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Contextual and Dispositional Influences on Low-Income Children's School Adjustment

Sonya Shaniece Myers
University of New Orleans

Contextual and Dispositional Influences on Low-Income Children's School Adjustment

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Sonya Shaniece Myers

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Abstract

Examination of child temperament and early adult-child relationships is of vital importance to children's socio-emotional development, school success, and the prevention of future problem behaviors. In response, the current project examined the interaction of parenting style, child temperament, and the quality of the teacher-child relationship in predicting low-income children's school adjustment. One hundred fifty-four children (70 girls and 84 boys), their parents, lead teachers, and teacher aides participated in this study with data collected in both preschool (Head Start) and in Kindergarten. Parents completed questionnaires pertaining to parenting styles and child temperament, while teachers also completed questionnaires on child temperament, teacher-child relationships, social / behavioral adjustment at school, and academic achievement. Children also reported on their relationships with teachers using a puppet interview format. Analyses indicate that children's effortful control and negative reactivity are associated with a wide range of academic, behavioral, and socio-emotional variables. Results of the current study also provide evidence that negative reactivity, parental hostility, and teacher-child conflict are related to children's social-emotional and academic difficulties; however, effortful control and reduced teacher-child conflict moderate the effects of these negative factors on low-income preschoolers' school adjustment. Results are discussed in terms of the utility of intervention efforts aimed at reducing negative parent-child and negative teacher-child relationships in order to promote positive school adjustment for low-income children.

Keywords: temperament, parenting, teacher-child relationship, school adjustment

Introduction

Overview

In order to understand the social and emotional factors associated with children's psychological adjustment and educational achievement, researchers often point to both child temperament and to the quality of early experiences in school (Hamre & Pianta, 2001). Children who display more positive temperamental characteristics and attend quality preschool programs show increased school readiness, higher self-esteem and higher achievement motivation (Washington, 2002). Research also indicates that preschool children's relationships with both parents and teachers play important roles in children's early school attitudes and school success (Pianta & Steinberg, 1992). Though there is a burgeoning amount of evidence suggesting that parenting factors contribute to children's socio-emotional competence, few studies assess positive teacher-child relationships and how the quality of these relationships are associated with fewer behavior problems, more social competence, and increased academic achievement (Birch & Ladd, 1997). More research is needed on the ways in which child dispositional factors, parenting factors, and the quality of the teacher-child relationship interact to predict school adjustment, particularly among low-income children in early educational settings.

In response, this study examined associations between child temperament, parent, and teacher factors and school adjustment in a sample of 154 low-income children. Pre-kindergarten children (4-5 year-olds) were recruited from a Head Start in a rural area of Southern Mississippi. Data were collected from both parents and teachers in pre-Kindergarten (Head Start) and in Kindergarten to meet the following aims: (1) to assess various temperamental characteristics and their relations to school adjustment; (2) to examine how parenting and temperament interact to predict school adjustment; (3) to examine how the teacher-child relationship can buffer or

enhance the association between parenting and temperament factors to predict school adjustment. In order to help meet these aims, this study uses a longitudinal design and a multi-method, multi-informant approach to data collection. One purpose of this study is to distinguish what factors influence successful school adjustment, particularly those that work in combination with Head Start preparation. The broader impact of this study includes the facilitation of teacher and parent-based interventions that can be used to promote early and later school success.

There is abundant evidence that high quality preschool and early intervention programs can enhance the development of low-income children (Berk, 1996). Though few researchers have studied the prevalence of behavior problems in very young school-aged children, the prevalence of behavior problems in low-income preschoolers is estimated to be at about 30% (Feil, Walker, Severson, & Ball, 2000). Many studies have found that preschoolers exhibiting internalizing and externalizing behavior problems are likely to develop future serious behavior problems and increased academic difficulties (Stormont, 2002; Tomblin, Zhang, Buckwalter, & Catts, 2000). The probability of preschoolers developing behavior problems is intensified when they are exposed to multiple risk factors, such as such as low SES and negative parenting (Qi, 2003). Such findings indicate the significant need for intervention during this critical social and developmental period.

One intervention that many educators and researchers have proposed for reducing the prevalence of behavior problems in young children is promoting positive, close relationships with teachers. Though little research has been conducted on this topic, the quality of the teacher-child relationship poses a significant influence on children's behaviors both at home and within the classroom (Birch & Ladd, 1997; Birch & Ladd 1998; Pianta & Steinberg, 1992). The quality of teacher-child relationships is of particular importance because in the absence of parents, the

teacher is who young children rely on to meet their needs and to ensure that the classroom environment is a safe haven in which to learn and explore. Many studies examining the effects of the teacher-child relationship have found that positive interactions lead to subsequent pro-social behaviors, increased social competence, and academic adjustment; however, negative teacher-child relationships can lead to further negative school attitudes, academic problems, and subsequent internalizing and externalizing behaviors at school (Birch & Ladd, 1997; Howes, 2000). Despite these links, little research has focused on these associations in rural, low-income children.

Temperament & School Adjustment

Temperament is defined as constitutionally based individual differences in reactivity and self-regulation, which are shaped over time by heredity, maturation, and experience (Rothbart & Ahadi, 1994). Temperament does have a biological basis, but it can be shaped by environmental influences. Research indicates that different children with the same temperamental pattern differ on the degree and kind of behavioral expression of the trait. When there is a "goodness of fit" or match between the temperamental characteristics of the child and the expectations / demands of the situation, psychological and social functioning progresses favorably, while failure in adjustment will lead to an unfavorable course of development (Chess & Thomas, 1991; Rothbart & Ahadi, 1994). As identified in previous studies of child temperament, young children with an easy temperament (which includes positive mood, low intensity of reactions and positive approaches to new situations, and high positive affect) paired with appropriate expectations of both parents and teachers can lead to increased socio-emotional development and academic success. In contrast, children with a difficult temperament (negative responses to new situations, negative emotions, and high reactivity), who are of particular interest in this study, elicit negative

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responses from caregivers (i.e. parents, teachers) thus likely facilitating problem behaviors. During interactions with parents and teachers, children with early tendencies toward negative emotions tend to have higher levels of anger, frustration, and sadness (Rothbart, Derryberry, & Hershey, 2000). Though children who have a propensity for negative emotions are already at a greater risk for developing behavior problems, when this propensity for negative emotions is paired with unresponsive parenting and negative interactions with teachers, a troublesome developmental trajectory is inevitable.

The current study focuses on two important dimensions of temperament, negative reactivity and effortful control. Negative reactivity is defined as the child's tendency to react to stressful events with high emotional displays, including anger, sadness, fear, and irritability, whereas effortful control refers to a child's abilities to use attentional resources and inhibit behavioral responses in order to regulate behaviors (Morris, Silk, Sessa, Avenevoli, & Essex, 2002; Rothbart, Ahadi, Hershey, 1994). Eisenberg and colleagues have studied in detail the effects of negative reactivity and effortful control in predicting behavior problems, finding that children with externalizing problems were more prone to angry, impulsive behaviors, while children with internalizing problems were prone to high sadness, low attentional control, and low impulsivity (Eisenberg et al, 2004). In terms of the continuity of negative reactivity Keenan, Shaw, Delliquadri, Geovannelli, and Walsh's (1998) study of the continuity of behavior problems in preschoolers found that preschool children who have an early emerging difficult temperament are likely to develop more serious internalizing (anxious-fearful, depressive affect) and externalizing behavior problems (aggression, hyperactivity) in the future.

In terms of temperament and academic achievement, Blair (2002) posits that children characterized as having a difficult temperament (high negative emotionality and low effortful

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control) are likely to have problems in certain cognitive processes such as planning and problem solving, both of which are necessary for academic success. Relatedly, teachers indicate that children who are temperamentally less distracted and are better able to regulate their emotions are more teachable and have higher academic achievement than children without these characteristics (Keogh, 1992; Martin, Drew, Gaddis, & Moseley, 1988). Additional studies of early childhood temperament and academic achievement have shown that negative emotionality and low effortful control are related to grade retention, poor math and reading skills, and overall lack of readiness for school (Blair, 2002; Morris et al., 2006). These studies of children's school adjustment offer evidence as to why research should consider the role of child temperament in school transitions and academic achievement.

In addition to direct links, child temperament characteristics have been shown to interact with contextual influences to predict children's adjustment (Morris, Silk, & Steinberg, 2002; Lengua, Wolchik, & Sandler, 2000; Rothbart & Bates, 1998). Lengua et al., (2002) states that negtiave reactivity and effortful control may moderate the risk between risk and adjustment by enhancing or buffering the level of distress experienced and subsequent behavioral responses. For example, in the face of negative adult-child relationships, children with high negative reactivity, may perceive threat and respond with maladaptive coping (i.e. aggression, anxiety, etc), while children with low negative reactivity may have better coping skills (i.e. fewer problem behaviors, academic achievement). In addition, in reaction to negative adult-child relationships, children with low effortful control may have difficulty managing behavioral expressions of negative reactivity (i.e. aggression, anxiety, etc), while high effortful control may moderate these associations by reducing arousal and aid in adoption of positive coping strategies (Eisenberg et al., 1997; Lengua et al., 2000).

Parenting & School Adjustment

Though previous research has established a well-defined link between parenting factors, child temperament, and children's behavior problems, few studies have examined this link in preschool children. The parent-child relationship has been found to be a strong predictor of child adjustment. Parental socialization of emotions and behaviors contributes to children's adjustment and social competence by teaching children ways to manage their experiences and emotions (Eisenberg et. al, 2001). The primary aim of this study is to identify characteristics of the parenting relationship (warmth, hostility, psychological control) and their relationship to children's school adjustment. In addition, we will examine how child temperament affects the relation between parenting and school adjustment.

Studies reveal positive relations between parenting and temperament, in that the adaptable, low reactive or affable children elicit warm and responsive parenting. Warmth indicates the parents' propensity to be supportive, affectionate, and express positive affect with their children (Eisenberg et al., 2001). Though displays of physical affection decrease at about age 3, warm and responsive parents report enjoying parenting, having positive affect toward their child, and allowing for their children's sense of autonomy (Roberts et. al., 1984). As a result of parental warmth, a sense of emotional security decreases the expression of negative emotions (Sanson & Rothbart, 1995). Parents who are warm and directive have children who are independent, socially responsible, and have high academic achievement (Baumrind, 1971, Maccoby & Martin, 1984). Moreover, studies indicate that children of warm and responsive parents demonstrate low levels of aggression, high socio-emotional competence, and high academic achievement (Chen, Liu, & Li, 2000; Dunn & Brown 1994; Rubin et.al., 1998).

In contrast, negative parenting has consistently been implicated in the development of

behavior problems in young children. Morris et al. (2002) identify two important components of negative parenting; hostility and psychological control. Parental hostility is defined in term of harsh discipline, punitive actions, coercion, and physical / verbal aggression (Silk, et. al, 2004). In contrast, psychological control is defined as "intrusive parental control in which parents attempt to manipulate their children's behavior, identity, and psychological development" (Morris et al, 2002, p. 126). Although these constructs may occur in unison, research suggests that these constructs have different effects on children's behavior problems.

Many studies examining parental hostility, such as harsh discipline, punitive behaviors, verbal and physical aggression, have consistently linked parental hostility to the development of behavior problems in young children. Studies of parental hostility have found that this negative expressivity, defined as the expression of negative emotions, is related to less socio-emotional competence and more adjustment problems in their children (Denham et. al., 2000; Messer & Gross, 1995; O'Neil, Clatfelter, & Parke, 1999). Importantly, parental hostility is associated with more aggressive behaviors across cultures and socio-economic status, and to a lesser degree, to internalizing problems (Chen & Rubin, 1993; Messer & Beidel, 1994).   Theories assert that negative parental behaviors create and preserve patterns of aggressive child behaviors, which provides for the development of externalizing problems in the future (Rubin & Stewart, 1995).

Studies continually link psychologically controlling parenting to both emotional and behavioral problems in young children. Most of the existing research has examined how psychological control affects children during middle childhood and adolescence; and few studies have examined this link as it pertains to preschooler problem behavior. Studies examining the effect of negative parenting on young children have found that children who exhibit

externalizing behaviors have parents who are generally more intrusive, punitive, and negative in mood compared to mothers of children without externalizing behaviors (Campbell, et al., 1991). In some of the few studies to examine the effects of psychological control on children, parent reports of psychological control were related to teachers' reports of hostile aggression with peers and various negative outcomes in children, such as internalized distress, depression, anxiety, and low self-esteem (Barber & Harmon, 2002; Hart et. al, 1998). Additionally, psychological control has also been related to young children's expression of internalizing and externalizing behaviors across cultures, suggesting that this parental construct may be more important to examine in young children than previous thought (Olsen, et al., 2002).

Many recent studies suggest that some elements of child temperament interact with parenting characteristics to predict child adjustment. Belsky et al. (1998), examining the effects of infant negative emotionality and parenting in predicting externalizing problems in subsequent years, found that parental negativity was a strong predictor of child future externalizing problems and inhibition for those children characterized as highly negative as infants. Adding further support to this association, Morris et al., (2002), specifically examining the interaction of temperamental vulnerability and negative parenting in the prediction of school-aged children's internalizing and externalizing behaviors, found that in children with high irritability and poor effortful control, maternal hostility and psychological control was associated with internalizing and externalizing behavior problems. Researchers suggest that children whom are exposed to frequent negative interactions with hostile parents may not have the dispositional resources to suppress frequent displays of aggression; however, children who are better able to regulate their emotions are less likely to react negatively when exposed to parental hostility.

Parenting characteristics have consistently been indicated as predictors of academic achievement in young children. Specifically, firm yet receptive parenting is connected to school-aged children's academic success; however, hostile parenting is associated with poorer academic grades and task oriented beliefs / behaviors (Aunola, Stattin, & Nurmi, 2000; Baumrind, 1989; Grolnick & Ryan, 1989). Wentzel, Feldman, and Weinberger (1991) found that parents' harsh and inconsistent discipline were related to increased child distress, low cognitive self-worth, and low restraint, thus predicting these children's low grades in school. Additionally, parental psychological control has been shown to be predictive of children's low grades in mathematics (Aunola & Nurmi, 2004). The results of these studies add significantly to literature on negative parenting and child academic outcomes by suggesting that parents' hostile and psychologically controlling behaviors are important precursor to children's low academic functioning.

Teacher-Child Relationship & School Adjustment

The relationship between teacher and child is very important, especially during the early school years. This unique relationship is the unavoidable target for both positive and negative child behaviors, beliefs, and emotion regulation strategies developed within the context of the parent-child relationship (Erickson and Pianta, 1989). Many studies have shown that close teacher-child relationships are related to more positive child outcomes, like social and academic competence, fewer behavior problems, a decrease in psychopathology, and less academic failure, while teacher-child discord is linked to negative outcomes, such as poor school attitudes, avoidance, and poor academic competence (Birch & Ladd, 1997; Werner & Smith, 1982). Three distinct patterns of teacher-child relationship have emerged regarding teacher-child interactions and its relation to children's social-emotional and behavioral development. These include the level of "closeness" within the teacher-child relationship, the prevalence of "conflict"

among the teacher-child interactions, and how "dependent" the child is on the teacher to regulate the environment (Birch & Ladd, 1997; Hamre & Pianta, 2001). This study seeks to examine how the relationship between teacher and child affects children's school adjustment. This will be examined for children with different temperaments and with varying quality of parent-child relationships (e.g. warmth, hostility, psychological control).

In terms of the quality of teacher-child interactions, the concept of "closeness" has emerged as an important factor in predicting social-emotional development and the continuity of behavior problems. Closeness includes the degree of warmth and open communication that exists between a teacher and child, which functions as support for children within the environment (Birch & Ladd, 1997). Studies have shown that closeness between teacher and child is positively linked to child academic performance, child school liking, and self-regulated behaviors (Birch & Ladd, 1997). Even more compelling, studies of teacher-child closeness and subsequent school adjustment have found that closeness in preschool and kindergarten is related to more positive work habits, less aggression, fewer disruptions, and less teacher-child conflict in subsequent grades (Hamre & Pianta, 2001; Howes, 2000). The quality of the teacher-child relationship can also serve as a buffer between negative parenting and children's adjustment, especially for children with a difficult temperament. Research has shown that close teacher-child interactions can moderate the negative consequences of experiences such as relationship stress, parental depression, and child maltreatment (Werner & Smith, 1982). Lynch and Cicchetti's (1992) study of maltreated children's relationships with their teachers hypothesized that positive, secure relationships with teachers may compensate for negative relationships with parents by providing the child with new representational models. Results indicated that among children with a history of negative parent-child interactions children with high levels of engagement with

teachers reported high levels of positive emotions, while children with weak or non-existent patterns of engagement with teachers reported low levels of emotional quality.

Literature on the prevalence of child behavior problems following negative teacher-child interactions has identified two relationship factors that can account for this association, "conflict" and "dependency." Conflictual teacher-child relationships are characterized by inharmonious interaction, and a lack of understanding within the relationship, which may foster feelings of anxiety, anger, and alienation (Birch & Ladd, 1997). In contrast, a dependent teacher-child relationship is characterized by possessive and "clingy" child behaviors that signify an over dependence on the teacher as a source regulation within the environment and support. Though both relationship types can lead to school adjustment problems in young children, the paths by which these problems occur appear to be quite unique.

In relationships characterized as conflictual, teachers are more likely to seek punitive actions for child misbehaviors and are more likely to withdraw from interactions or ignore these students. A consequence of this behavior is that the children who need the most attention are neglected by their teachers (Sutherland & Morgan, 2003). Studies examining the teacher-child relationship and school adjustment have found that conflict (antagonistic, disharmonious interactions) in the relationship was significantly correlated with school avoidance, aggression, disruptive behaviors, and social withdrawal (Birch & Ladd, 1997; Birch & Ladd 1998; Howes, 2000). Hamre and Pianta's (2001) study of the effect of teacher child relationships on children's trajectories through middle school found that conflictual relationships with teachers in kindergarten are related to low math and language arts grades, lower standardized test scores, less positive work-habits, and increased disciplinary infractions throughout upper elementary and

middle school, providing strong evidence that conflictual teacher-child relationships are significant predictors of children's lack of adjustment to school.

Though given little attention, "dependency" within early teacher-child relationships can increase the likelihood of both behavior and social competence difficulty in the future. These "dependent" children are usually timid in their explorations and social interactions, which can lead to feelings of loneliness and negative school attitudes (Birch & Ladd, 1997). Studies examining dependent teacher-child relationships have found that children in dependent teacher-child relationships early in life were more likely to have more school adjustment difficulties, more negative school attitudes, and less positive interactions within the school environment (Birch & Ladd, 1997; Howes et al., 1994). In relation to continuity of maladjustment, dependent relationships in kindergarten are also associated with lower grades, lower standardized test scores, and fewer positive work-habits, particularly among boys, as well as increased social withdrawal and less social competence in elementary school (Hamre & Pianta, 2001; Ladd & Burgess, 1999; Pianta, Steinberg, & Rollins, 1995). As children mature and social interaction with peers become increasingly important, dependent children, who cannot rely on teachers to regulate their environment become increasingly anxious and socially awkward, leading to social rejection, withdrawal, and behavior problems.

Though there is an abundance of evidence suggesting that teachers influence the behaviors of their students, there is also increasing evidence that child temperament characteristics wield influence on teachers. Sutherland and Morgan (2003) propose a "transactional model" in which the child both changes and is changed by interactions in the environment. A student's behavior results from an accumulation of interactions between the student and the teacher. For example, in a positive transactional interaction, a teacher

encouraging strict attention focusing in class will increase positive interactions to those children with high effortful control. In response, students high in effortful control are perceived by the teacher to be highly engaged in classroom activities, more intelligent, and generally better adjusted. This positive teacher child interaction inevitably leads to better academic achievement and fewer internalizing and externalizing behaviors in school (Henderson & Fox, 1998).

In relation to negative-teacher child interactions, the transactional model illustrates how teachers' perceptions of temperament and behavior can influence the type of interaction that teachers have with children. If teachers perceive a child's behavior as being negative in intent, this perception, whether correct or incorrect can lead to negative teacher – child interactions, and subsequent behavior problems in school. One theory that examines this phenomenon is the "attribution error". The fundamental attribution error is defined as the tendency for observers to underestimate situational influences and overestimate dispositional influences (Myers, 1993). Teacher attribution ascriptions can elicit strong emotional responses leading to a dysfunctional attribution cycle with children who have a difficult temperament (Morin, 2001). For example, a teacher observes misbehavior (high aggression, hyperactivity), applies a dysfunctional attribution to explain the cause of the behavior ("troublemaker" rather than negative temperament disposition), followed by an intrusive response, leads to subsequent negative teacher-child interactions. Studies have shown that children who were below teachers' expectations regarding dimensions of temperament receive more criticism from those teachers than those who met their expectations for normal temperamental variation (Martin, 1989; Myers, 2004).

The Current Study

Examining early adult-child relationships is of vital importance to children's emotional development, school success, and the prevention of future problem behaviors. In response, the

current project examined the interaction of parenting style and the quality of the teacher-child

relationship (reported by teachers and children) in predicting pre-school adjustment (reported by

lead teachers and teacher assistants). In addition, this study also examined how child

temperament affects the quality of the teacher-child relationship, thus predicting child adjustment

to school over time.

Figure 1. Hypothesized Theoretical Model
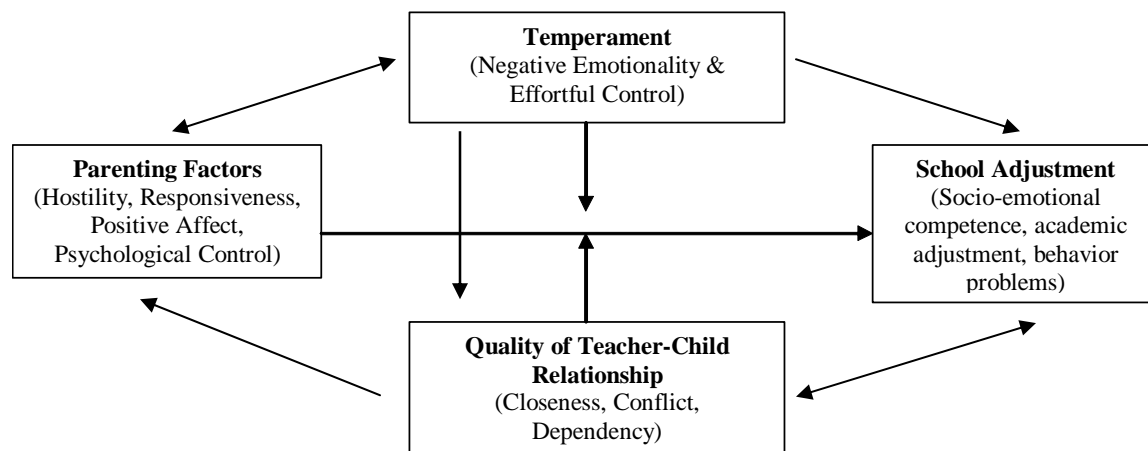
Hypotheses

Specific Aim 1- Assessing the role of temperament in relation to school adjustment.

Hypothesis 1: Higher levels of negative reactivity and lower levels of effortful control will be associated a higher prevalence of behavior problems (internalizing and externalizing), less social competence, and lower academic adjustment concurrently and one year later.

Hypothesis 2: Children with low effortful control and high levels of negative reactivity will have the most school behavior problems.

Specific Aim 2- Examining the interaction of parenting and temperament to predict children's school adjustment

Hypothesis 3: Positive parent-child relationships (warmth and structure will be associated fewer behavior problems, social competence, and academic success; however, negative parent-child relationships (hostility & psychological control) will be related to socio-emotional and academic difficulties concurrently and one year later.

Hypothesis 4: Children's temperament (negative reactivity and effortful control) will moderate the relation between negative parenting behaviors and school behavior problems; such that negative parenting and a vulnerable temperament will interact to predict school adjustment problems, while positive parenting and favorable temperament characteristics will predict socio-emotional and academic success.

Specific Aim 3- Examining the importance of the teacher-child relationship as a buffer between negative parenting / temperament and school adjustment.

Hypothesis 5: Close teacher-child relationships will be related to fewer behavior problems, social competence with peers, and academic success; however, negative teacher-child

relationships (conflict and dependency) will be strongly related to socio-emotional and academic difficulties.

Hypothesis 6: The quality of the teacher-child relationship will moderate the relation between negative parenting and school adjustment, such that children who have negative parent-child interactions (hostility and psychological control), yet have a close teacher-child relationship will have fewer behavior problems, social competence, and more academic success than those children who have both negative parent-child and teacher-child (dependency and conflict) relationships.

Hypothesis 7: Both child temperament and the quality of the teacher child relationship will moderate the relation between negative parenting factors and children's subsequent school adjustment, such that children exposed to negative parenting, who have low levels of negative reactivity, high effortful control, and a close teacher-child relationship will have more social competence, fewer behavior problems, and higher academic adjustment; however children exposed to negative parenting, who also have high levels of negative reactivity, low effortful control, and negative teacher –child relationships will have more school adjustment problems.

Methods

Design and Participants

A longitudinal design was used to collect data on children in pre-kindergarten and kindergarten. One hundred fifty-four children (70 girls and 84 boys), their parents (mostly mothers), lead teachers and teacher aides participated in this study with data collected in both preschool (Head Start) and kindergarten. The ethnic makeup of the sample was 46 % Euro-American, 48% African-American, and 2% Hispanic/ Latin American, with 4% of families not reporting ethnicity. Additional analyses indicated that 15% of participating families did not complete high school, 35% were high school graduates, and 26% had some college or technical training. All of the children were from economically disadvantaged families in that they all were eligible for Head Start enrollment.

This area was chosen for several reasons. First, the PI had a practicum at this center in year 1 of data collection, and with the public elementary school system in year 2. Second, there are only four elementary schools that the Head Start children feed into, all within about 10 miles of each other, so following children into Kindergarten was very feasible, unlike many urban centers that feed into dozens of elementary schools. In addition, having the support of the Superintendent of Picayune Public Schools, Picayune School Board, and elementary school principals, the second phase of this project allowed me the opportunity to follow these Head Start Children into kindergarten and assess the impact of the previously mentioned factors on child adjustment. Finally, this sample was chosen because it is a diverse sample (50% minority students) in a rural setting and this tends to be an understudied population. Every effort was made to minimize sample attrition. For example, adequate monetary compensation was given, and newsletters were mailed to families, and extensive initial contact information was collected.

However, due to effects of Hurricane Katrina, sample attrition at Time 2 reached about 65%.

Attrition analyses were computed for completers (N = 54) and non-completers [(N = 100 (i.e., the families that did not participate in Time 2 assessments)] using Chi-squares to examine whether there were any systematic differences in demographic variables (i.e., sex, ethnicity, parent education level). Results indicated that there were no significant differences for completers vs. non-completers in terms of demographics. In addition, independent sample t-tests were computed to examine whether there were any systematic differences on all variables of interest for completers vs. non-completers at both time points. No significant differences were found.

Procedure

Children and their parents were recruited from the Head Start Center, described above. Initial recruitment began at Head Start parent meetings, where the PI explained the nature of the study and answered questions. Information explaining the study and a number to call was also sent home to parents. Because the PI for this project was completing a practicum at the center, there was abundant availability to talk with the parents about the study and answer their questions. All parents were assured that participation was voluntary (the consent form was verbally discussed).

Participants received both detailed verbal and written explanations of the project and were assured of their confidentially at recruitment and throughout the project. Moreover, participants were informed that they could withdraw form the study at any time with no negative consequences. For the school-based assessment, parents completed two consent forms: consent for the parent and child to participate and consent to obtain information from their child's teacher. Teachers were given a copy of the parent's consent to contact the teacher and were also

given their own consent form to sign. Each participant, parents and teachers, signed two copies

of each consent form, one for their own records to keep and one for the project. In both pre-k

and kindergarten, after receiving child assent to participate, children were assessed via puppet

interviews. At the time of assessment, children received small prizes (stickers, graphic pencils,

coloring books, crayons. In addition, as a thank you for classroom participation, children

received a classroom party at the end of the year.   In pre-K, parents, teachers, and teacher

assistants completed questionnaires and received $20 for each child, each time data were

collected; however, in Kindergarten, due to lack of stability of teacher assistants, only parents

and lead teachers completed the measures. In kindergarten, parents and teachers also received

$20 per child for completion of questionnaires. Parents completed questionnaires pertaining to

parenting styles and child temperament   Parent packets took approximately 20 minutes to

complete, and packets were completed at parent meetings or sent home from school with the

child. Teacher questionnaires, on the other hand, took approximately 30 minutes to complete.

At T1, lead preschool teachers completed questionnaires on the teacher-child relationship,

temperament, social competence, and academic achievement, while preschool teacher assistants

(who are called upon to deal with behavioral aspects of classroom management) completed

questionnaires on children's internalizing / externalizing behaviors. Due to the impact of

Hurricane Katrina (damaged housing, lack of jobs, etc), many of the participants in this project

moved away from the area in which this study was conducted. For this reason, the sample at T2

included 52 families, so only school outcomes were assessed at Time 2.   In addition, at T2, only

lead kindergarten teachers completed all questionnaires on school outcome variables.

Measures

Measures assessed parenting factors, children's temperament, problem behaviors, quality of social relationships, and school adjustment. In addition, at T1 and T2, a basic demographic questionnaire was completed by parents to gather general information (parent education and income, marital status, people living in the home, child birth-date, etc).

Parenting. At Time 1, parents completed the Preschool Parenting Measure (PPM), an 18-item parent self-report questionnaire that assesses five dimensions of the parent-child relationship, but only two of these scales were utilized in the current study: warmth-acknowledgement of the children's needs, sensitivity, and positive affect; and hostility-negative affect and hostile interactions with the child using questions such as "I yell at my child", and "I praise my child". Items were rated on a 4-point Likert scale, ranging from"Strongly Agree" to "Strongly Disagree." The questionnaire, developed by Sessa et al. (2001) can be used with children in early and middle childhood. The scales have shown good internal reliability and empirical distinction in factor analyses and have demonstrated convergent and discriminant validity (Morris, 1997; Sessa et al, 2001). Parents also completed the Psychological Control Scale (PCS), an 11-item scale that taps parental psychological control (personal attack, erratic emotional behavior, guilt induction, and love withdrawal) using questions such as, "I bring up my child's past mistakes when criticizing," and "I don't like my child to bother me." Structural equation modeling has demonstrated that the factor structure of this scale is comparable across cultures. The PCS also has been associated with children's problem behavior in expected directions (see Olsen et al, 2002). Items are rated on a 1 "never" to 5 "always" scale. The PCS was created for parents of young children by adapting existing measures of psychological control

for parents of adolescents (i.e., Barber, 1996). In the present study, for both measures, Cronbach's alphas ranged from .57 to .68.

  Temperament. At time 1, both parents and teachers completed 4 shortened scales (attention focusing, attention shifting, inhibitory control, anger, and sadness) of the <u>Child Behavior Questionnaire</u> (CBQ). Internal consistency estimates of the CBQ range from .67 to .94 in previous studies (Goldsmith & Rothbart, 1991; see Fabes, 1994 for the reliability of the shortened scales), and scales from the CBQ have been correlated with similar observed constructs and child adjustment (see Eisenberg et al., 1997). Respondents rate how true an item is for the child on a 7-point scale (from 1 = extremely untrue to 7 = extremely true). The attention scales and inhibitory control scales were combined as an indicator of *effortful control*, a common measure of emotion regulation used in current research on children (see Eisenberg, Morris, & Spinrad, 2005; Morris et al., 2002). The anger and sadness scales used in combination to examine *negative reactivity* (see Morris et al., 2002). Due to the high correlation of parent and teacher reports of temperament at Time 1 ($r = .35$, $p < .01$), a "total effortful control" and "total negative reactivity" variable was formed by computing a unit-weighted score from parent and teacher report of temperament. Unit-weighted scores are computed as standardized deviation scores (z-scores) from the averaged sum of individual items identified as measuring a construct. Combining reporters captures multiple perspectives while improving predictive power as well as simplifies data analysis by reducing the number of analyses and Type I error rate (Holmbeck et al., 2002). In addition, as indicated as a possibility in previous studies, the composite variables formed from combination had higher reliability than any of the individual scales. Alphas ranged from .70 to 87.

Teacher-Child Relationship. At Time1, lead teacher report of teacher-child relations were measured via the Student-Teacher Relationship Scale (STRS). The STRS is a teacher self-report measure that assesses the teacher-student relationship for a particular child. This measure has 31-items and uses a Likert-type scale (Pianta & Steinberg, 1992). The STRS measures teacher-child dynamics, teachers' decisions about the child's career in school and the child's future school adjustment, and will be used to assess teacher-child closeness, dependency, and conflict (Pianta, 1996). Questions include items such as, "I share an affectionate, warm relationship with this child," and "If upset, this child will seek comfort from me." Internal consistency for the total scale is .85. Scores on the STRS have been found to correlate with competence behaviors at home and school (Pianta & Steinberg, 1992). For the current study, alphas ranged from .69 to .73.

In addition to teacher report, child report of the teacher-child relationship was assessed using the teacher-child relationship scale of the Berkeley Puppet Interview were administered to children using the puppet methodology that was developed in conjunction with the MacArthur Research Network on Development and Psychopathology (see Morris et al., 2002; Sessa et al., 2001); this method was adapted from the Berkeley Puppet Interview (Measelle, Ablow, Cowan & Cowan, 1998) and the work of Eder (1990). The puppet methodology uses an interactive interview to assess children's perceptions of various constructs (e.g., parenting, teacher-child relations, and self-concept). During the interview, two identical puppets present opposing statements. For example, one puppet says, "My teacher is nice to me," and the other says, "My teacher isn't nice to me." Children indicate which puppet is more like them and their lead teacher. All items are counter-balanced and the interview is videotaped for later coding. A "1" is given for an answer indicating the child's response was low on the construct being assessed and a

"3" is given for an answer indicating a high response. A "2" is given when children indicated that both responses equally applied. The teacher-child scale of the BPI is designed to parallel the STRS and contain closeness, dependency, and conflict scales. These scales are newly developed but initial analyses indicate adequate internal consistency (Essex & Armstrong, 1999). For the current study, alphas ranged from .61-.71 for the closeness and conflict scales; however, children had difficulty giving a reliable report of dependency.

School Adjustment. At time 1, teacher assistants completed the Strengths and Difficulties Questionnaire (SDQ), which is a brief behavioral screening questionnaire that asks about 25 attributes, some positive and others negative. The 25 items are divided between 5 scales of 5 items each, but for the current study, only the generalizing scores for conduct problems, emotional symptoms, and peer problems were used. The parent / teacher form for ages 4-10 (information shown below) was used for this study.   The SDQ has good discriminant and predictive validity and correlates highly with the Rutter Questionnaires as well as the Child Behavior Checklist, although it was considered more sensitive in detecting inattention and hyperactivity and equally effective in detecting internalizing and externalizing problems (Goodman, 1997; Goodman & Scott, 1999). Respondents rate how true an item is for the child no a 3-point scale (from 1= not true to 3 = certainly true). Due to lack of aide stability following Hurricane Katrina, lead teachers report of behavior problems were used at Time 2. Alphas for the current study ranged from .52 to .87 at Time 1 and .76 to .83 at Time 2.

Lead teachers reported on children's academic performance in school using the Children's School-Related Knowledge, Skills, & Behavior Questionnaire. Teachers were asked to compare each child to other children in the class and rate each child on a variety of academic related skills including: logical thinking and use of numbers (math and language development),

school specific instrumental development (coping with demands of school environment) and school readiness (Meisels, 1996). The math scale included items such as "uses appropriate labels when counting" and "uses counting to quantify numbers / objects," while the language scales assessed children's use of language to describe objects, initiate / maintain interactions, and to solve problems. In addition, the school coping scale assessed concepts such as children's ability to work independently, complete tasks in time allotted, and participate in class activities. School readiness asked teachers to indicate children's academic, intellectual, and social readiness for school. Each item is judged using a 4-point scale reflecting the degree to which the child has accomplished a particular skill or behavior (e.g., can recognize numbers from 1 to 20). In pilot work, this scale has shown good internal reliability (alphas .85-.93; Fabes, 2001). In the current study, alphas ranged from .81 to .93.

In order to assess specific aspects of peer relationships, lead teachers also completed the <u>Child Behavior Scale</u> (CBS), which assesses children's social competence and problem behaviors with peers. The CBS taps internalizing and externalizing behaviors: aggression, anxious-fearful behavior, and hyperactive-distractible behavior, as well as social competence with peers: asocial and prosocial behaviors, and exclusion by peers (Ladd & Profilet, 1996). For the current study, only the aggression and anxious-fearful behaviors scales were utilized.   Teachers rated children's behavior on a three-point scale ("doesn't apply" to "certainly applies"). Ladd & Profilet reported good construct validity, internal consistency (alphas .77-.96), and stability over time. Alphas for the current study ranged from .55 to .82 at Time 1 and .79 to .91 at Time 2.

Table 1. Key Constructs and Measures
_____

I. Temperament
    1. Child Behavior Questionnaire (Combined Parent and Teacher Report)
            a. Effortful Control
            b. Negative Reactivity

II. Parenting
    1. Preschool Parenting Questionnaire / Psychological Control Scale (Parent Report)
            a. Warmth
            b. Hostility
            c. Psychological Control

III. Teacher-Child Relationship
    1. Student-Teacher Relationship Scale (Teacher Report)
            a. Closeness
            b. Conflict
            c. Dependency
    2. School Scales of Berkley Puppet Interview (Child Report)
            a. Closeness
            b. Conflict

IV. School Adjustment
            a. Strengths & Difficulties Questionnaire (Aide Report T1 & Teacher Report T2)
                    1. Emotional Symptoms
                    2. Conduct Problems
                    3. Peer Problems
            b. Child Behavior Scale (Teacher Report T1 & Time 2)
                    1. Aggressive Behaviors with Peers
                    2. Anxious-Fearful Behaviors with Peers
            c. Teacher Perception of Skills (Teacher Report T1 & Time 2)
                    1. School Readiness
                    2. School Coping
                    3. Math Development
                    4. Language Development

Results

Descriptive Analyses

Means and standard deviations for all the major variables are presented in Table 2. All variables were tested for differences on child gender and ethnicity. Analyses indicated that there were no significant differences for gender or ethnicity at Time 1 (Head Start). Additionally, there were no significant differences among variables for gender or ethnicity at Time 2 (Kindergarten). Independent variables at Time 1 were not significantly correlated with any outcome variables at Time 2, so only results at Time 1 are presented.

Table 2. Means and Standard Deviations of Major Variables

	Min	Max	Mean	SD
1. Effortful Control	2.25	6.36	4.75	.79
2. Negative Reactivity	1.25	4.96	3.39	.74
3. Parental Hostility	1.00	4.00	2.00	.65
4. Parental Psych Ctrl	1.00	3.57	1.67	.50
5. Parental Warmth	2.50	4.00	3.74	.34
6. Conflict (Teacher)	1.00	4.00	1.68	.66
7. Closeness (Teacher)	2.18	4.91	3.97	.61
8. Depend (Teacher)	1.00	4.00	1.99	.77
9. Closeness (Child)	1.00	3.00	2.50	.58
10. Conflict (Child)	1.00	3.00	1.61	.58
11. Emotional Symptoms	1.00	2.80	1.27	.37
12. Conduct Problems	1.00	3.00	1.37	.51
13. Peer Problems	1.00	2.40	1.37	.33
14. Aggression w/ Peers	1.00	3.00	1.28	.37
15. Anxiety w/ Peers	1.00	2.25	1.16	.26
16. School Readiness	1.00	5.00	3.05	.91
17. School Coping	1.00	4.00	3.07	.62
18. Language Development	1.00	4.00	2.84	.68
19. Math Development	1.00	4.00	2.50	.67

Specific Aim 1- Assessing the role of temperament in relation to school adjustment

The first hypothesis sought to examine the relations between negative reactivity and effortful control to children's behavior problems, social competence, and academic adjustment. For temperament variables, negative reactivity was significantly correlated with most of the major variables in expected directions. Negative reactivity was significantly related to more emotional symptoms, conduct problems, aggression with peers, and anxious-fearful behaviors with peers. In addition, negative reactivity was significantly related to lower levels of effortful control, less school readiness, fewer academic skills, and less ability to adapt to the demands of the school environment. Effortful control, on the other hand, was significantly related to fewer emotional symptoms, fewer conduct problems, and less aggression / anxious-fearful behavior with peers. In terms of positive adjustment, higher effortful control was related to more school readiness, more academic skills, and greater ability to adapt to the demands of the school environment (See Table 3).

Table 3. Correlations: Temperament and School Outcomes

	Emot Symp	Cond Prob	Peer Prob	Aggr Peer	Axfr Peer	School Ready	School Cope	Lang Dev	Math Dev
EC	-.16	-.38**	-.17*	-.41**	-.19*	.49**	.59**	.43**	.41**
NR	.20*	.40**	.08	.34**	.22**	-.33**	-.38**	-.33**	-.18*

Note: +p < .10,*p < .05, **p < .01; EC = Effortful Control, NR = Negative Reactivity, Emot Symp = Emotional Symptoms, Cond Prob = Conduct Problems, Peer Prob = Peer Problems, Aggr Peer= Aggression with Peers, Axfr = Axxious-Fearful Behaviors with Peers, School Ready = School Readiness, School Cope = Coping with School Environment, Lang Dev = Language Development & Math Dev = Math Development

The second hypothesis examined the interactive relationship of negative reactivity, emotion regulation, and children's school adjustment. Specifically, it was expected that effortful control would moderate the relationship between negative reactivity and school adjustment variables. Baron and Kenny's (1991) procedure was used to test for moderation, and significant

interactions were probed using Aiken and West's (1991) procedures for interpreting interactions. Emotion regulation and reactivity were centered (M = 0) prior to inclusion in the regression equations in order to minimize multicollinearity (Aiken & West, 1991). As expected, a significant interaction for negative reactivity and effortful control was found predicting aggressive behaviors with peers (See Table 4). Unstandardized betas (slopes) were calculated among children high (one standard deviation above the mean) versus low (one standard deviation below the mean) on effortful control. Relations between the negative reactivity and outcome variables were then examined for children at high and low levels of effortful control using Holmbeck's (2002) procedure for testing the significance of the slopes for children in the high and low groups. Among children with low effortful control, high negative reactivity was significantly related to higher levels of aggression; however, among children with high effortful control, negative reactivity was not significantly related to aggression (See Table 4). Overall, findings indicated that negative reactivity is most predictive of aggressive behaviors with peers among children low in effortful control.

Table 4. Regression Analysis Predicting Aggression with Peers from Negative Reactivity, Effortful Control, and their Interaction

	Aggression with Peers	
	B	β
Negative Reactivity	.09*	.20*
Effortful Control	-.14**	-.31**
Negative Reactivity x Effortful Control	-.10*	-.18*
R^2 for equation	.20*	
F for equation	$F(3, 134) = 11.15$**	
Negative Reactivity and High Effortful Control	-.07	-.16
Negative Reactivity and Low Effortful Control	.14**	.42**

Note: B is the unstandardized coefficient and β is the standardized coefficient. +p < .10, *p < .05, **p<.01

Specific Aim 2- Examining the interaction of parenting and temperament to predict children's school adjustment

The third hypothesis sought to examine the relationships between positive vs. negative parenting and children's social-emotional, behavioral and academic adjustment. Parental warmth was not significantly correlated with any school outcomes. Parental hostility, on the other hand, was related to more aggressive behaviors with peers, more anxious-fearful behaviors with peers. In addition, parental psychological controlling behaviors were related to more emotional symptoms and anxious-fearful behaviors with peers. Taken together, these correlations suggest that parenting behaviors are more related to social-emotional outcomes than academic-related outcomes (See Table 5).

Table 5. Correlations: Parenting and School Outcomes

	EC	NR	Emot Symp	Cond Prob	Peer Prob	Aggr Peer	Axfr Peer	School Ready	School Cope	Lang Dev	Math Dev
Warm	.01	-.07	.02	-.09	-.10	-.07	.10	.04	.04	.05	.00
Host	-.09	.16	.00	.10	-.08	.24*	.25*	-.10	-.09	.13	-.01
Psych Ctrl	-.19*	.05	.25*	.02	.10	-.05	.24*	-.05	-.03	-.02	-.05

Note: +p < .10,*p < .05, **p < .01; EC = Effortful Control, NR = Negative Reactivity, Warm = Warmth, Host = Hostility, and Psych Ctrl = Psychological Control.

The fourth hypothesis examined the interaction of parenting and children's temperament in predicting children's social, behavioral and academic adjustment. Specifically, the next step included examining whether effortful control and negative reactivity would moderate the relationships between parenting variables and school adjustment variables. Though children's effortful control was not found to moderate these associations, a significant interaction for parental hostility and negative reactivity was found to predict children's coping within the school

environment Holmbeck's (2002) procedure indicated high negative reactivity and high parental hostility was significantly related to lower school coping, however, lower negative reactivity was related to higher school coping regardless of level of parental hostility (See Table 6).

Table 6. Regression Analysis Predicting School Coping from Parental Hostility, Negative Reactivity, and their Interaction

	Coping with Demands of School	
	B	β
Parental Hostility	-.39	-.12
Negative Reactivity	-.36**	-.35**
Parental Hostility X Negative Reactivity	-.95*	-.19*
R^2 for equation	.19*	
F for equation	$F(3, 98) = 7.82**$	
Parental Hostility and High Negative Reactivity	-.55*	-.30*
Parental Hostility and Low Negative Reactivity	-.44	-.26

Note: B is the unstandardized coefficient and β is the standardized coefficient. $+p < .10$, $*p < .05$, $**p < .01$

Specific Aim 3- Examining the importance of the teacher-child relationship as a buffer between negative parenting temperament and school adjustment

The fifth hypothesis sought to examine teacher-child relationships as they are related to children's behavior problems, social competence with peers, and academic achievement. Teacher-child closeness was related to less emotional symptoms, fewer problems with peers, school readiness, academic skills, and better coping with demands of the school environment. Inversely, teacher-child conflict was related to more emotional problems, peer problems, conduct problems, aggressive / anxious-fearful behaviors with peers, less school readiness / coping, and poorer language development. Children's dependency on the teacher is related to conduct

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problems, aggressive / anxious behaviors with peers, less school readiness, and less coping with

the demands of the school environment (See Table 7).

Table 7. Correlations: Teacher-Child Relationship (Teacher Report) and School Outcomes

	EC	NR	Emot Prob	Cond Prob	Peer Prob	Aggr Peer	Axfr Peer	School Ready	School Cope	Lang Dev	Math Dev
TClose	.22**	-.20*	-.24**	-.08	-.27**	-.12	-.01	.25**	.40**	.53**	.36**
TConflict	-.47	.50**	.34**	.54**	.33**	.59**	.35**	-.37**	-.45**	-.26**	-.09
TDepend	-.19*	.28**	.17*	.25*	-.01	.22**	.20*	-.29**	-.17*	.02	.14

Note: +p < .10,*p < .05, **p < .01; EC = Effortful Control, NR = Negative Reactivity.

In addition to teacher report of the teacher-child relationship, at Time 1, children's

reports of the teacher-child relationship were obtained. Child report of teacher-child closeness

was related to fewer peer problems and less aggressive / anxious-fearful behaviors with peers.

Child report of teacher-child conflict, on the other hand, was related to more anxious-fearful

behaviors with peers. Overall, teachers' perceptions of the teacher-child relationship were

related to social, emotional, behavioral, and academic outcomes, while children's perceptions of

their relationships with their teachers were mainly related to social outcomes (See Table 8).

Table 8. Correlations: Teacher-Child Relationship (Child Report) and School Outcomes

	EC	NR	Emot Symp	Cond Prob	Peer Prob	Aggr Peer	Axfr Peer	School Ready	School Cope	Land Dev	Math Dev
CClose	.08	.01	-.06	-.00	.12	.07	-.22*	-.09	-.11	-.05	.02
CConflict	-.06	.03	-.08	-.02	.19*	.17+	.22*	-.03	-.06	.03	.07

Note: +p < .10,*p < .05, **p < .01; EC = Effortful Control, NR = Negative Reactivity.

The sixth hypothesis examined teacher-child relationship quality as a moderator between parenting and school adjustment variables. Though teacher-child closeness and dependency were not found to moderate these associations, a significant interaction for parental hostility and teacher-child conflict was found to be significantly related conduct problems and aggression with peers (See Tables 9-10). Examination of relationships for high and low teacher-child conflict revealed that high teacher-child conflict significantly predicted more problem behaviors than low teacher-child conflict. Specifically, upon examining the relations for high and low groups, high parental hostility and high teacher-child conflict was significantly related to more conduct problems at school and aggression with peers; however, for children with low teacher-child conflict, parental hostility was not significantly related to problem behaviors at school (See Tables 9-10). Overall, these findings indicate that high teacher-child conflict and high parental hostility is most predictive of behavioral difficulties at school.

Table 9. Regression Analysis Predicting Aggression with Peers from Parental Hostility, Teacher-Child Conflict, and their Interaction

	Aggression with Peers	
	$\underline{B}$	β
Parental Hostility	.26*	.14*
Teacher-Child Conflict	.27**	.49**
Parental Hostility X T-C Conflict	1.07**	.44**
$\underline{R}^2$ for equation	.56**	
$\underline{F}$ for equation	$\underline{F}(3, 97) = 40.43$**	
Parental Hostility and High Teacher-Child Conflict	.33**	..36**
Parental Hostility and Low Teacher-Child Conflict	-.74	-.84

Note: $\underline{B}$ is the unstandardized coefficient and β is the standardized coefficient. + p < .10, *p < .05, **p<.01

Table 10. Regression Analysis Predicting Conduct Problems from Parental Hostility, Teacher-Child Conflict, and their Interaction

	Conduct Problems	
	<u>B</u>	β
Parental Hostility	.09	.03
Teacher-Child Conflict	..35**	.47**
Parental Hostility X T-C Conflict	.72*	.21*
<u>R</u>^{2} for equation	.30*	
<u>F</u> for equation	<u>F</u>(3, 98) = 14.62**	
Parental Hostility and High Teacher-Child Conflict	.72*	.26*
Parental Hostility and Low Teacher-Child Conflict	-2.10	-.88

Note: <u>B</u> is the unstandardized coefficient and β is the standardized coefficient. +p < .06, *p < .05, **p<.01

Specific Aim 4- Examining the multiplicative effects of temperament, parenting, and teacher-child relationship quality to children's school adjustment

The final hypothesis sought to examine interrelatedness between temperament, parenting, and teacher-child relationship quality in predicting children's school adjustment. Hierarchical multiple regression analysis was used to examine main and interactive effects parenting, temperament, and the teacher-child relationship in predicting school adjustment. Parental hostility or psychological control, effortful control or negative reactivity, and teacher-child conflict or teacher-child dependency were entered at the first of the equation. The product terms reflecting the two-way interactions were entered at the second step of the equation, and the product term reflecting the three-way interaction was entered at the third step.
Results showed that the interaction of negative parenting X negative teacher-child relationships, and negative teacher-child relationships X temperament were significant predictors of aggression, while the interaction of negative parenting X and teacher-child relationships were

predictive of conduct problems; however, the three-way interaction between negative parenting, negative teacher-child relationships, and temperament was not statistically significant.

Discussion

Findings from this study provide evidence for the important role of child temperament, parenting, and quality of the teacher-child relationship in low-income children's school adjustment, particularly in children's social-emotional adjustment in the preschool classroom. Results of the current study provide evidence that negative reactivity, parental hostility, and teacher-child conflict are related to children's social-emotional and academic difficulties; however, effortful control and reduced teacher-child conflict can moderate the effects of these negative factors on low-income preschoolers' school adjustment.

With regard to associations between temperament and child preschool outcomes, child negative reactivity and effortful control were consistently significant predictors of children's social-emotional and academic outcomes. Results indicate that individual differences in children's effortful control and reactivity explain differences in social and behavioral adjustment as well as moderated the relationship between parental hostility and socio-emotional difficulties at school. Specifically, findings indicate that low-income children with high levels of negative reactivity and low effortful control are at the greatest risk for behavioral difficulties at school. This pattern has been found in previous studies (see Eisenberg and colleagues' work 1995, 1999, 2004; Morris et al., under review), strengthening support for this effect. In addition, as evidenced in preschool, high negative reactivity and low effortful control were found to be significantly related to lower levels of school readiness, less school coping, as well as lower math and language further indicating the importance of these processes in preparation for the transition to formal schooling.

Results of the current study indicate that parental hostility and psychological control are related to low-income children's social-emotional adjustment in preschool; however parental

warmth was not associated with preschool outcomes. One explanation of these findings is that negative parenting behaviors (i.e., hostility and psychological control) often occur during emotionally charged situations (i.e., reprimand for negative behaviors), which make them easier to recall. Research has found that emotionally charged events are often better remembered than general events, thus offering explanation of findings for parental hostility and psychological control, in lieu of parental warmth (Lewis & Critchley, 2003). In addition, parents, especially parents with high levels of stress (i.e., low-income parents) are often asked to estimate the prevalence of recurring behaviors over long periods of time, which can be cognitively difficult (Morsbach & Prinz, 2006). In order to remedy this problem, other studies assessing the relationship between parental warmth and child adjustment in early childhood have offered evidence of this association by utilizing observational measures of parental warmth (Fuligni, Han & Brooks-Gunn, 2004; Roberts, 1986). Although observers have more of a limited sample of interactions on which to report, having observations of parenting behaviors, particularly in terms of positive parenting in early childhood, may offer the opportunity to assess family interaction with a higher degree accuracy (Simons & Conger, 2007).

The current study expands the literature by demonstrating the cumulative effects of parental hostility when combined with child negative reactivity in predicting children's school adjustment during the preschool period. Many studies have provided theoretical support that children high in negative reactivity may elicit more hostile responses from parents and thus, increasing the likelihood of a child exhibiting later behavior problems (Bates, Pettit, Dodge, & Ridge, 1998; Scaramella & Conger, 2003; Shaw et al, 2001). The findings of the current study demonstrate a similar relationship with a low income preschool sample. Specifically, children with high negative reactivity and whose parents exhibit high hostility are less able to cope with

the demands of the school environment. Although negative parenting and children's negative reactivity have been shown to be related to children's academic outcomes in previous and recent studies (Guerin, Gottfried, Oliver, & Thomas, 1994; Lerner, Lerner, & Zabski, 1985; Morris et al., under review), in the current study, children's negative reactivity was significantly related to school coping and school readiness, rather than academic variables (i.e., math and language development). One explanation of these findings could be that low-income preschoolers' negative reactivity is not yet having a direct effect on their academic achievement, but rather is related indirectly through children's adaptive coping within the school environment. In terms of early child temperament and schooling, Thomas and Chess (1977) state that difficult children, or those characterized by intense negative reactivity and slow adaptability to new situations at school, are the children more likely to have social and academic difficulties at school. Similarly, Keogh (2003) states that the temperament factor of "task orientation", which includes activity and persistence can influence both children's school performance and teacher-student interactions, thus offers the possibility that negative reactivity is predictive of children's academic functioning indirectly through children's adaptive coping within the school environment. Though this relationship was not examined in the current study, the significance of the associations between the variables in question offers evidence that these relationships deserve further examination.

As evidenced in previous studies assessing the relationship between teacher-child relationship quality and children's school adjustment, the results of the current study also indicate that low teacher-child closeness related to social, behavioral, and academic success; whereas, negative teacher child relationships (i.e., conflict and dependency) were related to school adjustment difficulties (Hamre & Pianta, 2001; Pianta & Steinberg, 1992; Pianta &

Stuhlman, 2004).   Though teacher report of conflict was related to social, behavioral, and academic adjustment in expected directions, child report of the teacher-child closeness were differentially related to children's social relationships with peers more than general behavioral adjustment. Previous studies of the teacher-child relationship and peer relationships have also found that the quality of the teacher–child relationship is differentially related to children's peer relationships at school (Colwell & Lindsey, 2002; Howes, 2000; Howes, Hamilton, & Matheson, 1994). Early childhood classrooms are viewed as a template of social relationships where children establish their own relationship quality (i.e., teachers and peers), which will continue over the transition to formal schooling (Howes, Matheson, & Hamilton, 1994).   Colwell and Lindsey (2002) have theorized that the quality of the teacher-child relationship may serve as an indicator of children's social functioning within the classroom. Specifically, positive teacher-child interactions may increase school liking and security within this relationship which may translate to children's positive peer interactions. Findings of the current study supports the argument that teacher-child relationships can serve as important contributors and predictors of children's social functioning.

Another interesting finding in the current study is that teacher report of the teacher-child relationship is related to social, behavioral, and academic outcomes, while child report of the teacher-child relationship is only significantly related to children's social relationships with peers. One possible explanation for the differentiation in findings is that teacher report of the teacher-child relationship were more based on teacher's individual perceptions of their relationships with the children in both social and academic arenas (i.e., during storytime, completing alphabet activities together, etc), whereas children's report of the teacher-child relationship quality is based more on their perceptions of how much the teacher meets their

needs during class time (i.e., autonomy during activities, allowing interactions with peers). Previous studies have found that children's positive perceptions of teaching and cooperative teaching styles were related to child reported school liking and positive peer relationships (Ireson & Hallam, 2005; Johnson & Johnson, 1983). Though these results were found during later childhood, these findings highlight the possibility that preschoolers' report of the teacher-child relationship, which hasn't been assessed in previous studies, may assess preschoolers' satisfaction with their teacher's teaching style rather than specific aspects of the teacher-child relationship.

The current study also sought to examine the multiplicative effects of parenting and teacher-child relationship quality to children's school adjustment. Results indicated that the combination of high parental hostility and high teacher-child conflict are related to more conduct problems and aggressive behaviors with peers at school. In that preschool is usually the child's first experience with the teacher-child relationship, children use their previous interactions with parents as a basis to construct their teacher-child relationships. In terms of conflict, when teachers perceive a child has being "difficult" they are likely to promote a coercive pattern of interactions, where negative attributes of the child interacts with unresponsiveness of the teacher to promote negative teacher behavior patterns. This is an example of Patterson's (1982) "Coercion Theory," where disruptive behaviors in young children have been unintentionally trained by negative parent-child and teacher-child interactions, thus making the child believe that these interaction styles are appropriate in social situations. As a child enters new classrooms with the same coping strategies as they exhibited in the context of the parent-child relationship, with a lack of understanding of contextual and dispositional effects, an unresponsive teacher could display passive acceptance of a child's maladaptive coping style, therefore reinforcing

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continuity of problem behaviors. Given that the interaction of high parental hostility and high teacher-child conflict were predictive of problem behaviors shows that parent and teacher interventions, even as early as preschool, may be effective in preventing subsequent problem behaviors in low-income children.

Though it was expected that low parental hostility and low-teacher child conflict would be related to the fewest behavior problems, a somewhat different pattern emerged. Results indicated that when there was low teacher-child conflict in the classroom, the association between parental hostility and problem behaviors was not significant. Lynch and Cicchetti's (1992) study of maltreated children's relationships with their teachers hypothesized that secure relationships with teachers may compensate for negative relationships with parents by providing the child with new representational models. Teachers influence a child's emerging cognitive skills through the social and personal experiences they provide for children and by encouraging and modeling behaviors for social interaction (Gauvain, 2001). For example, the structure that a teacher provides in face-to-face encounters and in the activities they arrange for children seem to be the most effective in helping children learn about and gradually adopt new cognitive skills (Rogoff, 1990). Rogoff (1995) states that the actual adult–child interaction itself may provide children with routines that they can use as their contribution to more complex activities, like providing representations of meaningful actions on which children can use to build their own social repertoires. Results of Cicchetti and Lynch (1992) showed that among children with a history of negative parent-child interactions children, yet had high levels of engagement with teachers exhibited higher levels of positive emotions and were better equipped to the demands of formal schooling, thus highlighting how positive teacher-child relationships can serve as a buffer between negative parenting and subsequent maladaptive school behaviors.

There are several strengths to the current study. This study uses a rural, low income sample of children to investigate contextual and dispositional influences on school adjustment in both preschool and in kindergarten. The current study is one of only a few studies that have investigated the relations between parent-child, teacher-child, and child temperament in the prediction of low-income children's social, behavioral, and academic outcomes. Findings of the current study confirm past research suggesting that child temperament and social relationships are important components of school success, while offering evidence that the combination of these relationships can explain variations in children's socio-emotional and academic outcomes. Another strength of this study is that instead of using just lead teacher reports of school outcomes, preschool teacher aides', who are most often responsible for behavioral management within the early childhood classroom, reports of children's social and behavioral adjustment were utilized. Teachers' perceptions of children's behavior can vary, even within the same classroom context. Utilizing teacher aide reports of child outcomes offered the opportunity to reduce the likelihood of shared method variance (which is often a problem when assessing school factors) in teachers' report of relationships and school outcomes. The final and very important strength of the current study is the use of child report of the teacher-child relationship. The fact that children's report of the teacher-child relationship predicted both teacher and aide report of socio-emotional outcomes is striking, and highlights the fact that children's perceptions of the teacher-child relationship, even as early as preschool, can offer valuable insight into mechanisms of children's relationships with teachers.

One major limitation of this study is the lack of sample size power needed in order to examine if the three-way interaction of temperament, parenting, and teacher-child relationships were predictive of children's school outcomes. In addition, in order to have more insight into

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specifics of children's social relationships with peers, lead teacher reports of children's social behaviors with peers were utilized. Having teacher aide or observer report of these peer relationships would have reduced the problem of shared method variance (i.e., teacher report of teacher-child relationships and behavior). Nevertheless, it is important to note that when examining school adjustment, teacher (or aide) report of outcomes is probably the best method of data collection.

Unexpectedly, contextual and dispositional influences at Time 1 did not predict functioning at Time 2; however, examination of outcomes at Time 1 and Time 2 indicate that there was a slight increase in problem behaviors and academic skills in kindergarten. For this reason, independent variables at Time 1 may uniquely predict Time 1 adjustment, but as adjustment changed in relation to outcomes of interest in kindergarten, the association among T1 predictors and T2 outcomes diminished. Another possibility for this occurrence is that different teachers are reporting on outcomes at two different points in time (preschool outcomes vs. kindergarten outcomes), making it difficult to examine Time 1 predictors with outcomes in a very different context. In addition, between Time 1 and Time 2 data collection, participating families and teachers were exposed to effects of Hurricane Katrina. Although assumptions about relationships between effects of the hurricane and study variables were not assessed, exposure to an event of this nature could have had a significant effect on all constructs of interest at Time 2.

Because children's early experiences in school set the foundation for later school success, understanding the important role of children's temperament as well as relationships with caregivers can aid in the creation of intervention and prevention programs aimed at promoting school readiness and reducing problem behaviors. The findings from the current study suggest that fostering emotion regulation skills, reducing negative reactivity, and improving adult-child

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interactions are important areas for intervention to increase low-income children's school success. In terms of practical applications, when teachers have problems with children's social-emotional and academic progress at school, parents and teachers should attempt to work together in order to decrease the prevalence of problem behaviors in the classroom. Our findings are in line with intervention research aimed at reducing child school difficulties over time which has found that when interventions include both teachers and parents, there is more of a decrease in child behavior problems over time, compared to interventions with just parents alone (Webster-Stratton, Reid, & Hammond, 2004). Thus, intervention efforts and school administrators/policies should involve both parents and teachers, and should work toward developing a greater understanding of child temperament and contextual influence on child behavior in order to reduce problem behaviors and promote social, behavioral, and academic success for children at risk.

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Correlation Matrix of Predictor Variables

Table 11. Correlations: Predictor Variables

	1	2	3	4	5	6	7	8	9	10
1. Effortful Control		-.57**	-.09	-.19*	.01	-.47**	.22**	-.19*	.08	-.06
2. Negative Reactivity			.16	.05	-.07	.51**	-.20*	.28**	.01	.03
3. Parental Hostility				.44**	-.17	.09	-.03	-.05	-.27*	.25*
4. Parental Psych Ctrl					-.19*	.03	-.04	-.07	-.07	.07
5. Parental Warmth						-.09	.03	-.09	.29*	-.25*
6. Conflict (Teacher)							-.36**	.34**	.12	-.18
7. Closeness (Teacher)								.09	.01	.15
8. Depend (Teacher)									.12	-.13
9. Closeness (Child)										-.61**
10. Conflict (Child)										

Note: +p < .10,*p < .05, **p < .01

Correlation Matrix of School Outcome Variables

Table 12. Correlations: School Outcome Variables

	1	2	3	4	5	6	7	8	9
1. Emotional Symptoms		.05	.28**	-.06	.37**	-.17*	-.23**	-.28**	-.12
2. Conduct Problems			.28**	.72**	.23**	-.27**	-.17*	-.01	.06
3. Peer Problems				.28**	.31**	-.22**	-.19*	-.12	-.05
4. Aggression w/ Peers					.34**	-.24**	-.36**	-.02	.01
5. Anxiety w/ Peers						-.23**	-.14	-.04	-.05
6. School Readiness							.51**	.48**	.44**
7. School Coping								.67**	.41**
8. Language Development									.66**
9. Math Development									

Note: +p < .10, *p < .05, **p < .01

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Figure 2. Interaction of Negative Reactivity & Effortful Control to Predict Aggression with Peers
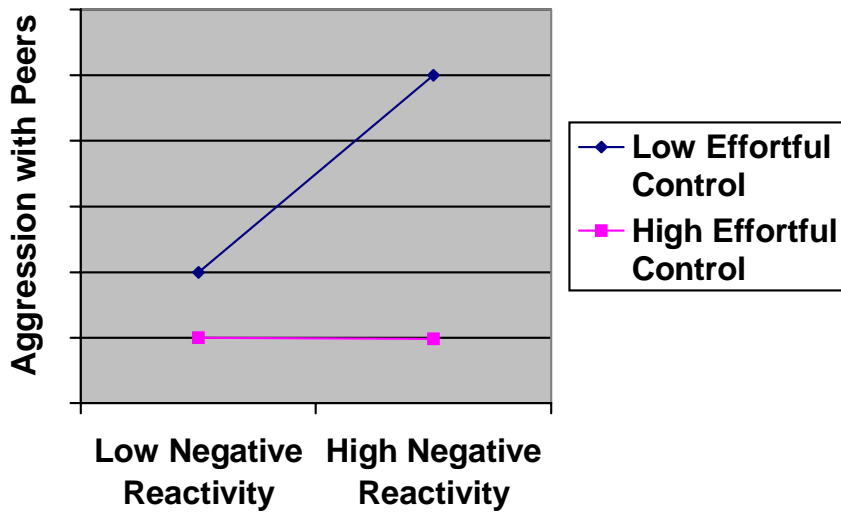

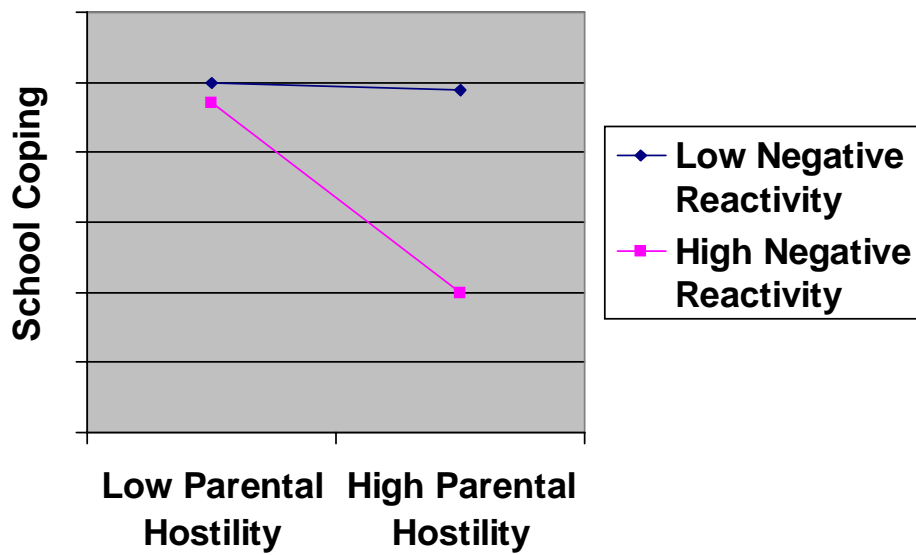Figure 3. Interaction of Parental Hostility & Negative Reactivity Predict School Coping

Figure 4. Interaction of Parental Hostility & Teacher-Child Conflict to Aggression with Peers
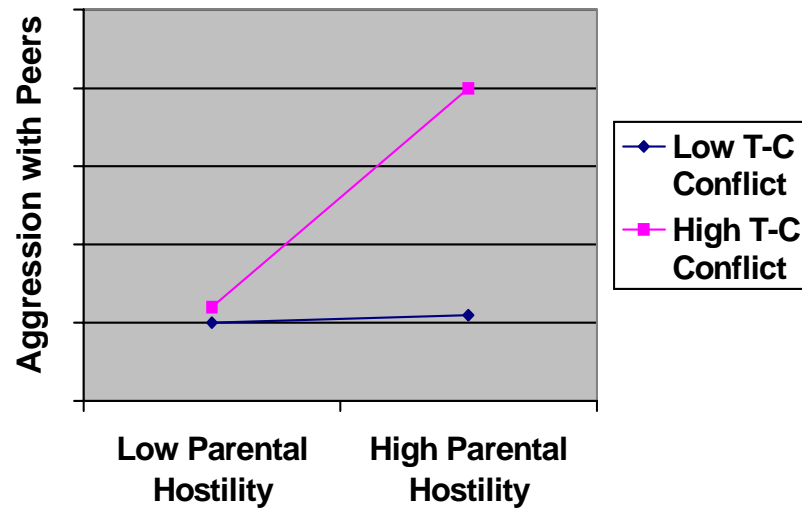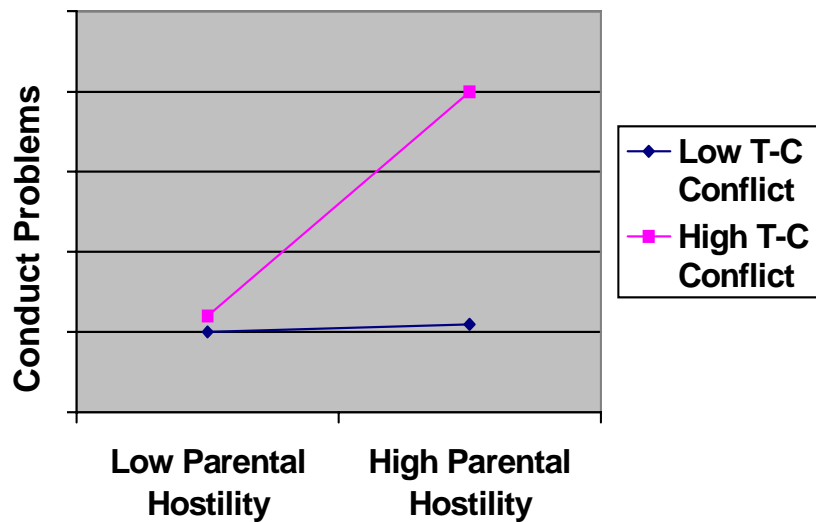

Figure 5. Interaction of Parental Hostility & Teacher-Child Conflict to Conduct Problems

Appendix C

Questionnaire Items for Major Variables (* indicates items removed)

Child Behavior Questionnaire (Parent and Lead Teacher Report)

Anger:
1. Gets irritated when s/he makes a mistake.
2. Gets quite frustrated when prevented from doing something s/he wants to do.
3. Gets mad when provoked by other children.
4. Gets angry when called in from play before s/he is ready to quit.
5. Has temper tantrums when s/he doesn't get what s/he wants.
6. Gets angry when s/he can't find something s/he wants to play with.
7. Rarely gets upset when told s/he has to go to bed (recoded)
8. Becomes easily frustrated when tired.
9. Easily gets irritated when s/he has trouble with some task.
10. Rarely protests when another child takes his/her toy away (recoded)
11. Acts shy around new people (recoded).

Sadness:
1. Sometimes appears downcast for no reason.
2. Becomes tearful when told to do something s/he does not want to do.
3. Rarely cries when s/he hears a sad story (recoded).
4. Becomes upset when loved relatives or friends are getting ready to leave.
5. Tends to feel "down" at the end of an exciting day.
6. Rarely becomes upset when watching a sad event in a video (recoded).
7. Does not usually become tearful when tired (recoded).
8. Cries sadly when a favorite toy gets lost or broken.
9. Rarely becomes discouraged when s/he has trouble making something work (recoded).
10. His/Her feelings are easily hurt by what others say.

Inhibitory Control:
1. Has trouble sitting still when s/he is told to (recoded).
2. Is good at following instruction.
3. Is able to resist laughing or smiling when it isn't appropriate.
4. Is usually able to resist temptation when told s/he is not supposed to do something.
5. Has a hard time following instructions (recoded).
6. Can wait before entering into a new activity if asked to.
7. Has difficulty waiting in line for something (recoded).
8. Approaches places s/he has been told are dangerous slowly and cautiously.
9. Can easily stop an activity when s/he is told "no".
10. Can lower his/her voice when asked to do so.

Attention Shifting:
1. Has a lot of trouble stopping an activity when called to do something else (recoded).
2. Can easily quit working on a project if asked (recoded).
3. Often doesn't seem to hear me when s/he is working on something (recoded).
4. Has a hard time shifting from one activity to another.

Attention Focusing:
1. When drawing or coloring in a book, shows strong concentration.
2. Is easily distracted when listening to a story (recoded).
3. When picking up toys or doing other jobs, usually keeps at the task until it is done.
4. Sometimes becomes absorbed in a picture book and looks at it for a long time.
5. When practicing an activity has a hard time keeping his/her mind on it (recoded).
6. Will move from one task to another without completing any (recoded).
7. When building or putting something together, becomes very involved in what s/he is doing for long periods of time.
8. Has a hard time concentrating on an activity when there are distracting noises.
9. Has difficulty leaving a project s/he has begun (recoded).

Preschool Parenting Questionnaire / Psychological Control Scale (Parent Report)

Hostility:
1. I yell at my child at least once a day.
2. When my child does something wrong, I sometimes threaten him/her.
3. When he/she really upsets me, I loose my patience and punish him/her more severely than I really mean to.
4. I snap at my child when he/she gets on my nerves.
5. I sometimes make fun of my child.

Psych Control:
1. I bring up my child's past mistakes when criticizing him/her.
2. I tell my child that his/her behavior was dumb or stupid.
3. I tell my child that s/he should feel ashamed when s/he misbehaves.
4. I tell my child I feel embarrassed when s/he doesn't meet my expectations.
5. If my child hurts my feelings, I stop talking to him/her until s/he pleases me again.
6. I am less friendly with my child when my child does not see things my way.
7. I feel disappointed when my child misbehaves.

Warmth:
1. I make sure my child knows that I appreciate what he/she tries to accomplish.
2. I make my child feel that what he/she does is important.
3. I praise my child when he/she does something well.
4. I talk to or hold my child when he/she is scared.
5. When my child and I play together, we laugh a lot.
6. My child and I play together on the floor.
7. I often smile when I am around my child.
8. I joke around with my child.

Student-Teacher Relationship Scale (Lead Teacher Report)

Conflict:
1. This child and I always seem to be struggling with each other.
2. This child easily becomes angry with me.
3. This child feels that I treat him/her unfairly.
4. This child sees me as a source of punishment and criticism.
5. This child remains angry or Is resistant after being disciplined.
6. When this child is misbehaving, he/she responds well to my look or tone of voice.
7. Dealing with this child drains my energy.
8. When this child is in a bad mood, I know we're in for a long and difficult day.
9. This child's feelings toward me can be unpredictable or can change suddenly.
10. Despite my best efforts, I'm uncomfortable with how this child and I get along.
11. This child whines or cries when he/she wants something from me.
12. This child is sneaky or manipulative with me.

Closeness:
1. I share an affectionate, warm relationship with this child.
2. If upset, this child will seek comfort from me.
3. This child is uncomfortable with physical affection or touch from me (recoded).
4. This child values his/her relationship with me.
5. When I praise this child, he/she beams with pride.
6. This child spontaneously shares information about himself/herself
7. This child tries to please me.
8. It is easy to be in tune with what this child is feeling.
9. I've noticed this child copying my behavior or ways off doing things.
10. This child openly shares his/her feelings and experiences with me.
11. My interactions with this child make me feel effective and confident.

Dependency:
1. This child appears hurt of embarrassed when I correct him/her.
2. This child reacts strongly to separation from me.
3. This child is overly dependent on me.
4. This child asks for my help when he/she really does not need help.
5. This child expresses hurt or jealousy when I spend time with other children.

Teacher-Child Relationship: Berkley Puppet Interview (Child Report)

Conflict:
1. My teacher isn't nice to me.
2. My teacher doesn't care about me.
3. My teacher is mean to me.
4. My teacher makes me mad.
5. My teacher gets angry with me.
6. My teacher yells at me.

Closeness:
1. My teacher likes me.
2. I like my teacher a lot.
3. I know when my teacher thinks I've done a good job.
4. If I need help, I know that my teacher will help me.

Strengths and Difficulties Questionnaire (Teacher Assistant Report)

Emotional Symptoms:
1. Often complains of headaches stomachaches, or sickness.
2. Many worries, or often seems worried.
3. Nervous, or clingy in new situation, easily looses confidence.
4. Many fears, easily scared.
5. Often unhappy, downhearted or tearful*

Conduct Problems:
1. Often fights with other children or bullies them.
2. Often argumentative with adults.
3. Can be spiteful to others.
4. Often has temper tantrums*

Peer Problems:
1. Rather solitary, prefers to play alone.
2. Has at least one good friend.
3. Generally liked by other children.
4. Picked on or bullied by other children.
5. Gets along better with adults than with other children.

Child Behavior Scale (Lead Teacher Report)

Aggressive with Peers:
1. Fights
2. Bullies
3. Kicks, bites, hits
4. Aggressive
5. Taunts, teases
6. Threatens
7. Argues

Anxious-Fearful:
1. Is worried
2. Appears distressed
3. Fearful or afraid
4. Appears miserable, distressed*

Teacher Perception of Skills (Lead Teacher Report)

School Coping:
1. Can work independently.
2. Demonstrates willingness to try new things.
3. Understands playground and classroom rules.
4. Enjoys being in school.
5. Can work effectively in a group.
6. Actively participates in class activities.
7. Focused attention during large group teacher-directed activities*

School Readiness:
1. Overall, how would you rate this child's academic skills compared to other children in his or her class?
2. Based on your experience, how intellectually ready was this child for kindergarten?
3. Based on your experience, how socially ready was this child for kindergarten?

Language Development:
1. Uses elaborate language to describe objects and events.
2. Uses language to initiate and maintain interactions with adults and peers.
3. Uses language to gather information and solve problems (asks questions).

Math Development:
1. Understands and uses such concepts as many, more, less, etc.
2. Uses appropriate labels ("one, two, etc.") when counting objects.
3. Uses counting reliably to quantify perceptual (< 5) numbers.
4. Uses counting reliably to quantify elementary (5 to 12) numbers.
5. Uses counting to quantify larger number (20+) objects.

Appendix D

Approval for Use of Human Subjects

**University Committee for the Protection
of Human Subjects in Research
University of New Orleans**

Campus Correspondence

Amanda Morris, Ph.D.
Department of Psychology
GP 2001

8/18/04

RE: Family Development and Education Project—Picayune Head Start

IRB#: 8AUG04

The IRB has deemed that the proposed research project is now in compliance with
current University of New Orleans and Federal regulations.

Be advised that approval is only valid for one year from the approval date. Any changes
to the procedures or protocols must be reviewed and approved by the IRB prior to
implementation. Use the IRB# listed on the first page of this letter in all future
correspondence regarding this proposal.

If an adverse, unforeseen event occurs (e.g., physical, social, or emotional harm), you
are required to inform the IRB as soon as possible after the event.

Best of luck with your project!
Sincerely,

Laura Scaramella, Ph.D.
Chair, University Committee for the Protection of Human Subjects in Research

Vita

Sonya Shaniece Myers was born on April 13, 1980 in Picayune, Mississippi. After receiving her Bachelor of Science degree in Psychology (Emphasis: Child Development & Minor: Sociology) from the University of Southern Mississippi in May 2002, she entered the University of New Orleans as a graduate student in the Department of Psychology. In August 2004, Sonya received her Master of Science degree in Applied Developmental Psychology. Her research interests include examining parent, teacher, and temperament contributions to the socio-emotional and academic adjustment of children from low-income families. In October 2004, Sonya received the Head Start Graduate Student Research Grant funded by the Department of Health and Human Services Administration for Children and Families, which funded her dissertation research from October 2004-2006. After receiving her doctorate, she will be working as a Post Doctoral Fellow at The University of Virginia with Dr. Robert Pianta and Dr. Sara Rimm-Kaufman on Risk and Prevention research. She plans on continuing her line of research and eventually working in social policy.