

Continuity of Behavioral Inhibition in Early Childhood:
The Impact of Parental Attitudes toward Socially Inhibited Behavior

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Dissertation submitted to the faculty of the Virginia Polytechnic Institute and State
University in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

In

Psychology

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27 November 2006

Blacksburg, Virginia

Keywords: Behavioral Inhibition, Childrearing Practices, Parental Anxiety, Parental
Attitudes

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ABSTRACT

Although behavioral inhibition has been found to be relatively stable, such stability has not always been shown. Moreover, although an association between parental shyness and child behavioral inhibition has been reported, this relationship is imperfect and indirect. The present study proposed that one factor that may impact these relationships is the attitudes parents hold toward having a shy, inhibited child. Although shyness is typically regarded as a negative and maladaptive trait, it is not necessarily viewed as problematic by all parents. The present study investigated a series of ten specific hypotheses that centered around the notion that variations in parental attitudes toward shyness may lead some parents to encourage and other parents to discourage behaviors typically associated with shyness in their young children. Using a longitudinal design, the present study examined the relations among the constructs of parental attitudes toward shyness, child behavioral inhibition, childrearing strategies, and parental shyness over a span of two years in a sample of 3 to 6 year-old children and their parents. Results revealed several interesting and valuable findings. Maternal attitudes toward shyness emerged as a moderator of the relationship between behavioral inhibition at Time 1 and Time 2. Maternal attitudes toward shyness also emerged as a significant moderator of the relationship between maternal shyness and child behavioral inhibition. However, childrearing strategies did not mediate the relationship between maternal attitudes toward shyness and behavioral inhibition in children as predicted.

Acknowledgments

I would like to thank my advisor and mentor, Dr. Thomas H. Ollendick, for generously sharing his time and expertise with me during the past five years. I have learned an amazing amount from him during this short time, and hope there are many more years of collaboration and friendship to come.

I would also like to extend special acknowledgement to Dr. Martha Ann Bell and Dr. Christy Wolfe, without whom this project would not have been possible. Thank you for sharing your secrets for running an excellent, fun-filled research laboratory with me. A special thank you goes out to Dr. Bell for helping to build my confidence and for your continued support of my professional development.

In addition, I wish to thank my remaining committee members for their valuable comments on this dissertation as well as for their encouragement during my education at Virginia Tech. To Danny Axsom, thank you for your social psychological insights and for modeling and encouraging a balanced lifestyle. To Julie Dunsmore, thank you for bringing in your beautiful daughter Elizabeth and for your dependably warm, friendly, and helpful interactions. To Kee Jeong Kim, thank you for teaching me all I know about longitudinal analysis and for inspiring me to love those little Greek characters almost as much as you do.

Finally, a personal thank you goes out to my father, the best scientist I know, and to my mother, the best provider of support and comfort I know. And to Logan, thank you for creating a calm, loving refuge for me amidst a stressful flurry of deadlines, demands, and uncertainties.

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Introduction

Generally regarded as an indication of social anxiety disorder, shyness is a condition that involves anxious self-preoccupation and behavioral inhibition in social interactions that result largely from the prospect of being evaluated by others (Bruch, Gorsky, Collins, & Berger, 1989). As many as 30 to 40 percent of Americans label themselves as dispositionally shy and report feeling inhibited, self-conscious, and awkward in social situations (Zimbardo, 1977). This condition often appears in childhood and can affect children throughout their development, although it is expressed differently at various ages and stages of development (e.g., Albano & Hayward, 2004). Shyness has also been found to occur more frequently and intensely in boys than in girls (e.g., Zupancic & Kavcic, 2005). Overall, however, shyness frequently interferes with children's lives by affecting their social and academic success, and by causing painful and disruptive effects during a child's formative years (Ishiyama, 1984).

A well-documented precursor to shyness is a temperamental style known as behavioral inhibition. Generally speaking, behavioral inhibition is conceptualized as a pattern of responding to unfamiliar, novel stimuli or situations in a wary, disorganized fashion that is detectable early-on in life (e.g., Burgess, Rubin, Cheah, & Nelson, 2001). This pattern of wary, timid behavior has been consistently observed in approximately 10 to 15 percent of children (Kagan, 1989). In infants, this temperamental profile has been found to include high levels of motor activity, arousal, crying, and negative affect, particularly in response to presentation of novel sensory stimuli (Fox, Henderson, Rubin,

Calkins, & Schmidt, 2001). In young children, behavioral inhibition is typically manifested through hesitancy, reticence, and inhibited spontaneous comments and delayed smiling with an unfamiliar adult or peer (Ollendick & Hirshfeld-Becker, 2002). Uninhibited children, by contrast, are more likely to easily approach unfamiliar objects and people, and respond to such stimuli with smiling, laughing, and conversation.

Behavioral inhibition is regarded as possessing biological underpinnings, with researchers concluding that behaviorally inhibited children are physiologically prone to display socially fearful behavior (e.g., Kagan, 1989). The sympathetic nervous system has been found to be highly responsive to novel, stressful environmental stimuli in behaviorally inhibited individuals. Specifically, the high physiological reactivity associated with behavioral inhibition typically includes accelerated heart rate, increased morning salivary cortisol levels, and muscle tension in the vocal cords and larynx (Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984).

Though they are conceptually related constructs, the presentations of behavioral inhibition and shyness are unique in several ways. Whereas behavioral inhibition primarily involves approach and avoidance behaviors in reaction to diverse novel conditions (e.g., people, objects, situations), shyness by definition is restricted to social stimulation. Moreover, definitions of shyness are extended to include an element of evaluative discomfort and self-preoccupation (e.g., Cheek & Buss, 1981; Jones, Cheek, & Briggs, 1986), hence suggesting the invocation of cognitive components and social evaluative concerns as well. By contrast, behavioral inhibition is not motivated by a concern with negative evaluation. In sum, behavioral inhibition and shyness possess

distinctly different meanings in the psychological literature and should not be viewed as synonymous.

Despite such important distinctions, behavioral inhibition and shyness are certainly interrelated and are often considered as more similar than dissimilar (e.g., Beidel & Turner, 1999). Also related to both behavioral inhibition and shyness are a myriad of additional constructs, such as social anxiety, social phobia, withdrawal, reticence, and introversion. While these constructs often apply to the same general arena of problems and appear to overlap in several important ways, they are not interchangeable. Instead, several researchers have proposed that such interrelated constructs exist along a continuum, spanning from behavioral inhibition and shyness at one end to more pathological levels of social phobia at the other (e.g., McNeil, 2001). Of particular relevance to the present study is the notion that shyness often cannot be identified in young children because they do not yet possess the social maturity and cognitive capacity necessary for grasping social evaluative concerns (which often require that they make comparisons between their own social abilities and those of others). Hence, in research involving young children, behavioral inhibition may be a more developmentally appropriate construct to measure than shyness.

Developmental psychopathologists have hypothesized that temperamental features associated with behavioral inhibition create an important diathesis to the development of lifelong social inhibition (e.g., Neal & Edelmann, 2003). The growing body of literature on this topic continues to suggest an association between behavioral inhibition in childhood and conditions such as shyness and social anxiety later in life. For example, Biederman and colleagues found that behaviorally inhibited children were

over five times more likely than non-inhibited children to develop social anxiety disorder (Biederman et al., 2001). In another study, Hirshfeld and colleagues (1992) found that children who were consistently rated as behaviorally inhibited between the ages of 4 and 7.5 had higher rates of anxiety disorders than children who did not have stable behavioral inhibition.

Nonetheless, the relationship between behavioral inhibition and shyness or social anxiety is not perfect and the pathway is not direct. Longitudinal data have shown that about 50 % of inhibited one- to two-year-old children remain inhibited through the eighth year of life (Kagan, Snidman, & Arcus, 1993); therefore, a significant percentage of children who demonstrate a behaviorally inhibited temperament in their early years of life grow up to be non-shy children and adults. It is clear, then, that the persistence of children's inhibited behavior cannot be explained by a temperamental disposition alone. A pertinent area of exploration, then, is to examine those factors that are associated with changes in children's levels of inhibited behavior over time.

Another consistent finding in the extant literature on child shyness involves intergenerational transmission of inhibited behavior from parents to children, or the social process through which shy characteristics or behavioral patterns demonstrated by parents are passed on to their children (e.g., Lieb, Wittchen, Hofler, Fuetsch, Stein, & Merikangas, 2000). In other words, shy, inhibited behavior in children has been linked to similar behavior in parents. In general, offspring of parents with anxiety disorders have been found to be at an increased risk for developing an anxiety disorder themselves (e.g., Silverman, Cerny, Nelles, & Burke, 1988; Turner, Beidel, & Costello, 1987). In particular, this relationship has received much support in relation to socially anxious

behavior, where shyness in parents significantly predicts shyness in children (e.g., Boegels, Van Oosten, Muris, & Smulders, 2001). Shyness in parents has also been found to be significantly related to the temperamental profile of behavioral inhibition in their young children (e.g., Rickman & Davidson, 1994).

There is considerable evidence for both genetic transmission of inhibited behavior from parents to children, as well as evidence for strong environmental influences (e.g., Daniels & Plomin, 1985). Such environmental transmission from parent to child of thoughts and behaviors appears to occur through various mechanisms. Some researchers have hypothesized that mothers of shy children transmit their own social fearfulness to their children through over-involved parenting (Burgess et al., 2001). Socially anxious parents may also model social avoidance and be less likely to arrange social interactions for their child (through play dates, for example). Furthermore, socially anxious parents may be less able to help their children cope with social fearfulness and may in turn promote their engaging in more avoidant coping strategies (Barrett, Rapee, Dadds, & Ryan, 1996).

Much like the relationship between behavioral inhibition early in life and shyness or social anxiety later in life, the relationship between shyness in parents and behavioral inhibition in children is imperfect and not direct (e.g., see Plomin, 1986, for a review). Once again, therefore, it is important to examine factors that might be associated with intergenerational transmission of shyness over time. In exploring these associations, a wide variety of variables could arguably be conducive to either continuity or discontinuity in childhood inhibition, and to the presence or absence of transmission of shyness from parent to child. For example, child characteristics (e.g., IQ, social

competence), life events (e.g., birth of sibling, marital conflict, death of a parent, day-care change), and familial factors and processes (e.g., personality of the parents, parenting behaviors, parental psychopathology) play influential roles in the developmental process and hence may be associated with longitudinal changes in behavioral inhibition or with intergenerational transmission of shyness. One potentially important factor that has not yet been empirically examined, however, is the attitudes that parents hold toward having a shy child. Undoubtedly, different parents place different values on shy, reticent behavior in their children. Although some parents may feel concerned, disappointed, and/or even embarrassed when their children demonstrate shy behaviors, other parents may have a more accepting and positive attitude toward their children's shyness.

Although it is apparent that shyness is typically regarded as a negative and maladaptive trait that individuals ought strive to overcome, there has recently been a movement toward "depathologizing" shyness (e.g., Avila, 2002; Schmidt & Tasker, 2000). This movement is rooted in the notion that shyness is not inherently problematic; instead, many features of shyness can be viewed in a positive and beneficial light. Indeed, shy persons may be more socially sensitive, more reflective, more empathic, and better at listening, for example. From the perspective of a parent, having a shy child may be advantageous in that the child may be better behaved, more compliant, and less impulsive. Reviews of the literature have revealed that parents complain less about shy, withdrawn behavior in their children than they do about aggressive behavioral problems, suggesting they are less disturbed by or at least more accepting of such behavior (Campbell, 1998).

Moreover, cross-cultural research on shyness has revealed that it is frequently viewed as a positive trait in many countries (e.g., Chen, Hastings, Rubin, Chen, Cen, & Stewart, 1998). Such research has suggested that, in general, Western, individualistic cultures tend to view shyness as maladaptive and reflective of social incompetence, whereas Eastern, collectivist cultures tend to view this same condition as adaptive and reflective of social maturity. Further, even within Western cultures, North American parents have been found to exhibit stronger negative reactions to social withdrawal in their children than Italian parents (Schneider, Attili, Vermigli, & Younger, 1997). These authors theorized that Italians, given their collective emphasis on the family, view children's shyness as less troublesome than North Americans, who place a higher priority on individualism and social competence.

In short, shyness is not necessarily viewed as problematic by all parents. Along with the observed differences in parental attitudes toward shyness across cultures, it is likely that there is a considerable degree of heterogeneity of parent attitudes toward shyness within a single culture. As such, it is likely that different parents place different values on reserved, reticent behavior, and that variability among these attitudes and values may play an important role in the ways in which parents interact with their children. For example, if parents of shy children are over-controlling and overprotective, it may be partly due to the notion that they have strong negative attitudes toward their child's shy behaviors. Hence, the ways in which parents think and feel about their children's level of shyness may lead some parents to *encourage* and others to *discourage* behaviors typically associated with shyness in their children. As parental attitudes

become instantiated in parental behavior, they may play a role in the development or maintenance of children's shy and socially withdrawn behavior.

Caspi, Elder, and Bem (1988) argue that parental judgments of their children's behavior may be important in their cumulative effect upon children's self-definitions. More specifically, the ways in which parents interpret their children's development and their attitudes toward their child's characteristics may influence parent-child interaction, which in turn may influence the child's development. They propose that dispositional shyness may develop in children through the interaction of temperamental qualities (e.g., behavioral inhibition) with parenting and socialization factors. Subsequently, beyond these first several years of life, they argue that the stage is set for continuity of this inhibited behavioral style across the lifespan through phenomena such as children's tendencies to evoke maintaining responses from others and to select environments that reinforce their shy, inhibited behavior.

Chess and Thomas's (1977) "goodness-of-fit" model provides a useful framework for conceptualizing the interplay between parental attitudes toward shy, inhibited behavior and behavioral inhibition in children as it might relate to explaining variations in developmental outcomes. This model, which is now widely accepted in the scientific community (e.g., Lindahl & Ostbaum, 2004), is based upon interactions between characteristics of the child and characteristics of the surrounding environment. It suggests that a child's temperament and its contribution to development ought not be considered in isolation, but rather as it relates to or "fits" with the child's environment, especially behaviors, characteristics, and preferences of the parent (Seifer, 2000). According to the model, "good fit" occurs when characteristics of the child are

compatible with the expectations of the environment, thereby decreasing the likelihood of maladjustment.

Within the context of the present study, the “fit” of interest is that between child temperament and parent attitudes toward that temperamental style. It is proposed that parental attitudes toward, and subsequent reactions to children’s displays of shy, inhibited behavior will interact with these behaviors to either increase or decrease their frequency over time. In this sense, it is incompatibility between the attitudes of the parent and the temperament of the child that may play an important role in continuity or discontinuity of behavioral inhibition in children over time, rather than temperament alone. Indeed, several empirical studies have supported the importance of goodness-of-fit in predicting positive child outcomes such as social competence (e.g., Churchill, 2003; Paterson & Sanson, 1999).

From a social psychological perspective, parental attitudes toward their children’s shyness may serve as a mechanism through which the parents’ preferences (as indicated by their attitudes) may be actualized in their children. Similar to the processes through which expectancy effects are communicated (Rosenthal & Jacobson, 1968), parents’ preferences for their child may be communicated through their actions and actually alter their child’s development in such a way that the child’s resultant behavior conforms to the parents’ initial desire. Central to this idea is the assumption that attitudes and beliefs *mediate* behaviors. In other words, parents may communicate their attitudes and preferences to their children through a variety of processes, including verbal and nonverbal cues as well as overt actions (Harris & Rosenthal, 1985). In this sense, parents’ attitudes can affect the manner in which they behave toward their child when the

child displays shy, withdrawn behavior in ways that either promote or discourage such behavior. Therefore, it is likely that the ideas held by parents about their children are likely to influence their choices of parenting strategies and ultimately their child's development.

In particular, recent research has suggested that highly protective, over-involved, and unaffectionate childrearing practices are associated with shy and withdrawn behavior in children (e.g., Chen et al., 1998; Rubin, Hastings, Stewart, Chen, & Henderson, 1997), which typically involve higher levels of parental control and restriction of the child's activities. Such childrearing practices may implicitly encourage shyness and inhibition in children as they are denied opportunities to experience novel situations and practice self-regulation (Hastings & Rubin, 1999). Importantly, it appears as though these sorts of overprotective, overcontrolling parenting practices are at least in part a reaction to their child's shy disposition; in other words, early social fearfulness in children may elicit such parenting responses (Rubin, Nelson, Hastings, & Asendorpf, 1999). Therefore, it appears that parental and child behavior relate to one another in a transactional manner, as has been hypothesized by many developmental psychopathology theorists (see Ollendick & Hirshfeld-Becker, 2002).

Basis for the Present Study

A recent study by Horsch and Ollendick (2004) investigated the variable of maternal attitudes toward shyness as it relates to the social process through which shy characteristics and behavioral patterns demonstrated by mothers are passed on to their children. Young children (i.e., 3 and 4 years old) were selected to serve as participants in this study based primarily on the observation that the impact of parents on children is

thought to be greater at earlier ages (e.g., DeHart, Stroufe, & Cooper, 2000), given that children at these young ages are less likely to be involved in networks of peers. Although the results of the 2004 study failed to demonstrate a significant role of maternal attitudes in intergenerational transmission of shyness, the study indicated several noteworthy findings. First, a significant, positive relationship between maternal attitudes toward shyness and parent-reported levels of inhibited behavior in children was found, suggesting that mothers who hold more positive, accepting attitudes toward having a shy child are more likely to report that their child is behaviorally inhibited. Second, a series of significant relationships between maternal attitudes toward shyness and parenting strategies was found, wherein positive maternal attitudes toward shyness were positively related to parenting strategies of a protective, controlling nature and negatively related to parenting strategies that encourage independence in children. Both of these findings extended previous findings by suggesting that maternal attitudes were related to behavioral inhibition in children and to one's choice of childrearing techniques.

The hypothesis that maternal attitudes toward shyness have the potential to impact the development of children was an exciting possibility for the field of developmental psychopathology, and was deserving of future investigation. Hence, the present study was undertaken in order to extend the findings of the original 2004 study and to provide a longitudinal investigation of the relationships that emerged in that study. Given that the relationship between maternal attitudes toward shyness and the presence of inhibited behavior in children that was found in the original study was correlational in nature, the original study did not allow for directional or causal inferences to be made regarding this finding. Hence, longitudinal investigation of the relationship between parental attitudes

toward shyness and behavioral inhibition in children was undertaken in the present study in order to provide clues regarding the directionality of this relationship and to reveal if either parental attitudes or child inhibition changed over time. For instance, in the event that children's levels of withdrawn, inhibited behavior changed to become more aligned with their parents' attitudes toward shyness, it would appear that parental attitudes play an important role in the child's development. Conversely, in the event that parents' attitudes toward shyness changed to become more aligned with their children's levels of withdrawn, inhibited behavior, parental attitudes would appear to be more a consequence of the child's behavior than a precursor to it.

The present study in large part replicated the original study, but made several important additions as well to address several limitations of the original study. The original study included an observational assessment of behavioral inhibition as well as several parent-report measurements of behavioral inhibition, childrearing strategies, maternal attitudes, and maternal shyness. The present study included some additional measurements of behavioral inhibition and childrearing strategies above and beyond those gathered in the original study. Foremost among these additions involved collecting data from fathers as well as mothers. In the present study, fathers completed measures of child behavioral inhibition as well as their own attitudes toward shyness and use of various childrearing strategies. Additionally, teacher-report data on children's levels of behavioral inhibition were obtained in order to provide convergent validity with parent-report measures of behavioral inhibition. Furthermore, an observational assessment of parenting behaviors via a parent-child interaction task was obtained in order to provide convergent validity with parent-report measures of childrearing strategies.

The present study had ten primary objectives. The first goal was to examine the continuity or discontinuity of the various study variables from Time 1 to Time 2. Second, the present study sought to examine the convergence or divergence of multiple raters and measurement techniques on the constructs of child behavioral inhibition, childrearing strategies, and parental attitudes toward shyness. The third goal of the present study was to investigate the bivariate relationships between the various study variables. Fourth, the present study sought to examine differences between mothers and fathers in terms of the relationships between their attitudes toward shyness and the presence of behavioral inhibition in their children.

The fifth goal of the present study was to examine the degree to which the constructs of parental attitudes toward shyness and behavioral inhibition in children converged, or became more compatible with one another over time (i.e., from Time 1 to Time 2). Related to this goal are the sixth and seventh objectives of the present study: to examine whether children's levels of behavioral inhibition changed from Time 1 to Time 2 to become more aligned with their parents' attitudes toward shyness (objective six) or whether parents' attitudes toward shyness changed from Time 1 to Time 2 to become more aligned with their child's level of behavioral inhibition (objective seven).

Eighth, the present study sought to examine the role of childrearing strategies in the relationship between parental attitudes toward shyness at Time 1 and child behavioral inhibition at Time 2. The ninth objective of the present study was to examine the role of maternal attitudes toward shyness in the relationship between maternal shyness and behavioral inhibition in children. The tenth and final goal of the present study was to

investigate simultaneously several variables from the original study that might serve as predictors of behavioral inhibition in children in the present follow-up study.

In summary, the present study followed-up this sample of young 3-4 year-old children in order to illuminate several questions surrounding the general topic of parental attitudes toward shyness and the presence of behavioral inhibition in children.

Hypotheses

The first goal of the present study was to examine the continuity or discontinuity of the various study variables from Time 1 to Time 2. It was hypothesized that behavioral inhibition scores in children at Time 1 would be significantly and positively related to behavioral inhibition scores in children at Time 2. Likewise, it was hypothesized that maternal attitudes toward shyness at Time 1 would be significantly and positively related to maternal attitudes toward shyness at Time 2. Maternal-reported childrearing strategies were also hypothesized to be significantly and positively related at Time 1 and Time 2.

Second, the present study sought to examine the convergence or divergence of multiple raters and measurement techniques on the constructs of child behavioral inhibition, childrearing strategies, and parental attitudes toward shyness. It was hypothesized that the ratings of mothers, fathers, and teachers would be significantly and positively interrelated on measures of behavioral inhibition. However, it was expected that mothers and fathers might differ in terms of their attitudes toward shyness and parenting strategies. Moreover, it was hypothesized that observational and parent-reported measures of behavioral inhibition and childrearing strategies would converge.

The third objective was to analyze the bivariate relationships between the various study variables. Specifically, it was hypothesized that parental attitudes toward shyness would be significantly and positively related to childrearing strategies. It was also hypothesized that parents' choices of childrearing strategies would be significantly related to behavioral inhibition in children. Maternal shyness was also hypothesized to demonstrate a significant and positive relationship with behavioral inhibition in children. Lastly, it was hypothesized that maternal shyness would be significantly and positively related to child behavioral inhibition.

Fourth, the present study sought to examine potential differences between mothers and fathers in terms of the relationships between their attitudes toward shyness and the presence of behavioral inhibition in children. Given that fathers spend less time with their children than do mothers (qualified by income earning status; Renk et al., 2003), it was hypothesized that the strength of the correlational relationship between paternal attitudes toward shyness and behavioral inhibition in children would not be as robust as the strength of this correlational relationship when maternal attitudes were considered.

The fifth goal of the present study was to examine the degree to which the constructs of maternal attitudes toward shyness and behavioral inhibition in children converged, or became more compatible with one another over time (i.e., from Time 1 to Time 2). It was hypothesized that the strength of the correlational relationship between maternal attitudes toward shyness and child behavioral inhibition would be higher at Time 2 than at Time 1.

Sixth, the present study sought to examine whether children's levels of behavioral inhibition changed from Time 1 to Time 2 to become more aligned with their mothers' attitudes toward shyness. To investigate this notion, maternal attitudes toward shyness were investigated as a potential moderator of the relationship between behavioral inhibition at Time 1 and Time 2 (see Figure 1). It was hypothesized that behavioral inhibition at Time 1 and maternal attitudes toward shyness at Time 1 would interact to influence children's levels of behavioral inhibition at Time 2. More specifically, it was predicted that children's levels of behavioral inhibition would increase from Time 1 to Time 2 when their mothers held more positive attitudes toward shyness. On the other hand, it was expected that children's levels of behavioral inhibition would decrease from Time 1 to Time 2 when their mothers held less positive attitudes toward shyness.

The converse of this hypothesis was also explored in the seventh objective of the present study, which was to examine whether maternal attitudes toward shyness changed from Time 1 to Time 2 to become more aligned with their child's level of behavioral inhibition. To investigate this notion, behavioral inhibition in the child at Time 1 was investigated as a potential moderator of the relationship between maternal attitudes toward shyness at Time 1 and Time 2 (see Figure 2). It was hypothesized that maternal attitudes toward shyness at Time 1 and behavioral inhibition in the child at Time 1 would interact to influence parents' attitudes toward shyness at Time 2. More specifically, it was expected that maternal attitudes toward shyness would become more positive from Time 1 to Time 2 when their children were more behaviorally inhibited.

Eighth, the present study sought to examine the role of childrearing strategies in the relationship between maternal attitudes toward shyness at Time 1 and child

behavioral inhibition at Time 2. It was hypothesized that maternal attitudes toward shyness at Time 1 would affect mothers' choices of childrearing practices which, in turn, would affect levels of behavioral inhibition in children at Time 2. Specifically, it was expected that mothers who held more positive attitudes toward shyness would have engaged in childrearing practices that were more controlling, protective, and unaffectionate and that discouraged independence. On the other hand, it was expected that mothers who held less positive attitudes toward shyness would engage in childrearing practices that were less controlling, protective, and unaffectionate and that encouraged independence. Subsequently, it was expected that overcontrolling, overprotective parenting behaviors would result in higher behavioral inhibition in children at Time 2, while less controlling and protective parenting behaviors would result in lower behavioral inhibition in children at Time 2. Thus, it was hypothesized that parenting practices would serve as a mediator in the anticipated relationship between maternal attitudes toward shyness at Time 1 and levels of behavioral inhibition in children at Time 2 (see Figure 3).

The ninth objective of the present study was to examine the role of maternal attitudes toward shyness in the relationship between maternal shyness and behavioral inhibition in children. It was hypothesized that maternal attitudes toward shyness would moderate the relationship between shyness in mothers and behavioral inhibition in their children (see Figure 4). More specifically, it was expected that the positive correlation between maternal shyness and child behavioral inhibition would be stronger when mothers held more positive attitudes and weaker when mothers held less positive attitudes toward shyness.

The tenth and final goal of the present study was to investigate simultaneously several predictors of behavioral inhibition in children. Specifically, it was hypothesized that the four primary variables from the original study, measured at Time 1, would predict a significant portion of the variance in behavioral inhibition scores at Time 2. Behavioral inhibition at Time 1 was controlled for, and the contributions of maternal attitudes toward shyness, childrearing strategies, and maternal shyness at Time 1 were also investigated (see Figure 5).

Method

Participants

Participants for the present study were recruited from the pool of families who participated in the original study at Time 1. In the original study, the sample consisted of 55 children (28 male; 27 female) between the ages of 3.4 and 4.6 years (mean age = 4.05 years) and their mothers. Participants were 91% Caucasian and came from families with a mean income of approximately \$64,500. Participants were recruited using multiple techniques. Some ($n=26$) were located through use of an existing database of families who participated in research conducted by Dr. Martha Ann Bell of the Department of Psychology, while others ($n=23$) were located through use of an existing database of birth announcements published in the local newspaper in 1999 and 2000. In both cases, parents were sent letters in the mail informing them of the project and were subsequently contacted via telephone to inquire about their willingness to participate. In total, approximately 150 families were contacted in this manner. Finally, the remaining ($n=6$) participants were obtained through recruitment letters that were made available to preschools and daycare centers in Montgomery County, Virginia. In total, approximately

200 such letters were distributed to nine local preschools and daycares. Each mother-child dyad was given \$5 in cash to thank them for their participation in the original study.

In the present study, children and their mothers were invited to the laboratory approximately 23 months (range = 19.2 to 25.2 months) after their initial visit at Time 1. Participants for the present study were 40 families, representing approximately 73% of the original sample of 55 families. Participants from the original study were sent letters in the mail informing them of the follow-up study and subsequently were contacted via telephone to inquire about their willingness to participate. Some ($n=10$) families from the original study could not be contacted due to disconnected telephone numbers and/or undeliverable mailing addresses, while a few ($n=5$) families from the original study declined to participate. Families were offered an incentive (e.g., a children's toy valued at \$5.00) to thank them for their participation.

Of the 40 children participating, 19 were male and 21 were female, and all were between the ages of 5.0 and 6.7 years (mean age = 5.85, SD = .48). Participants were 90% Caucasian and came from families with a mean income of approximately \$72,500. A Chi-square test confirmed that the families who were available for participation did not differ from those who were not available on gender of the child ($\chi^2 = 6.82, p = n.s.$). Independent samples *t*-tests were next performed and confirmed that the families who were available for participation did not differ from those who were not available on age ($t(53) = -1.34, p = n.s.$) or family income ($t(53) = .16, p = n.s.$). Likewise, families who were available for participation did not differ from those who were not available on study variables including maternal shyness ($t(50) = .25, p = n.s.$), maternal attitudes toward shyness ($t(49) = -.69, p = n.s.$), or of the five indicators of behavioral inhibition in the

child [$t(52) = .63, p = \text{n.s.}$ for the CBQ-Shyness scale; $t(47) = .66, p = \text{n.s.}$ for the DECA-Withdrawal scale; $t(52) = 1.79, p = \text{n.s.}$ for the BIA-Comments index; $t(52) = 1.66, p = \text{n.s.}$ for the BIA-Smiles index; $t(53) = -1.18, p = \text{n.s.}$ for the BIA-Global index]. Finally, tests of homogeneity of variances revealed that equality of variances could be assumed for each of these variables.

Fathers of each child were asked to participate in the present study through completion of five questionnaires. Overall, 20 fathers completed and returned the questionnaires. Several ($n=5$) families consisted of single-parent (mother only) households and hence fathers were not available for participation, while 15 of the fathers simply failed to return the questionnaires. Teachers of each child were also asked to participate in the present study through the completion of two questionnaires. Teacher contact information was obtained from families, and with familial consent teachers were contacted via mail to inquire about their willingness to participate. Overall, 25 teachers completed and returned the questionnaires. Some ($n=5$) families requested that their child's teacher not be contacted, a few ($n=2$) children were home-schooled and hence there was no teacher to contact, and the remainder of the teachers ($n=8$) failed to return the questionnaires.

Materials

Observation-Based Measures:

Behavioral Inhibition Assessment Battery (BIA; Hirshfeld-Becker, 1998):

Children's levels of behavioral inhibition were assessed using a modified version of the Behavioral Inhibition Assessment Battery developed by Hirshfeld-Becker. It consisted of a series of unfamiliar tasks that the child was asked to complete. For example, children

were asked to repeat a story aloud, scribble in a book, and guess the identity of an object with their eyes closed. The battery was reduced in length by omitting two components (i.e., those involving the blood pressure cuff), as per the author's assent (Hirshfeld-Becker, personal communication, October 2003). Children's reactions to unfamiliar people, objects, and test procedures were observed and rated on two dimensions, including the number of spontaneous comments made by the child and the number of spontaneous smiles from the child, which were subsequently coded according to stringent criteria. The number of spontaneous comments and smiles were inversely coded in the present study by creating absolute values so that higher values represented higher levels of behavioral inhibition. Each child was also assigned a global rating of behavioral inhibition on a 4-point scale (1 = not inhibited, 4 = very inhibited).

The researcher was trained to use this system and established reliability with Dr. Hirshfeld-Becker's research team. In the past, adequate psychometric properties have been found for this system (e.g., Rosenbaum et al., 2000). In the present study, a second rater coded 25% ($n=10$) of BIA videotapes to establish reliability with the primary rater. In the original study at Time 1, interrater reliability coefficients were .84 for number of spontaneous comments, .97 for number of spontaneous smiles, and .76 for global behavioral inhibition ratings, all of which were significant at the $p < .001$ level. At Time 2, interrater reliability coefficients were .90 for number of spontaneous comments, .76 for number of spontaneous smiles, and .76 for global behavioral inhibition ratings, all of which were again significant at the $p < .001$ level.

Maternal Warmth and Control Scale - Revised (MWCS; Rubin & Cheah, 2000):

Mothers' levels of warmth and control toward their children were assessed via

observation of parent-child interaction using a modified version of the Maternal Warmth and Control Scale – Revised. For the present study, the battery was reduced in length by omitting the free play session and two of the seven coding indexes. The parent-child interaction task centered around an age-inappropriate Lego-building task. Mothers' behaviors were observed for fifteen 60-second segments and coded on five indexes, including Proximity and Orientation, Positive Affect, Negative Affect, Negative Control, and Positive Control. Stringent coding criteria were subsequently followed using a 3-point scale (1 = behavior absent; 2 = behavior present at moderate levels; 3 = behavior present at high levels). The Positive Affect index was reverse-coded in the present study so that all indexes could be predicted to relate positively to behavioral inhibition in children.

In the present study, a second rater coded 25% ($n=10$) of MWCS videotapes to establish reliability with the primary rater. Interrater reliability coefficients in the present study were .99 for Proximity and Orientation, .38 for Positive Affect, .80 for Negative Affect, .75 for Negative Control, and .13 for Positive Control. While three of these reliability coefficients were significant at the $p < .05$ level, two (i.e., Positive Affect and Positive Control) were not. Given their low levels of inter-rater reliability, the Positive Affect and Positive Control scales were not used in subsequent analyses. This instrument was administered only at Time 2.

Parent-Report Measures:

Diagnostic Interview for Infants and Preschoolers for Anxiety (DIIPA; Warren & Dadson, 2001): For descriptive purposes, the presence of anxiety disorders in children was assessed using the Diagnostic Interview for Infants and Preschoolers for Anxiety, a

semi-structured interview conducted with parents regarding their child's symptoms of anxiety. Parent participants responded to questions pertaining to the child's display of anxious symptomology over the duration of the child's life, as well as impairment posed by such symptomology in the life of the child. Areas of inquiry included fears, reactions to novel situations, separation anxiety, social phobia, general anxiety, and panic. Anxiety disorder diagnoses were offered to children with heightened frequency, intensity, and duration of symptoms, according to standard diagnostic criteria. In the past, adequate psychometric properties have been found for this instrument (Warren, Umylny, Aron, & Simmens, 2006). This instrument was administered only at Time 2.

Children's Behavior Questionnaire (CBQ-S; Rothbart, Ahadi, Hershey, & Fisher, 2001): Child temperament was assessed using a modified version of the Children's Behavior Questionnaire. Only the Shyness scale from the original questionnaire was used in the present study, which consists of 13 items that assess slow or inhibited approach in situations involving novelty or uncertainty. Parents rated the extent to which statements describe their child on a 7-point Likert-type scale (1 = extremely untrue of your child, 7 = extremely true of your child, or "not applicable"). Rothbart and colleagues reported a coefficient alpha of .92 for the Shyness scales, obtained on a sample of 228 children. In the present study, a coefficient alpha of .72 was found.

Perceived Advantages of Shyness Survey (PASS; Schmidt & Tasker, 2000): Parental attitudes toward shyness were assessed using the 14-item Perceived Advantages of Shyness Survey, which assesses the degree to which parents view various features of shyness as positive (e.g., "I like that my child doesn't speak to strangers," "Teachers prefer shy children"). Parents rated the degree to which they consider a variety of things

to be advantages to either having or being a shy child, as well as the degree to which they consider various items drawbacks to either having or being a shy child on a 5-point Likert-type scale (1 = strongly agree, 5 = strongly disagree). This instrument has not yet been subjected to rigorous scientific standards; therefore its psychometric properties are not fully known at this time (Schmidt, personal communication, August 2003). Coefficient alphas of .88 and .84 were obtained in the original study (at Time 1) and the present study (at Time 2), respectively.

Childrearing Practices Report (CRPR; Block, 1986): Parental socialization behaviors and child-handling techniques were measured using a modified version of the Child-Rearing Practices Report. Five factors (28 items) from the original scale were used in this study: Authoritarian Control (e.g., “I have strict, well-established rules for my child”), Encouragement of Independence (e.g., “I let my child make many decisions for herself”), Expression of Affection (e.g., “I feel a child should be given comfort and understanding when she is scared or upset”), Protection of Child (e.g., “I prefer that my child not try things if there is a chance that she will fail”), and Control by Anxiety Induction (e.g., “I control my child by warning her about the bad things that can happen to her”). The original CRPR was also modified from using a Q-sort format to using Likert-type scales to facilitate data collection, as has been recommended by Lin and Fu (1990). Parents rated the extent to which statements describe their relationship with their child on a 1-5 Likert-type scale (1 = strongly disagree, 5 = strongly agree). The Encouragement of Independence and Expression of Affection factors were reverse-coded in the present study so that all factors could be predicted to relate positively to behavioral inhibition in children. Block reported a test-retest reliability coefficient of .71 obtained

on a sample of 90 undergraduates. In the original study (at Time 1), a coefficient alpha of .60 was obtained, while in the present study (at Time 2) a coefficient alpha of .82 was obtained.

Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998): Maternal shyness was assessed using the 19-item Social Interaction Anxiety Scale, which measures anxiety and nervousness in meeting or talking with other people (e.g., “I get nervous if I have to speak with someone in authority”, “I find myself worrying I won’t know what to say in social situations”). Parents rated their anxiety on a 0-4 Likert-type scale (0 = not at all; 4 = extremely), with higher scores being indicative of more severe levels of shyness. Mattick and Clarke reported a coefficient alpha of .88 obtained on a sample of 482 undergraduate students. In the original study (at Time 1), a coefficient alpha of .91 was obtained. This instrument was not re-administered at Time 2.

Parent Information Form: Demographic information was gathered using a parent information form. Parents were also asked to answer questions about their child’s school attendance, daycare attendance, siblings, extracurricular activities, and medical history.

Parent- and Teacher-Report Measures:

Behavioural Inhibition Questionnaire (BIQ; Bishop, Spence, & McDonald, 2003): Children’s symptoms of behavioral inhibition were assessed using the 30-item Behavioural Inhibition Questionnaire. Parents and teachers rated the frequency with which the behavior described in each item occurs for their child on a 1-7 Likert-type scale (1 = hardly ever; 7 = almost always), with higher scores being indicative of greater behavioral inhibition. Examples of items include “My child enjoys being the centre of attention” and “My child happily explores new play equipment”. Bishop and colleagues

reported a coefficient alpha of .95 for a sample of 611 children. A coefficient alpha of .96 was obtained in the present study. This instrument was not administered in the original study at Time 1.

Devereux Early Childhood Assessment Clinical Form – (DECA-W; LeBuffe & Naglieri, 2002): Children’s problematic and protective behaviors were assessed using the 62-item Devereux Early Childhood Assessment Clinical Form; however, only the Withdrawal/Depression scale was analyzed herein. Sample items on this scale include “How often does your child avoid being with adults?” and “How often does your child resist participating in group activities?” Parents and teachers rated how frequently the child evidenced a series of behaviors over the past four weeks on a 5-point scale ranging from “never” to “very frequently”. LeBuffe and Naglieri reported a coefficient alpha of .91 for the total protective factors scale and a coefficient alpha of .88 for the total behavioral concerns scale, both of which were obtained on a sample of 2000 preschool children. A coefficient alpha of .74 was obtained in the original study (at Time 1) for the overall scale, while a coefficient alpha of .68 was obtained in the present study (at Time 2).

Other Instruments:

In addition to these seven instruments, the Pictorial Scale of Perceived Competence and Social Acceptance – Preschool/Kindergarten version (Harter & Pike, 1983) and the Fear Survey Schedule for Infants and Preschoolers (Warren & Ollendick, 2001) were administered for purposes of other research. They will not be reported upon in the present study.

Procedure

Families each attended one session, lasting approximately 75 minutes, during which mother-child dyads were invited to meet with the examiner and a research assistant in a room at the Child Study Center of Virginia Tech. At least one week prior to each session, packets of questionnaires were sent to the parents (i.e., both mothers and fathers) to complete and return to the experimenter at the time of the laboratory session. Upon arrival for the experiment, participants were provided with a general overview of the experimental procedures and were given the opportunity to provide their explicit informed consent to participate. Consent procedures were approved by the Human Subjects Committee of the Department of Psychology and the Institution Review Board of Virginia Tech.

The child was then asked to engage in activities involved in the Behavioral Inhibition Assessment. These activities included: 1) showing the child a series of pictures and asking him/her to identify what was depicted; 2) asking the child to listen to and repeat a story out loud, using a series of pictures illustrating scenes in the story; 3) asking the child to repeat several strings of numbers orally after the examiner said them; 4) asking the child to hold out his/her hands, close his/her eyes, and guess the object placed in his/her hands; 5) asking the child to comply with several unusual requests, including pouring water from one cup to another, scribbling in a book, tearing a sheet of paper, throwing a ball, pouring juice onto a table, scribbling on a sheet of paper, throwing a ball at the researcher's face, tearing a picture, putting his/her finger in an empty cup, hitting a table, and putting his/her finger in a cup filled with gel; 6) administering a matrix completion activity in which the child was shown an incomplete pattern that

he/she was asked to complete by choosing from a series of possible pictorial choices; and 7) allowing the child to choose a sticker after completing each of the aforementioned six activities. Mothers were present in the room during administration of these activities, but were asked not to become involved in them. This battery lasted approximately 30 minutes.

Next, mothers and children were asked to engage in the parent-child interaction task (MWCS). This task consisted of a structured, age-inappropriate Lego-building activity. Children were presented with a complex Lego model and a set of unassembled Lego pieces that could be used to replicate the model. Children were told to work to make their Lego pieces resemble that of the model exactly. Mothers were instructed that they could not touch the Lego's but that they were permitted to assist their child in any other way. Children and their mothers were left alone in the laboratory room for 15 minutes to complete this task.

Finally, child participants were taken to a separate room within the Child Study Center of Virginia Tech for the remainder of the study, while mothers were asked to partake in the diagnostic interview (DIIPA) with a research assistant. Completion of these interviews typically took 20 minutes. It should be noted that three husbands attended the laboratory sessions along with their wife and child, and in these instances participated in the diagnostic interview along with their wives.

Sessions were videotaped for subsequent coding and analyses. Outside of the experimental session, packets containing the two teacher-report questionnaires were sent to teachers in the mail along with an addressed, stamped envelope to return the questionnaires to the experimenter.

Results

Measures obtained during the original study will be referred to as “Time 1” variables whereas measures taken during the present follow-up study will be referred to as “Time 2.”

Descriptive Analyses

Descriptive statistics were computed for each measure, and means, standard deviations, and ranges are presented in Table 1. Diagnoses for the sample, as measured by the Diagnostic Interview for Infants and Preschoolers for Anxiety, are presented in Table 2. As can be seen in Table 2, only a small percentage of this sample of children met criteria for an anxiety diagnosis. The interview was administered for descriptive purposes only to determine the number of children characterized by a psychiatric diagnosis at the time of follow-up. Given the small number of children who met diagnostic criteria for an anxiety disorder, no further analyses were undertaken with this information.

To investigate potential gender differences, univariate ANOVAs were conducted on the various measures of parental attitudes toward shyness, childrearing strategies, and child behavioral inhibition. These analyses revealed significant gender differences for number of smiles during the BIA at Time 1 ($F(1,52) = 4.20, p = .04$) as well as at Time 2 ($F(1,38) = 4.01, p = .05$). At both times, girls smiled significantly more frequently than boys during this battery of unfamiliar tasks. No significant gender differences were found for any of the other measures, however.

To investigate potential age differences, the correlational matrix regressing age on the various measures of parental attitudes toward shyness, childrearing strategies, and

child behavioral inhibition was investigated. This analysis revealed significant age differences for maternal attitudes toward shyness at Time 1 ($r = .332, p = .04$), wherein mothers of older children held more positive attitudes toward shyness than mothers of younger children during the original study. Significant age differences also emerged for the MWCS-Negative Control index at Time 2 ($r = -.344, p = .03$) and the paternal-reported CRPR-Control scale at Time 2 ($r = -.515, p = .02$), wherein parents of younger children evidenced more controlling parenting strategies than parents of older children during the present study.

Bivariate Regression Analyses

Several series of bivariate regression analyses were conducted separately and Pearson r 's were calculated for each.

Examining the Continuity of Study Constructs from Time 1 to Time 2 (Objective #1): The test-retest reliabilities for each measure were examined, and correlations among scores on all measures at Time 1 and Time 2 are presented in Table 3. All measures were significantly correlated across the span of two years with the exception of the DECA-Withdrawal scale and the CRPR-Independence scale. Paired samples t -tests were also performed to examine differences between measures at Time 1 and Time 2. Mothers differed significantly in their reports on the Independence and Anxiety Induction scales of the CRPR at Time 1 and Time 2 ($t(35) = 2.146, p = .04$ and $t(35) = 2.103, p = .04$, respectively). In both cases, mothers reported higher levels of these childrearing strategies at Time 2. Children also differed significantly in the number of smiles during the BIA tasks at Time 1 and Time 2 ($t(38) = 4.217, p = .00$), wherein children smiled

more frequently at Time 2 than Time 1. No other significant differences emerged between Time 1 and Time 2 scores.

Examining the Convergence of Multiple Raters and Measurement Techniques (Objective #2): The inter-rater reliabilities for each measure were examined, and correlations among different respondents (e.g., mothers, fathers, and teachers) on the same questionnaire are presented in Table 4. Mothers and fathers evidenced significant agreement on all measures with the exception of the CRPR-Protection scale and the CRPR-Affection scale. Teachers evidenced significant agreement with both mothers and fathers on the BIQ scale but not on the DECA-Withdrawal scale. Paired samples *t*-tests were also performed to examine differences between maternal and paternal reports of behaviors. Mothers and fathers differed in their reports on the Anxiety Induction scale of the CRPR ($t(19) = -2.163, p = .04$), wherein fathers reported higher levels of this childrearing strategy than mothers. No other significant differences emerged between maternal and paternal reports.

It should be noted that when comparing maternal and paternal reports, only those families that had both mothers and fathers participating were included. Given the small number of fathers and teachers who completed the questionnaires (listwise $n=20$ as compared to a listwise $n=40$ with mothers alone), only maternal-reported data will be included in further analyses unless otherwise noted.

Correlations among different indicators of the same construct are presented in Tables 5 and 6, representing the constructs of behavioral inhibition and childrearing strategies, respectively. The intercorrelations between the indicators of behavioral inhibition varied considerably, with Pearson *r*'s ranging from .857 ($p < .01$) to .001 ($p =$

n.s.). Likewise, while some of the indicators of childrearing strategies were significantly correlated with one another, others were not; Pearson r 's ranged from .748 ($p < .01$) to .007 ($p = \text{n.s.}$). These correlation matrixes were also inspected for the presence of multicollinearity among variables, using Gunst and Mason's (1980) guidelines. Among the indicators of behavioral inhibition, the BIA-Spontaneous Comments and BIA-Global Rating indexes were correlated higher than .80 ($r = .810$); however, this is not surprising given that the global rating of behavioral inhibition is derived in large part from the number of spontaneous comments made on the part of the child. The Behavioural Inhibition Questionnaire total score was also correlated at above .80 with the CBQ-Shyness scale total score ($r = .857$); however, this multicollinearity is not problematic given that these two measures were not used in conjunction in subsequent analyses. No significant multicollinearity was noted among the indicators of childrearing strategies.

To facilitate data analysis and interpretation, and based on theory and empirical relations observed in this study, composite scores were created for the constructs of behavioral inhibition and childrearing strategies. All composite scores were created by converting raw scores to standardized z -scores for each measure and then using the sum of the standardized scores. For behavioral inhibition, separate composite scores were created at Time 1 and Time 2 for the *maternal-report* measures (i.e., a combination of the DECA-Withdrawal and CBQ-Shyness scales), the *observational* measures (i.e., a combination of the BIA-Spontaneous Comments, BIA-Smiles, and BIA-Global Rating indexes), and the maternal-report and observational measures *combined* (i.e., a combination of all five of the above indicators: DECA-Withdrawal, CBQ-Shyness, BIA-Spontaneous Comments, BIA-Smiles, and BIA-Global Rating). For childrearing

strategies, separate composite scores were created at Time 1 and Time 2 for the *maternal-report* measures (i.e., a combination of the CRPR-Protection scale, the CRPR-Control scale, the CRPR-Affection scale, the CRPR-Independence scale, and the CRPR-Anxiety Induction scale). At Time 2, composite scores were also created for the *observational* measures (i.e., a combination of the three reliable indexes of the MWCS: Proximity and Orientation, Negative Affect, and Negative Control), and the maternal-report and observational measures *combined* (i.e., a combination of all eight of the above indicators: the five CRPR scales at Time 2 and the three reliable indexes of the MWCS). Such an observational and a combined composite score could not be created for Time 1 childrearing strategies as observational measurement of childrearing strategies was not conducted in the original study. Both the individual measures as well as the composite scores were included in further analyses to allow for detailed, in-depth exploration of the dataset (through inclusion of the individual specific measures) as well as more broad exploration of the relationships among the latent constructs (through inclusion of the composite scores).

Examining the Bivariate Relationships Between Study Variables (Objective #3):
Additional bivariate regression analyses were conducted to examine the relationships between (a) parental attitudes toward shyness and the various measures of behavioral inhibition, (b) parental attitudes toward shyness and the various measures of childrearing strategies, and (c) the various measures of childrearing strategies and the various measures of behavioral inhibition. For the constructs of behavioral inhibition and childrearing strategies, the composite scores were included in these analyses along with the individual indicators.

First, for the relationship between parental attitudes toward shyness and behavioral inhibition, both maternal and paternal attitudes toward shyness were examined in order to detect whether they related similarly or differently to levels of behavioral inhibition in their children (see Table 7). Maternal attitudes toward shyness at both Time 1 and Time 2 were significantly and positively related to scores on the DECA-Withdrawal scale at Time 1. Maternal attitudes at Time 1 also showed a positive and significant relationship with the Maternal Report Composite score for behavioral inhibition at both Time 1 and Time 2. Finally, paternal attitudes toward shyness were significantly and positively related to the CBQ-Shyness scale at Time 1, the Maternal Report Composite score for behavioral inhibition at Time 1, and the Combined Composite score for behavioral inhibition at Time 1.

Second, for the relationship between parental attitudes toward shyness and childrearing strategies, once again both maternal and paternal attitudes toward shyness were examined in order to detect whether they related similarly or differently to childrearing strategies. In addition, both maternal and paternal reports of childrearing strategies were examined (see Table 8). Correlation coefficients between the indicators of parental attitudes toward shyness and the indicators of childrearing strategies were quite varied, with Pearson r 's ranging from .599 ($p < .01$) to .001 ($p = \text{n.s.}$). Notably, paternal attitudes toward shyness were not significantly related to any of the indices of childrearing strategies, with the exception of the Time 2 Observational Composite score. On the other hand, maternal attitudes at both Time 1 and Time 2 showed numerous significant, positive relationships with maternal-reported childrearing strategies at both Time 1 and Time 2. Included among these was a significant, positive relationship

between maternal attitudes toward shyness (at both Time 1 and Time 2) and the Maternal Report Composite score for childrearing strategies (at both Time 1 and Time 2). Time 1 and Time 2 maternal attitudes were also significantly and positively related to the Combined Composite score for childrearing strategies at Time 2, while Time 1 maternal attitudes were significantly and negatively related to the Observational Composite score for childrearing strategies at Time 2.

Third, for the relationship between childrearing strategies and behavioral inhibition in children, both maternal- and paternal-reported childrearing strategies were examined in order to detect whether they related similarly or differently to levels of behavioral inhibition in children (see Table 9). Once again, correlation coefficients between the indicators of childrearing strategies and the indicators of behavioral inhibition in children varied considerably, with Pearson r 's ranging from .538 ($p < .01$) to .001 ($p = \text{n.s.}$). Various indicators of behavioral inhibition at Time 1 and Time 2 were significantly and positively related to maternal- and paternal-reported childrearing strategies at Time 1 and Time 2, although no clear trends emerged.

One last set of bivariate regression analyses were conducted to examine the relationship between maternal shyness (as measured by the SIAS at Time 1) and the various measures of behavioral inhibition (at both Time 1 and Time 2; see Table 10). For the construct of behavioral inhibition, composite scores were included in these analyses along with the individual indicators. Contrary to hypotheses, maternal shyness was only significantly related to one indicator of behavioral inhibition; namely, the Observational Composite score at Time 2. However, the negative direction of this relationship was unexpected.

Examining Maternal versus Paternal Attitudes toward Shyness (Objective #4):

Fisher's *Z*-tests were performed to examine whether the relationship between parental attitudes toward shyness and behavioral inhibition was significantly stronger for maternal than for paternal attitudes, as was hypothesized. The Combined Composite Score for behavioral inhibition was first used, and revealed that the correlation between maternal attitudes at Time 2 and the Combined Composite Score at Time 2 ($r = .038$) did not differ significantly from the correlation between paternal attitudes at Time 2 and the Combined Composite Score at Time 2 ($r = .111$), $Z = .10$, $p = \text{n.s.}$, contrary to hypotheses. In order to account for potential method variance, paternally-reported behavioral inhibition was also analyzed, in which a Paternal Report Composite Score was created containing the DECA-Withdrawal and CBQ-Shyness scales as measured by paternal report. Again, however, results revealed that the correlation between maternal attitudes at Time 2 and the Paternal Report Composite Score for behavioral inhibition at Time 2 ($r = .342$) did not differ significantly from the correlation between paternal attitudes at Time 2 and the Paternal Report Composite Score for behavioral inhibition at Time 2, ($r = .228$), $Z = .35$, $p = \text{n.s.}$ It should again be noted that when comparing maternal and paternal reports, only those families that had both mothers and fathers participating were included.

Examining the Longitudinal Convergence of Maternal Attitudes toward Shyness with Child Behavioral Inhibition (Objective #5): Additional Fisher's *Z*-tests were next performed in order to examine whether the relationship between maternal attitudes toward shyness and behavioral inhibition in children was significantly stronger at Time 2 than at Time 1, as was hypothesized. The Combined Composite score was first used; the correlation between maternal attitudes at Time 1 and the Combined Composite score at

Time 1 ($r = .150$) did not differ significantly from the correlation between maternal attitudes at Time 2 and the Combined Composite score at Time 2 ($r = .083$), $Z = .30$, $p = n.s.$ The pattern of results was similar for the Maternal Report Composite score for behavioral inhibition: the correlation between maternal attitudes at Time 1 and the Maternal Report Composite score at Time 1 ($r = .292$) did not differ significantly from the correlation between maternal attitudes at Time 2 and the Maternal Report Composite score at Time 2 ($r = .029$), $Z = 1.19$, $p = n.s.$ Likewise, for the Observational Composite score for behavioral inhibition, the correlation between maternal attitudes at Time 1 and the Observational Composite score at Time 1 ($r = -.012$) did not differ significantly from the correlation between maternal attitudes at Time 2 and the Observational Composite score at Time 2 ($r = -.068$), $Z = .26$, $p = n.s.$

Multiple Regression Analyses

Five sets of multiple regression analyses were conducted to correspond to each of the five hypotheses represented in Figures 1 through 5. For the analyses for Figures 1, 2, and 4, multiple criterion variables were tested separately to represent each of the eight indicators of behavioral inhibition. Given that multiple outcome variables were tested instead of a single outcome variable for each of these sets of analyses, a Bonferroni correction is recommended to control for experiment-wide error. In general terms, the Bonferroni correction is a safeguard against chance capitalization (i.e., incorrectly declaring a relationship to be statistically significant due to chance fluctuation in the total experiment) that is used when multiple tests of significance are conducted on the same data (e.g., Sankoh, Huque, & Dubey, 1997). This procedure involves adjusting the alpha level downward in order to account for the number of comparisons being performed,

usually by dividing the original alpha level by the number of outcomes being tested. For the present study, then, an original alpha level of .05 would need to be divided by 8 (for the eight criterion variables included in analyses), which would result in an adjusted alpha level of .006.

However, the small sample size involved in these analyses ($n = 40$), in conjunction with the presence of a Bonferroni correction, would further reduce the likelihood of finding significant results and in turn further inflate the possibility of committing a Type II error. In other words, this procedure has the potential to render significant findings non-significant due to the rigid constraints imposed by the Bonferroni correction combined with the already-low statistical power imposed (in part) by the small sample size. Indeed, some researchers have argued that adjustments for multiple tests such as the Bonferroni correction are “deleterious to sound statistical inference” (Perneger, 1998, p. 1236, among others). This contention is based on several drawbacks to the Bonferroni correction. First is the notion that correcting for Type I errors comes at the expense of inflating Type II errors. Second is the notion that Bonferroni adjustments stipulate that any given statistical test be interpreted differently according to how many other tests were performed. This idea becomes problematic when one considers that any tests conducted in the past or any that have the potential to be conducted in the future ought be included in the adjustment as well, which lacks both practical sense and cannot be accounted for by statistical theories such as that put forth by Bonferroni.

These statistical issues notwithstanding, and having considered the arguments in favor of and against the use of a Bonferroni correction, the present study proceeded to analyze the data according to plan by testing multiple criterion variables separately in

each set of regression analyses. Given the aforementioned problems with using a strict, Bonferroni-adjusted alpha level, the results are discussed using the original, conventional alpha level of .05. *Hence, the results of these analyses should be considered preliminary and exploratory.*

Exploring Maternal Attitudes toward Shyness as a Moderator of the Relationship between Behavioral Inhibition at Time 1 and Time 2 (Objective #6): A series of eight regression analyses were conducted to test for significant main effects of Time 1 behavioral inhibition and maternal attitudes toward shyness in predicting Time 2 behavioral inhibition in children. Maternal attitudes toward shyness at Time 1 were also tested as a possible moderator of the relationship between behavioral inhibition at Time 1 and behavioral inhibition at Time 2 (see Figure 1). Analyses were conducted separately for eight criterion variables: a) BIA-Spontaneous Comments; b) BIA-Smiles; c) BIA-Global Rating; d) CBQ-Shyness; e) DECA-Withdrawal; f) Maternal Report Composite; g) Observational Composite; and g) Combined Composite scores. For each criterion variable, the primary predictor variables were: a) behavioral inhibition in children at Time 1 (as measured by the corresponding indicator), and b) maternal attitudes toward shyness (as measured by the PASS at Time 1). Moderation was assessed for by creating a variable representing the interaction of Time 1 maternal attitudes and Time 1 behavioral inhibition. Demographic characteristics of the child (i.e., age, gender) were entered into the model as well.

Results of these analyses are presented in Table 11. A significant main effect of behavioral inhibition at Time 1 was found for the regression using CBQ-shyness ($t =$

-2.838, $p = .01$). Significant main effects of maternal attitudes toward shyness were found for the regressions predicting BIA-Comments ($t = 2.459, p = .02$), CBQ-Shyness ($t = -2.709, p = .01$), the Maternal Report Composite score ($t = 2.203, p = .04$), and the Combined Composite score ($t = 2.095, p = .05$). In each of these cases, maternal attitudes toward shyness contributed to Time 2 behavioral inhibition scores above and beyond the contribution of Time 1 behavioral inhibition.

Significant interaction effects emerged in the analyses predicting BIA-Comments ($t = 2.286, p = .03$) and CBQ-Shyness ($t = 3.381, p = .01$). For both of these indicators of behavioral inhibition, post-hoc probing of the significant interaction term was conducted according to Holmbeck's (2002) recommended methods. First, variables were centered. Next, conditional moderator variables were computed representing high and low (i.e., ± 1 SD) conditions of maternal attitudes toward shyness, and new interaction terms were created using each of these conditional variables. Then, new simultaneous regression analyses were performed that incorporated these conditional variables in order to generate slopes for the high and low conditions of the moderator (i.e., maternal attitudes toward shyness). Finally, t -tests were examined to determine the significance of each slope.

The post-hoc test of the interaction between Time 1 PASS scores and Time 1 BIA-Comments as a predictor of Time 2 BIA-Comments revealed that maternal attitudes moderated the relationship between behavioral inhibition at Time 1 and Time 2 (see Figure 6). More specifically, the relationship between Time 1 and Time 2 behavioral inhibition was significant and positive when mothers held more positive attitudes toward shyness. On the other hand, when mothers held less positive attitudes toward shyness,

the relationship between Time 1 and Time 2 behavioral inhibition was considerably weakened. Significance tests for each slope indicate that the regression line for the high (i.e., more positive) maternal attitudes toward shyness condition was significant ($t = 3.611, p = .00$), whereas the slope for the low (i.e., less positive) maternal attitudes condition was not ($t = .381, p = \text{n.s.}$).

The post-hoc test of the interaction between Time 1 PASS scores and Time 1 BIA-Comments as a predictor of Time 2 CBQ-Shyness revealed that maternal attitudes moderated the relationship between behavioral inhibition at Time 1 and Time 2 (see Figure 7). More specifically, the correlation between Time 1 and Time 2 behavioral inhibition was significant and positive when mothers held more positive attitudes toward shyness. On the other hand, when mothers held less positive attitudes toward shyness, the correlation between Time 1 and Time 2 behavioral inhibition was weak and negative. Significance tests for each slope indicate that the regression line for the high (i.e., more positive) maternal attitudes toward shyness condition was significant ($t = 4.232, p = .00$), whereas the slope for the low (i.e., less positive) maternal attitudes condition was not ($t = -.687, p = \text{n.s.}$).

Exploring Behavioral Inhibition as a Moderator of the Relationship between Maternal Attitudes toward Shyness at Time 1 and Time 2 (Objective #7): Another series of eight regression analyses were conducted to test for significant main effects of Time 1 maternal attitudes and behavioral inhibition in predicting Time 2 maternal attitudes toward shyness. Behavioral inhibition at Time 1 was also tested as a possible moderator of the relationship between maternal attitudes toward shyness at Time 1 and Time 2 (see Figure 2). Analyses were conducted separately for eight indicators of Time 1 behavioral

inhibition: a) BIA-Spontaneous Comments; b) BIA-Smiles; c) BIA-Global Rating; d) CBQ-Shyness; e) DECA-Withdrawal; f) Maternal Report Composite; g) Observational Composite; and g) Combined Composite scores. For each analysis, the primary predictor variables were: a) behavioral inhibition in children at Time 1 (as measured by one of the aforementioned indicators), and b) maternal attitudes toward shyness (as measured by the PASS at Time 1). Moderation was assessed for by creating a variable representing the interaction of Time 1 behavioral inhibition and Time 1 maternal attitudes toward shyness. Demographic characteristics of the child (i.e., age, gender) were entered into the model as well. The criterion variable was maternal attitudes toward shyness at Time 2 for each analysis.

Results of these analyses are presented in Table 12. Significant main effects of Time 1 maternal attitudes toward shyness in predicting Time 2 maternal attitudes toward shyness were found in six of the eight regression analyses (those using the BIA-Comments ($t = 3.256, p = .01$), BIA-Smiles ($t = 3.442, p = .01$), CBQ-Shyness ($t = 2.450, p = .02$), Maternal Report Composite ($t = 4.973, p = .00$), Observational Composite ($t = 5.804, p = .00$), and Combined Composite scores ($t = 5.379, p = .00$)). No significant main effects of Time 1 behavioral inhibition emerged, nor was the interaction term significant in any of the analyses.

Exploring Childrearing Strategies as a Mediator of the Relationship between Maternal Attitudes toward Shyness at Time 1 and Behavioral Inhibition at Time 2
(Objective #8): A series of two hierarchical regression analyses were conducted in order to test for significant main effects of maternal attitudes toward shyness and childrearing strategies in predicting inhibited behavior in children, as well as to examine the possible

mediating effect of childrearing strategies in the relationship between maternal attitudes toward shyness at Time 1 and behavioral inhibition in children at Time 2 (see Figure 3). For both analyses, the criterion variable was behavioral inhibition in the child at Time 2, and the predictor variables were Time 1 maternal attitudes toward shyness and childrearing strategies (in that order). Demographic characteristics of the child (i.e., age, gender) were entered into the model in the first step. Mediation was assessed for by determining whether the regression weight for maternal attitudes toward shyness decreased significantly when the measure of childrearing strategies was entered into the model.

Prior to undertaking these analyses, however, the requisite conditions for mediation were examined. This process involved verifying: a) that the predictor variable (i.e., maternal attitudes toward shyness) was significantly related to the mediating variable (i.e., childrearing strategies); b) that the predictor variable (i.e., maternal attitudes toward shyness) was significantly related to the criterion variable (i.e., behavioral inhibition in children); and c) that the mediating variable (i.e., childrearing strategies) was significantly related to the criterion variable (i.e., behavioral inhibition in children). Although there were numerous significant relationships for each of these three pathways, only two sets of indicators were found to meet each of the prerequisite conditions.

The first set of indicators included PASS scores at Time 1, the CRPR-Control scale at Time 1, and the Combined Composite score for behavioral inhibition at Time 2. Results of the regression analysis using these measures are presented in Table 13. Significant main effects emerged for age ($t = -2.005, p = .05$) and maternal attitudes

toward shyness ($t = 2.496, p = .02$) in Block 2. However, the CRPR-Control scale did not emerge as a significant predictor above and beyond the PASS in Step 3 ($t = 1.091, p = n.s.$). Hence, criteria for a mediated model were not met.

The second set of indicators included PASS scores at Time 1, the CRPR-Affection scale at Time 2, and the Maternal Report Composite score for behavioral inhibition at Time 2. Results of the regression analysis using these measures are presented in Table 14. Similarly, significant main effects emerged for age ($t = -2.449, p = .02$) and maternal attitudes toward shyness ($t = 2.847, p = .01$) in Blocks 2 and 3. However, the CRPR-Affection scale did not emerge as a significant predictor above and beyond the PASS ($t = 1.283, p = n.s.$). Hence, criteria for a mediated model were once again not met.

Exploring Maternal Attitudes toward Shyness as a Moderator of the Relationship between Maternal Shyness and Child Behavioral Inhibition (Objective #9): A series of nine regression analyses were conducted to test for significant main effects of Time 1 maternal shyness and maternal attitudes toward shyness in predicting Time 2 behavioral inhibition in children. Maternal attitudes toward shyness at Time 1 were also tested as a possible moderator of the relationship between shyness in mothers at Time 1 and behavioral inhibition in children at Time 2 (see Figure 4). Analyses were conducted separately for nine criterion variables: a) BIA-Spontaneous Comments; b) BIA-Smiles; c) BIA-Global Rating; d) CBQ-Shyness; e) DECA-Withdrawal; f) Maternal Report Composite; g) Observational Composite; h) Combined Composite; and i) BIQ scores. For each criterion variable, the primary predictor variables were: a) maternal shyness (as measured by the SIAS at Time 1), and b) maternal attitudes toward shyness (as measured

by the PASS at Time 1). Moderation was assessed for by creating a variable representing the interaction of Time 1 maternal shyness and Time 1 maternal attitudes toward shyness. Demographic characteristics of the child (i.e., age, gender) were entered into the model as well.

Results of these analyses are presented in Table 15. Significant main effects of maternal shyness at Time 1 were found for the regressions predicting BIA-Smiles ($t = -2.765, p = .01$) and BIQ scores ($t = -2.354, p = .03$). A significant main effect of maternal attitudes toward shyness was found only for the regression using BIA-Smiles ($t = -2.474, p = .02$). Hence, maternal attitudes toward shyness at Time 1 contributed to Time 2 behavioral inhibition scores above and beyond the contribution of Time 1 maternal shyness in this instance.

Significant interaction effects emerged in the analyses predicting BIA-Smiles ($t = 2.557, p = .02$) and BIQ scores ($t = 2.185, p = .04$). For both of these indicators of behavioral inhibition, post-hoc probing of the significant interaction term was conducted according to Holmbeck's (2002) recommended methods. First, variables were centered. Next, conditional moderator variables were computed representing high and low (i.e., ± 1 SD) conditions of maternal attitudes toward shyness, and new interaction terms were created using each of these conditional variables. Then, new simultaneous regression analyses were performed that incorporated these conditional variables in order to generate slopes for the high and low conditions of the moderator (i.e., maternal attitudes toward shyness). Finally, t -tests were examined to determine the significance of each slope.

The post-hoc test of the interaction between Time 1 SIAS scores and Time 1 PASS scores as a predictor of Time 2 BIA-Smiles revealed that maternal attitudes moderated the relationship between maternal shyness at Time 1 and child behavioral inhibition at Time 2 (see Figure 8). More specifically, the correlation between Time 1 maternal shyness and Time 2 child behavioral inhibition was significant and negative when mothers held less positive (i.e., more negative) attitudes toward shyness. On the other hand, when mothers held more positive attitudes toward shyness, the correlation between Time 1 maternal shyness and Time 2 child behavioral inhibition was weak and positive. Significance tests for each slope indicate that the regression line for the low (i.e., less positive) maternal attitudes toward shyness condition was significant ($t = -2.957, p = .01$), whereas the slope for the high (i.e., more positive) maternal attitudes condition was not ($t = 1.049, p = \text{n.s.}$).

The post-hoc test of the interaction between Time 1 PASS scores and Time 1 SIAS scores as a predictor of Time 2 BIQ scores again revealed that maternal attitudes moderated the relationship between maternal shyness at Time 1 and child behavioral inhibition at Time 2 (see Figure 9). More specifically, the correlation between Time 1 maternal shyness and Time 2 child behavioral inhibition was significant and negative when mothers held less positive (i.e., more negative) attitudes toward shyness. On the other hand, when mothers held more positive attitudes toward shyness, the correlation between Time 1 maternal shyness and Time 2 child behavioral inhibition was weak and positive. Significance tests for each slope indicate that the regression line for the low (i.e., less positive) maternal attitudes toward shyness condition was significant ($t = -$

2.497, $p = .02$), whereas the slope for the high (i.e., more positive) maternal attitudes condition was not ($t = 1.066$, $p = \text{n.s.}$).

Exploring Time 1 Predictors of Time 2 Behavioral Inhibition (Objective #10): A simultaneous regression analysis was performed to determine the amount of variance accounted for in behavioral inhibition in the child at Time 2 based upon several predictors at Time 1 (see Figure 5). These included Time 1 maternal attitudes toward shyness (as measured by the PASS), Time 1 childrearing strategies (as measured by the Maternal Report Composite score), and Time 1 maternal shyness (as measured by the SIAS). The Time 2 Combined Composite score for behavioral inhibition served as the criterion variable, while the Time 1 Combined Composite score for behavioral inhibition was entered into the model as a control variable. Demographic characteristics of the child (i.e., age, gender) were entered into the model as well.

Results of this analysis are presented in Table 16. A significant main effect emerged for Time 1 behavioral inhibition only ($t = 3.624$, $p = .00$). It was noted that none of the other variables contributed significantly to the prediction of Time 2 behavioral inhibition above and beyond Time 1 behavioral inhibition. Nonetheless, the overall model accounted for approximately 49% of the variance associated with behavioral inhibition in children at Time 2 ($R^2 = .493$; $F(6,27) = 4.377$, $p = .00$).

Discussion

Results of the present study provided support for some of the primary hypotheses, while other hypotheses failed to be upheld. Results are discussed one at a time, corresponding to each of the ten aforementioned study objectives and their associated hypotheses.

Objective #1: Examining the Continuity of Study Constructs from Time 1 to Time 2

As previously stated, the first goal of the present study was to examine the continuity or discontinuity of the various study variables from Time 1 to Time 2. As hypothesized, behavioral inhibition scores in children at Time 1 were significantly and positively related to behavioral inhibition scores in children at Time 2 in the present study, with only one exception among the five measures included in the present study. Also in accordance with hypotheses, maternally-reported childrearing strategies were significantly and positively related at Time 1 and Time 2, with only one exception among the five scales included in the present study. Finally, maternal attitudes toward shyness at Time 1 were also significantly and positively related to maternal attitudes toward shyness at Time 2 in the present study, as was hypothesized. Overall, the study variables showed high rates of continuity over the span of two years for the constructs of behavioral inhibition, childrearing strategies, and parental attitudes toward shyness, as was hypothesized.

Objective #2: Examining the Convergence of Multiple Raters and Measurement Techniques

The second goal of the present study was to examine the convergence or divergence of multiple raters and measurement techniques for the constructs of child behavioral inhibition, childrearing strategies, and parental attitudes toward shyness. For the construct of behavioral inhibition, mothers and fathers evidenced significant agreement in their ratings on all measures of behavioral inhibition at Time 2. The ratings of mothers, fathers, and teachers at Time 2 were significantly and positively interrelated on one measure of behavioral inhibition (i.e., the Behavioural Inhibition Questionnaire),

as was hypothesized. On a second measure of behavioral inhibition (i.e., the Withdrawal scale of the Devereux Early Childhood Assessment), maternal- and paternal-reports were significantly correlated but did not relate significantly to the teacher-reported data. These results provide sufficient evidence of convergence between multiple raters of behavioral inhibition.

The various indicators of behavioral inhibition did not reliably show convergence in the manner that was hypothesized, however. At both Time 1 and Time 2, the observational indicators of behavioral inhibition were significantly and positively intercorrelated, as was hypothesized, but they were not significantly related to the maternal-report measures of behavioral inhibition, contrary to hypotheses. Within the maternal-report measures of behavioral inhibition, scores on the Shyness scale of the Children's Behavior Questionnaire were significantly related to scores on the Behavioural Inhibition Questionnaire at Time 2, as hypothesized. However, the Withdrawal scale of the Devereux Early Childhood Assessment did not relate to the other maternal-report measures of behavioral inhibition at either Time 1 or Time 2.

The lack of convergence between questionnaire- and observation-based measurement of behavioral inhibition in the present study is certainly surprising. However, previous studies employing observation-based and parent-report measures of behavioral inhibition contemporaneously have produced mixed results in terms of convergence. For example, Reznick, Gibbons, Johnson, and McDonough (1989) found significant inter-measure correlations for observational and parent-reported behavioral inhibition. On the other hand, in a study by Pfeifer, Goldsmith, Davidson, and Rickman

(2002), parent-reported behavioral inhibition was correlated at a non-significant level with concurrent laboratory observational measurement of behavioral inhibition. Several explanations can be speculated to play a role in this surprising phenomenon. Foremost among these is the notion that observational measurement itself comes with its own set of limitations. These include factors such as “novelty of the laboratory, other mood effects, and idiosyncratic background factors such as unrecognized, impending illnesses” (Pfeifer, Goldsmith, Davidson, & Rickman, 2002, p. 1483). Given that only single-day observational assessment of behavioral inhibition was conducted in the present study, it is possible that extraneous factors may have interfered with the reliability of this observational measurement. Furthermore, the lack of significant agreement between the questionnaire- and observation-based indicators of behavioral inhibition in the present study might be explained in terms of the vastly different methods through which information was collected. Inasmuch as both parent-report measures of behavioral inhibition utilized similar response formats, part of their relationship may be explained by common method variance.

For the construct of childrearing strategies, the ratings of mothers and fathers were significantly and positively correlated on three of five dimensions, including use of parenting practices that are controlling, discourage independence, and induce anxiety in children. However, maternal- and paternal-reports diverged in relation to parenting practices of an overprotective and affectionate nature, wherein mothers rated themselves as using these childrearing strategies more frequently than did fathers. Nonetheless, these differences were small and non-significant.

Contrary to hypotheses, observational and maternal-reported measures of childrearing strategies did not converge. In fact, there were no instances in which a maternal-reported childrearing scale was significantly correlated with an observation-based childrearing scale. Once again, the lack of a significant relationship between maternal-reported childrearing strategies (via the Childrearing Practices Report) and parenting strategies as measured by the observation-based Maternal Warmth and Control Scale was surprising. Several factors may help explain this lack of convergence. First, a modified version of the MWCS was utilized in the present study; hence, it remains a possibility that in its entirety the MWCS would correlate significantly with other, parent-reported measures of childrearing strategies. Second, once again only single-day observational assessment of childrearing strategies was conducted in the present study, making it is possible that extraneous factors may have interfered with the reliability of this measurement. Third, some scales of the Childrearing Practices Report had a restricted range in the present sample, as did all three scales of the Maternal Warmth and Control Scale. Hence, these restricted ranges may have reduced the likelihood of any significant correlational relationships emerging in the present study.

Lastly, for the construct of parental attitudes toward shyness, mothers and fathers showed significant agreement in their reported attitudes toward having a shy child, as was hypothesized. Only one measurement technique was used to assess parental attitudes toward shyness, precluding the opportunity to examine convergence among indicators. Unfortunately, the inclusion of only one measure of parental attitudes toward shyness must be viewed as a weakness of the present study.

Objective #3: Examining the Bivariate Relationships Between Study Variables

The third goal of the present study was to examine the bivariate relationships between the constructs of behavioral inhibition, childrearing strategies, and parental attitudes toward shyness. Results were varied for each of the relationships between these three constructs. First, it was hypothesized that parental attitudes toward shyness would be significantly and positively related to child behavioral inhibition. This hypothesis received limited support in the present study. Maternal attitudes at Time 1 were significantly correlated with only one of the eleven (9%) individual indicators of behavioral inhibition (i.e., the Withdrawal scale of the Devereux Early Childhood Assessment at Time 1), but were significantly correlated with two of the six (33%) behavioral inhibition composite scores (i.e., the Maternal Report Composite score at both Time 1 and Time 2). Maternal attitudes at Time 2 were likewise significantly correlated with only one of the eleven (9%) individual indicators of behavioral inhibition (i.e., the Withdrawal scale of the Devereux Early Childhood Assessment at Time 1), but were not related to any (0%) of the behavioral inhibition composite scores at either Time 1 or Time 2. Paternal attitudes at Time 2 were again significantly correlated with only one of the eleven (9%) individual indicators of behavioral inhibition (i.e., the Shyness scale of the Children's Behavior Questionnaire at Time 1), but were significantly correlated with two of the six (33%) behavioral inhibition composite scores at Time 1 (i.e., the Maternal Report Composite score and the Combined Composite score).

Taken together, these instances of significant relationships among indicators of parental attitudes toward shyness and behavioral inhibition in children provide only limited support for the hypothesis that parental attitudes significantly relate to child

inhibition. However, given that maternal attitudes toward shyness consistently emerged as a significant predictor of child behavioral inhibition during the multiple regression analyses, it appears that this relationship might be more robust when controlling for variables such as child age and gender. Hence, despite limited support from bivariate regression analyses, the relationship between parental attitudes toward shyness and child behavioral inhibition was upheld in the present study as a whole. However, it is important to note that this relationship emerged only for parent-reported behavioral inhibition; there were no instances in which parental attitudes toward shyness significantly predicted observed behavioral inhibition (in the bivariate regression analyses; parent attitudes did have significant main effects toward predicting observed behavioral inhibition in several instances in the multiple regression analyses, however). This relationship between parental attitudes toward shy, inhibited behavior and the presence of shy, inhibited behavior in children is certainly worthy of note and makes a valuable contribution to the literature. In brief, it appears that parents who hold more positive, accepting attitudes toward having a shy child are more likely to report that their child is withdrawn and inhibited.

Second, it was hypothesized that parental attitudes toward shyness would be significantly and positively related to parents' choices of childrearing strategies. This hypothesis received moderate to high levels of support in the present study. Maternal attitudes at Time 1 were significantly correlated with seven of the ten (70%) maternally-reported individual indicators of childrearing strategies, and were also significantly correlated with all four (100%) of the childrearing strategies composite scores. Similarly, maternal attitudes at Time 2 were significantly correlated with six of the ten (60%)

maternally-reported individual indicators of childrearing strategies, and were also significantly correlated with three of the four (75%) childrearing strategies composite scores. Paternal attitudes at Time 2 were not significantly correlated with any (0%) of the eleven individual indicators of childrearing strategies, but were significantly correlated with one of the four (25%) composite scores. In no instances were parental attitudes toward shyness related to paternally-reported or observed indices of childrearing strategies, however.

Taken together, this series of significant relationships between maternal attitudes toward shyness and maternally-reported childrearing strategies provide sufficient support for the hypothesis that parental attitudes and parenting strategies are related. More specifically, positive parental attitudes toward shyness were positively related to parenting strategies of a protective nature. Second, positive parental attitudes toward shyness were positively related to parenting strategies of a controlling nature. Third, positive parental attitudes toward shyness were positively related to parenting strategies that involve inducing anxiety in children in order to manage their behavior. Fourth, positive parental attitudes toward shyness were positively related to parenting strategies that discourage independence in children. The remaining hypothesis, which posited that positive parental attitudes toward shyness would be positively related to childrearing strategies that involve high levels of expression of affection, was not supported in the present study. These findings, which suggest that parental attitudes toward shyness are significantly related to certain types of parenting strategies, are a new contribution to the literature, which has previously suggested only a relationship between parenting strategies and socially inhibited behavior in children (e.g., Chen et al., 1998). Hence, the

present study extended past research findings by suggesting that parental attitudes are related to parents' choices of childrearing techniques.

Third, it was hypothesized that parents' choices of childrearing strategies would be significantly and positively related to behavioral inhibition in children. This hypothesis received only marginal support in the present study. Given that data was collected on eleven individual indicators of behavioral inhibition (along with six composite scores for behavioral inhibition) and eighteen individual indicators of childrearing strategies (along with four composite scores for childrearing strategies), a very large number of correlation coefficients representing the relationship between childrearing strategies and behavioral inhibition were computed. Of these 374 correlation coefficients, only 16 (4%) were found to be significant. Among maternally-reported childrearing strategies, there were five instances in which low levels of maternal affection were significantly related to higher levels of child behavioral inhibition, two instances in which low levels of encouragement of independence were significantly related to higher levels of child behavioral inhibition, two instances in which control by anxiety induction was significantly related to higher levels of child behavioral inhibition, and one instance in which maternal-reported control was significantly related to higher levels of child behavioral inhibition. Among paternally-reported childrearing strategies, there were three instances in which low levels of encouragement of independence significantly related to higher levels of behavioral inhibition in children, and one instance in which paternal-reported protectiveness significantly related to higher levels of behavioral inhibition in children.

Taken together, these instances of significant bivariate relationships among indicators of parents' choices of childrearing strategies and behavioral inhibition in children provide only marginal support for the hypothesis that parenting strategies significantly predict child inhibition. The lack of significant support for this hypothesis is disconcerting, and is inconsistent with previous research suggesting that parenting of a highly protective, controlling, and unaffectionate nature is related to social inhibition in children (e.g., Rubin et al., 1997). Once again, inspection of the ranges on the measures of childrearing strategies reveals that the range of reported and observed parenting practices was somewhat restricted in the present sample, which may have reduced the likelihood of significant relationships emerging.

Lastly, it was hypothesized that maternal shyness would be significantly and positively related to child behavioral inhibition. This hypothesis received no support in the present study. Maternal shyness at Time 1 was not significantly correlated with any of the five individual indicators of behavioral inhibition at Time 1, nor was it correlated with any of the three behavioral inhibition composite scores at Time 1. Likewise, maternal shyness at Time 1 was not significantly correlated with any of the five individual indicators of behavioral inhibition at Time 2. Maternal shyness was significantly correlated with one of the three behavioral inhibition composite scores at Time 2 (i.e., the Observational Composite score); however, this correlation was negative and hence was in the opposite direction of that predicted in hypotheses.

Taken together, the present study provided no support for the hypothesis that maternal shyness significantly predicts child inhibition. This lack of a significant relationship between shyness in parents and behavioral inhibition in children is troubling,

especially given that a positive correlation between shyness in parents and behavioral inhibition in their young children has been supported in the literature (e.g., Rickman & Davidson, 1994). However, despite limited support from bivariate regression analyses, shyness in parents emerged as a significant predictor of child behavioral inhibition in two multiple regression analyses.

Objective #4: Examining Maternal versus Paternal Attitudes toward Shyness

The fourth goal of the present study was to examine potential differences between mothers and fathers in terms of the relationships between their attitudes toward shyness and the presence of behavioral inhibition in children. It was hypothesized that the strength of the correlational relationship between paternal attitudes toward shyness and behavioral inhibition in children would not be as robust as the strength of this correlational relationship when maternal attitudes were considered. However, contrary to hypotheses, results revealed no significant differences between maternal and paternal attitudes as they relate to child behavioral inhibition. This finding suggests that although fathers spend less time with their children than do mothers, on average (qualified by income earning status; Renk et al., 2003), their attitudes toward shyness are no more or less correlated with shy, inhibited behavior in children than are maternal attitudes.

Objective #5: Examining the Longitudinal Convergence of Maternal Attitudes toward Shyness with Child Behavioral Inhibition

The fifth goal of the present study was to examine the degree to which the constructs of maternal attitudes toward shyness and behavioral inhibition in children converged, or became more compatible with one another over the span of two years in the present study. It was hypothesized that the strength of the correlational relationship

between maternal attitudes toward shyness and child behavioral inhibition would be higher at Time 2 than at Time 1. However, this hypothesis was not upheld in the present study, with results revealing no evidence of convergence for these two constructs.

Although not anticipated, these results are not particularly disquieting because the “Goodness of Fit” model does not necessarily require that maternal attitudes toward shyness be aligned with child behavioral inhibition. Rather, this model suggests that any incompatibility between parental attitudes and child status would be more likely to result in maladjustment. Further investigation of this outcome will be undertaken in future studies using the present dataset to ascertain whether “poor fit” does indeed have a negative impact upon developmental outcomes, such as the child’s self-esteem and general behavior over time.

Objective #6: Exploring Maternal Attitudes toward Shyness as a Moderator of the Relationship between Behavioral Inhibition at Time 1 and Time 2

The sixth goal of the present study was to examine whether children’s levels of behavioral inhibition changed from Time 1 to Time 2 to become more aligned with their mothers’ attitudes toward shyness. In other words, maternal attitudes toward shyness were investigated as a potential moderator of the relationship between behavioral inhibition at Time 1 and Time 2 (see Figure 1). Mixed support for this model was found in the present study. As hypothesized, the main effect of maternal attitudes toward shyness significantly predicted child behavioral inhibition at Time 2 in four of the eight (50%) regression analyses. In each of these cases, maternal attitudes toward shyness contributed to Time 2 behavioral inhibition scores above and beyond the contribution of Time 1 behavioral inhibition.

Moreover, behavioral inhibition at Time 1 and maternal attitudes toward shyness at Time 1 interacted to influence children's levels of behavioral inhibition at Time 2 for two indicators of behavioral inhibition; namely, the number of comments made by the child during the Behavioral Inhibition Assessment battery and scores on the Shyness scale of the Child Behavior Questionnaire. However, contrary to hypotheses, this interaction effect was not found for the remaining three indicators of behavioral inhibition, or for the composite scores. In these analyses, maternal attitudes toward shyness were dichotomized through a median split to create high and low levels of maternal attitudes. For the two significant interaction effects, results revealed that the high, more positive condition of maternal attitudes toward shyness significantly impacted the relationship between Time 1 and Time 2 behavioral inhibition in the child. Specifically, Time 2 behavioral inhibition tended to be higher at higher levels of Time 1 behavioral inhibition when parents held more positive attitudes toward shyness at Time 1.

Put simply, this finding suggests that if a child is shy and the child's mother has a positive attitude about shyness, then the child is more likely to become even more shy over a span of two years in early childhood. This novel and noteworthy finding provides longitudinal evidence that parental attitudes impact the continuity of child behavioral inhibition. Additionally, this finding emerged for both a parent-reported and an observational measure of behavioral inhibition, which provides important convergent evidence for this relationship. The observational data helps to rule out the alternative explanation that mothers who hold positive attitudes toward shyness are simply more willing to report that their child is shy.

Furthermore, the finding that the low, less positive condition of maternal attitudes toward shyness did *not* produce a significant relationship between Time 1 and Time 2 behavioral inhibition is in itself interesting. Typically, one would expect to find a significant, positive relationship between behavioral inhibition at one age (4, in this study) and behavioral inhibition at an older age (6, in this study) because of the high level of predicted continuity in this variable over time. Indeed, for the overall sample in the present study, Time 1 behavioral inhibition was correlated with Time 2 behavioral inhibition with coefficients of .45 (for the number of comments in the behavioral task) and .47 (for parent reports of shyness on the CBQ) in these moderational analyses. However, under the condition of low levels of positive maternal attitudes toward shyness, this relationship was attenuated. Hence, the notion that the presence of less positive (or, more negative) attitudes toward shyness on the part of the mother appears to disrupt the continuity of behavioral inhibition in her child over a span of two years is noteworthy.

Objective #7: Exploring Behavioral Inhibition as a Moderator of the Relationship between Maternal Attitudes toward Shyness at Time 1 and Time 2

The seventh goal of the present study was to examine whether maternal attitudes toward shyness changed from Time 1 to Time 2 to become more aligned with their child's level of behavioral inhibition. In other words, behavioral inhibition in the child at Time 1 was investigated as a potential moderator of the relationship between maternal attitudes toward shyness at Time 1 and Time 2 (see Figure 2). No support for this hypothesis was found in the present study, suggesting that this model does not accurately fit the data. Given that the converse of this model (i.e., the model depicted in Figure 1)

received some support in the present study, it appears that the former model better accounts for the data than the latter model.

The inclusion of both of these models of the longitudinal relationship between parental attitudes toward shyness and child behavioral inhibition aids in shedding some light upon the directionality of this relationship. It is important to note that due to the correlational nature of the present study, causal relations cannot be asserted. Yet, based on the results of the present study, it appears that parents who hold more positive attitudes toward shyness may tend to encourage such withdrawn, inhibited behavior in their children over time. On the other hand, rejection of the model presented in Figure 2 rules out the notion that parents develop positive attitudes toward shyness after observing their child demonstrating shy, inhibited behaviors.

This finding is noteworthy inasmuch as it lends support to the idea that parental attitudes play an important role in the development or maintenance of children's shy and socially withdrawn behavior. Although this finding does not indicate the precise mechanism through which parental attitudes become actualized in their children, it suggests that parental attitudes toward, and subsequent reactions to, children's displays of shy, inhibited behavior may interact with these behaviors to either increase or decrease their frequency over time. Hence, these results suggest that the ways in which parents think and feel about shyness may lead some parents to *encourage* and others to *discourage* behaviors typically associated with shyness in their children, which is an exciting and novel finding for the field of developmental psychopathology.

Objective #8: Exploring Childrearing Strategies as a Mediator of the Relationship between Maternal Attitudes toward Shyness at Time 1 and Behavioral Inhibition at Time

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The eighth goal of the present study was to examine the role of childrearing strategies in the anticipated relationship between maternal attitudes toward shyness at Time 1 and child behavioral inhibition at Time 2. In other words, parenting practices were investigated as a potential mediator of the relationship between maternal attitudes toward shyness at Time 1 and levels of behavioral inhibition in children at Time 2 (see Figure 3). No support for this hypothesis was found in the present study, however. Prospects for finding support for this model were discouraging from the outset, given that the prerequisite conditions for mediation were met for only two sets of indicators. Then, when entered into hierarchical regression analyses, a significant main effect of maternal attitudes toward shyness on child behavioral inhibition emerged in both instances. However, childrearing strategies did not emerge as a significant predictor of child behavioral inhibition above and beyond the contribution of parent attitudes in either instance, hence failing to provide support for a mediational model.

The lack of support for this hypothesis is surprising and somewhat troublesome. As evidenced both in the significant main effects of maternal attitudes on child inhibition that emerged in this set of analyses, as well as in the results of previous analyses in the present study, it appears that parental attitudes toward shyness have a significant impact upon child behavioral inhibition. However, as previously mentioned, this finding does not indicate the precise mechanism through which parental attitudes impact the development or maintenance of behavioral inhibition in children. In an attempt to

address this issue, the present study hypothesized that parental attitudes might become instantiated in parental behavior in the form of parents' choices of childrearing strategies. However, the present results do not uphold this hypothesis.

Given several aforementioned limitations of the present study, it may be premature to discard altogether the idea that the attitudes held by parents about shyness are likely to influence their choices of parenting strategies and ultimately their child's level of behavioral inhibition. On the other hand, it may be the case that childrearing strategies are not the best or the only mechanism through which parental attitudes act upon child development. Parents may implicitly encourage shyness and inhibition in children through a variety of processes that do not map precisely onto childrearing strategies. Such processes may include verbal and nonverbal cues during the course of everyday interactions with their child.

Objective #9: Exploring Maternal Attitudes toward Shyness as a Moderator of the Relationship between Maternal Shyness and Child Behavioral Inhibition

The ninth objective of the present study was to examine the role of maternal attitudes toward shyness in the relationship between maternal shyness and behavioral inhibition in children. More specifically, maternal attitudes toward shyness were investigated as a potential moderator of the relationship between shyness in mothers and behavioral inhibition in their children (see Figure 4). Mixed support for this model was found in the present study. Maternal shyness at Time 1 significantly predicted child behavioral inhibition at Time 2 in two of nine (22%) regression analyses, while there was a main effect of maternal attitudes toward shyness on child behavioral inhibition in only one of the nine (11%) regression analyses.

As hypothesized, maternal shyness at Time 1 and maternal attitudes toward shyness at Time 1 interacted to influence children's levels of behavioral inhibition at Time 2 for two indicators of behavioral inhibition; namely, the number of smiles made by the child during the Behavioral Inhibition Assessment battery and scores on the Behavioural Inhibition Questionnaire. However, contrary to hypotheses, this interaction effect was not found for the remaining four indicators of behavioral inhibition, or for the composite scores. For the two significant interaction effects, results revealed that the low, less positive condition of maternal attitudes toward shyness significantly impacted the relationship between maternal shyness and child behavioral inhibition. Specifically, Time 2 behavioral inhibition tended to be lower at higher levels of Time 1 maternal shyness when parents held fewer positive attitudes toward shyness at Time 1.

Put simply, this finding suggests that if a mother is shy but she holds negative attitudes about shyness, her child is less likely to display shy, inhibited behaviors. This is a novel and noteworthy finding, and provides evidence that parental attitudes can impact the transmission of shyness from parent to child. Additionally, this finding emerged for both a parent-reported and an observational measure of behavioral inhibition, which provides important convergent evidence for this relationship. Once again, the observational data helps to rule out the alternative explanation that mothers who hold positive attitudes toward shyness are simply more willing to report that their child is shy.

Objective #10: Exploring Time 1 Predictors of Time 2 Behavioral Inhibition

The tenth and final goal of the present study was to investigate simultaneously several longitudinal predictors of behavioral inhibition in children. Specifically, the contributions of maternal attitudes toward shyness, childrearing strategies, and maternal

shyness at Time 1 were examined as predictors of child behavioral inhibition at Time 2, while controlling for the effect of Time 1 child inhibition (see Figure 5). Results revealed that none of the Time 1 variables contributed to Time 2 behavioral inhibition scores above and beyond the significant contribution of Time 1 behavioral inhibition. Nonetheless, they made significant contributions to the amount of variance captured by the overall model. As a whole, the overall model accounted for an impressive amount (i.e., approximately 50%) of the variance associated with behavioral inhibition in children at Time 2.

General Discussion

In summary, results of the present study revealed several intriguing and novel findings. First, nearly all measures of behavioral inhibition, childrearing strategies, and parental attitudes toward shyness showed high rates of continuity over a span of two years. Ratings of these constructs provided by mothers, fathers, and, in some cases, teachers converged in nearly all cases. However, there was an absence of significant convergence among questionnaires and observation-based measurements. On a bivariate basis, results revealed that parents who hold more positive, accepting attitudes toward having a shy child are more likely to report that their child is withdrawn and inhibited. Moreover, parental attitudes toward shyness were found to be significantly related to certain types of parenting strategies. However, parents' choices of childrearing strategies were not found to be related to behavioral inhibition in children in the present study. Interestingly, results revealed no significant differences between maternal and paternal attitudes as they relate to child behavioral inhibition.

Based upon a series of multiple regression analyses, maternal attitudes toward shyness emerged as a moderator of the relationship between behavioral inhibition at Time 1 and Time 2. However, childrearing strategies did not mediate the relationship between maternal attitudes toward shyness and behavioral inhibition in children. With regard to the relationship between maternal shyness and child behavioral inhibition, maternal attitudes toward shyness emerged as a significant moderator. Lastly, a combination of the primary study variables (i.e., child behavioral inhibition, maternal attitudes toward shyness, childrearing strategies, and maternal shyness) at Time 1 were found to predict approximately one half of the variance in child behavioral inhibition at Time 2.

Several limitations of the present study must be considered when interpreting results and extrapolating conclusions. First, the sheer number of analyses conducted on the data may have inflated the experiment-wide error, as previously mentioned. Therefore, the results of the present study should be considered preliminary and exploratory. Second, given the correlational nature of the present study, causal relations among the variables of interest cannot be asserted. Third, while the sample size of 40 in the present study appears to have been sufficient in most cases, it obviously represents a small and limited sample. Participants were also primarily Caucasian and of high socioeconomic status, which may also limit the generalizability of results. Additionally, the present study did not utilize clinical samples of either parents or children. Hence, the moderate and somewhat restricted nature of the scores obtained by many participants in this sample may not comprise an ideal sample for use in investigating the hypotheses posed in the current study. Given the possibility that different findings may be obtained on different samples, future investigation might be undertaken using clinical populations.

On a somewhat related note, whereas the most prominent researchers in the area of behavioral inhibition have typically included only extreme groups in their studies (e.g., Kagan, 1993; Fox, 2001), the present study considered the full range of behavioral inhibition by including participants with intermediate levels of behavioral inhibition. This decision was both practical and conceptual in nature. Given the present study's goal of examining longitudinal change in behavioral inhibition over time, consideration of the entire continuum of inhibited behavior was deemed more appropriate since it is unlikely that children would move from one extreme to the other over a span of two years. Indeed, although it is not conventional, the use of an intermediate group has been found to be useful in previous studies as well (e.g., Pfeifer, Goldsmith, Davidson, & Rickman, 2002).

The results of the present study have several implications for future research. First, future research might further investigate the impact of paternal attitudes toward shyness. Given the small number of fathers who participated in the present study, the effect of paternal attitudes could only be examined tentatively. Although the inclusion of fathers in research examining the impact of parents may be important (e.g., Phares, Lopez, Fields, Kamboukos, & Duhig, 2005), it can be argued to be particularly important in the present study. Given the presence of gender differences in the prevalence of shyness (e.g., Zupancic & Kavcic, 2005), as well as the presence of societal norms which promote gender role differences in the degree to which displays of shy behavior are acceptable (e.g., Bruch, 2002), the attitudes that fathers hold toward having a shy child appear to be especially relevant to the questions posed in the present study.

Second, the relationship between parental attitudes toward shyness and parent perceptions of their child's shyness might be further explored. These two constructs appear to be related but distinct, and may both contribute to the continuity or discontinuity of child behavioral inhibition over time. Maternal perceptions of child shyness, for example, were found to precede laboratory assessment of behavioral inhibition (i.e., via EEG and observational data) in a longitudinal study of young children by Fox, Henderson, Rubin, Calkins, and Schmidt (2001). Similar to the results of the present study, maternal perceptions of their child's shyness were related to the direction of change in the children's behavior over time. Hence, the distinction between these two constructs and their unique contributions to change in behavioral inhibition status in children over time might be further examined in future research.

Future research might also examine the impact of parental attitudes on other child characteristics (besides social inhibition), as similar significant relationships might emerge in relation to a variety of psychological constructs. Additionally, although the correlational and exploratory nature of the present study has shed some light on several questions surrounding the impact of parental attitudes toward shyness on child development, experimental studies might be undertaken in the future. For example, parental attitudes toward shyness might be manipulated to examine their effects on the development and maintenance of child inhibition. Lastly, as these results have not previously been found in the literature, replication will be necessary.

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Table 1. *Descriptive Statistics*

Measure	Mean	SD	Observed Range	Possible Range
PASS				18 – 90
T1 Mom	53.18	10.08	18 – 73	
T2 Mom	52.92	12.84	18 – 81	
T2 Dad	50.55	10.29	23 – 68	
BIA-SC				- ∞ – 0
T1	-24.13	18.37	-91 – 0	
T2	-29.68	22.56	-92 – 0	
BIA-SM				- ∞ – 0
T1	-18.04	12.17	-50 – 0	
T2	-31.83	18.50	-72 – 0	
BIA-GR				1.00 – 4.00
T1	2.29	0.94	1.00 – 4.00	
T2	2.18	1.17	1.00 – 4.00	
CBQ-S				1.00 – 7.00
T1 Mom	3.53	1.14	1.46 – 6.00	
T2 Mom	3.39	1.28	1.00 – 5.85	
T2 Dad	3.55	0.87	1.62 – 5.23	

Table 1 (continued). *Descriptive Statistics*

Measure	Mean	SD	Observed Range	Possible Range
DECA-W				28 – 72
T1 Mom	52.04	9.17	34 – 71	
T2 Mom	52.95	8.98	36 – 72	
T2 Dad	55.00	9.72	34 – 68	
T2 Teacher	46.16	8.72	31 – 62	
BIQ				30 – 210
T2 Mom	85.11	29.82	31 – 147	
T2 Dad	91.00	23.47	46 – 131	
T2 Teacher	82.44	32.22	35 – 143	
CRPR-P				1.00 – 5.00
T1 Mom	2.40	0.63	1.00 – 3.50	
T2 Mom	2.31	0.44	1.25 – 3.00	
T2 Dad	2.25	0.62	1.00 – 3.50	
CRPR-C				1.00 – 5.00
T1 Mom	2.44	0.52	1.22 – 3.78	
T2 Mom	2.44	0.54	1.56 – 4.00	
T2 Dad	2.55	0.66	1.00 – 3.56	

Table 1 (continued). *Descriptive Statistics*

Measure	Mean	SD	Observed Range	Possible Range
CRPR-A				1.00 – 5.00
T1 Mom	1.41	0.25	1.00 – 2.00	
T2 Mom	1.46	0.26	1.00 – 2.33	
T2 Dad	1.64	0.40	1.00 – 2.67	
CRPR-I				1.00 – 5.00
T1 Mom	2.25	0.40	1.14 – 3.14	
T2 Mom	2.10	0.32	1.43 – 2.71	
T2 Dad	2.36	0.53	1.00 – 3.29	
CRPR-AI				1.00 – 5.00
T1 Mom	2.77	0.86	1.00 – 4.00	
T2 Mom	3.01	0.94	1.00 – 5.00	
T2 Dad	3.40	0.99	1.00 – 5.00	
MWCS-PO	2.97	0.09	2.60 – 3.00	1.00 – 3.00
MWCS-NA	1.02	0.05	1.00 – 1.20	1.00 – 3.00
MWCS-NC	1.11	0.22	1.00 – 2.00	1.00 – 3.00
SIAS	16.58	10.72	4 – 55	0 – 76

Note: SD=standard deviation; T1=Time 1; T2=Time 2; PASS=Perceived Advantages of Shyness Survey; BIA-SC=Behavioral Inhibition Assessment Battery-Spontaneous Comments; BIA-SM=Behavioral Inhibition Assessment Battery-Smiles; BIA-GR= Behavioral Inhibition Assessment Battery-Global Rating; CBQ-S=Child Behavior Questionnaire-Shyness scale; DECA-W=Devereux Early Childhood Assessment-Withdrawal scale; BIQ=Behavioural Inhibition Questionnaire; CRPR-P=Childrearing Practices Report-Protection scale; CRPR-C=Childrearing Practices Report-Control scale; CRPR-A=Childrearing Practices Report-Affection scale; CRPR-I=Childrearing Practices Report-Independence scale; CRPR-AI=Childrearing Practices Report-Anxiety Induction scale; MWCS-PO=Maternal Warmth and Control Scale-Proximity and Orientation; MWCS-NA=Maternal Warmth and Control Scale-Negative Affect; MWCS-NC=Maternal Warmth and Control Scale-Negative Control; SIAS=Social Interaction Anxiety Scale.

Table 2. *Anxiety Diagnoses for the Sample*

Diagnosis	Number of Children	Percent of Sample
Specific Fear	4	10%
Anxiety about Novelty	4	10%
Stranger Anxiety	0	0%
Social Phobia	1	2.5%
General Anxiety	2	5%
Separation Anxiety	1	2.5%
Panic	0	0%
Other	1	2.5%
No Diagnosis	27	67.5%
Total	40	100%

Note: Disorders based upon the Diagnostic Interview for Infants and Preschoolers for Anxiety (DIIPA; Warren & Dadson, 2001).

Table 3. *Correlations among Measures at Time 1 and Time 2*

	1	2	3	4	5	6	7	8	9	10	11
1. PASS	.700**										
2. BIA-SC		.471**									
3. BIA-SM			.379*								
4. BIA-GR				.409**							
5. CBQ-S					.451**						
6. DECA-W						.175					
7. CRPR-P							.495**				
8. CRPR-C								.748**			
9. CRPR-A									.493**		
10. CRPR-I										.312	
11. CRPR-AI											.465**

Note: ** significant at $\alpha = .01$; * significant at $\alpha = .05$; PASS=Perceived Advantages of Shyness Survey; BIA-SC=Behavioral Inhibition Assessment Battery-Spontaneous Comments; BIA-SM=Behavioral Inhibition Assessment Battery-Smiles; BIA-GR= Behavioral Inhibition Assessment Battery-Global Rating; CBQ-S=Child Behavior Questionnaire-Shyness scale; DECA-W=Devereux Early Childhood Assessment-Withdrawal scale; CRPR-P=Childrearing Practices Report-Protection scale; CRPR-C=Childrearing Practices Report-Control scale; CRPR-A=Childrearing Practices Report-Affection scale; CRPR-I=Childrearing Practices Report-Independence scale; CRPR-AI=Childrearing Practices Report-Anxiety Induction scale; all measures based on maternal report.

Table 4. *Correlations among Maternal, Paternal, and Teacher Reports on Study Questionnaires at Time 2*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Maternal Report:																				
1. PASS										.57**										
2. CBQ-S										.72**										
3. DECA-W										.54*										
4. BIQ										.85**										
5. CRPR-P										.29										
6. CRPR-C										.51*										
7. CRPR-A										.25										
8. CRPR-I										.50*										
9. CRPR-AI										.48*										
Paternal Report:																				
10. PASS																				
11. CBQ-S																				
12. DECA-W																				
13. BIQ																				
14. CRPR-P																				
15. CRPR-C																				
16. CRPR-A																				
17. CRPR-I																				
18. CRPR-AI																				
Teacher Report:																				
19. DECA-W																				
20. BIQ																				

Table 4 (continued). *Correlations among Maternal, Paternal, and Teacher Reports on Study Questionnaires at Time 2*

Note: ** significant at $\alpha = .01$; * significant at $\alpha = .05$; PASS=Perceived Advantages of Shyness Survey; CBQ-S=Child Behavior Questionnaire-Shyness scale; DECA-W=Devereux Early Childhood Assessment-Withdrawal scale; BIQ=Behavioural Inhibition Questionnaire; CRPR-P=Childrearing Practices Report-Protection scale; CRPR-C=Childrearing Practices Report-Control scale; CRPR-A=Childrearing Practices Report-Affection scale; CRPR-I=Childrearing Practices Report-Independence scale; CRPR-AI=Childrearing Practices Report-Anxiety Induction scale.

Table 5. *Correlations among Indicators of Behavioral Inhibition*

	1	2	3	4	5	6	7	8	9	10	11
1. T1 BIA-SC	--										
2. T1 BIA-SM	.286*	--									
3. T1 BIA-GR	.774**	.467**	--								
4. T1 CBQ-S	.145	.117	.207	--							
5. T1 DECA-W	-.249	.006	-.162	.224	--						
6. T2 BIA-SC	.471**	.266	.336*	.011	-.263	--					
7. T2 BIA-SM	.178	.379*	.079	.001	.013	.430**	--				
8. T2 BIA-GR	.423**	.118	.409**	-.044	-.388*	.810**	.362*	--			
9. T2 CBQ-S	.304	.166	.383*	.451**	-.205	.296	.156	.279	--		
10. T2 DECA-W	.149	.295	.176	.081	.175	-.083	.232	-.190	.131	--	
11. T2 BIQ	.308	.160	.235	.408*	.014	.268	.284	.134	.857**	.318	--

Note: ** significant at $\alpha = .01$; * significant at $\alpha = .05$; T1=Time 1; T2=Time 2; BIA-SC=Behavioral Inhibition Assessment Battery-Spontaneous Comments; BIA-SM=Behavioral Inhibition Assessment Battery-Smiles; BIA-GR= Behavioral Inhibition Assessment Battery-Global Rating; CBQ-S=Child Behavior Questionnaire-Shyness scale; DECA-W=Devereux Early Childhood Assessment-Withdrawal scale; BIQ=Behavioural Inhibition Questionnaire; all questionnaires based on maternal report.

Table 6. *Correlations among Indicators of Childrearing Strategies*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. T1 CRPR-P	--												
2. T1 CRPR-C	.309*	--											
3. T1 CRPR-A	.012	.273	--										
4. T1 CRPR-I	.162	-.104	-.025	--									
5. T1 CRPR-AI	.218	.554**	.203	.143	--								
6. T2 CRPR-P	.495**	.376*	.111	.232	.289	--							
7. T2 CRPR-C	.259	.748**	.043	-.232	.387*	.326*	--						
8. T2 CRPR-A	.334*	.270	.493**	-.014	.406*	.302	.091	--					
9. T2 CRPR-I	-.089	-.234	.128	.330*	.062	-.019	-.398*	.173	--				
10. T2 CRPR-AI	.180	.510**	.214	-.016	.465**	.424**	.610**	.321*	-.248	--			
11. T2 MWCS-PO	.037	-.007	-.030	.025	.027	.097	.166	.033	-.075	.043	--		
12. T2 MWCS-NA	-.199	.059	-.006	-.095	-.108	.091	.256	-.280	-.364*	.135	.109	--	
13. T2 MWCS-NC	.217	-.012	-.190	-.147	-.081	-.043	-.083	.057	-.130	-.243	.137	-.221	--

Note: ** significant at $\alpha = .01$; * significant at $\alpha = .05$; T1=Time 1; T2=Time 2; CRPR-P=Childrearing Practices Report-Protection scale; CRPR-C=Childrearing Practices Report-Control scale; CRPR-A=Childrearing Practices Report-Affection scale; CRPR-I=Childrearing Practices Report-Independence scale; CRPR-AI=Childrearing Practices Report-Anxiety Induction scale; MWCS-PO=Maternal Warmth and Control Scale-Proximity and Orientation; MWCS-NA=Maternal Warmth and Control Scale-Negative Affect; MWCS-NC=Maternal Warmth and Control Scale-Negative Control; all questionnaires based on maternal report.

Table 7. *Correlations between Parental Attitudes toward Shyness and Indicators of Behavioral Inhibition*

	Parental Attitudes Toward Shyness		
	T1 Maternal Report	T2 Maternal Report	T2 Paternal Report
T1 BIA-SC	.008	.083	.048
T1 BIA-SM	-.023	-.132	.375
T1 BIA-GR	-.014	.108	.158
T1 CBQ-S	.177	.028	.490*
T1 DECA-W	.291*	.505**	.408
T2 BIA-SC	.137	-.002	-.059
T2 BIA-SM	-.125	-.138	-.054
T2 BIA-GR	-.063	-.044	-.149
T2 CBQ-S	.132	-.017	.268
T2 DECA-W	.131	-.020	.312
T2 BIQ	.266	.085	.287
T1 BI COMP-MR	.292*	.274	.511*
T1 BI COMP-OBS	-.012	-.004	.214
T1 BI COMP-COMB	.150	.155	.481*
T2 BI COMP-MR	.341*	.029	.379
T2 BI COMP-OBS	-.030	-.068	-.111
T2 BI COMP-COMB	.319	.083	.111

Note: ** significant at $\alpha = .01$; * significant at $\alpha = .05$; T1=Time 1; T2=Time 2; BIA-SC=Behavioral Inhibition Assessment Battery-Spontaneous Comments; BIA-SM=Behavioral Inhibition Assessment Battery-Smiles; BIA-GR= Behavioral Inhibition Assessment Battery-Global Rating; CBQ-S=Child Behavior Questionnaire-Shyness scale; DECA-W=Devereux Early Childhood Assessment-Withdrawal scale; BIQ=Behavioural Inhibition Questionnaire; BI=Behavioral Inhibition; COMP-MR=Maternal Report Composite; COMP-OBS=Observational Composite; COMP-COMB=Combined Composite; all behavioral inhibition questionnaires based on maternal report.

Table 8. *Correlations between Parental Attitudes toward Shyness and Indicators of Childrearing Strategies*

	Parental Attitudes Toward Shyness		
	T1 Maternal Report	T2 Maternal Report	T2 Paternal Report
T1 Mom CRPR-P	.297*	.444**	-.166
T1 Mom CRPR-C	.390**	.562**	.139
T1 Mom CRPR-A	.240	.169	.080
T1 Mom CRPR-I	.355*	.051	-.076
T1 Mom CRPR-AI	.290*	.520**	.223
T2 Mom CRPR-P	.319*	.397*	-.052
T2 Mom CRPR-C	.221	.370*	.143
T2 Mom CRPR-A	.424**	.284	.038
T2 Mom CRPR-I	.218	-.047	.093
T2 Mom CRPR-AI	.463**	.401*	.101
T2 Dad CRPR-P	.089	-.156	-.298
T2 Dad CRPR-C	-.173	.134	-.027
T2 Dad CRPR-A	.100	.084	.288
T2 Dad CRPR-I	.244	-.082	.101
T2 Dad CRPR-AI	.084	.001	-.069
T2 MWCS-PO	-.153	-.014	-.268
T2 MWCS-NA	-.132	-.163	-.290
T2 MWCS-NC	-.239	-.232	-.209
T1 CR COMP-MR	.541**	.599**	.073
T2 CR COMP-MR	.565**	.549**	1.09
T2 CR COMP-OBS	-.322*	-.234	-.442*
T2 CR COMP-COMB	.394*	.386*	-.148

Note: ** significant at $\alpha = .01$; * significant at $\alpha = .05$; T1=Time 1; T2=Time 2; CRPR-P=Childrearing Practices Report-Protection scale; CRPR-C=Childrearing Practices Report-Control scale; CRPR-A=Childrearing Practices Report-Affection scale; CRPR-I=Childrearing Practices Report-Independence scale; CRPR-AI=Childrearing Practices Report-Anxiety Induction scale; MWCS-PO=Maternal Warmth and Control Scale-Proximity and Orientation; MWCS-NA=Maternal Warmth and Control Scale-Negative Affect; MWCS-NC=Maternal Warmth and Control Scale-Negative Control; CR=Childrearing; COMP-MR=Maternal Report Composite; COMP-OBS=Observational Composite; COMP-COMB=Combined Composite.

Table 9. *Correlations between Indicators of Childrearing Strategies and Indicators of Behavioral Inhibition*

	Indicators of Behavioral Inhibition						
	T1 BIA-SC	T1 BIA-SM	T1 BIA-GR	T1 CBQ-S	T1 DECA-W	T2 BIA-SC	T2 BIA-SM
T1 CRPR-P	-.067	-.143	-.041	-.180	.035	.097	-.048
T1 CRPR-C	.102	.101	.129	-.191	.238	.260	.109
T1 CRPR-A	.167	.132	.123	.168	.047	.089	.144
T1 CRPR-I	-.002	.164	-.045	.124	-.094	.076	-.193
T1 CRPR-AI	-.011	-.107	-.053	-.134	.304*	.323	.068
T2 Mom CRPR-P	-.122	-.024	.038	-.149	.096	.065	-.116
T2 Mom CRPR-C	.032	.029	-.113	-.364*	.102	.079	.034
T2 Mom CRPR-A	.124	-.287	-.073	.072	.264	-.058	-.040
T2 Mom CRPR-I	-.307	-.084	-.193	.181	.226	-.281	-.375*
T2 Mom CRPR-AI	.051	-.039	-.136	-.208	.131	.189	.166
T2 Dad CRPR-P	-.178	-.458*	-.401	-.094	-.135	-.003	.029
T2 Dad CRPR-C	.125	-.053	.149	-.079	.111	.150	.371
T2 Dad CRPR-A	.081	-.108	.019	-.215	-.220	.142	.150
T2 Dad CRPR-I	-.488*	-.152	-.476*	-.127	-.088	-.341	-.110
T2 Dad CRPR-AI	.340	-.140	.187	.078	.117	.227	.172
T2 MWCS-PO	.192	-.111	.033	-.226	-.015	.110	-.253
T2 MWCS-NA	-.218	.114	-.242	-.118	.214	-.128	.102
T2 MWCS-NC	.031	-.147	.093	-.180	-.302	-.035	-.063
T1 CR COMP-MR	.065	.050	.039	-.073	.181	.286	.029
T2 CR COMP-MR	-.078	-.141	-.128	-.141	.276	-.018	-.111
T2 CR COMP-OBS	-.001	-.082	-.066	-.300	-.075	-.030	-.123
T2 CR COMP-COMB	-.067	-.172	-.104	-.265	.235	-.057	-.178

Table 9 (continued). *Correlations between Indicators of Childrearing Strategies and Indicators of Behavioral Inhibition*

	Indicators of Behavioral Inhibition					
	T2 BIA-GR	T2 CBQ-S	T2 DECA-W	T2 BIQ	T1 COMP-MR	T1 COMP-OBS
T1 CRPR-P	.074	.028	-.253	.124	-.065	-.092
T1 CRPR-C	.106	-.008	.171	.108	.052	.136
T1 CRPR-A	-.133	.179	.364*	.538**	.118	.165
T1 CRPR-I	-.092	.124	.092	.212	-.002	.032
T1 CRPR-AI	.213	-.089	.038	.017	.118	-.068
T2 Mom CRPR-P	-.011	.096	.041	.199	-.086	-.059
T2 Mom CRPR-C	.028	-.239	-.057	-.015	-.103	.006
T2 Mom CRPR-A	-.119	.177	.239	.372*	.197	-.096
T2 Mom CRPR-I	-.372*	-.090	.079	-.175	.209	-.238
T2 Mom CRPR-AI	.069	-.003	.054	.260	.005	-.026
T2 Dad CRPR-P	.243	.012	.024	.063	-.132	-.420
T2 Dad CRPR-C	.206	-.155	-.037	.033	.024	.108
T2 Dad CRPR-A	.150	.383	-.145	.100	-.249	.009
T2 Dad CRPR-I	-.110	.223	-.042	.014	-.122	-.480*
T2 Dad CRPR-AI	.121	-.006	.151	.020	.113	.186
T2 MWCS-PO	.105	-.202	-.266	-.179	-.234	.095
T2 MWCS-NA	-.244	-.265	-.177	-.081	.114	-.159
T2 MWCS-NC	.192	.058	.075	-.062	-.321	.026
T1 CR COMP-MR	.056	.081	.132	.345*	.076	.059
T2 CR COMP-MR	-.144	.014	.132	.223	.083	-.144
T2 CR COMP-OBS	.030	-.234	-.215	-.185	-.255	-.024
T2 CR COMP-COMB	-.121	-.084	-.009	.095	-.050	-.138

Table 9 (continued). *Correlations between Indicators of Childrearing Strategies and Indicators of Behavioral Inhibition*

	Indicators of Behavioral Inhibition			
	T1 COMP-COMB	T2 COMP-MR	T2 COMP-OBS	T2 COMP-COMB
T1 CRPR-P	-.112	-.162	.055	-.099
T1 CRPR-C	.132	.192	.173	.350*
T1 CRPR-A	.211	.431**	.001	.308
T1 CRPR-I	.018	.139	-.086	.044
T1 CRPR-AI	.024	.025	.237	.260
T2 Mom CRPR-P	-.159	.090	-.021	.069
T2 Mom CRPR-C	-.114	-.097	.052	.041
T2 Mom CRPR-A	.060	.362*	-.097	.207
T2 Mom CRPR-I	-.030	.056	-.413**	-.232
T2 Mom CRPR-AI	-.028	.158	.152	.274
T2 Dad CRPR-P	-.381	.024	.133	.117
T2 Dad CRPR-C	.091	-.125	.264	.143
T2 Dad CRPR-A	-.155	.151	.107	.163
T2 Dad CRPR-I	-.415	.117	-.263	-.146
T2 Dad CRPR-AI	.204	.096	.182	.193
T2 MWCS-PO	-.158	-.290	.011	-.176
T2 MWCS-NA	-.079	-.278	-.141	-.276
T2 MWCS-NC	-.181	.045	.073	.003
T1 CR COMP-MR	.094	.208	.129	.286
T2 CR COMP-MR	-.084	.212	-.120	.131
T2 CR COMP-OBS	-.250	-.306	-.033	-.263
T2 CR COMP-COMB	-.212	.007	-.141	-.037

Table 9 (continued). *Correlations between Indicators of Childrearing Strategies and Indicators of Behavioral Inhibition*

Note: ** significant at $\alpha = .01$; * significant at $\alpha = .05$; T1=Time 1; T2=Time 2; CRPR-P=Childrearing Practices Report-Protection scale; CRPR-C=Childrearing Practices Report-Control scale; CRPR-A=Childrearing Practices Report-Affection scale; CRPR-I=Childrearing Practices Report-Independence scale; CRPR-AI=Childrearing Practices Report-Anxiety Induction scale; MWCS-PO=Maternal Warmth and Control Scale-Proximity and Orientation; MWCS-NA=Maternal Warmth and Control Scale-Negative Affect; MWCS-NC=Maternal Warmth and Control Scale-Negative Control; BIA-SC=Behavioral Inhibition Assessment Battery-Spontaneous Comments; BIA-SM=Behavioral Inhibition Assessment Battery-Smiles; BIA-GR= Behavioral Inhibition Assessment Battery-Global Rating; CBQ-S=Child Behavior Questionnaire-Shyness scale; DECA-W=Devereux Early Childhood Assessment-Withdrawal scale; BIQ=Behavioural Inhibition Questionnaire; CR=Childrearing; BI=Behavioral Inhibition; COMP-MR=Maternal Report Composite; COMP-OBS=Observational Composite; COMP-COMB=Combined Composite.

Table 10. *Correlations between Maternal Shyness and Indicators of Behavioral Inhibition*

	T1 SIAS
T1 BIA-SC	-.166
T1 BIA-SM	.066
T1 BIA-GR	-.051
T1 CBQ-S	.136
T1 DECA-W	.233
T2 BIA-SC	-.266
T2 BIA-SM	-.232
T2 BIA-GR	-.309
T2 CBQ-S	-.207
T2 DECA-W	.156
T2 BIQ	-.170
T1 BI COMP-MR	.214
T1 BI COMP-OBS	-.059
T1 BI COMP-COMB	.110
T2 BI COMP-MR	-.002
T2 BI COMP-OBS	-.323*
T2 BI COMP-COMB	-.179

Note: ** significant at $\alpha = .01$; * significant at $\alpha = .05$; T1=Time 1; T2=Time 2; BIA-SC=Behavioral Inhibition Assessment Battery-Spontaneous Comments; BIA-SM=Behavioral Inhibition Assessment Battery-Smiles; BIA-GR= Behavioral Inhibition Assessment Battery-Global Rating; CBQ-S=Child Behavior Questionnaire-Shyness scale; DECA-W=Devereux Early Childhood Assessment-Withdrawal scale; BIQ=Behavioural Inhibition Questionnaire; BI=Behavioral Inhibition; COMP-MR=Maternal Report Composite; COMP-OBS=Observational Composite; COMP-COMB=Combined Composite; SIAS=Social Interaction Anxiety Scale; all questionnaires based on maternal report.

Table 11. *Regression Analyses for Figure 1*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
<i>BIA-Spontaneous Comments</i>					
Age	4.722	7.369	.101	.641	.526
Gender	9.777	6.505	.217	1.503	.143
T1 BIA-SC	-2.466	1.346	-2.033	-1.832	.076
T1 PASS	1.456	.592	.688	2.459	.020
T1 BIA-SC x PASS	.060	.026	2.603	2.286	.029
<i>BIA-Smiles</i>					
Age	-8.434	6.394	-.224	-1.319	.197
Gender	-9.996	6.455	-.274	-1.549	.131
T1 BIA-SM	1.238	1.112	.842	1.113	.274
T1 PASS	-.459	.544	-.269	-.844	.405
T1 BIA-SM x PASS	-.016	.021	-.611	-.735	.468
<i>BIA-Global Rating</i>					
Age	-.043	.440	-.018	-.098	.923
Gender	.130	.397	.055	.328	.745
T1 BIA-GR	-.573	1.607	-.432	-.356	.724
T1 PASS	-.053	.069	-.476	-.760	.453
T1 BIA-GR x PASS	.020	.028	.951	.704	.487

Table 11 (continued). *Regression Analyses for Figure 1*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
<i>CBQ-Shyness</i>					
Age	-.775	.361	-.306	-2.15	.040
Gender	.473	.333	.191	1.423	.165
T1 CBQ-S	-2.099	.740	-2.043	-2.838	.008
T1 PASS	-.130	.048	-1.130	-2.709	.011
T1 CBQ-S x PASS	.046	.013	2.951	3.381	.002
<i>DECA-Withdrawal</i>					
Age	-3.050	3.248	-.181	-.939	.355
Gender	-2.077	3.259	-.128	-.637	.529
T1 DECA-W	-.011	1.542	-.011	.007	.994
T1 PASS	-.053	1.502	-.061	-.035	.972
T1 DECA-W x PASS	.003	.030	.238	.088	.930
<i>Maternal Report Composite for Behavioral Inhibition</i>					
Age	-.990	.494	-.345	-2.004	.054
Gender	.079	.469	.029	.168	.868
T1 BI COMP-MR	.588	1.130	.631	.520	.607
T1 PASS	.057	.026	.382	2.203	.036
T1 BI COMP-MR x PASS	-.007	.021	-.427	-.351	.728

Table 11 (continued). *Regression Analyses for Figure 1*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
<i>Observational Composite for Behavioral Inhibition</i>					
Age	-.098	.673	-.025	-.145	.886
Gender	.263	.608	.070	.432	.669
T1 BI COMP-OBS	1.747	1.439	1.698	1.214	.234
T1 PASS	.002	.029	.010	.060	.952
T1 BI COMP-OBS x PASS	-.023	.026	-1.255	-.899	.375
<i>Combined Composite for Behavioral Inhibition</i>					
Age	-1.108	.795	-.217	-1.394	.174
Gender	.742	.732	.151	1.014	.319
T1 BI COMP-COMB	-.467	1.250	-.461	-.373	.712
T1 PASS	.084	.040	.317	2.095	.045
T1 COMP-COMB x PASS	.018	.023	.959	.776	.444

Note: Outcome variable is corresponding Time 2 behavioral inhibition score; T1=Time 1; PASS=Perceived Advantages of Shyness Survey; BIA-SC=Behavioral Inhibition Assessment Battery-Spontaneous Comments; BIA-SM=Behavioral Inhibition Assessment Battery-Smiles; BIA-GR= Behavioral Inhibition Assessment Battery-Global Rating; CBQ-S=Child Behavior Questionnaire-Shyness scale; DECA-W=Devereux Early Childhood Assessment-Withdrawal scale; BI=Behavioral Inhibition; COMP-MR=Maternal Report Composite; COMP-OBS=Observational Composite; COMP-COMB=Combined Composite.

Table 12. *Regression Analyses for Figure 2*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
<i>BIA-Spontaneous Comments</i>					
Age	-5.138	3.544	-.203	-1.450	.157
Gender	-3.476	3.162	-.140	-1.099	.280
T1 PASS	.926	.284	.803	3.256	.003
T1 BIA-SC	-.156	.646	-.235	-.242	.811
T1 PASS x BIA-SC	.003	.013	.268	.268	.790
<i>BIA-Smiles</i>					
Age	-5.034	3.348	-.198	-1.504	.143
Gender	-3.924	3.430	-.158	-1.144	.261
T1 PASS	.982	.285	.852	3.442	.002
T1 BIA-SM	-.428	.583	-.431	-.734	.469
T1 PASS x BIA-SM	.006	.011	.359	.556	.582
<i>BIA-Global Rating</i>					
Age	-5.999	3.535	-.237	-1.698	.100
Gender	-3.786	3.224	-.152	-1.174	.249
T1 PASS	.657	.557	.570	1.181	.247
T1 BIA-GR	-5.990	12.946	-.428	-.463	.647
T1 PASS x BIA-GR	.091	.228	.411	.398	.693

Table 12 (continued). *Regression Analyses for Figure 2*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
<i>CBQ-Shyness</i>					
Age	-6.205	3.267	-.245	-1.899	.067
Gender	-3.650	3.014	-.147	-1.211	.235
T1 PASS	1.067	.435	.925	2.450	.020
T1 CBQ-S	.299	6.699	.029	.045	.965
T1 PASS x CBQ-S	-.045	.122	-.293	-.371	.713
<i>DECA-Withdrawal</i>					
Age	-6.196	3.314	-.238	-1.869	.071
Gender	-1.202	3.284	-.048	-.366	.717
T1 PASS	1.327	.789	1.145	1.681	.103
T1 DECA-W	.907	.862	.626	1.052	.301
T1 PASS x DECA-W	-.011	.017	-.748	-.692	.494
<i>Maternal Report Composite for Behavioral Inhibition</i>					
Age	-6.282	3.431	-.241	-1.831	.077
Gender	-3.191	3.251	-.126	-.982	.334
T1 PASS	.854	.172	.737	4.973	.000
T1 BI COMP-MR	3.662	4.338	.454	.835	.411
T1 PASS x BI COMP-MR	-.074	.081	-.481	-.916	.367

Table 12 (continued). *Regression Analyses for Figure 2*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
<i>Observational Composite for Behavioral Inhibition</i>					
Age	-5.857	3.447	-.231	-1.669	.099
Gender	-3.819	3.159	-.154	-1.209	.236
T1 PASS	.861	.148	.746	5.804	.000
T1 BI COMP-OBS	-6.088	7.366	-.895	-.827	.415
T1 PASS x BI COMP-OBS	.103	.133	.837	.775	.444
<i>Combined Composite for Behavioral Inhibition</i>					
Age	-6.832	3.556	-.263	-1.922	.064
Gender	-3.480	3.265	-.138	-1.066	.295
T1 PASS	.899	.167	.776	5.379	.000
T1 BI COMP-COMB	1.388	4.150	.268	.335	.740
T1 PASS x COMP-COMB	-.034	.077	-.351	-.444	.660

Note: Outcome variable is Time 2 PASS score; T1=Time 1; PASS=Perceived Advantages of Shyness Survey; BIA-SC=Behavioral Inhibition Assessment Battery-Spontaneous Comments; BIA-SM=Behavioral Inhibition Assessment Battery-Smiles; BIA-GR= Behavioral Inhibition Assessment Battery-Global Rating; CBQ-S=Child Behavior Questionnaire-Shyness scale; DECA-W=Devereux Early Childhood Assessment-Withdrawal scale; BI=Behavioral Inhibition; COMP-MR=Maternal Report Composite; COMP-OBS=Observational Composite; COMP-COMB=Combined Composite.

Table 13. *First Regression Analysis for Figure 3*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
Block 1					
Age	-1.132	.900	-.225	-1.259	.217
Gender	.069	.882	.014	.078	.938
Block 2					
Age	-1.743	.869	-.346	-2.005	.054
Gender	.035	.817	.007	.043	.966
T1 PASS	.110	.044	.416	2.496	.018
Block 3					
Age	-1.524	.890	-.303	-1.713	.097
Gender	.076	.816	.015	.093	.927
T1 PASS	.086	.049	.325	1.747	.091
T1 CRPR-C	.967	.887	.195	1.091	.284

Note: Outcome variable is Time 2 Combined Composite score for behavioral inhibition; T1=Time 1; PASS=Perceived Advantages of Shyness Survey; CRPR-C=Childrearing Practices Report-Control scale.

Table 14. *Second Regression Analysis for Figure 3*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
Block 1					
Age	-.814	.507	-.277	-1.604	.118
Gender	-.006	.493	-.002	-.013	.990
Block 2					
Age	-1.167	.477	-.397	-2.449	.020
Gender	.012	.447	.004	.027	.979
T1 PASS	.070	.024	.449	2.847	.008
Block 3					
Age	-1.008	.488	-.343	-2.067	.047
Gender	.117	.450	.041	.261	.796
T1 PASS	.057	.026	.367	2.179	.037
T2 CRPR-A	.202	.158	.213	1.283	.209

Note: Outcome variable is Time 2 Maternal Report Composite score for behavioral inhibition; T1=Time 1; PASS=Perceived Advantages of Shyness Survey; CRPR-A=Childrearing Practices Report-Affection scale.

Table 15. *Regression Analyses for Figure 4*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
<i>T2 BIA-Spontaneous Comments</i>					
Age	-1.716	8.055	-.037	-.213	.833
Gender	11.249	7.474	.248	1.505	.142
T1 SIAS	-4.457	2.306	-1.993	-1.933	.062
T1 PASS	-.573	.662	-.273	-.866	.393
T1 SIAS x PASS	.072	.043	1.787	1.672	.105
<i>T2 BIA-Smiles</i>					
Age	-8.716	6.165	-.231	-1.414	.167
Gender	-13.845	5.720	-.374	-2.420	.022
T1 SIAS	-4.880	1.765	-2.669	-2.765	.010
T1 PASS	-1.253	.506	-.730	-2.474	.019
T1 SIAS x PASS	.084	.033	2.558	2.557	.016
<i>T2 BIA-Global Rating</i>					
Age	-.326	.451	-.134	-.722	.475
Gender	.287	.418	.120	.687	.497
T1 SIAS	-.045	.129	-.381	-.348	.730
T1 PASS	-.003	.037	-.023	-.069	.945
T1 SIAS x PASS	.000	.002	.055	.048	.962

Table 15 (continued). *Regression Analyses for Figure 4*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
<i>T2 CBQ-Shyness</i>					
Age	-.958	.448	-.376	-2.140	.041
Gender	.392	.419	.155	.935	.357
T1 SIAS	-.115	.128	-.904	-.900	.375
T1 PASS	.012	.037	.106	.334	.740
T1 SIAS x PASS	.002	.002	.689	.662	.513
<i>T2 DECA-Withdrawal</i>					
Age	-5.103	3.175	-.295	-1.607	.119
Gender	-3.342	2.976	-.197	-1.123	.271
T1 SIAS	-1.107	1.142	-1.288	-.969	.340
T1 PASS	-.147	.370	-.161	-.396	.695
T1 SIAS x PASS	.023	.021	1.466	1.094	.283
<i>T2 Maternal Report Composite for Behavioral Inhibition</i>					
Age	-1.294	.502	-.438	-2.580	.015
Gender	-.111	.470	-.038	-.236	.815
T1 SIAS	.000	.180	.002	.001	.999
T1 PASS	.074	.058	.478	1.272	.213
T1 SIAS x PASS	-.000	.003	-.008	-.006	.995

Table 15 (continued). *Regression Analyses for Figure 4*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
<i>T2 Observational Composite for Behavioral Inhibition</i>					
Age	-.601	.698	-.156	-.860	.396
Gender	.097	.648	.026	.150	.882
T1 SIAS	-.311	.200	-1.668	-1.556	.130
T1 PASS	-.057	.057	-.327	-.998	.326
T1 SIAS x PASS	.005	.004	1.393	1.254	.219
<i>T2 Combined Composite for Behavioral Inhibition</i>					
Age	-1.844	.882	-.366	-2.091	.045
Gender	.045	.827	.009	.054	.957
T1 SIAS	-.159	.317	-.634	-.500	.621
T1 PASS	.073	.103	.276	.713	.482
T1 SIAS x PASS	.002	.006	.457	.358	.723
<i>T2 BIQ</i>					
Age	-26.329	10.136	-.421	-2.598	.015
Gender	-8.024	9.539	-.132	-.841	.407
T1 SIAS	-7.283	3.094	-2.381	-2.354	.026
T1 PASS	-.476	.853	-.172	-.558	.581
T1 SIAS x PASS	.129	.059	2.272	2.185	.037

Note: T1=Time 1; T2=Time 2; SIAS=Social Interaction Anxiety Scale; PASS=Perceived Advantages of Shyness Survey; BIA=Behavioral Inhibition Assessment Battery; CBQ=Child Behavior Questionnaire; DECA=Devereux Early Childhood Assessment; BIQ=Behavioural Inhibition Questionnaire.

Table 16. *Regression Analysis for Figure 5*

Measure	B	SE B	β	<i>t</i>	<i>p</i>
Age	-.891	.826	-.173	-1.079	.290
Gender	.730	.728	.146	1.002	.325
T1 BI COMP-COMB	.549	.151	.532	3.624	.001
T1 PASS	.031	.054	.117	.575	.570
T1 CR COMP-MR	.214	.165	.246	1.297	.206
T1 SIAS	-.065	.037	-.253	-1.750	.091

Note: $R^2 = .49$ for model, outcome variable is Time 2 Combined Composite score for behavioral inhibition; T1=Time 1; PASS=Perceived Advantages of Shyness Survey; SIAS=Social Interaction Anxiety Scale; BI COMP-COMB=Combined Composite score for behavioral inhibition; CR COMP-MR=Maternal Report Composite Score for childrearing practices.

Figure 1. *Exploring Maternal Attitudes toward Shyness as a Moderator of the Relationship between Behavioral Inhibition at Time 1 and Time 2*

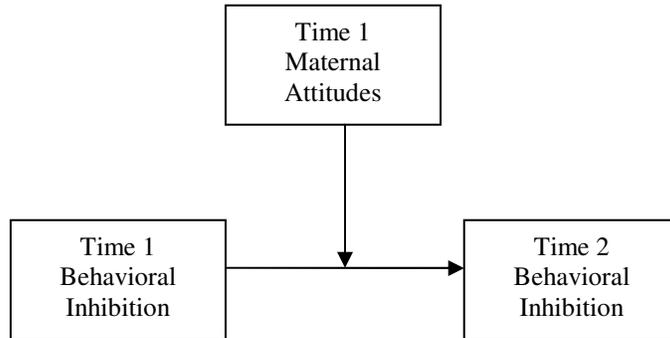


Figure 2. *Exploring Childrearing Strategies as a Mediator of the Relationship between Maternal Attitudes toward Shyness at Time 1 and Behavioral Inhibition at Time 2*

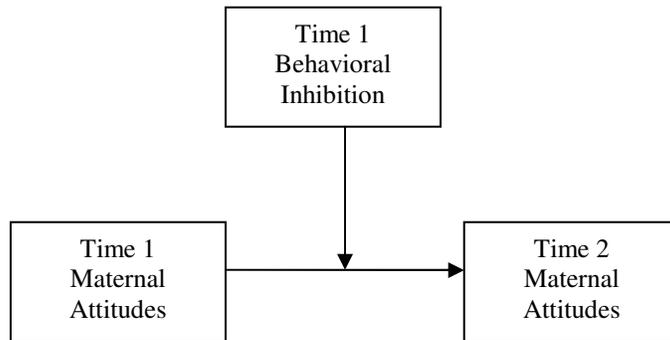


Figure 3. *Exploring Childrearing Strategies as a Mediator of the Relationship between Maternal Attitudes toward Shyness at Time 1 and Behavioral Inhibition at Time 2*

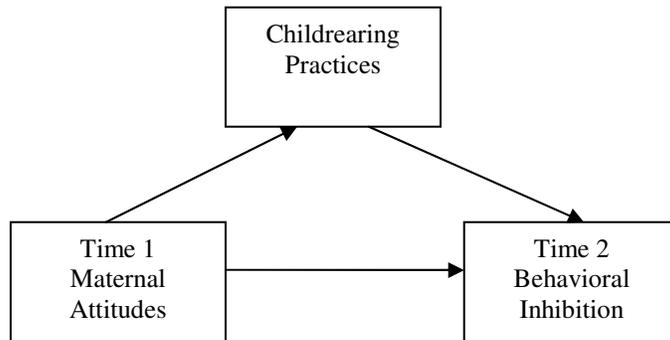


Figure 4. *Exploring Maternal Attitudes toward Shyness as a Moderator of the Relationship between Maternal Shyness and Child Behavioral Inhibition*

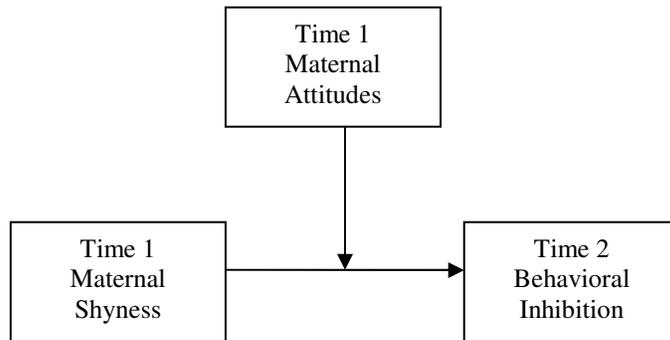


Figure 5. *Exploring Time 1 Predictors of Time 2 Behavioral Inhibition*

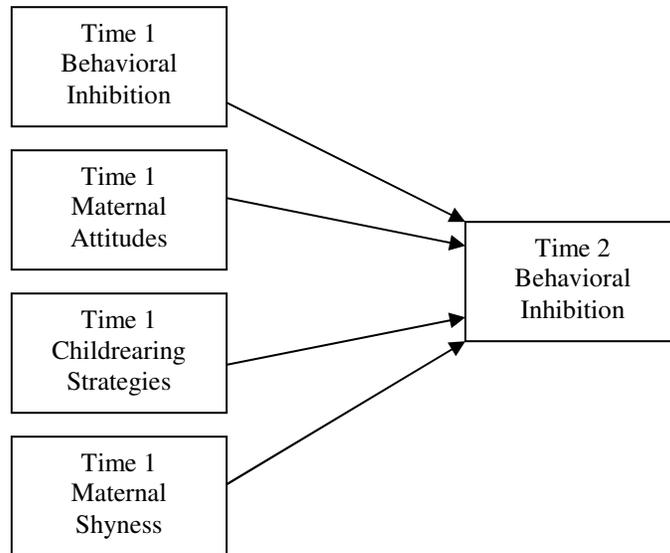
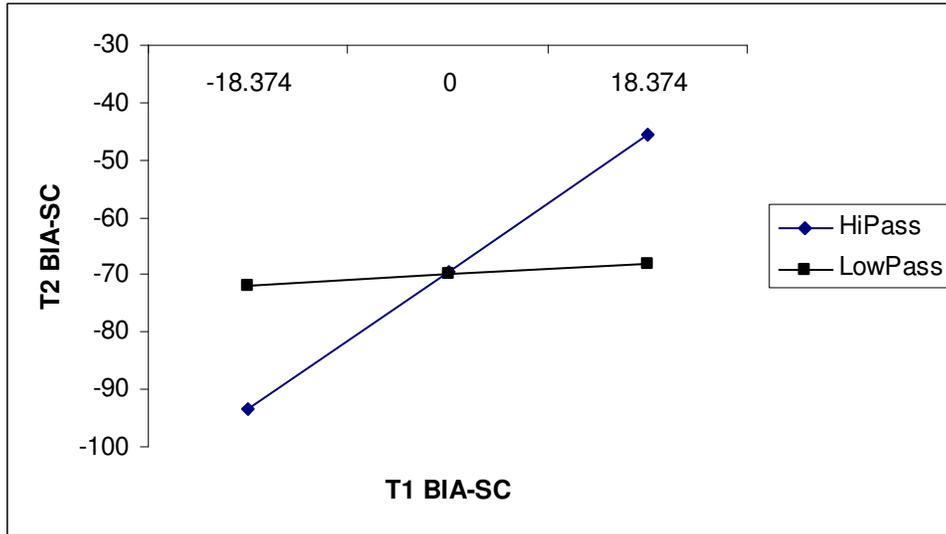
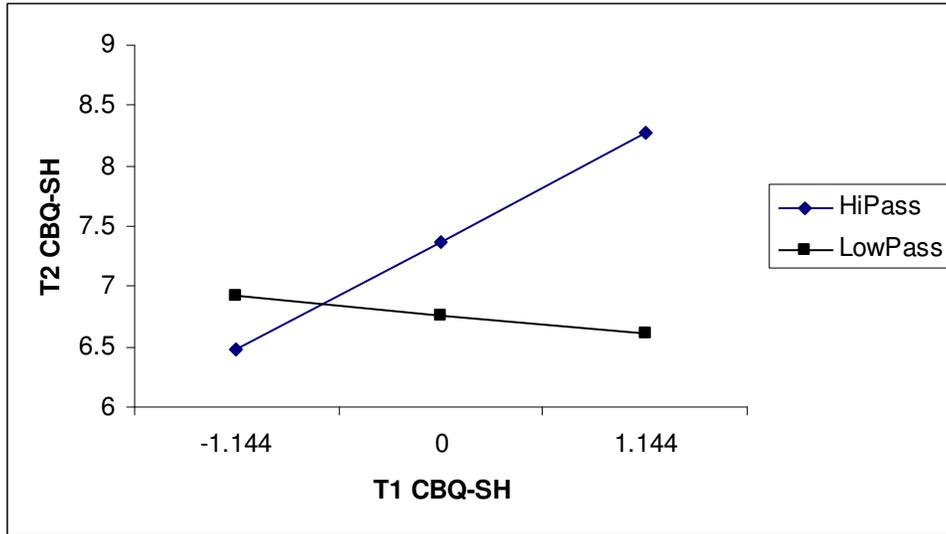


Figure 6. *Regression Lines for Relations between Time 1 BIA-Comments and Time 2 BIA-Comments as Moderated by T1 PASS Scores*



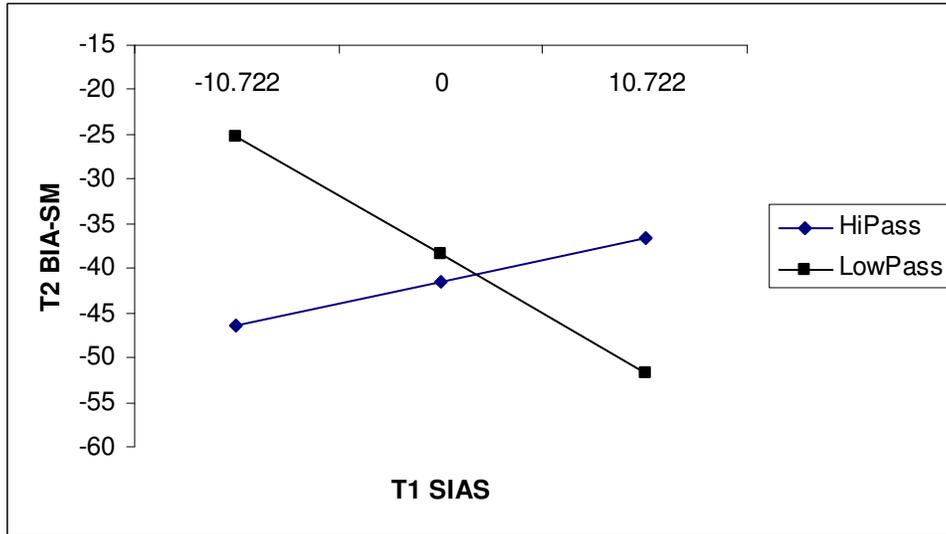
Note: T1=Time 1; T2=Time 2; BIA-SC=Behavioral Inhibition Assessment Battery-Spontaneous Comments; PASS=Perceived Advantages of Shyness Survey; HiPASS=conditional moderator variable representing the high (i.e., +1 SD) condition of the PASS; LowPASS=conditional moderator variable representing the low (i.e., -1 SD) condition of the PASS.

Figure 7. *Regression Lines for Relations between Time 1 CBQ-Shyness Scores and Time 2 CBQ-Shyness Scores as Moderated by T1 PASS Scores*



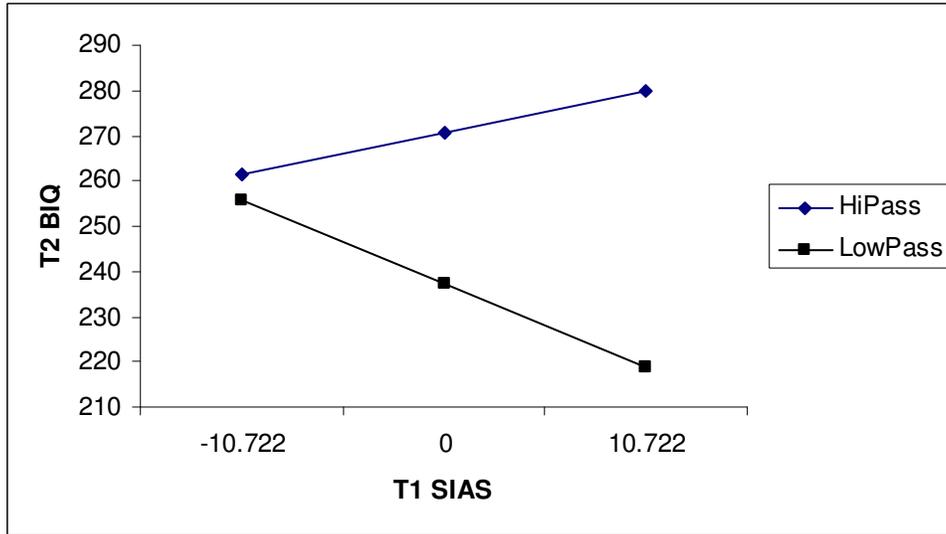
Note: T1=Time 1; T2=Time 2; CBQ-SH=Child Behavior Questionnaire-Shyness scale; PASS=Perceived Advantages of Shyness Survey; HiPASS=conditional moderator variable representing the high (i.e., +1 SD) condition of the PASS; LowPASS=conditional moderator variable representing the low (i.e., -1 SD) condition of the PASS.

Figure 8. *Regression Lines for Relations between Time 1 SIAS Scores and Time 2 BIA-Smiles as Moderated by T1 PASS Scores*



Note: T1=Time 1; T2=Time 2; BIA-SM=Behavioral Inhibition Assessment Battery-Smiles; SIAS=Social Interaction Anxiety Scale; PASS=Perceived Advantages of Shyness Survey; HiPASS=conditional moderator variable representing the high (i.e., +1 SD) condition of the PASS; LowPASS=conditional moderator variable representing the low (i.e., -1 SD) condition of the PASS.

Figure 9. *Regression Lines for Relations between Time 1 SIAS Scores and Time 2 BIQ Scores as Moderated by T1 PASS Scores*



Note: T1=Time 1; T2=Time 2; BIQ=Behavioural Inhibition Questionnaire; SIAS=Social Interaction Anxiety Scale; PASS=Perceived Advantages of Shyness Survey; HiPASS=conditional moderator variable representing the high (i.e., +1 SD) condition of the PASS; LowPASS=conditional moderator variable representing the low (i.e., -1 SD) condition of the PASS.