxiety ($F(7, 59) = 1.22$, ns) or children's depression ($F(7, 59)= .49$, ns). As hypothesized, however, parental behaviors showed a trend toward predicting children's social anxiety ($F(7, 59) = 2.03$, $p = .06$).

*Summary of Results*

The proposed theoretical model predicted that the association betwen parental warmth and control and child social anxiety would be mediated by children's interpretations. Furthermore, teacher-child relationships were predicted to moderate the association between parental behaviors and children's interpretations. Results indicate that Figure 4 depicts the best integration of hypothesized associations and the best statistical fit of the data. This model indicates that maternal overcontrol exhibits a direct effect on only child social anxiety, and maternal rejection is directly associated with child depression, but has an indirect effect on child social anxiety that is mediated by children's interpretations. Similar to maternal rejection, teacher-child relationships show a direct association with child depression, and an indirect association with child social anxiety that is mediated by children's interpretations. Overall, these findings add significantly to the literature and suggest that maternal rejection, maternal overcontrol, and teacher-child relationships are factors contributing to children's cognitions, social anxiety, and depression.

CHAPTER IV

DISCUSSION

The purpose of the current study was to test a model that examined how children's relationships with parents and teachers predict child social anxiety and depression, and how children's interpretations are related to these associations. The structural equation modeling results support a cognitive-mediated model that indicates teacher-child relationships, maternal rejection, and maternal warmth contribute to child social anxiety and depression with children's interpretations as a partial mediator. This model adds to extant research on child social anxiety and depression in three important ways. First, an increased understanding of the differential relationships of maternal behaviors was provided, as maternal control was directly associated with child social anxiety, but not child depression. Second, the differential associations of children's interpretations were informed, as the relationship between maternal rejection and child social anxiety was mediated by children's interpretations; yet, maternal rejection was a direct predictor of child depression. These findings provide support for the "affectionless control" (Parker, 1984) and "content specificity" (Beck et al., 1983) theories and increase our understanding of how maternal behaviors may contribute to children's interpretations, social anxiety, and depression. Finally, this model documents that the associations of teacher-child relationships and maternal rejection are similar for child social anxiety and depression. As with maternal rejection, the closeness of teacher-child

relationships was associated directly with child depression, but associations with child

social anxiety were mediated by cognitive interpretations. Of particular importance is the

significance of teacher-child relationships even when considered in the same model as

parental behaviors. Collectively, these results suggest differential associations between

children's interpretations, parental behaviors, and teacher-child relationships.

Furthermore, this model offers a significant contribution to the literature regarding the

associations of teacher-child relationships to parental behaviors, child social anxiety, and

depression.

*Relationships with Parents and Teachers*

With regard to child anxiety, most previous research has focused on how parental

behaviors are related to *general* child anxiety, which often includes a sample with a

variety of anxiety problems (e.g., Dadds et al., 1996; Dumas et al., 1995; Moore et al.,

2004; Wiborg & Dahl, 1997; see Wood et al., 2003). Less emphasis has been given to

how parental behaviors are related specifically to child *social* anxiety (Masia & Morris,

1998). Although the current model includes children who may have other anxiety

concerns, using SEM enables the direct examination of parent and teacher relations for

child social anxiety. Parental behaviors shape children's learning histories (Fisak &

Grills-Taquechel, 2007); thus, children may learn to negatively interpret situations based

on their interactions with their parents. Furthermore, parent-child interactions are often

social in nature, represent children's first social relationships, and influence children's

subsequent interactions with others (Barrett & Holmes, 2001; Ziv et al., 2004). Due to the

social nature of parent-child interactions, parental behaviors were hypothesized to be important for understanding factors contributing to child *social* anxiety.

Teacher-child relationships may be similar to parent-child relationships (Wentzel, 2002) and have been shown to be important for children's social relationships (e.g. Pianta et al., 1997). Longitudinal research has found that children who have exhibit anxious solitary behaviors later experience more negative outcomes when in classrooms with negative emotional climates, which include negative teacher behavior (Gazelle, 2006). In addition, positive feedback from teachers is associated with children's prosocial behavior (Wentzel, 2002). These studies indicate that teacher-child relationships are associated with child outcomes; yet, no research is known to have examined the association between teacher-child relationships and child social anxiety or depression. Based on these associations with children's social behavior, closeness of teacher-child relationships were examined with parental behaviors in the current model.

*Parental control.* The current study found that maternal overprotection is a direct predictor of child social anxiety. Through overprotective behaviors, parents may deprive their children of environmental experiences and the opportunity to form a personal sense of control (Chorpita & Barlow, 1998; Chorpita, et al., 1998). Overprotective parental behaviors may also be an adaptive response to a child's social anxiety. For example, if a child becomes very anxious when she goes to a peer's birthday party, then her parent may take her home and allow her to avoid subsequent birthday parties. This type of parenting, although it initially may be adaptive, may lead the child to perceive that she lacks control and that the world is a dangerous place. Thus, she is likely to experience increased

anxiety when in subsequent social situations (e.g. Barlow, 1988; Beck & Emery, 1985; Rapee, 1997). The current model indicates that parental overprotection predicts child *social* anxiety, which represents an important extension of previous research connecting parental overprotection and *general* child anxiety (see DiBartolo & Helt, 2007; Dumas et al., 1995; Gruner et al., 1999; Hudson & Rapee, 2001; Hummel & Gross, 2001; Krohne & Hock, 1991; Mills & Rubin, 1998; Rubin et al., 2001; Moore et al., 2004; Wood et al., 2003).

The specific relationship of maternal overcontrol and child social anxiety was further informed by the inclusion of child depression in the current model. Maternal overprotection has been posited to be related specifically to child anxiety due to the importance of children's perceptions of threat and control (Rapee, 1997; McLeod et al., 2007). The current model extends these findings (Muris et al., 2004) by demonstrating that maternal overprotection predicts child *social* anxiety but not depression.

*Parental warmth and teacher-child closeness.* In addition to parental control, the second major dimension of parenting is parental warmth (Baumrind, 1971; Maccoby & Martin, 1983; Parke & Buriel, 1998). The current study found that parental warmth is associated with the closeness of teacher-child relationships. Two explanations for this finding have been suggested in the literature. First, child characteristics, such as an inhibited temperament, may elicit certain types of relationships with teachers and parents (Howes & Hamilton, 1992b). In addition, parental behaviors shape children's expectations in subsequent social relationships, such that children with a positive

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relationship with their parents may expect their teachers to also be available and supportive (Howes & Hamilton, 1992b; Howes et al., 1994).

In the current study, teacher-child relationships and maternal warmth had similar associations with child outcomes. The final model indicates that maternal rejection and teacher-child relationships both directly predict child depression, but not social anxiety. Thus, children who perceive that their parents and teachers exhibit more rejecting behaviors are more likely to experience symptoms of depression. Maternal rejection has been posited to be particularly relevant to perceptions of loss and increased expectations of negative responses that are theorized to maintain child depression (Beck, 1976). In particular, rejecting parental behaviors may convey to children that positive responses are difficult to obtain and increase their perceptions of loss in important social relationships (Rapee, 1997). Similarly, close-teacher child relationships may provide children with positive experiences in the school domain; yet, teachers who are rejecting may contribute to child depression by inciting feelings of loss and lack of support. These findings indicate that both parental rejection and teacher-child closeness predict child depression and suggest that although teacher-child relationships are typically short compared to parent-child relationships, teacher-child relationships may be associated with child outcomes in ways that mirror parent-child relationships.

Conflicting theories and data exist regarding whether parental warmth (or rejection) is related to child social anxiety (see DiBartolo & Helt, 2007), and no research is known to have examined the association of teacher-child closeness to child anxiety. The "affectionless control" theory, originally proposed by Parker (1984), has been

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partially supported by research indicating that parental control and parental rejection exhibit two pathways by which parenting is associated with *general* child anxiety (e.g., Chorpita & Barlow, 1998). In contrast, the "affectionate control" theory (Becker, 1964; Rubin & Mills, 1991) posits that parental warmth is not related to child anxiety. The current study did not find a direct association of maternal warmth or teacher-child closeness with child social anxiety. It is likely, however, that parents and teachers influence child outcomes in ways that are not captured by measuring only direct effects. As such, examining possible mechanisms by which these relationships may be related to child social anxiety and depression provides a more comprehensive understanding of the effects of parental behaviors (DiBartolo & Helt, 2007) and teacher-child relationships. Based on Social Information Processing Theory (Crick & Dodge, 1994; Dodge, 1991) and previous empirical research (e.g., Chorpita et al., 1998), the current model examined children's interpretations as a mediator of the associations between parental behaviors and teacher-child relationships on child social anxiety and depression.

*Children's Interpretations*

Children's interpretations represent their explanations of social events (Crick & Dodge, 1994; Dodge, 1991). In the current study, children's negative interpretations were associated positively with child *social* anxiety and depression. Thus, children with high social anxiety and depression are more likely to negatively interpret information in social situations than are children with low social anxiety (e.g., Barrett et al., 1996; Hadwin et al., 1997; Suarez & Bell-Dolan, 2001) or depression (e.g., Epkins, 1996). Although the link between negative interpretations and child *general* anxiety has been examined

previously, the current findings highlight the importance of children's negative interpretations for child *social* anxiety and depression in the context of the full model.

*Children's interpretations, maternal rejection, and teacher-child relationships*. The associations of maternal rejection and teacher-child closeness with child social anxiety were mediated by children's interpretations. This finding informs the examination of "affectionless control" versus "affectionate control" theories; in particular, previous research asserting that low parental warmth/high paternal rejection does not contribute to child anxiety may not capture the full effects of these relationships when examining only direct effects. Although maternal rejection and teacher-child relationships were not direct predictors, they predicted child social anxiety via children's interpretations. Thus, the mediating effect between maternal rejection and child social anxiety supports aspects of the "affectionless control" theory. Originally, the affectionless control theory proposed that parental warmth and control interacted to affect child outcomes (Parker, 1984). The current results, however, support subsequent research indicating that maternal warmth and control contribute separately to child social anxiety and depression. This model also connects separate studies finding that children's interpretations are associated with parent-child interactions (e.g., Bogels et al., 2003) and child *social* anxiety (e.g., Magnusdottir & Smari, 1999; Shortt et al., 2001; Wichmann et al., 2004) and adds novel knowledge regarding teacher-child relationships and child *social* anxiety.

Because parent-child interactions are largely social, parental behaviors were hypothesized to be particularly important for child social anxiety. Results indicate that

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parents' rejecting behaviors and teacher-child closeness both indirectly predict child social anxiety through their effect on children's negative interpretations. The results of the model for parental behaviors are compatible with previous research indicating that parental behaviors create an internal working model that affects children's interpretations of social situations (Ziv et al., 2004). Over time, children may learn to negatively interpret situations based on their parents' behaviors. Subsequently, children may be more likely to negatively interpret situations during interactions with peers and adults. Thus, children's interpretations may represent one factor contributing to cross-contextual congruence in behaviors. In sum, the current findings suggest that parents play an important role in the interpretation stage of social information processing, thereby affecting children's social anxiety and depression.

In addition, the current model highlights the importance of teacher-child relationships for child social anxiety and depression. Although teacher-child relationships did not moderate the association of parental behaviors to children's interpretations as hypothesized, teacher-child relationships were associated with children's interpretations, social anxiety, and depression in ways that are similar to parental rejection. Even though teacher-child relationships typically only last a year, teachers may have the opportunity to ameliorate the effects of negative parental behaviors on children's interpretations, child social anxiety, and depression. During this time, close teacher-child relationships may serve as a protective factor for children's social anxiety and depression.

*Differential Relationship of Children's Interpretations and Internalizing*

The current model found that children's negative interpretations predict both child social anxiety and depression. Recent research suggests that negative interpretations represent actual negative aspects of children's social environments (Blote et al., 2007; Blote & Westenberg, 2006). This distinction was not able to be examined in the current study; yet, the relationship between negative interpretations, social anxiety, and depression supports previous literature (e.g., Leitenberg, 2002; Leitenberg et al., 1986; Taylor & Wald, 2003). The current study sought to extend extant research by parsing apart how these relationships vary for child social anxiety and depression. Although findings are mixed, previous research measuring children's interpretations using the same method as the current study (CNCEQ; Appendix F) found that different types of cognitive errors are related to anxiety versus depression (e.g., Weems et al., 2004; Weems et al., 2007). In the current study, types of cognitive errors were not differential predictors of children's social anxiety or depression. Similarly, in follow-up regression analyses, the type of cognitive error did not differentially predict either child social anxiety or depression. In contrast, examining children's report of social anxiety and depression symptoms on the ADIS-C found that when using a diagnostically based measure of social anxiety and depression, the types of cognitive errors did vary slightly. All cognitive errors were related to children's reports of generalized anxiety and social anxiety on the ADIS-C; yet, for children's reports of depression, only selective abstraction was a significant predictor. This specific relationship between selective abstraction and depression is consistent with previous literature (Weems et al., 2007), and

this difference also demonstrates the importance of examining various types of measurements. This finding, however, is likely limited due to the substantial frequency of children reporting no symptoms of depression on the ADIS-C (81%) as compared to general anxiety (17%) and social anxiety (13%). This difference makes it likely that there is a floor effect for children's reports of depressive symptoms, and this measure may lack the power to detect existing relationships. Thus, the self-report measures likely represent a more comprehensive depiction of children's symptoms of depression and social anxiety and their relation to negative interpretations. When examining child self-report measures, specific cognitive errors were not differential predictors of child social anxiety and depression, which has also been found in previous research (e.g., Laurent & Stark, 1993)

The situations about which children have negative interpretations were a more significant marker for child social anxiety versus depression. Although all situations provided on the assessment measure of children's interpretations (CNCEQ) have a social component, they are separated into situations that are purely social, situations in an academic setting, and situations in an athletic setting. The current study found that child social anxiety was more closely related to negative interpretations about purely social situations, and child depression was more closely related to negative interpretations about general academic situations. These results are partially consistent with the content-specificity hypothesis (Beck et al., 1983) and suggest that although children's negative cognitions are related to child social anxiety, general anxiety, and depression, negative cognitions in strictly social situations are more relevant for social anxiety. In contrast, child depression was related specifically to interpretations in academic settings. These

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results may contradict the content-specificity hypothesis supposition that depression is related to negative interpretations in social and non-social situations. This finding, however, is likely due to the social nature of all of the items on the CNCEQ. In sum, the specific relationship between child social anxiety and the strictly social situations partially supports the content-specificity hypothesis.

*Measurement and conceptualization of interpretations.* Due to the importance placed on children's cognitive interpretations in the current study, it is important to address inconsistencies in the extant literature between methods of measurement and how these differences may inform the current findings. The current study examined maternal warmth and control and found that only maternal warmth was mediated by children's interpretations. One possible explanation is the use of different measurement tools. A review by Winters, Myers, and Proud (2002) on the assessment of cognitions in youth suggests—"caveat emptor"— let the buyer beware. This paper reviews measures of cognitions and finds differences in the constructs being measured. These authors state that the Children's Negative Cognitive Errors Questionnaire (CNCEQ), which was used in the current study, has the most psychometric support and is appropriate for measuring children's cognitions. Thus, differences between measures are not likely due to poor measurement, but to variations in the content. The hypothetical situations on the CNCEQ (See Appendix F) center on negative interpretations related to being rejected or doing poorly in various social situations. The current results indicate that cognitive interpretations, as measured by the CNCEQ, mediate the association of maternal rejection and teacher-child relationships to child social anxiety and child depression. In the current

study, maternal rejection and closeness of teacher-child relationships both measure acceptance from an important social figure. Because the CNCEQ also centers on a rejection theme, this underlying content similarity may be one reason that the CNCEQ was a significant mediator of maternal rejection and teacher-child relationships. Interpretations of situations relating specifically to overprotective parenting, therefore, may be better measured by a questionnaire assessing children's interpretations about the level of threat or the likelihood that the child can handle the situation independently.

Recent research captures this distinction by examining separately *cognitive interpretations* (negative or biased interpretations of situations) and *judgment biases* (negative estimates of personal ability to handle a situation; Weems et al., 2007). Although this distinction has been supported in the adult literature (e.g., Voncken et al., 2007), this separation presents a new categorization method for child research. In previous research, parsing these processes apart indicated that interpretation biases and judgment biases did not differ for anxiety and depression, but the content of these biases was specific in children (Weems et al., 2007). These results support the interpretations of the current study. In particular, children's interpretations of social situations were found to be related to child social anxiety and depression. These interpretations mediated only the associations of maternal rejection and teacher-child relationships with child social anxiety, as the measurement tool used provides items where negative interpretations reflect thoughts of being rejected by others. Measurement of judgment biases, therefore, may mediate the relationship between maternal overcontrol and child social anxiety and depression and represents an avenue for future research.

*Limitations*

One limitation of the current study was the lack of power available to examine separate models for mother and father behaviors. Recruiting parents to participate in lab-based research is difficult and, as in the current study, often results in a relatively small sample size. Although a systematic power analysis method has not been established for structural equation modeling, an a priori power analysis estimated that the current study should include 100 participants. Despite extensive recruitment efforts, the current sample included 76 participants. Examination of Hoelter's N statistics (Hoelter, 1983) indicated that the sample size was sufficient to examine each of the models included in the current study. Preliminary research has examined mothers' and fathers' behaviors and found evidence that both are related to child anxiety (Hummel & Gross, 2001). Other findings suggest that maternal behaviors are more closely related to child psychopathology (e.g., Ingram, Overbey, & Fortier, 2001; Ingram, & Ritter, 2000) and that the effects of paternal and maternal behaviors on child outcomes may differ (Barrett et al., 2005). The current study used observational assessments of parental behaviors; yet, due to the low frequency of fathers who participated in parent-child interactions, observational measures were not able to parse differences between parents. A larger sample size, however, would enable SEM iterations examining separately the influence of maternal and paternal behaviors on child social anxiety and depression.

The use of a multi-rater, multi-method design is a strength of the current study; however, the final model relied on child-report measures because latent variables constructed with measures from multiple reporters did not converge. Although this

method may capitalize on shared method variance, discrepancies between parent, child, and observer reports are typical for studies using multiple raters and multiple methods of measurement (Tein et al., 1994; see Appendix C). Future studies could administer identical measures to all reporters and conduct separate structural equation models using mainly latent variables to examine how relationships may differ between reporters.

In the current study child generalized anxiety was examined using child and parent reports on a structured interview. Child social anxiety and depression were measured with the structured interview and with child report questionnaires, which represented a more comprehensive measure of child internalizing symptoms. One limitation of the current study, therefore, is that a child self-report measure of general anxiety was not included. Child social anxiety and depression, as measured by child report questionnaires, were maintained in the final model. Thus, future research should include a child self-report measure of child social anxiety, child depression, and child general anxiety to examine the differential prediction of these three types of internalizing problems.

*Clinical Implications*

The current model indicates that children's cognitive interpretations are associated with both child social anxiety and depression. Similarly, empirically-supported treatments for social anxiety and depression often overlap in content (Chu & Harrison, 2007). Cognitive-Behavioral Therapy (CBT) is a treatment that seeks to address children's negative cognitions and behavioral avoidance, and has received empirical support for both child anxiety and child depression (see Chorpita et al., 2002; Chu &

Harrison for reviews). The current results support the use of CBT for both child social anxiety and depression, as children's interpretations were a contributing factor for both types of internalizing issues. It is important to note, however, that theoretical predictions may not correspond to treatment efficacy. In a meta-analysis, Spielmans, Pasek, and McFall (2007) concluded that adding parent training to CBT did not result in better outcomes. Similarly, Prins and Ollendick (2003) suggest that cognitive change has not been empirically documented as being responsible for the success of CBT. As such, future research should examine the correspondence between contributing factors based on empirical studies and targets of treatment based on treatment-outcome studies.

Due to the novel inclusion of teacher-child relationships in the full model with parental behaviors, the current study has many implications for teachers' training or continuing education. Primarily, the current results suggest that teacher-child relationships may be an appropriate avenue for intervention, and that teachers may serve as useful agents of change. For teacher-based interventions to be successful teachers would need to be instructed as to how the relationships that they establish with their students may alter children's experiences of social anxiety and depression. Although some cognitive behavioral therapy includes a parent training component, no empirically supported interventions include specific teacher training components. Farrell, Barrett, and Ollendick (2007) identify the school setting as a good option for treatment provision, and recent focus on school-based prevention programs has increased. Research on the effectiveness of such programs in the school setting has found mixed results for child depression (e.g., Gillham et al., 2007). Furthermore, preliminary research examining the

effects of a 90-minute in-service training for teachers focusing on internalizing problems and the referral process indicates that this training results in teachers having a greater understanding of children's emotional and internalizing problems (Davis, 2005). The current findings suggest that this greater understanding, if resulting in closer teacher-child relationships, would benefit children with social anxiety and depression.

Before implementing teacher-focused treatments, however, psychoeducation should be provided for teachers so that they are more accurate when identifying internalizing problems. Research has shown that most teachers fail to recognize signs of depression (e.g., Auger, 2004) and anxiety (e.g., Molins & Clopton, 2002) in their students. Teachers are more likely to identify children with externalizing difficulties, such as aggression, than children with internalizing difficulties, such as social anxiety or depression (e.g. Albano, Chorpita, & Barlow, 2003). Even if teachers notice signs of internalizing problems, they may be less likely to view such difficulties as warranting help than externalizing difficulties (Pearcy, Clopton, & Pope, 1993; Tarnowski, Anderson, Drabman, & Kelly, 1990). Thus, psychoeducation should help teachers understand the severity of social anxiety and depression and the trajectories of children with these difficulties who do not receive treatment. Furthermore, teachers more accurately identify child internalizing problems when they have a high degree of familiarity with the child (Auger, 2004). Thus, teacher-child relationships may be particularly relevant to the identification of child internalizing problems.

*Research Implications*

The current model also presents findings that are important for future empirical studies. In particular, factors that have been shown to contribute to *general* child anxiety were also related to the development of child *social* anxiety. Although the current model included child *social* anxiety specifically, previous research has often combined children with multiple types of anxiety concerns into a category of *general* child anxiety. This method makes the distinction between *generalized* anxiety and *social* anxiety unclear. Thus, future research should examine the associations of parent and teacher relationships for clinical populations of children with generalized anxiety disorder and social anxiety disorder.

The current model also indicates that maternal overprotection and rejection contribute to child social anxiety and depression. CBT with Parent Training has been examined empirically; results provide preliminary support that CBT with Parent Training is more effective than CBT alone for children with anxiety (Barrett et al., 1996) and equally effective as CBT alone for children with depression (Clarke, Rohde, Lewinsohn, Hops & Seeley, 1999). Although the most empirical support has been provided for CBT without Parent Training, the current study provides preliminary empirical support for including both child cognitions and parental behaviors as targets of clinical interventions. Yet, empirical support indicating that there are increased benefits for including parents in CBT for children with anxiety is inconclusive (Barmish & Kendall, 2005). Furthermore, Suveg and colleagues (2006) discuss ways in which parents can both facilitate and impede therapeutic progress. These authors suggest that one way in which parents

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interfere with therapy is through rescuing their child from anxiety provoking situations, which may represent parental overprotection. Future research, therefore, should examine the benefits of treatments addressing specifically parental overprotection.

Considering teacher-child relationships as important for child outcomes was supported by the current model. Future research, therefore, should continue to extend research on teacher-child relationships with child social anxiety and depression. The current model includes teacher-child closeness; examining other aspects of teacher behaviors, such as teacher overprotection, would further our understanding of the similarities between parent and teacher-child relationships for child outcomes. Although the current study was not able to examine the influence of teacher-child and parent-child relationships over time, longitudinal data are being collected and should be examined to determine if the predictions of these relationships differ as children get older. In addition, examining the effects of teacher-child relationships over time would augment our understanding of the short-term versus long-term effects of teacher-child relationships.

Other important social relationships, such as peer relationships, occur in the same social environment as teacher-child relationships. Thus, future research should examine how both peer and teacher relationships are related to child internalizing problems and how these relationships may be interrelated. For example, peer status may be related to the effects that teacher-child relationships have on child outcomes or close teacher-child relationships could serve as a protective factor for children with negative peer relationships. Future research should examine these relationships to form a more

comprehensive understanding of how the school social environment may contribute to child social anxiety and depression.

*Summary of Current Study*

The current study investigated factors associated with both child social anxiety and depression, focusing primarily on maternal overcontrol, maternal warmth, and teacher-child relationships. Results supported a cognitive-mediated model indicating that maternal overcontrol directly predicts child social anxiety, and maternal rejection and teacher-child relationships directly predict child depression. In addition, children's negative cognitions were related to both child social anxiety and depression and mediated the relationships of maternal rejection and teacher-child relationships with child social anxiety. Overall, these findings extend research on factors related to *general* child anxiety by depicting a relationship specifically with child *social* anxiety and depression. Thus, the current study suggests that parental behaviors play an important role in child social anxiety and depression and should be a focus of clinical interventions and further empirical investigation.

The current model also indicates that teacher-child relationships predict children's interpretations, social anxiety, and depression even when also accounting for predictions related to parental behaviors. The nature of these relationships was similar to maternal rejection; in particular, maternal rejection and teacher-child closeness were both directly associated with child depression and indirectly associated with child social anxiety via children's interpretations. The inclusion of teachers in this model represents a novel contribution to the literature, and these results highlight the importance of teacher-child

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relationships for future research and interventions. In particular, teacher-child

relationships should be seen as a domain in which teachers have the opportunity to

positively affect children's interpretation styles, social anxiety, and depression. When

considered together, these results increase the current understanding of how parental

behaviors, teacher-child relationships, and negative interpretations contribute to both

child social anxiety and depression.

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Appendix A. *Coding criteria for Parent-Child Interactions*

1. Supportive Presence: A parent scoring high on this scale expresses positive regard and emotional support to the child. This may occur by acknowledging the child's accomplishments on the task or unrelated tasks the child is doing (e.g., building a house of blocks), encouraging the child with positive emotional regard (e.g., "You're really good at this." "You got another one right.") and various other ways of letting the child know that he/she has his/her support and confidence to do well in the setting.

| 1 | **Very Low** | Parent completely fails to be supportive to the child, either being aloof and unavailable or being hostile toward the child when the child shows need of some support. |
|---|---|---|
| 2 | **Low** | Parent provides very little emotional support to the child. Whatever supportive presence he/she does display is minimal and not timed well, either being given when the child does not really need it, or only after the child has become upset. |
| 3 | **Moderately Low** | Parent gives some support but it is sporadic and poorly timed to the child's needs. The consistency of this support is uneven so as to make the parent unreliable as a supportive presence. |
| 4 | **Moderate** | This parent does a respectable job of being available when his/her child needs support. He/she may lean closer as the child shows small signs of frustration and praise the child's efforts to show that he/she is available and supportive, but inconsistency in this style makes his/her support unreliable or unavailable at crucial times in the session. |
| 5 | **Moderately High** | Parent provides good support, reassurance and confidence in the child's ability, but he/she falters in this at times when the child especially could use more support. Or, parent is universally supportive but rarely gives evidence of modulation to child's needs. |
| 6 | **High** | Parent establishes him/herself as supportive and encouraging toward the child and continues to provide support when the child needs it. If the child experiences more difficulty, his/her support increases in commensurate fashion. He/she has some lapses, however, in which the child's success with the play materials wavers for lack of support. Yet, he/she attempts to return the child to a level of involvement that is more optimal. |
| 7 | **Very High** | Parent skillfully provides support throughout the session. He/she sets up the situation from the beginning as one in which he/she is confident of the child's efforts. He/she may redirect the child when appropriate in a way that does not reduce his/her support and confidence in the child's ability to modify his or her behavior. If the child is having difficulty, he/she finds ways to reward some sort of success by the child and encourage whatever solution the child can make. Parent not only is emotionally supportive but continuously reinforces the child's success. |

2. Respect for Child's Autonomy: This scale reflects the degree to which the parent acted in a way that recognized and respected the validity of the child's individuality, motives, and perspectives in the session. A parent scoring low on this scale would be very intrusive in his/her interventions with the child. In contrast, a parent scoring high on this scale acknowledges the child's perspectives and desires as a valid part of the child's individual identity.

| 1 | Very Low | Parent completely denies the child's individuality in the techniques he/she uses. Parent is very intrusive, physical and forceful in controlling the child. |
|---|---|---|
| 2 | Low | Parent strongly denies the child's individuality, but there are a few opportunities for the child to experience autonomy, whether by variation in parent's approach or simply by occasional absence of maternal controls over the child. Mostly, however, this parent's style denies the child's autonomy and parent is intrusive. |
| 3 | Moderately Low | Parent does not completely deny the child's individuality, but he/she effectively communicates that the child's intentions do not have validity compared to his/her own intentions for the child. He/she also intrudes strongly on the child's behavior, giving him/her little chance to do anything on his/her own. |
| 4 | Moderate | Parent shows moderate respect for child's autonomy. He/she is moderately intrusive. Although parent does not deny the child's separate identity, he/she does very little to support the validity of the child's individuality. He/she might communicate doubts to the child about the appropriateness of having his/her own intentions, or intrude abruptly on the child several times |
| 5 | Moderately High | Parent does allow the child some autonomy of intentions, but he/she does not actively support and reinforce this perspective in the child. He/she may reflect the child's intentions and ideas by engaging the child, but he/she also exerts his/her will at times over the child in a way that shifts the child's perspective. |
| 6 | High | Parent respects child's autonomy. He/she is not intrusive over the child; instead, he/she acknowledges the child's intentions, communicates trust in the child's individuality, and allows a mutually negotiated interaction. |
| 7 | Very High | Parent very clearly interacts with the child in a way that acknowledges the validity of the child's perspective, encourages the child to acknowledge his/her intentions, and to negotiate the course of interactions in the session. This parent also models his/her individuality to the child in these negotiated interactions and may insist on the importance of his/her interventions being followed, but he/she does so while acknowledging the reality and validity of the child's differing perspective and never in an intrusive manner. |

3. <u>Positive Affectivity:</u> A parent's facial, vocal, or gestural behaviors that serve as an indicator of positive feelings toward their child. Such behavior includes laughing, smiling, using humor, and being happy.

| 4 | Very High | The parent laughs, smiles, and uses humor very frequently during the task. The parent usually uses a pleasant or lighthearted tone. The parent appears to really enjoy doing the task with the child. The parent comments very frequently about the positive aspects of their child's performance. |
|---|---|---|
| 3 | High | The parent smiles or laughs often. The parent often uses a pleasant or lighthearted tone. The parent appears to enjoy doing the task with the child and comments frequently on positive aspects of their child's performance. |
| 2 | Moderate | The parent laughs and smiles occasionally. The parent appropriately identifies positive aspects of their child's performance. |
| 1 | Low | Parent shows little or no positive emotional expressions or emotional arousal. Parent does not identify negative aspects of their child's performance. |

4. <u>Negative Affectivity:</u> a facial, vocal, or gestural behavior that serves as an indicator of negative affect. Such behavior includes scowling, frowning, yelling, signs of frustration, anger, guilt, hostility, and sadness.

| 4 | Very High | The parent exhibits a persistent negative mood and negative affect. The parent very frequently identifies what the child did wrong during the interaction. |
|---|---|---|
| 3 | High | The parent frequently expresses negative affect. Most comments that the parent makes are regarding the negative aspects of their child's performance. |
| 2 | Moderate | The parent shows some expression of negative affect. The parent identifies a few negative aspects of their child's performance. |
| 1 | Low | Parent shows little or no negative emotional expressions or emotional arousal. Parent does not identify negative aspects of their child's performance. |

Appendix B. *Family-wise statistical corrections.*

        Due to multiple correlational analyses, a family-wise statistical correction was computed. Although many correlations remained significant after the correction, the associations between 1) parent social anxiety and parent reported child social anxiety, 2) teacher-reported teacher-child closeness and child-reported social anxiety, parent social anxiety, and child-reported maternal overcontrol 3) child-reported maternal rejection and child interpretations, 4) child-reported teacher-child relationship and child-reported maternal overcontrol and parent-reported overprotectiveness, and 5) child-reported paternal rejection and child-reported maternal rejection and parent-reported overprotectiveness did not remain statistically significant. It is important to note, however, that these variables were not examined at the zero-order level. Rather, their effects were primarily considered using structural equation modeling.

Appendix C. *Parent-Child Agreement*

In research examining predictors of child outcomes, poor agreement between parents and children is a complex, yet frequent methodological difficulty. A recent review by Grills and Ollendick (2002) discusses many factors related to multiple-rater agreement. These authors highlight the transition from the historical view that parents are the best reporters of children's behaviors to the empirically founded view that children are consistent and accurate reporters of their internal thoughts and external behaviors (see Grills & Ollendick, 2002). Consistent with previous research, the current study exhibited poor agreement among multiple raters.

*Child social anxiety.* Children's report of social anxiety on the structured interview was correlated with children's responses on a self-report questionnaire. Thus, children exhibited agreement between measures. Parents' report of child social anxiety on a structured interview showed a trend toward being associated with children's responses on the structured interview, but not on the self-report questionnaire. These findings suggest that inter-rater agreement may be due in part to the type of measurement. Parents and children were asked parallel questions on the structured interview; this is one likely explanation for the higher inter-rater agreement. Parent social anxiety was correlated with parents reporting that their children experience social anxiety, but was not correlated with child reported anxiety on either the structured interview or the self-report measure. Parent social anxiety and child social anxiety have been linked in the literature (e.g., Bogels et al., 2001). The current findings highlight the importance of examining differences between reporters. Due to their own anxiety in social situations, parents with social

anxiety may be more likely to think that their children also experience social anxiety. In addition, children's reports of social anxiety, but not parents', were associated with their reports of negative cognitions. This supports the argument that parents may not be aware of children's internal experiences.

*Parental behaviors*. Research has also shown poor agreement for parental behaviors (see Grills & Ollendick, 2002). The current results indicated that parent and child report questionnaire measures of maternal rejection and maternal overprotection were not related significantly. Thus, poor parent-child agreement was present. The current study also used observational measures to examine parental behaviors. Results indicated that child and parent reports of maternal overprotection were both associated negatively with observer ratings of parental autonomy granting during a 15 minute interaction task. During one task, parents were given instructions not to help unless their child needed it. These instructions enabled examination of differences for controlling behavior. Although the child and parent report questionnaires did not agree with each other, they both agreed with the observer ratings. This finding highlights the benefits of having an observation task when measuring parental behaviors. Although examining parent-child interactions with this method is time intensive, it can provide information that is lacking from child and parent reports.

Parent and child reports of maternal rejection were not significantly related with each other or with observations of parental warmth. Thus, poor inter-rater agreement was present for all three types of measurement. It is possible that the current interaction task did not evoke rejecting behaviors from parents. It is also possible that parents were

exhibiting more warmth because they were being videotaped than they would in a typical interaction with their child.

Shared method variance is also likely to have occurred due to the reliance on mostly child report data. This is consistent with previous research finding that within between method variance is greater than between construct variance (Tein et al.,1994 ). Overall, poor agreement results from using a multi-rater, multi-method approach. The hypothesized relationships were examined in the SEM model using child-report. These analyses were also run using parent reports of parental behaviors, child social anxiety, and child depression—see models below.

*Measurement Models*

Confirmatory factor analysis was used to form a latent variable representing child social anxiety. A latent variable was examined with only the subscales on the Social Phobia and Anxiety Inventory for Children (SPAI-C), but did not possess adequate degrees of freedom to be tested. To further examine child social anxiety, the Anxiety Disorders Interview Schedule Parent and Child reports were used as two indicators, with scores reflecting the number of criteria endorsed. Additionally, three subscales of the Social Phobia and Anxiety Inventory for Children (SPAI-C) child report measure were used—assertiveness, social encounters, and public performance. This latent variable showed poor fit ($\chi^2$ (5) = 13.00, $p$ = .02, CFI = .05, RMSEA = .09, Hoelter's N = 226). Because Hoelter's N statistic exceeded 200, it is likely that these variables did not converge due to the poor agreement.

*Figure C1*: Factor Loadings for Child Social Anxiety
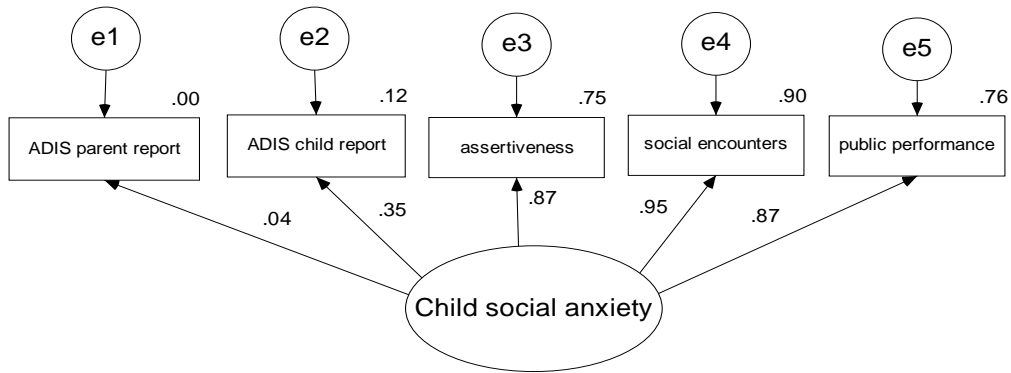


The factor loadings for parental warmth were also examined. In the current study,
parental warmth was measured using multiple methods. Although the overall fit was
adequate ($\chi^2$ (14) = 12.70, *p* = .55, CFI = 1.0, RMSEA = .000, Hoelter's N = 446),
examination of the specific paths indicated significant disagreement between multiple
methods (observation, parent report, and child report) and multiple raters (observers,
parents, children). Specifically, observations of parental behaviors corresponded with
each other, with limited support for correspondence with child report of maternal
rejection.

*Figure C2*: Factor Loadings for Parental Warmth
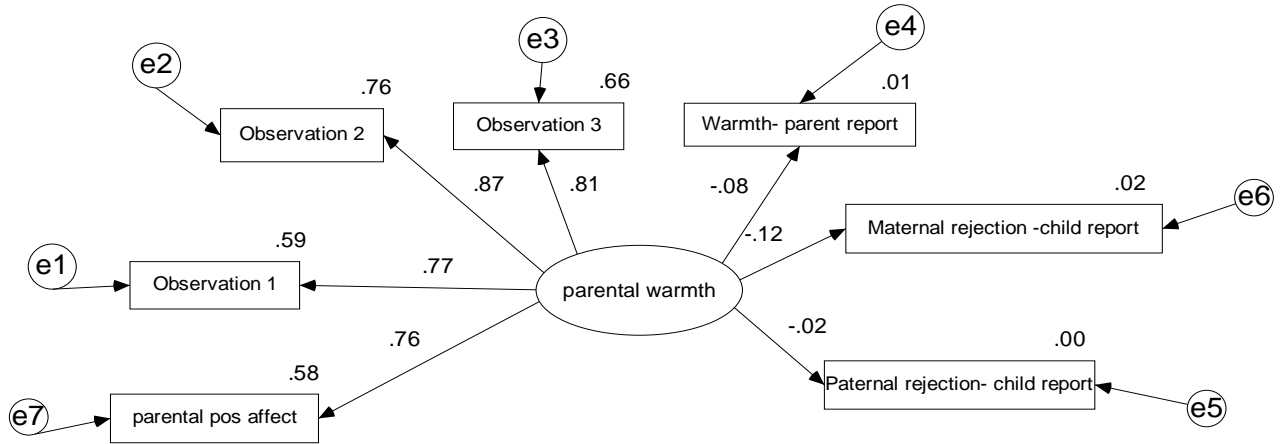


In contrast, measures of parental overcontrol exhibited better agreement between

raters, yet the overall model did not fit the data ($\chi^2$ (9) = 10.0, *p* = .03, CFI = .85, RMSEA

= .08, Hoelter's N = 222: See Figure C3)

*Figure C3*: Factor Loadings for Parental Overcontrol
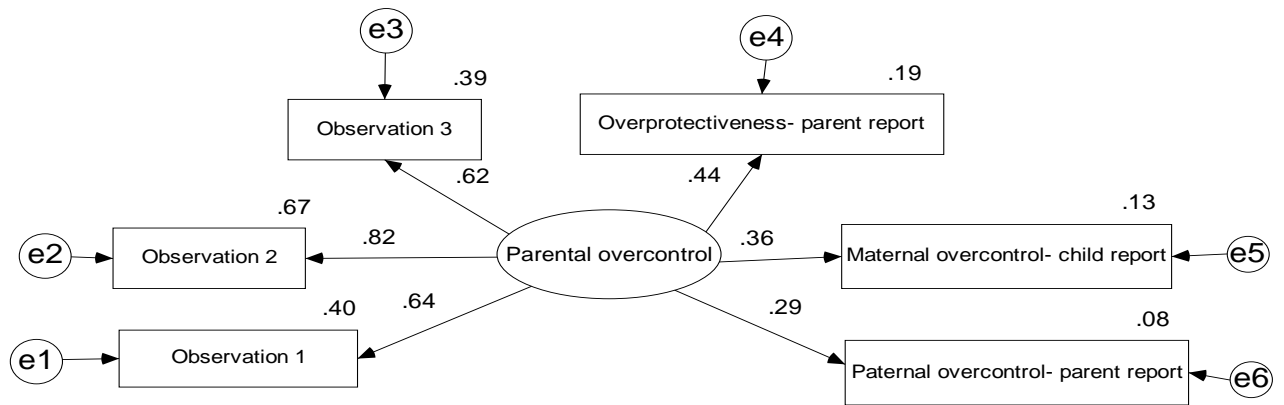


*Models measuring agreement*

Two mediational models were also conducted to examine parent-child agreement.

When using parent and teacher reports the model demonstrated adequate fit to the data ($\chi^2$

(20) = 26.1, I = .16, CFI = .96, RMSEA = .04, Hoelter's N = 279). When using parent

reports of parental behavior but not including teachers, the model remained significant ($\chi^2$ (17) = 23.45, I = .14, CFI = .96, RMSEA = .04, Hoelter's N = 277). As would be expected, however, children's interpretations were not as strongly related to child outcomes. Furthermore, the direct pathways were not significant (See Figure C4).

*Figure C4:* Cognitive-mediated Model Examining Teachers and Mothers' Reports of

Relationships and Parent Reported Social Anxiety and Depression. No pathways were statistically
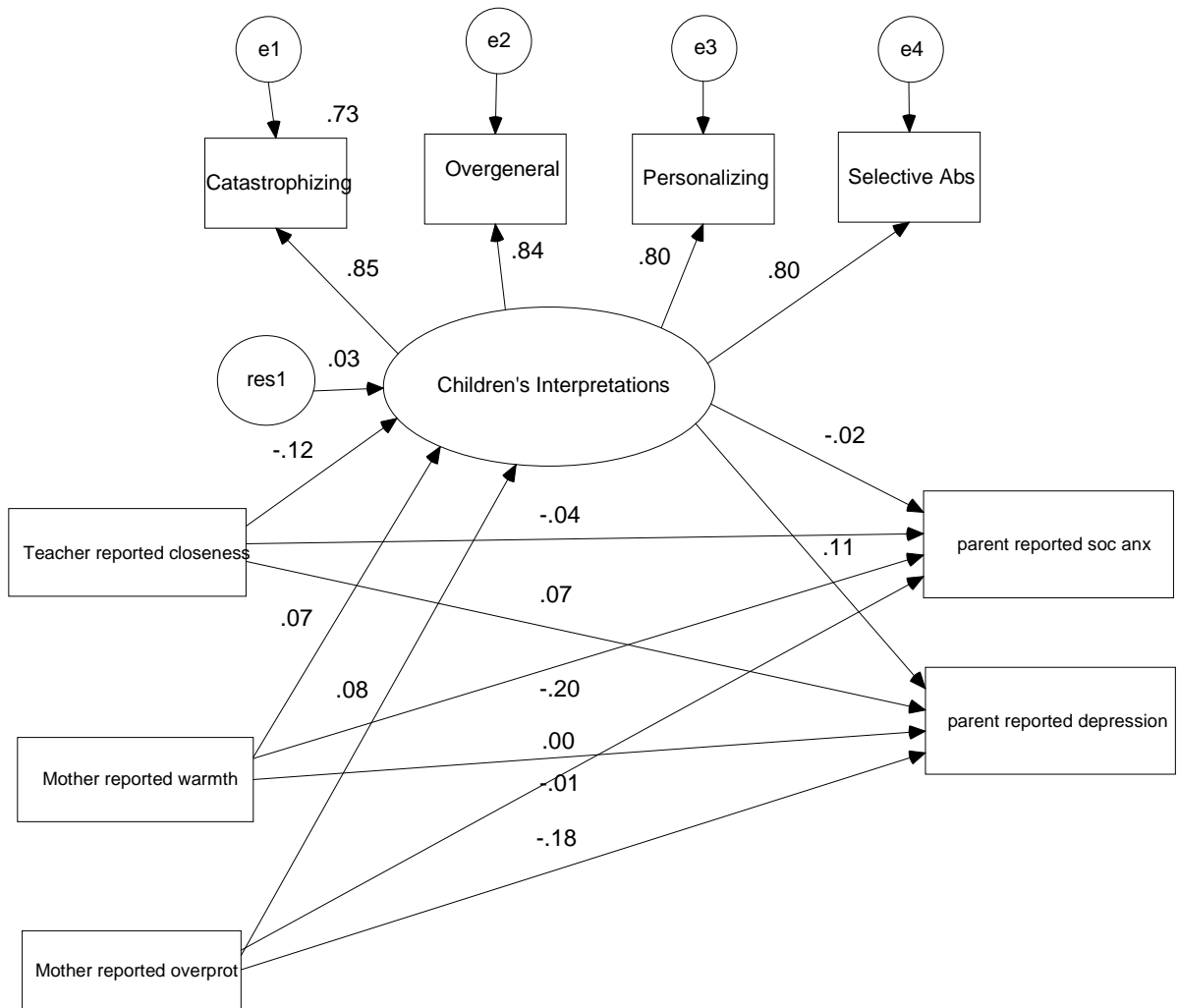
significant.

*Figure C5:* Cognitive-mediation Model with Mother Reports of Maternal Behaviors,

Child Social Anxiety, and Depression.  No pathways were statistically significant.
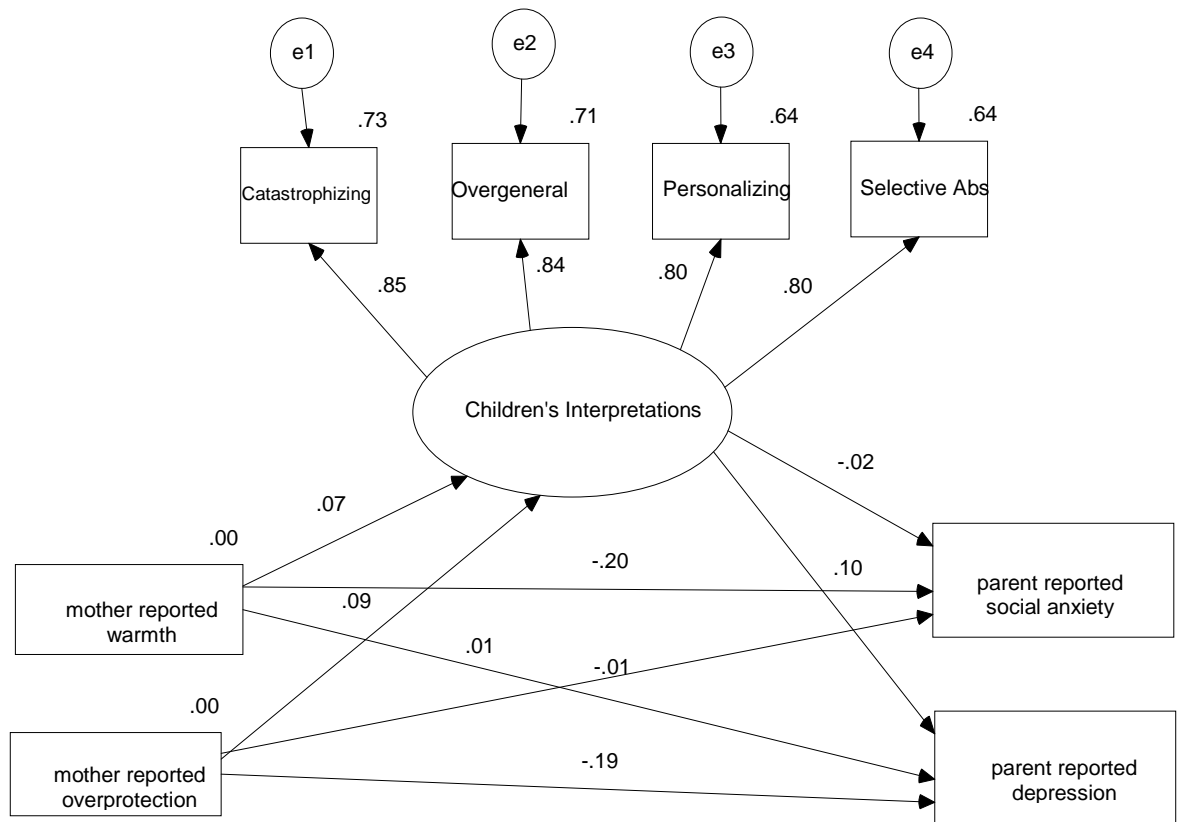
Appendix D. *Sex Differences*

Previous research also suggests that environmental influences on social anxiety differ based on sex (Greco & Morris, 2005; La Greca & Lopez, 1998; Rapee & Spence, 2004; Vernberg, Abwender, Ewell, & Beery, 1992). Sex differences may relate specifically to children's social information processing; for example, Keane, Brown, and Crenshaw (1990) found that mothers and their rejected sons exhibited corresponding attribution biases, whereas mothers and their rejected daughters did not. In another study, mothers of anxious girls—but not boys—exhibited controlling behavior during an observation task (Krohne & Hock, 1991). Although sex differences in factors influencing the development and maintenance of child social anxiety have been suggested (e.g., Eley & Stevenson, 1999), the current study was interested in the mechanisms by which parental behaviors influence child social anxiety. Thus, the relationships between parental warmth and control, children's interpretations, and both child social anxiety and depression were not hypothesized to function differently for boys and girls.

Due to a limited sample size, SEM models were not able to be computed separately for boys and girls. A regression analysis, however, indicated that sex is not a significant factor when examining how maternal overcontrol and rejection predict children's interpretations (see Table D1; $F(7,55) = 1.64$, ns).

Table D1

*Regression Analysis of Parental Behaviors Predicting Children's Interpretations*

| Step | Variable | B | SE B | β | R² | R²Δ |
|------|----------|-----|------|-----|-----|-----|
| Step 1 | | | | | .01 | .01 |
| | Ethnicity | 1.39 | 4.09 | .06 | | |
| | Free Lunch | 1.54 | 3.93 | .06 | | |
| Step 2 | | | | | .17 | .16 |
| | Ethnicity | .57 | 4.13 | .02 | | |
| | Free Lunch | 1.98 | 3.80 | .08 | | |
| | Maternal Rej | .74 | .58 | .17 | | |
| | Maternal Over | .80 | .67 | .18 | | |
| | Paternal Rej | 4.80 | 4.43 | .15 | | |
| | Paternal Over | .01 | .58 | .00 | | |
| | Sex | -2.71 | 1.76 | -.20 | | |

*Note*: * p < .05, ** p< .01. Overall model was significant; F (7, 58) = 2.98, p = .01.

Maternal overcontrol, paternal overcontrol, maternal rejection, paternal rejection = Children's Report of Parental Behavior Index (CRPBI)

Additional regression analyses that controlled for sex were conducted to examine how maternal behaviors predict child social anxiety and child depression (see Table D2 and Table D3). These analyses indicated that sex and maternal overprotection are both significant predictors of child social anxiety, but only maternal rejection is a significant predictor of child depression.

Table D2

*Regression Analysis of Parental Behaviors Predicting Child Social Anxiety*

| Step | Predictor | B | SE B | β | $R^2$ | $R^2\Delta$ |
|------|-----------|-----|------|-------|-----|-----|
| Step 1 | | | | | .12 | .12 |
| | Sex | -2.88 | 1.07 | -.32** | | |
| | Ethnicity | .42 | 1.94 | .03 | | |
| | Free Lunch | -1.48 | 2.18 | -.09 | | |
| Step 2 | | | | | .27 | .15* |
| | Sex | -3.11 | 1.05 | -.35** | | |
| | Ethnicity | .23 | 1.87 | .02 | | |
| | Free Lunch | -1.53 | 2.07 | -.10 | | |
| | Mat Rej | -.03 | .34 | -.01 | | |
| | Mat OC | 1.18 | .38 | .43** | | |
| | Paternal Rej | -.71 | 2.60 | -.03 | | |
| | Paternal OC | -.18 | .34 | -.07 | | |

*Note*: * p < .05, ** p< .01. Overall model was significant; F (7, 58) = 2.98, p = .01.

Maternal overcontrol, paternal overcontrol, maternal rejection, paternal rejection =

Children's Report of Parental Behavior Index (CRPBI)

Table D3

*Regression Analysis of Parental Behaviors Predicting Child Depression*

| Step | Predictor variable | B | SE B | β | R² | R²Δ |
|------|-------------------|------|------|------|-----|------|
| Step 1 | | | | | .01 | .01 |
| | Sex | -.07 | .73 | -.01 | | |
| | Ethnicity | -1.13 | 1.34 | -.12 | | |
| | Free Lunch | .23 | 1.51 | .02 | | |
| Step 2 | | | | | .25 | .24** |
| | Sex | -.39 | .68 | -.07 | | |
| | Ethnicity | -1.05 | 1.23 | -.11 | | |
| | Free Lunch | -.11 | 1.36 | -.01 | | |
| | Maternal Rejection | .61 | .22 | .33** | | |
| | Maternal Overcontrol | .19 | .25 | .10 | | |
| | Paternal Rejection | 2.36 | 1.67 | .17 | | |
| | Paternal Overcontrol | .15 | .22 | .09 | | |

*Note*: ** p < .01. Overall model was significant; F (7, 59) = 2.90, p = .01. Maternal overcontrol, paternal overcontrol, maternal rejection, paternal rejection = Children's Report of Parental Behavior Index (CRPBI); Child Depression = Children's Depression Inventory self report measure.

  A follow-up regression analysis was conducted to examine if sex influenced the effect of maternal overprotection on child social anxiety. This analysis (see Table D4) indicated that sex does not moderate the relationship between maternal overprotection and child social anxiety. Thus, sex and maternal overprotection exhibit separate effects on child social anxiety.

Table D4

*Regression Analysis of Sex Effects and Maternal Overcontrol Predicting Child Social Anxiety*

| Step | Predictor variable | B | SE B | β | $R^2$ | $R^2\Delta$ |
|------|-------------------|-----|------|-----|------|------|
| Step 1 | | | | | .03 | .03 |
| | Ethnicity | 1.49 | 1.99 | .10 | | |
| | Free Lunch | -2.88 | 2.23 | -.18 | | |
| Step 2 | | | | | .27 | .25** |
| | Ethnicity | .71 | 1.75 | .05 | | |
| | Free Lunch | -2.21 | 1.97 | -.14 | | |
| | Maternal Overcontrol | 1.04 | .31 | .37** | | |
| | Sex | -3.50 | .99 | -.39** | | |
| Step 3 | | | | | .27 | .00 |
| | Ethnicity | .70 | 1.78 | .05 | | |
| | Free Lunch | -2.18 | 1.99 | -.14 | | |
| | Maternal Overcontrol | 1.03 | .32 | .36** | | |
| | Sex | -3.99 | 3.99 | -.44 | | |
| | Maternal Ovcn X Sex | .04 | .32 | .06 | | |

*Note*: * p < .05, ** p< .01. Overall model was significant; F (5, 62) = 4.69, p = .001.

Maternal overcontrol, paternal overcontrol, maternal rejection, paternal rejection =

Children's Report of Parental Behavior Index (CRPBI); Child Social Anxiety = score on

the Social Phobia and Anxiety Inventory for Children (SPAI-C).

Similar regression equations were conducted to examine the possible moderation

of sex on the associations of teacher-child relationships to both children's interpretations

and child social anxiety. When predicting children's interpretations, teacher-child

relationships and sex did not exhibit a significant interaction based on child report ($r^2$ =

.12, $r^2 \Delta$ = .02, ns) or teacher report ($r^2$ = .08, $r^2 \Delta$ = .01, ns). Furthermore, the interaction

between teacher-child relationship and sex did not predict child social anxiety based on child report ($r^2 = .21$ $r^2\Delta = .01$, ns) or teacher report ($r^2 = .15$, $r^2 \Delta = .00$, ns). Previous analyses indicate that girls have closer relationships with their teachers; however, sex did not mediate the association between teacher-child relationship and children's interpretations or social anxiety.

The current study also investigated sex differences and found that teacher-child relationships differ for boys and girls; specifically, teachers reported higher teacher-child closeness with girls than with boys. This finding is consistent with previous literature (Kesner, 2000). In the United States, females comprise 71% of teachers (US Census Bureau, 2008). Kesner (2000) suggests that this factor plays a key role in the relationships between teachers and girls. Specifically, teachers may establish better relationships with same-sex students. Additional studies, however, indicate that women and girls are more relationship oriented than boys (Arnold, 1992; Brown & Gilligan, 1992), and females tend to "describe their world in terms of relationships" (Kesner, 2000). Thus, girls may seek out relationships from their teachers more than boys, resulting in closer teacher-child relationships. This research posits that teachers may naturally have closer relationships with girls. When coupled with previous findings indicating that positive teacher-child relationships increase the accuracy of identifying internalizing symptoms for children (Auger, 2004), these results suggest that teachers need to be particularly aware of giving equal attention to their relationships and the mental health difficulties of both boys and girls. Sex was included as a predictor variable in the final mediational model to examine if children's sex is associated with children's

interpretations and child social anxiety and depression. Figure E1 shows that although

sex differences were present for child social anxiety and depression, the mehanisms by

which these factors were predicted did not differ based on sex.

Figure D1. *Final Mediation Model Including Sex as a Predictor Variable.* $\chi^2$ (30) = 34.3,

p = .27, RMSEA = .03, CFI = .98, Hoelter's N = 288
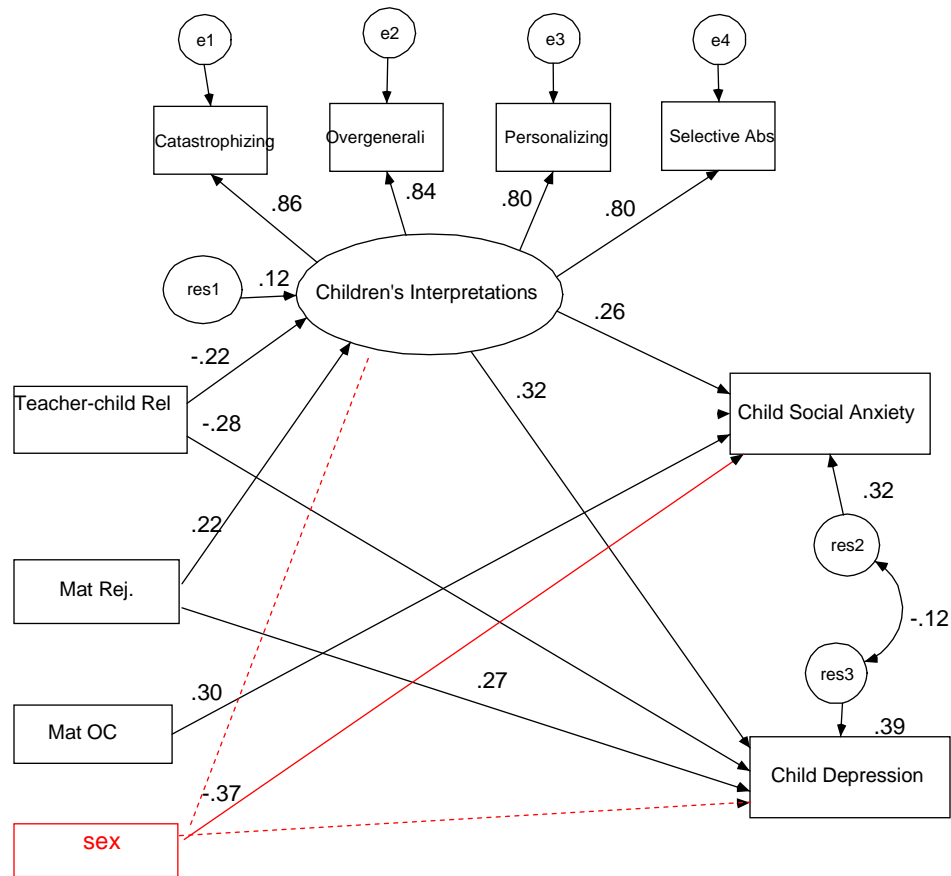
Appendix E. *Alternate Structural Equation Models*

      Subsequent iterations of models were tested using SEM to examine possible alternate models; $\chi^2$ difference tests were conducted to examine the significance of the change in fit between models. The first simplified mediational model trimmed parent anxiety and parent negative interpretations from the full model. Although fit was achieved ($\chi^2$ (20) = 23.9, p = .25, CFI = .98, RMSEA = .03, Hoelter's N = 306), a chi square difference test yielded a $\chi^2$d (12) = 10.9, which was not a significant change in fit from the full model. This suggests that the association between parental behaviors and both child social anxiety and depression is independent of the influence of parent anxiety and parent negative interpretations.

*Figure E1*: Cognitive-Mediated Model of Parental Behaviors on Child Social Anxiety and Depression. ($\chi^2$ (20) = 23.9, *p* = .25, CFI = .98, RMSEA = .03, Hoelter's N = 306)
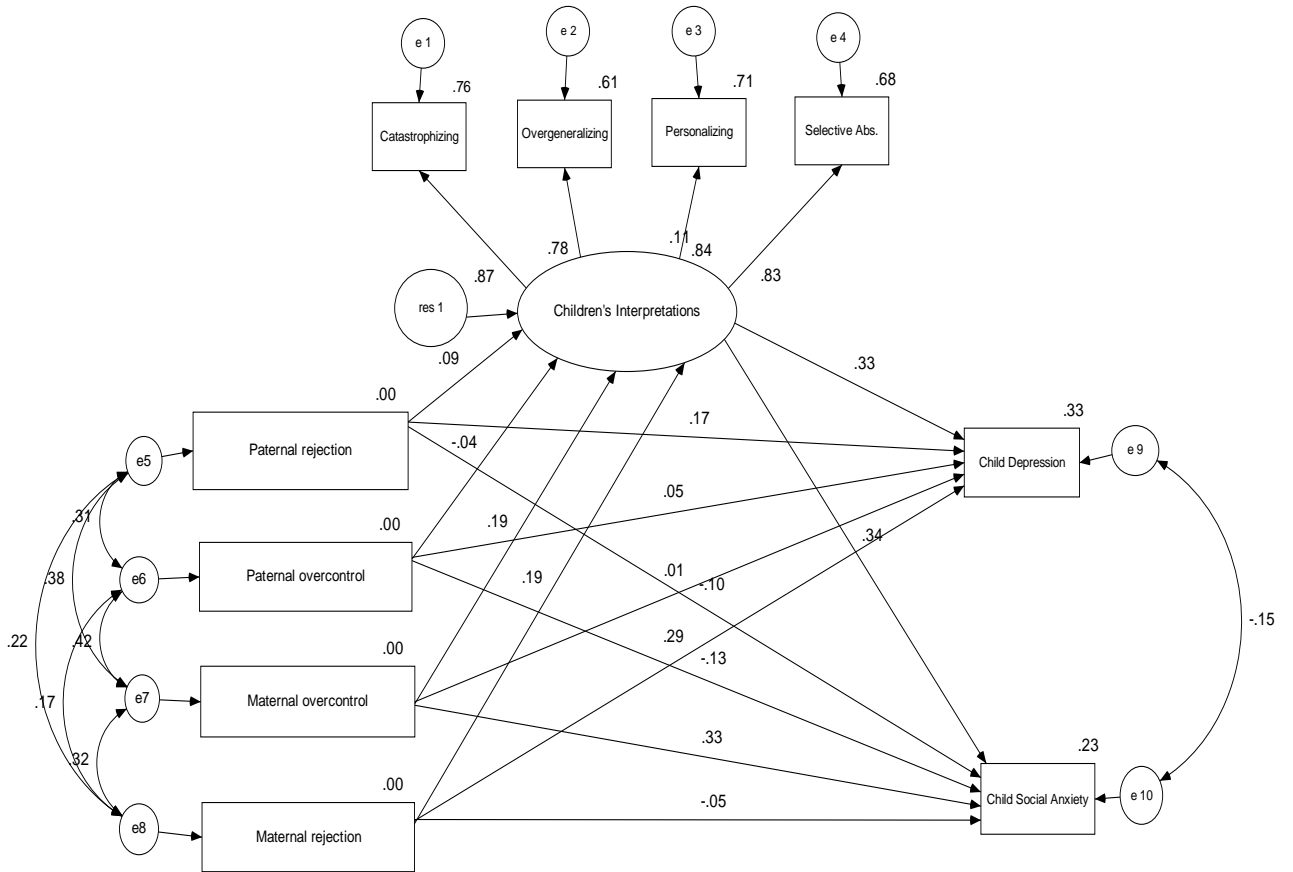


To further examine the effects of parent anxiety and parent interpretations, a direct effects model was conducted examining these parent factors in addition to parental behaviors. Although the model fit the data, it did not represent a significant improvement in fit from the theorized full model ($\chi^2$d (6) = 10.3, *p* < .10). Furthermore, the paths of parent anxiety and interpretations were not significant.

*Figure E2*: Direct Effects of Parent Anxiety and Interpretations in Full Cognitive-Mediated Model. χ² (26) = 24.5, p = .55, RMSEA = .001, CFI = 1.0, Hoelter's N = 363.
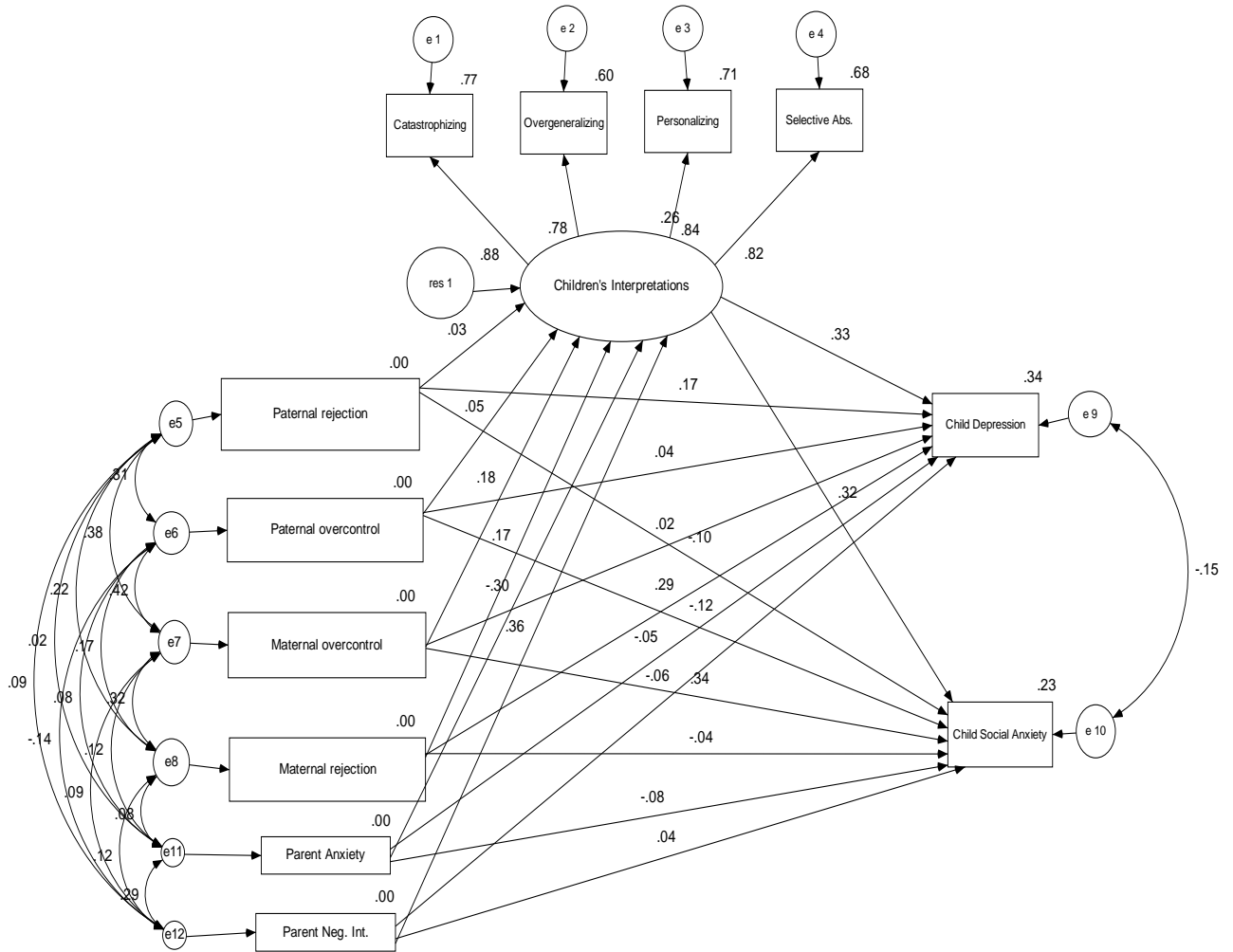


Maternal behaviors were more highly associated with child outcomes in the full model. Thus, analyses were conducted after trimming paternal overcontrol and paternal warmth from the model. Analyses indicated that this model fits the data (χ² (26) = 27.1, *p* = .40, CFI = .99, RMSEA = .02, Hoelter's N = 327); yet, this model also did not represent a significant change in fit from the full mediational model (x2d ( 6) = 7.7, ns).

*Figure E3*: Cognitive-Mediated Model after Removing Paternal Behaviors from the Model. χ² (26) = 27.1, *p* = .40, CFI = .99, RMSEA = .02, Hoelter's N = 327);
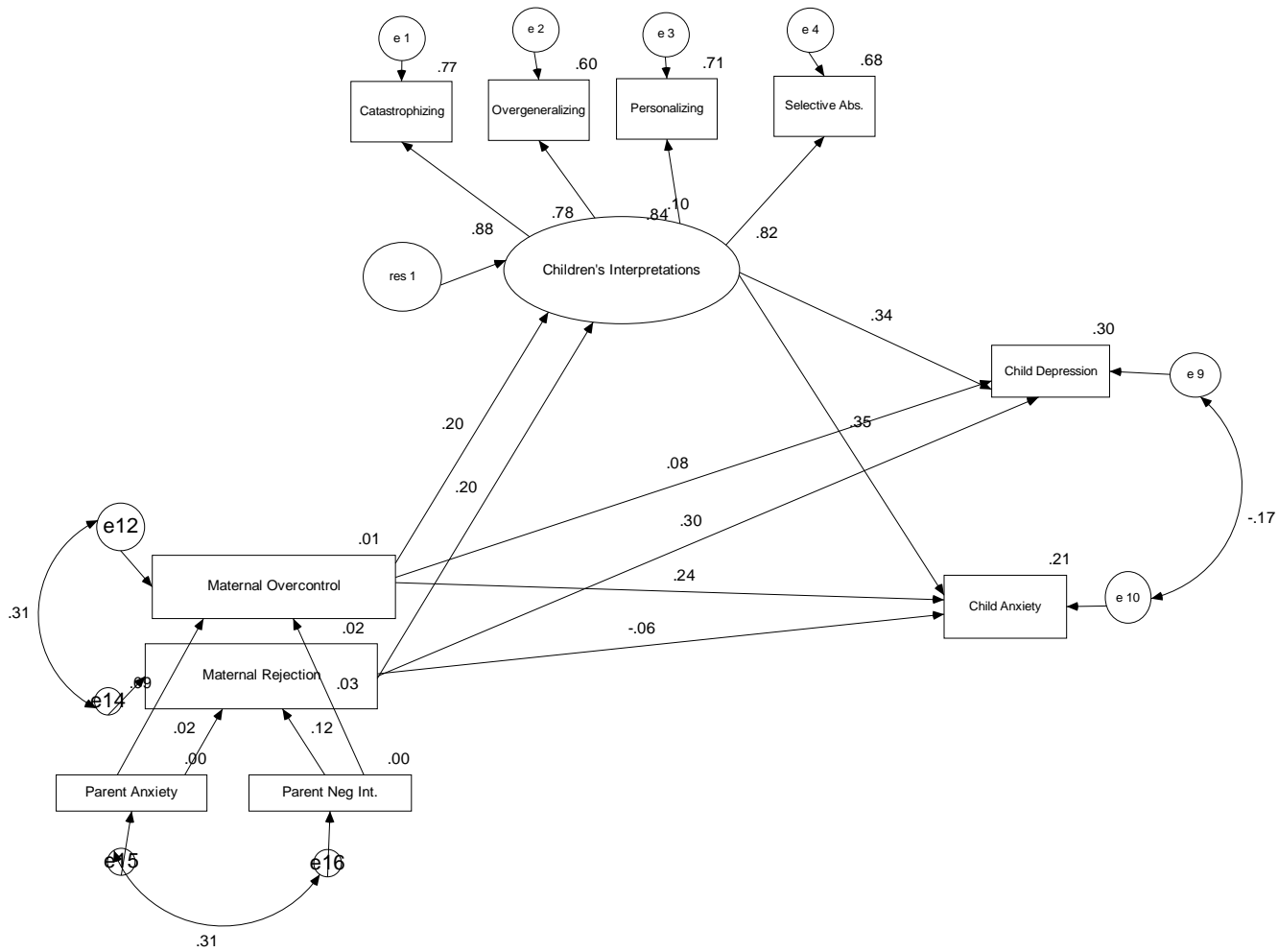


Based on these analyses, trimming parent anxiety, parent negative interpretations, and paternal behaviors did not result in a significant decrease in the overall fit of the model. When trimming these four factors simultaneously, fit (χ² (14) = 15.5, p = .35, CFI = .99, RMSEA = .02, Hoelter's N = 366) also did not show a significant decrease from the full model (χ² d (18) = 19.3.

*Figure E4:* Simplified Cognitive-Mediation Model including Maternal Behaviors. χ² (14) = 15.5, p = .35, CFI = .99, RMSEA = .02
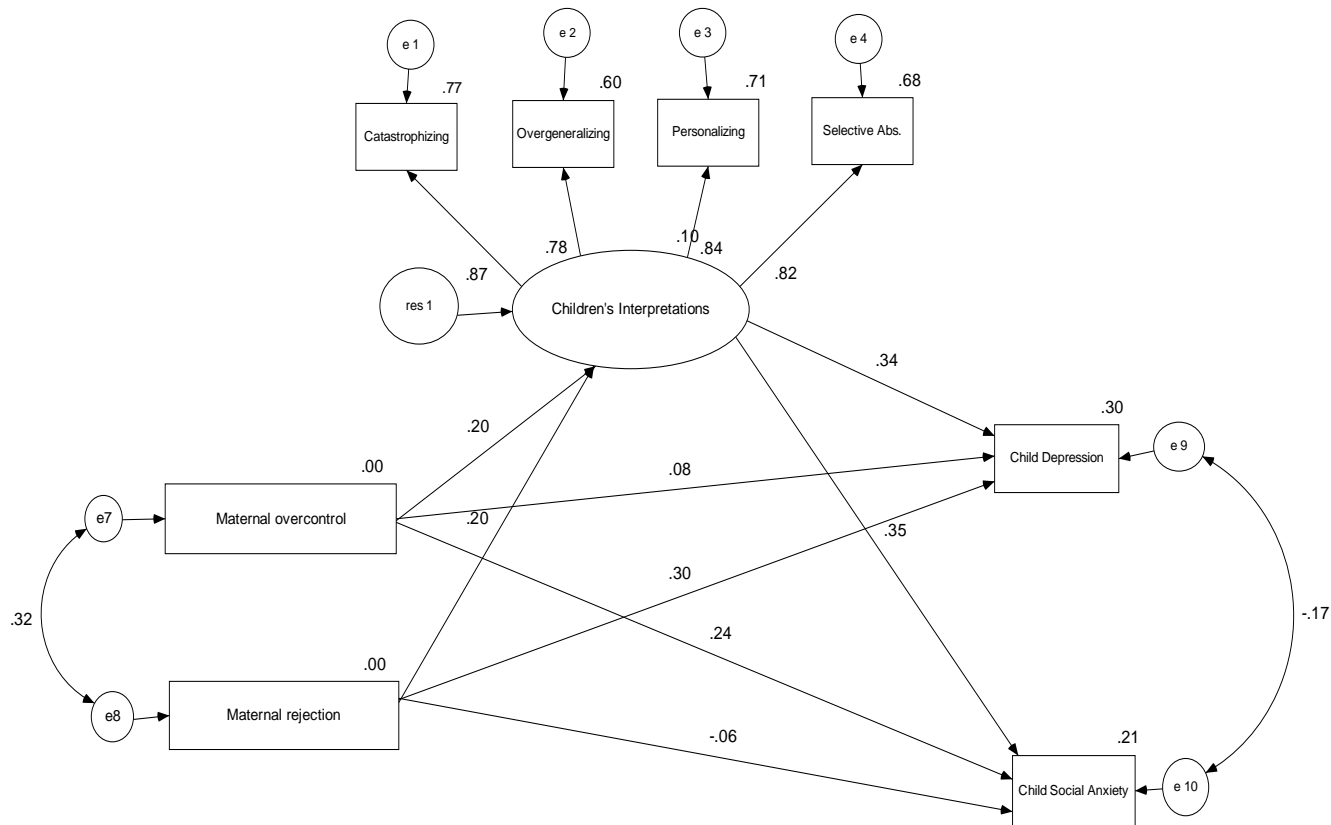


A model examining the direct effects of children's interpretations, maternal overprotection, and maternal control on child social anxiety and depression was also conducted. Results indicated that this model adequately fits the data χ² (15) =19.4, p = .20, RMSEA = .04, CFI = .98, Hoelter's N = 306). However, a χ² difference test indicated that the previous model depicting children's interpretations as a mediator represents a significantly better fit to the data (χ²d (1) = 3.9, *p* < .05). Of note, however, this model depicts that the associations between children's interpretations and both child social

anxiety and depression are significant independent of contributions by maternal behaviors (Figure E5).

*Figure E5*: Direct Effects of Children's Interpretations, Maternal Overcontrol, and Maternal Rejection. $\chi^2$ (15) =19.4, *p* = .20, RMSEA = .04, CFI = .98, Hoelter's N = 306.
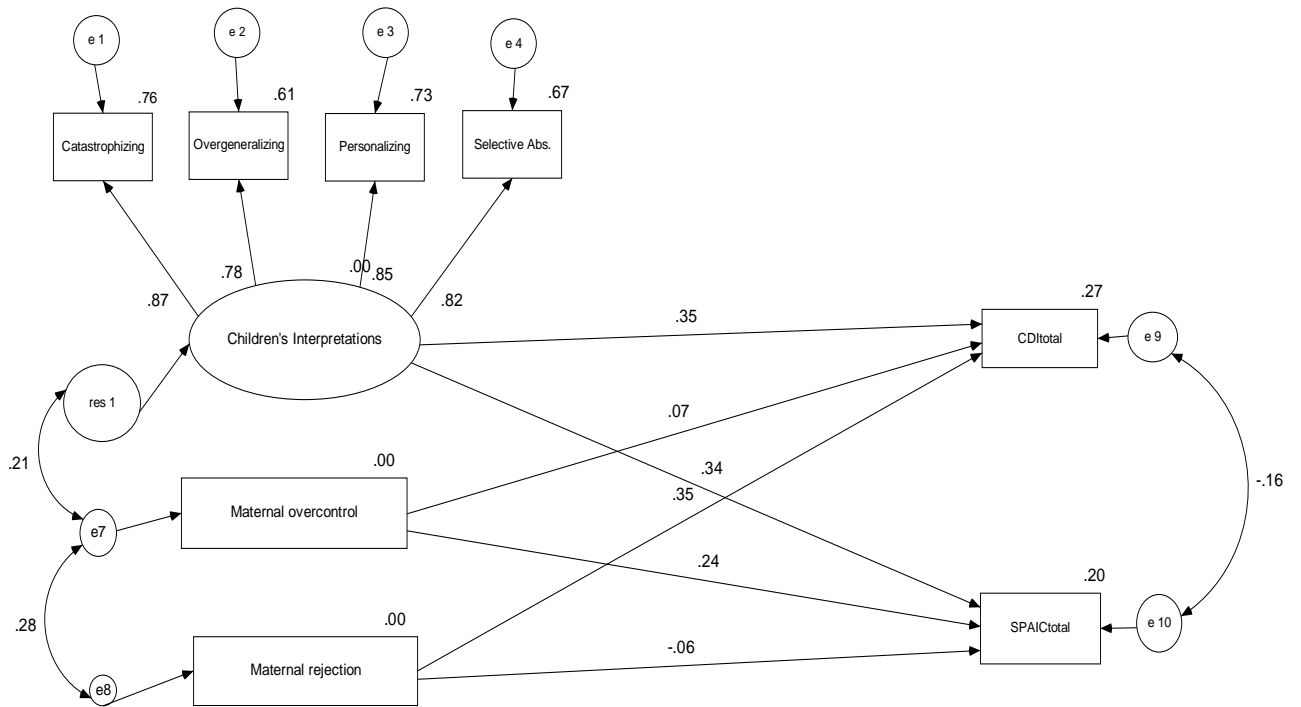


In sum, these iterations suggest that the final mediation model examining how maternal overcontrol, maternal rejection, and teacher-child relationship are related to children's interpretations, social anxiety, and depression represent the best theoretical and statistical fit to the data.

Appendix F. *Children's Negative Cognitive Errors Questionnaire*

<u>Instructions:</u>
This questionnaire describes a number of situations that might happen to kids. Each situation is followed by a thought that a kid in the situation might have. This thought is in "QUOTATATION MARKS". We want to know how similar that thought is to what <u>you</u> might think in that situation.

---

<u>Here is an example</u>

You are a goalie for your soccer team. The game ends in a 1-1 tie. After the game you hear one of your teammates say that your team should have won today. You think, "HE/SHE THINKS IT'S MY FAULT WE DIDN'T WIN"

This thought is _____ like I would think.

Almost exactly        a lot           somewhat          only a little      not at all

I will read each item out loud. You can follow along with me and circle the choice that is closest to what you would think. If you have a question, I will answer it. Remember, there are no wrong answers.

---

(1)  You invite one of your friends to stay overnight at your house. Another one of your friends finds out about it. You think, "HE/SHE WILL BE REAL MAD AT ME FOR NOT ASKING THEM, AND NEVER WANT TO BE FRIENDS AGAIN".

This thought is _____ like I would think.

Almost exactly        a lot           somewhat          only a little      not at all

---

(2)  Your class is having 4-person relay races in the gym. Your team loses. You think, "If I HAD JUST BEEN FASTER, WE WOULD NOT HAVE LOST".

This thought is _____ like I would think.

Almost exactly        a lot           somewhat          only a little      not at all

---

(3)  You are trying out for the school softball team. You get up four times and get two hits and make two outs. You think, "WHAT A LOUSY PRACTICE I HAD".

This thought is _____ like I would think.

Almost exactly        a lot           somewhat          only a little      not at all

---

(4)   Your team loses a spelling contest. The other team won easily. You think, "IF I WERE SMARTER, WE WOULDN'T HAVE LOST".

This thought is _____ like I would think.

Almost exactly          a lot          somewhat          only a little          not at all

(5)   Some of your friends have asked you if you're going to try out for the school soccer team. You tried out last year but did not make it. You think, "WHAT'S THE USE OF TRYING OUT, I COULDN'T MAKE IT LAST YEAR".

This thought is _____ like I would think.

almost exactly          a lot          somewhat          only a little          not at all

(6)   You call one of the kids in your class to talk about your math homework. He/she says. "I can't talk to you now, my father needs to use the phone." You think, "HE/SHE DIDN'T WANT TO TALK TO YOU".

This thought is _____ like I would think.

Almost exactly          a lot          somewhat          only a little          not at all

(7)   You and three other students completed a group science project. Your teacher did not think it was very good and gave your group a poor grade. You think, "IF I HADN'T DONE SUCH A LOUSY JOB, WE WOULD HAVE GOTTEN A GOOD GRADE."

This thought is _____ like I would think.

Almost exactly          a lot          somewhat          only a little          not at all

(8)   Whenever it is someone's birthday in your class, the teacher lets that student have a half hour of free time to play a game with another student. Last week it was your friend's birthday and he/she picked someone else. Now another of your friends is going to get to choose someone. You think, HE/SHE PROBABLY WON'T PICK ME EITHER."

This thought is _____ like I would think.

Almost exactly          a lot          somewhat          only a little          not at all

(9)  Your softball team is having practice. The coach tells you he would like to talk to you after practice. You think, "HE'S NOT HAPPY WITH HOW I'M DOING AND DOESN'T WANT ME ON THE TEAM ANYMORE."

This thought is _____ like I would think.

Almost exactly        a lot        somewhat        only a little        not at all

(10) You went to a party with one of your friends. When you first got there your friend hung around with some other kids instead of you. Later you and your friend decided to stop at his/her house for a snack before you go home. Later that night you think, "MY FRIEND DIDN'T SEEM TO WANT TO HANG AROUND WITH ME TONIGHT."

This thought is _____ like I would think.

Almost exactly        a lot        somewhat        only a little        not at all

(11) You forgot to do your spelling homework. Your teacher tells the class to hand the homework in. You think, "THE TEACHER IS GOING TO THINK I DON'T CARE AND I WON'T PASS."

This thought is _____ like I would think.

Almost exactly        a lot        somewhat        only a little        not at all

(12) You were having a good day in school until the last period when you had a math quiz. You did poorly on the quiz . You think, "SCHOOL IS A DRAG, WHAT A WASTE OF TIME."

This thought is _____ like I would think.

Almost exactly        a lot        somewhat        only a little        not at all

(13) You play basketball and score 5 baskets but miss two real easy shots. After the game you think, "I PLAYED POORLY."

This thought is _____ like I would think.

Almost exactly        a lot        somewhat        only a little        not at all

(14) You spend the day at your friend's house. The last hour before leaving you were really bored. You think, "TODAY WAS NO FUN."

This thought is _____ like I would think.

    Almost exactly       a lot       somewhat       only a little       not at all

(15) Last week you had a history test and forgot some of the things you had read. Today you are having a math test and now the teacher is passing out the test. You think, "I'LL PROBABLY FORGET WHAT I STUDIED JUST LIKE LAST WEEK."

This thought is _____ like I would think.

    Almost exactly       a lot       somewhat       only a little       not at all

(16) You are taking skiing lessons. The teacher tells the class that he does not think people are ready for the steep trails yet. You think, "IF I COULD LEARN TO SKI FASTER, I WOULDN'T BE HOLDING EVERYONE UP."

This thought is _____ like I would think.

    Almost exactly       a lot       somewhat       only a little       not at all

(17) Your class is starting a new unit in math. The last one was really hard. When it's time for math class you think, "THAT LAST STUFF WAS SO HARD I JUST KNOW I'M GOING TO HAVE TROUBLE WITH THIS TOO."

This thought is _____ like I would think.

    Almost exactly       a lot       somewhat       only a little       not at all

(18) You just started a part-time job helping one of your neighbors. Twice this week you were not able to go skating with your friends because of having to work. As you see your friends leaving to go skating, you think, "PRETTY SOON THEY WON'T EVER WANT TO DO ANYTHING WITH ME."

This thought is _____ like I would think.

    Almost exactly       a lot       somewhat       only a little       not at all

(19) Last week one of the kids in your class had a party and you weren't invited. This past week you heard another student in your class telling someone he was thinking of getting some kids together to go to the movie. You think, "IT'LL BE LIKE LAST WEEK, I WON'T BE ASKED TO GO."

This thought is _____ like I would think.

    Almost exactly      a lot      somewhat      only a little      not at all

(20) You did an extra credit assignment. Your teacher tells you that he would like to talk to you about it. You think, "HE THINKS I DID A LOUSY JOB ON MY ASSIGNMENT AND IS GOING TO GIVE ME A BAD GRADE."

This thought is _____ like I would think.

    Almost exactly      a lot      somewhat      only a little      not at all

(21) You're with two of your friends. You ask if they would like to go to the movie this weekend. They both say they can't. You think, "THEY PROBABLY JUST DON'T WANT TO GO WITH ME."

This thought is _____ like I would think.

    Almost exactly      a lot      somewhat      only a little      not at all

(22) Your cousin calls you to ask if you'd like to go on a long bike ride. You think, "I PROBABLY WON'T BE ABLE TO KEEP UP AND PEOPLE WILL MAKE FUN OF ME."

This thought is _____ like I would think.

    Almost exactly      a lot      somewhat      only a little      not at all

(23) Your team has lost in a spelling contest. You were the last one up for your team and had spelled four words right. The last word was "excellent" and you got it wrong. When you sit down you think, "I'M NO GOOD AT SPELLING."

This thought is _____ like I would think.

    Almost exactly      a lot      somewhat      only a little      not at all

(24)  Last week you played softball and struck out twice. Today some kids from your class ask you to play soccer. You think, "THERE'S NO SENSE PLAYING, I'M NO GOOD AT SPORTS."

This thought is _____ like I would think.

      Almost exactly      a lot      somewhat      only a little      not at all

Appendix G: *Tables*

Table 1

*Sample Characteristics for Main Study Variables*

| Scale | n | M | SD | skew | kurtosis | α |
|---|---|---|---|---|---|---|
| *Child Report* | | | | | | |
| CDI | 76 | 8.59 | 8.60 | 1.16 | 1.13 | .82 |
| SPAI-C | 74 | 14.55 | 9.73 | .15 | -.94 | .94 |
| CNCEQ total | 70 | 43.17 | 13.96 | .88 | -.13 | .91 |
| CRPBI | | | | | | |
|    Maternal OC | 70 | 12.13 | 3.17 | .43 | -.12 | .76 |
|    Maternal Rej | 70 | 11.16 | 3.16 | 1.03 | .29 | .70 |
|    Paternal OC | 74 | 12.42 | 3.34 | .42 | -.32 | .75 |
|    Paternal Rej | 73 | 10.95 | 3.07 | 1.61 | 2.95 | .74 |
| SST | 73 | 3.01 | .48 | -.67 | .63 | .70 |
| | | | | | | |
| *Parent Report* | | | | | | |
| ASSIQ | 70 | 14.46 | 7.36 | -.13 | 2.57 | .89 |
| SPS/SIAS | 62 | 25.37 | 16.93 | 1.58 | 3.64 | .88 |
| PSDQ | | | | | | |
|    Overprotection | 61 | 13.51 | 3.55 | -.13 | .07 | .52 |
|    Warmth | 61 | 22.72 | 2.30 | -1.58 | 4.06 | .67 |
| | | | | | | |
| *Teacher Report* | | | | | | |
| STRS Closeness | 61 | 53.41 | 9.61 | -.54 | .08 | .87 |
| | | | | | | |
| *Observation* | | | | | | |
| Aut Granting | 76 | 4.90 | .96 | -.87 | .62 | -- |
| Supp Presence | 76 | 3.89 | 1.58 | -.08 | -.82 | -- |
| Positive Affect | 76 | 1.96 | .73 | .28 | -.42 | -- |

*Note*: CDI = Child Depression Inventory; SPAI-C = Social anxiety disorder and Anxiety Inventory for Children; CNCEQ = Children's Negative Cognitive Errors Questionnaire; SST = Security Scale for Teachers; CRPBI = Children's Report of Parental Behaviors Index; PSDQ = Parenting Styles and Dimensions Questionnaire; ASSIQ = Ambiguous Social Situations Interpretations Questionnaire; SPS/SIAS = Social Phobia Scale/Social Interaction Anxiety Scale; STRS Closeness = Student Teacher Relationship Scale-Closeness subscale.

Table 2

*Variables with Leptokurtic Distribution after Square Root Transformation*

| Scale | M | SD | skew | kurtosis |
|---|---|---|---|---|
| SPS/SIAS (parent) | 4.78 | 1.59 | .53 | .70 |
| Paternal Rejection (child) | 3.28 | .43 | 1.26 | 1.53 |
| ASSIQ (parent) | 3.97 | .10 | -2.55 | 13.99 |
| Parental warmth (parent) | 4.76 | .03 | -1.88 | 5.84 |

*Note*: SPS = Social Phobia Scale; SIAS = Social Interaction Anxiety Scale; Paternal

Rejection = Children's Report of Parenting Behavior Index; ASSIQ = Ambiguous Social

Situations Interpretations Questionnaire; Parental warmth = Parenting Styles and

Dimensions Questionnaire.

Table 3

*Sample Characteristics in Anxious Solitary Group Classified in Third and Fourth Grade*

| | Control in Fall of 4th grade (n = 56) | | | | Control in 3rd and 4th grade (n = 36) | | | |
|---|---|---|---|---|---|---|---|---|
| Scale | M | SD | skew | kurtosis | M | SD | skew | kurtosis |
| Child Report | | | | | | | | |
| CDI | 10.35 | 5.98 | .77 | .35 | 9.66 | 6.47 | .85 | .38 |
| SPAI-C | 15.49 | 8.54 | -.48 | -.57 | 14.68 | 8.70 | -.25 | -1.08 |
| CNCEQ | 14.76 | 11.51 | 8.68 | .11 | 44.08 | 12.69 | .87 | -.20 |
| SST | 44.55 | 7.73 | -.05 | -.86 | 45.34 | 7.62 | -.54 | -.54 |
| CRPBI | | | | | | | | |
| Mat OC | 12.59 | 3.22 | 1.24 | 1.41 | 12.51 | 3.07 | .58 | .44 |
| Mat Rej | 11.82 | 3.43 | .90 | -.26 | 11.31 | 3.15 | .92 | -.16 |
| Pat OC | 11.72 | 2.27 | .05 | -1.01 | 12.71 | 3.07 | .41 | .01 |
| Pat Rej | 11.41 | 3.04 | 1.24 | 1.27 | 11.61 | 3.53 | 1.40 | 2.06 |
| | | | | | | | | |
| Parent report | | | | | | | | |
| PSDQ | | | | | | | | |
| Overprot | 13.75 | 3.59 | -.43 | -.10 | 14.03 | 3.72 | .02 | -.07 |
| Warmth | 23.38 | 1.45 | -.46 | -1.34 | 23.12 | 1.91 | -1.01 | .27 |
| ASSIQ | 17.82 | 7.49 | 2.63 | 6.96 | 16.08 | 6.15 | 2.01 | 9.68 |
| SPS/SIAS | 31.47 | 22.30 | 1.63 | 3.00 | 16.50 | 18.94 | 1.83 | 4.02 |
| | | | | | | | | |
| Teacher report | | | | | | | | |
| STRS Close | 55.23 | 7.26 | -.74 | .86 | 52.79 | 8.09 | -.17 | -.71 |
| | | | | | | | | |
| Observation | | | | | | | | |
| Autonomy | 4.83 | 1.06 | -.42 | -.91 | 4.87 | .99 | -.47 | -.85 |
| Support | 3.84 | 1.45 | -.59 | -.30 | 3.97 | 1.53 | -.53 | -.71 |
| Pos Affect | 1.92 | .63 | .14 | -.12 | 2.00 | .67 | .00 | -.75 |

*Note*: CDI = Child Depression Inventory; SPAI-C = Social Phobia and Anxiety Inventory for Children; CNCEQ = Children's Negative Cognitive Errors Questionnaire; SST = Security Scale for Teachers; CRPBI = Children's Report of Parental Behaviors Index; PSDQ = Parenting Styles and Dimensions Questionnaire; ASSIQ = Ambiguous Social Situations Interpretations Questionnaire; SPS/SIAS = Social Phobia Scale/Social Interaction Anxiety Scale; STRS Closeness = Student Teacher Relationship Scale-Closeness subscale.

Table 4

*Sample Characteristics for Main Study Variables in Control Group in Third and Fourth Grade*

| Scale | AS in fall of 4th grade (n = 20) | | | | AS in 3rd or 4th grade (n = 40) | | | |
|---|---|---|---|---|---|---|---|---|
| | M | SD | skew | kurtosis | M | SD | skew | kurtosis |
| **Child Report** | | | | | | | | |
| CDI | 7.97 | 6.29 | 1.39 | 1.91 | 7.42 | 5.88 | 1.70 | 3.43 |
| SPAI-C | 12.89 | 9.34 | .41 | -.80 | 12.32 | 9.62 | .66 | -.39 |
| CNCEQ | 43.30 | 14.75 | .87 | -.25 | 42.15 | 15.39 | .98 | .01 |
| SST | 45.21 | 7.17 | -.96 | 1.48 | 44.69 | 6.98 | -.94 | 2.60 |
| CRPBI | | | | | | | | |
| Mat OC | 11.98 | 3.17 | .21 | -.60 | 11.74 | 3.27 | .38 | -.50 |
| Mat Rej | 10.94 | 3.07 | 1.11 | .64 | 11.00 | 3.21 | 1.20 | .99 |
| Pat OC | 12.64 | 3.61 | .33 | -.60 | 12.11 | 3.63 | .52 | -.43 |
| Pat Rej | 10.80 | 3.09 | 1.78 | 3.83 | 10.25 | 2.36 | 1.51 | 1.95 |
| **Parent Report** | | | | | | | | |
| PSDQ | | | | | | | | |
| Overprot | 13.42 | 3.58 | -.04 | .29 | 12.90 | 3.30 | -.57 | .01 |
| Warmth | 22.49 | 2.50 | -1.46 | 3.28 | 22.25 | 2.63 | -1.68 | 4.46 |
| ASSIQ | 16.00 | 4.45 | -1.44 | 5.26 | 16.85 | 4.32 | -1.43 | 6.57 |
| SPS/SIAS | 23.07 | 14.02 | .92 | .42 | 24.00 | 14.32 | .67 | .23 |
| **Teacher Report** | | | | | | | | |
| STRS Close | 52.92 | 10.16 | -.45 | -.11 | 53.94 | 10.83 | -.74 | .25 |
| **Observation** | | | | | | | | |
| Autonomy | 4.93 | .93 | -1.07 | 1.47 | 4.94 | .94 | -1.36 | 2.84 |
| Supportive | 3.91 | 1.64 | .02 | -.94 | 3.80 | 1.67 | .34 | -.72 |
| Pos Affect | 1.97 | .76 | .29 | -.52 | 1.91 | .79 | .54 | -.13 |

*Note*: CDI = Child Depression Inventory; SPAI-C = Social Phobia and Anxiety Inventory for Children; CNCEQ = Children's Negative Cognitive Errors Questionnaire; SST = Security Scale for Teachers; CRPBI = Children's Report of Parental Behaviors Index; PSDQ = Parenting Styles and Dimensions Questionnaire; ASSIQ = Ambiguous Social Situations Interpretations Questionnaire; SPS/SIAS = Social Phobia Scale/Social Interaction Anxiety Scale; STRS Closeness = Student Teacher Relationship Scale-Closeness subscale.

Table 5

*Sex Differences Between Main Study Variables*

| Measure | Boys M | Boys SD | Girls M | Girls SD | F |
|---|---|---|---|---|---|
| Child Social Anx (child) | 10.20 | 8.40 | 17.26 | 8.74 | 12.37** |
| Child Soc Anx criteria (parent) | .51 | .90 | 1.08 | 1.21 | 5.23* |
| Child Soc Anx dx (parent) | .11 | .31 | .24 | .43 | 2.51 |
| Child Soc Anx criteria (child) | 1.05 | .99 | 1.46 | 1.24 | 2.40 |
| Child Social Anx dx (child) | .11 | .31 | .35 | .48 | 6.90** |
| Child Negative Int (child) | 40.91 | 13.35 | 45.97 | 14.22 | 2.30 |
| Child Depression (child) | 8.75 | 6.12 | 8.63 | 6.47 | .01 |
| Maternal Rejection (child) | 11.11 | 3.03 | 11.16 | 3.38 | .00 |
| Maternal Overcontrol (child) | 12.46 | 3.47 | 11.72 | 2.84 | .92 |
| Paternal Rejection (child) | 11.27 | 3.11 | 10.54 | 3.05 | 1.00 |
| Paternal overcontrol (child) | 13.19 | 3.51 | 11.56 | 3.01 | 4.55* |
| Parental autonomy (obs) | 4.89 | 1.08 | 5.05 | .81 | 1.88 |
| Parental support (obs) | 4.08 | 1.56 | 3.65 | 1.61 | 1.33 |
| Parental overprot. (parent) | 14.00 | 3.15 | 12.93 | 3.92 | 1.35 |
| Parental warmth (parent) | 22.60 | 2.36 | 22.90 | 2.28 | .25 |
| Teacher-Child Security(child) | 45.92 | 6.42 | 44.31 | 8.09 | .88 |
| Teacher-Child Close (teacher) | 49.71 | 9.86 | 58.38 | 6.68 | 14.92** |
| Parent Anxiety (parent) | 24.80 | 12.70 | 25.68 | 20.60 | .04 |
| Parent Negative Int (parent) | 15.91 | 4.77 | 17.03 | 5.95 | .74 |

*Note*: * p < .05, ** p < .01; SPAI-C = Social Phobia and Anxiety Inventory for Children (child report); CNCEQ = Children's Negative Cognitive Errors Questionnaire (child report); CDI = Children's Depression Inventory (child report); Maternal Rejection, Maternal Overcontrol, Paternal Rejection, Paternal Overcontrol = Children's Report of Parental Behaviors Index (child report); SST = Security Scale for Teachers (child report); Closeness = Student Teacher Relationship Scale (teacher report).

Table 6 *Zero Order Correlations Among Main Study Variables*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Soc anx dis criteria (child) | - | | | | | | | | | | | | | | | | |
| 2 Soc anx dis criteria (parent) | .14† | - | | | | | | | | | | | | | | | |
| 3 SPAI-C (child) | .36** | .05 | - | | | | | | | | | | | | | | |
| 4 Child int (child) | .54** | -.03 | .38 | - | | | | | | | | | | | | | |
| 5 Parent soc anx (parent) | -.02 | .23* | -.12 | -.12 | - | | | | | | | | | | | | |
| 6 Parent int (parent) | .23* | .08 | .19† | .30** | .11 | - | | | | | | | | | | | |
| 7 Maternal OC (child) | .13 | -.07 | .32** | .27** | .12 | .03 | - | | | | | | | | | | |
| 8 Paternal OC (child) | -.09 | -.09 | -.01 | -.09 | .18 | -.18† | .43** | - | | | | | | | | | |
| 9 PSDQ OC (parent) | -.04 | .04 | -.16† | .08 | .14† | -.02 | -.00 | .04 | - | | | | | | | | |
| 10 Aut granting (obs) | .14 | .19† | -.05 | -.05 | .17 | -.03 | -.27** | -.14 | -.28 | - | | | | | | | |
| 11 PSDQ warmth (parent) | .20† | -.21† | .31** | .06 | -.13 | .05 | -.12 | -.05 | -.15 | -.17 | - | | | | | | |
| 12 Maternal rejection (child) | .32** | -.02 | .11 | .27* | .05 | .16 | .32** | .16 | -.01 | -.07 | -.15 | - | | | | | |
| 13 Paternal rejection (child) | .16† | -.10 | .04 | .19† | .06 | .03 | .38** | .31** | .23* | -.02 | -.07 | .23* | - | | | | |
| 14 Parental pos affect (obs) | -.01 | -.12 | .08 | .00 | -.17† | .10 | -.20† | -.04 | -.20† | .29** | -.06 | -.10 | -.05 | - | | | |
| 15 Parental support (obs) | .05 | .08 | .15 | .03 | .01 | .06 | -.06 | -.07 | -.15 | .49** | -.13 | .08 | .03 | .67** | - | | |
| 16 Teacher-child sec (child) | -.11 | -.09 | -.18† | -.25* | -.00 | -.01 | -.21* | -.16† | -.23* | .04 | .01 | -.19† | -.23* | -.07 | -.02 | - | |
| 17 Teacher-child closeness (teacher) | -.09 | -.05 | .23* | -.13 | .24* | -.10 | -.24* | -.13 | -.08 | .16 | -.02 | -.18† | .04 | .14 | .02 | -.03 | - |
| 18 Child dep (child) | .20* | -.09 | .05 | .42** | -.03 | .13 | .27** | .19* | .29** | -.04 | .12 | .41** | .33** | -.24** | -.14 | -.03 | .13 |

*Note:* * p < .05, † p < .10; Soc anx dis criteria = ADIS; Child int = CNCEQ; Parent soc anx = SPS/SIAS; Parent int= ASSIQ; Teacher-child sec = SST; Teacher-child close = STRS; Child dep = CDI.

Table 7

*Inter-rater Agreement for Child Social Anxiety and Parental Behaviors*

| | Reported by child | | | | Reported by parent | | | Reported by observer | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ADIS-C | SPAI-C | MATREJ | MAT OC | ADIS-P | MATWARM | MATOC | PARSUPP | PARPA | PARAUT |
| **Reported by child** | | | | | | | | | | |
| Child Social Anxiety (ADIS-C) | -- | | | | | | | | | |
| Child Social Anxiety (SPAI-C) | .36** | -- | | | | | | | | |
| Maternal Rejection (MATREJ) | .32** | .11 | -- | | | | | | | |
| Maternal Overcontrol (MATOC) | .13 | .32** | .32** | -- | | | | | | |
| **Reported by parent** | | | | | | | | | | |
| Child Social Anxiety (ADIS-P) | .14† | .05 | -.02 | -.07 | -- | | | | | |
| Parental Warmth (PAT WARM) | .20† | .31** | -.15 | -.12 | -.21† | -- | | | | |
| Parental Overcontrol (PAT OC) | -.04 | -.16† | -.01 | -.00 | .04 | -.14 | -- | | | |
| **Reported by observer** | | | | | | | | | | |
| Parental support (PAR SUPP) | .05 | .15 | -.08 | -.06 | .08 | -.13 | -.15 | -- | | |
| Parental positive affect (PAR PA) | -.01 | .08 | -.10 | -.20† | -.12 | -.06 | -.20† | .67** | -- | |
| Parental autonomy gr (PARAUT) | .14 | -.05 | -.07 | -.27** | .19† | -.17 | -.28* | .49** | .29** | -- |

*Note:* ** $p < .01$, * $p < .05$, † $p < .10$. MATREJ = Maternal Rejection subscale of Children's Report of Parental Behaviors Index (CRPBI); MATOP =

Maternal Overprotection subscale of Children's Report of Parental Behaviors Index (CRPBI); PAT WARM = Parental Warmth subscale of Parenting

Styles and Dimensions Questionnaire; PAT OC = Parental Overcontrol on Parenting Styles and Dimensions Questionnaire; Observations were coded

based on Parent-Child interactions during the Teaching Task Activity.

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Table 8

*Confirmatory Factor Analysis for Children's Interpretations*

| Factor | Loading |
|---|---|
| Selective Abstraction | .82** |
| Personalizing | .84** |
| Overgeneralizing | .78** |
| Catastrophizing | .87** |

*Note*: ** p < .01, $\chi^2$ = .61, df = 2, p = .74, CFI = 1.0, RMSEA = .00, Hoelter's N = 294.

All factors are subscales on the Children's Negative Cognitive Errors Questionnaire.

Table 9

*Indirect Effects of Parental Behaviors in Full Mediated Model*

| Indirect effects: | a | SEa | b | SEb | ab | SEab | z |
|---|---|---|---|---|---|---|---|
| Mat overcontrol → Children's int → child social anxiety | .23 | .17 | .86 | .31 | .20 | .17 | 1.18 |
| Mat overcontrol → Children's int → child depression | .23 | .17 | .56 | .19 | .13 | .11 | 1.18 |
| Mat rejection → Children's int → child social anxiety | .22 | .15 | .86 | .31 | .19 | .11 | 1.73* |
| Mat rejection → Children's int → child depression | .22 | .15 | .56 | .19 | .12 | .09 | 1.33† |
| Pat overcontrol → Children's int → child social anxiety | -.05 | .15 | .86 | .31 | -.04 | .14 | -.29 |
| Pat overcontrol → Children's int → child depression | -.05 | .15 | .56 | .19 | -.03 | .08 | -.38 |
| Pat rejection → Children's int → child social anxiety | .11 | .16 | .86 | .31 | .09 | .14 | .64 |
| Pat rejection → Children's int → child depression | .11 | .16 | .56 | .31 | .06 | .10 | .60 |

*Note:* * $p < .05$, † $p < .10$; Mat protection = maternal overcontrol on the Children's Report of Parental Behaviors Index; Mat rejection = maternal rejection on the Children's Report of Parental Behaviors Index; child interpretations = latent variable comprised of subscales on the Children's Negative Cognitive Errors Questionnaire; child social anxiety = Social Phobia and Anxiety Inventory for Children; child depression = Child Depression Inventory

Table 10

*Regression Analysis of Teacher-Child Relationships Predicting Children's Interpretations*

| Variable | B | SE B | β | $R^2$ | $R^2\Delta$ |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| | | | | .03 | .03 |
| Sex | -1.61 | 1.77 | -.12 | | |
| Ethnicity | 1.90 | 4.01 | .08 | | |
| Free lunch | 1.73 | 3.83 | .08 | | |
| **Step 2** | | | | | |
| | | | | .38 | .12 |
| Sex | -2.01 | 1.80 | -.15 | | |
| Ethnicity | 1.18 | 4.13 | .05 | | |
| Free lunch | 1.93 | 3.77 | .09 | | |
| Maternal overcontrol | .94 | .68 | .22 | | |
| Paternal overcontrol | -.13 | .62 | -.03 | | |
| Maternal rejection | .69 | .58 | .17 | | |
| Paternal rejection | 2.52 | 4.63 | .08 | | |
| **Step 3** | | | | | |
| | | | | .47 | .08* |
| Sex | -1.13 | 1.78 | -.09 | | |
| Ethnicity | .41 | 4.00 | .02 | | |
| Free Lunch | 2.89 | 3.66 | .13 | | |
| Maternal overcontrol | .90 | .65 | .21 | | |
| Maternal rejection | .46 | .57 | .11 | | |
| Paternal overcontrol | -.22 | .60 | -.06 | | |
| Paternal rejection | 2.07 | 4.47 | .06 | | |
| Teacher-child rel. | -.54 | .24 | -.29* | | |

*Note*: * $p < .05$. Overall model showed a trend toward significance; $F (8, 51) = 1.81$, $p = .09$. Maternal overcontrol, paternal overcontrol, maternal rejection, paternal rejection = Children's Report of Parental Behavior Index (CRPBI); Teacher-child relationship = Security Scale (SST) child report measure.

Table 11

*Indirect Effects of Maternal Behaviors and Teacher-Child Relationships in Mediated Model*

| Indirect effects: | a | Sea | b | SEb | ab | SEab | z |
|---|---|---|---|---|---|---|---|
| Mat overprotection → Children's int → child soc anx | .20 | .16 | .77 | .29 | .15 | .14 | 1.07 |
| Mat overprotection → Children's int → child dep | .20 | .16 | .45 | .18 | .09 | .08 | 1.13 |
| Mat rejection → Children's int → child soc anx | .21 | .16 | .77 | .29 | .16 | .14 | 1.13 |
| Mat rejection → Children's int → child dep | .21 | .16 | .45 | .18 | .09 | .08 | 1.13 |
| Teacher-Child relationship → Children's int → child soc anx | -.11 | .07 | .73 | .28 | -.08 | .06 | -1.33† |
| Teacher-Child relationship → Children's int → child dep | -.11 | .07 | .45 | .18 | -.02 | .10 | -.20 |

*Note:* † p < .10; Mat protection = maternal overcontrol on the Children's Report of Parental Behaviors Index; Mat rejection = maternal rejection on the Children's Report of Parental Behaviors Index; child interpretations = latent variable comprised of subscales on the Children's Negative Cognitive Errors Questionnaire; child social anxiety = Social Phobia and Anxiety Inventory for Children; child depression = Child Depression Inventory

Table 12

*Regression Analysis of Teacher-Child Relationships Predicting Child Social Anxiety*

| Variable | B | SE B | β | $R^2$ | $R^2\Delta$ |
|---|---|---|---|---|---|
| Step 1 | | | | .13 | .13 |
| Sex | -3.16 | 1.08 | -.38 | | |
| Ethnicity | .58 | 1.93 | .04 | | |
| Free lunch | -1.28 | 2.18 | -.08 | | |
| Step 2 | | | | .31 | .18** |
| Sex | -3.41 | 1.03 | -.38 | | |
| Ethnicity | .67 | 1.84 | .05 | | |
| Free lunch | -1.21 | 2.02 | -.08 | | |
| Maternal overcontrol | 1.25 | .37 | .46 | | |
| Paternal overcontrol | -.42 | .36 | -.16 | | |
| Maternal rejection | .06 | .33 | .02 | | |
| Paternal rejection | .56 | 2.60 | .03 | | |
| Step 3 | | | | .32 | .00 |
| Sex | -3.29 | 1.06 | -.37 | | |
| Ethnicity | .73 | 1.85 | .05 | | |
| Free Lunch | -1.16 | 2.03 | -.07 | | |
| Maternal overcontrol | 1.23 | .37 | .45 | | |
| Maternal rejection | .04 | .33 | .02 | | |
| Paternal overcontrol | -.44 | .36 | -.17 | | |
| Paternal rejection | .35 | 2.64 | .02 | | |
| Teacher-child relationship | -.08 | .14 | -.07 | | |

*Note*: ** $p < .01$. Overall model was significant; $F(8, 75) = 3.17$, $p = .09$. Maternal overcontrol, paternal overcontrol, maternal rejection, paternal rejection = Children's Report of Parental Behavior Index (CRPBI); Teacher-child relationship = Security Scale (SST) child report measure.

Table 13

*Regression Analysis of Teacher-Child Relationships Predicting Child Depression*

| Step | Predictor Variable | B | SE B | β | $R^2$ | $R^2\Delta$ |
|------|--------------------|-----|------|------|------|------|
| Step 1 | | | | | .01 | .01 |
| | Sex | .27 | .71 | .05 | | |
| | Ethnicity | -.98 | 1.28 | -.11 | | |
| | Free lunch | .29 | 1.44 | .03 | | |
| Step 2 | | | | | .24 | .23** |
| | Sex | -.07 | .67 | -.01 | | |
| | Ethnicity | -.79 | 1.19 | -.09 | | |
| | Free lunch | -.01 | 1.31 | -.00 | | |
| | Maternal overcontrol | .28 | .24 | .16 | | |
| | Paternal overcontrol | .05 | .23 | .03 | | |
| | Maternal rejection | .59 | .21 | .35 | | |
| | Paternal rejection | 1.40 | 1.69 | .11 | | |
| Step 3 | | | | | .32 | .07* |
| | Sex | .26 | .66 | .05 | | |
| | Ethnicity | -.65 | 1.15 | -.08 | | |
| | Free Lunch | .14 | 1.26 | .01 | | |
| | Maternal overcontrol | .22 | .23 | .13 | | |
| | Maternal rejection | .54 | .21 | .32 | | |
| | Paternal overcontrol | .02 | .22 | .01 | | |
| | Paternal rejection | .82 | 1.62 | .06 | | |
| | Teacher-child relationship | -.22 | .09 | -.29* | | |

*Note*: ** $p < .01$. Overall model was significant; $F(8, 75) = 3.17$, $p = .09$. Maternal overcontrol, paternal overcontrol, maternal rejection, paternal rejection = Children's Report of Parental Behavior Index (CRPBI); Teacher-child relationship = Security Scale (SST) child report measure.

Table 14

*Children's Generalized Anxiety, Depression, and Social Anxiety Predicting Children's Interpretations*

| Step | Predictor variable | B | SE B | β | R² | R²Δ |
|------|-------------------|-----|------|-----|-----|-----|
| Step 1 | | | | | .05 | .05 |
| | Sex | -2.59 | 1.70 | -.19 | | |
| | Ethnicity | 3.29 | 3.81 | .13 | | |
| | Free Lunch | .63 | 3.63 | .03 | | |
| Step 2 | | | | | .31 | .26*** |
| | Sex | -1.16 | 1.54 | -.08 | | |
| | Ethnicity | 1.40 | 3.41 | .05 | | |
| | Free Lunch | .74 | 3.18 | .03 | | |
| | Generalized Anxiety | .06 | .91 | .01 | | |
| | Depression | 2.24 | 1.82 | .14 | | |
| | Social Anxiety | 5.99 | 1.59 | .48* | | |

*Note*: *** $p < .0001$; * $p < .05$. Overall model was significant; $F (6, 61) = 4.55$, $p = .001$. Generalized anxiety, depression, and social anxiety were based on children's report on the ADIS-C. Children's interpretations were measured with the child report measure Children's Negative Cognitive Errors Questionnaire.

Table 15

*Differential Relationships of Children's Cognitive Errors with Main Study Variables*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1  Catastrophizing | -- | | | | | | | | |
| 2  Overgeneralizing | .67** | -- | | | | | | | |
| 3  Personalizing | .75** | .65** | -- | | | | | | |
| 4  Selective Abstraction | .71** | .67** | .69** | -- | | | | | |
| 5 Social Anxiety (SPAI-C) | .37** | .31** | .33** | .30** | -- | | | | |
| 6 Social Anxiety (ADIS-C) | .48** | .49** | .42** | .51** | .36** | -- | | | |
| 7 Depression (CDI) | .36** | .32** | .41** | .38** | .05 | .20* | -- | | |
| 8 Depression (ADIS-C) | .17† | .07 | .15† | .27* | .16† | .11 | .15† | -- | |
| 9 General Anxiety (ADIS-C) | .28* | .23* | .37** | .29** | .20* | .54** | .22* | .30** | - |

*Note*: ** $p < .01$, * $p < .05$, † $p < .10$; all correlations are one-tailed analyses.

Catastrophizing, overgeneralizing, personalizing, selective abstraction = Children's Negative Cognitive Errors Questionnaire subscales (CNCEQ); SPAI-C = Social Phobia and Anxiety Inventory for Children; CDI = Children's Depression Inventory; ADIS-C = Anxiety Disorders Interview Schedule for Children.

Appendix H: *Figures*

Figure 1

*Theoretical model of parental behaviors predicting child social anxiety, as mediated by*

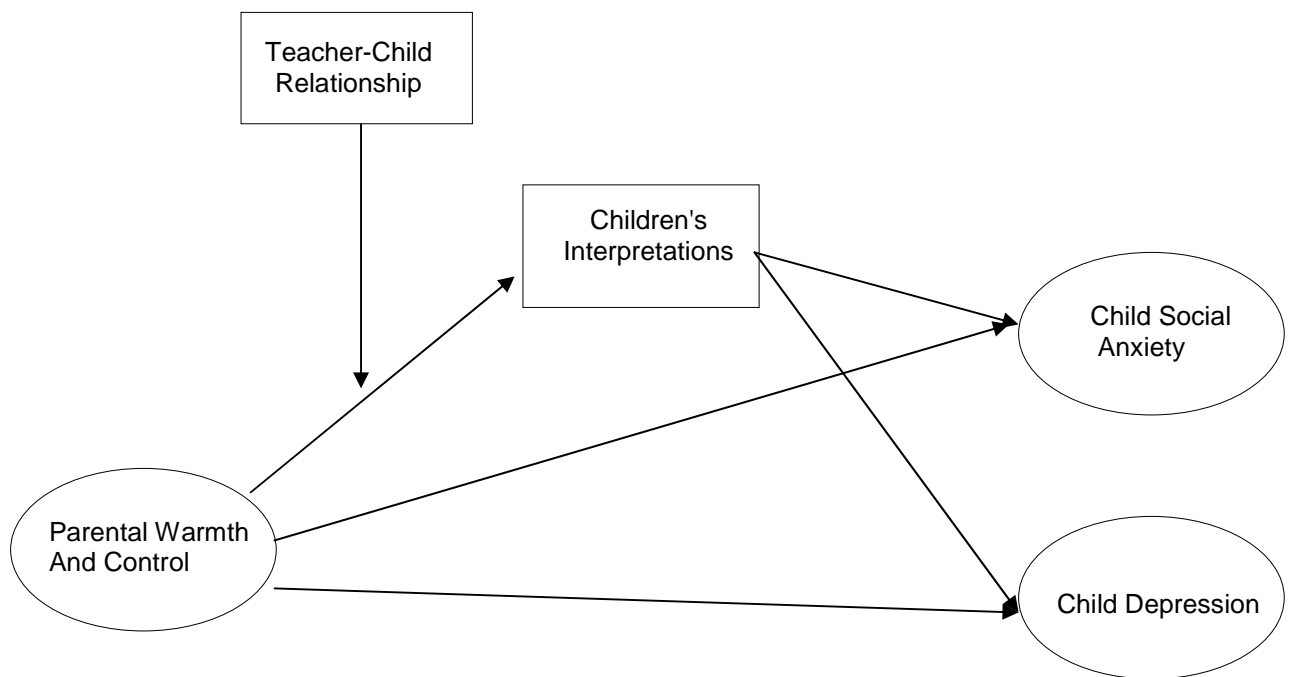*children's interpretations and moderated by teacher-child relationship.*

Figure 2

*Full mediation model of interpretations on the associations of parental behaviors and child social anxiety and depression. χ² (32) =39.78; p = .34; CFI = .98; RMSEA = .02; Hoelter's N = 299 (at .01 level). Lines depicted in gray are non-significant.*
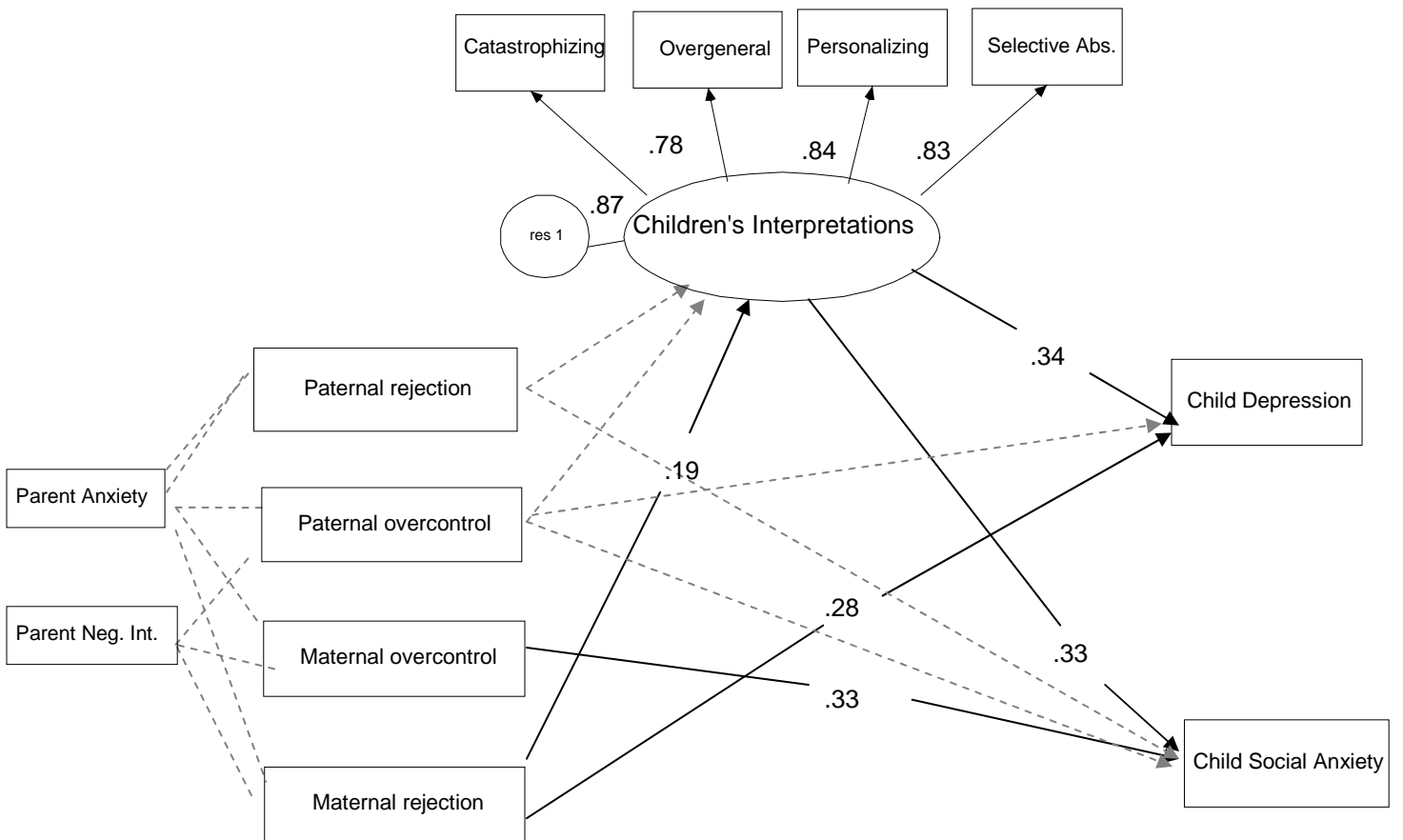
Figure 3

*The moderation of teacher-child relationship on association of parental behaviors and children's interpretations. χ² (34) = 65.35; p= .001; CFI = .90; RMSEA = .07; Hoelter's N = 167. Maternal rejection = Children's Report of Parenting Behavior Index; Teacher- Child relationship = Security Scale for Teachers; Maternal overprotection = Children's Report of Parenting Behavior Index*
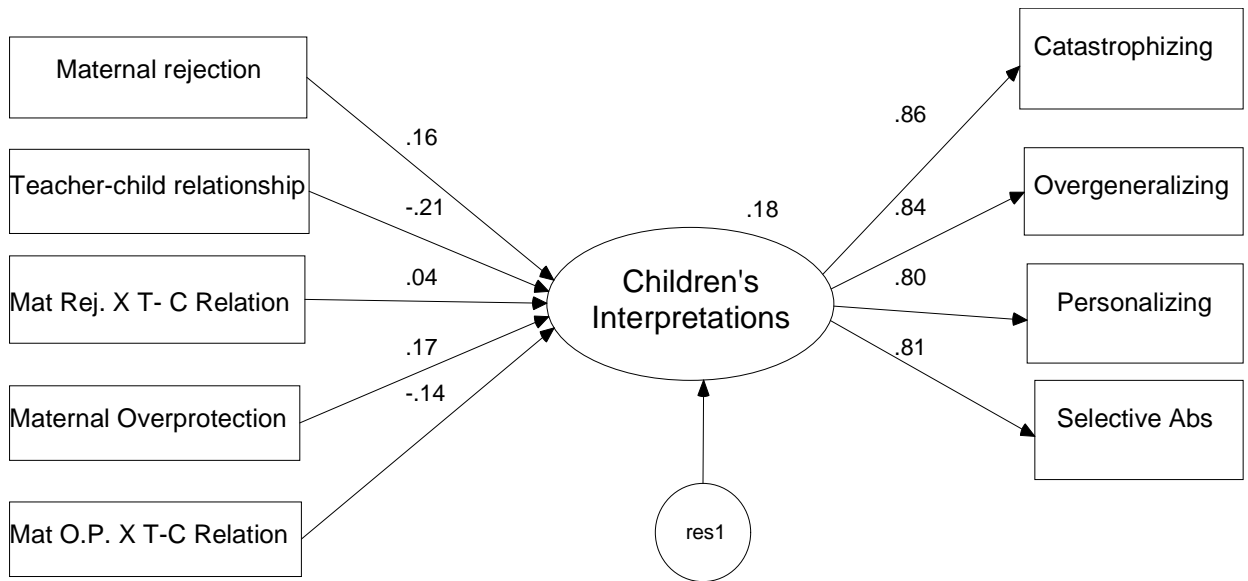
Figure 4

*Final cognitive-mediated model.  χ² (20) = 26.3, p = .16; CFI = .97; RMSEA = .04; Hoelter's N = 278.*