

## **ABSTRACT**

SCHEUNEMANN, ANN ELIZABETH. Child Perceptions of Parenting as Mediators of the Relationship Between Mother-Child Conflict Tactics and Problem Behaviors. (Under the direction of Dr. Craig C. Brookins.)

This study examined the longitudinal relationship between child maltreatment, in the form of harsh parental conflict resolution strategies, and externalizing and internalizing behaviors in children. Child perceptions of parenting as a mediator between harsh parental conflict resolution strategies and child outcomes were also examined. Parent-child dyads were recruited through Child Protection Services in the child's final year of preschool. Data were available for 94 dyads, 32 of which remained in the study across three time points: preschool, kindergarten, and first grade. Hierarchical Linear Modeling was used to investigate the longitudinal relationship between mother-reported parent-child conflict strategies, teacher-reported child behavior, and child perceptions of parenting as assessed through puppet interviews. Findings revealed no relationship between conflict strategies, teacher-reported child behavior, and child perceptions of parenting, indicating that the mediator model was unable to explain differences in teacher reports of child behavior, in this sample. Limitations and future directions are discussed.

Keywords: child maltreatment, conflict resolution, externalizing, internalizing, perceptions of parenting

Child Perceptions of Parenting as Mediators of the Relationship Between Mother-Child  
Conflict Tactics and Problem Behaviors

by  
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## CHAPTER 1

### Introduction

Despite efforts over the years to combat it, child maltreatment remains a prevalent aspect of American society. In 2015 alone, the U.S. Department of Health and Human Services reported approximately 69,213 children in North Carolina required a response from child protective services; 7,857 of those children were found to be victims (2017). 54.6% of these children suffered neglect, 22.7% suffered physical abuse, and 20.3% suffered sexual abuse (2017). These rates are disturbing because maltreatment puts children at risk for numerous pervasive adverse effects, such as delinquency, aggression, depression, and anxiety (Gershoff, 2002; Margolin, Vickerman, Oliver, & Gordis, 2010; Mrug, 2008; Sheehan & Watson, 2008). Younger children are most at risk for maltreatment (U.S. Department of Health and Human Services, 2016); 25% of victims are under the age of three and 45% of victims are under the age of five nationally (SafeHorizon, 2016). Younger children are also more likely to die because of maltreatment; in the United States in 2014 over 70% of deaths attributed to abuse or neglect were children under 3 years of age (2016). For children who survive maltreatment, many suffer a lifetime of consequences which impact not only victims but society as a whole, through medical, financial, and indirect costs and public programs (Cicchetti & Toth, 2005). The estimated lifetime cost to victims who survive maltreatment is over \$210,000 per person and includes healthcare, special education, criminal justice, welfare, and productivity loss, among others (Fang, Brown, Florence, & Mercy, 2012). Not only are younger children at higher risk for maltreatment, but children maltreated at a younger age tend to have greater adjustment problems in adolescence than those maltreated later in childhood (Keiley, Howe, Dodge, Bates, & Pettit, 2001). Maltreatment should not

happen at any age, but because it has more long-term detrimental consequences for younger children preventing early childhood maltreatment could have the greatest effect on improving children's lives. Also, preventing early childhood maltreatment might decrease the odds of maltreatment ever occurring, because maltreatment is most likely to occur in early childhood and because preventive measures, if adopted early, might have lasting effects.

One reason for the detrimental impacts of early childhood maltreatment is that early childhood is a time of rapid development physically, mentally, and emotionally. Young children learn quickly as the brain develops, as executive functioning increases, and as they observe and interact with the world around them. For example, many theorists and over fifty years of research suggest that children learn behaviors by observing, imitating, and modeling other people around them (e.g., Bandura, Ross, & Ross, 1961). Children are also learning life-long skills such as communication, which has been linked to emotional understanding, pro-social behavior, and moral internalization (Laible & Thompson, 2002). Maltreatment can disrupt healthy learning and result in negative outcomes, including both internalizing and externalizing behaviors (e.g. Coplan, Closson, & Arbeau, 2007; Sheehan & Watson, 2008), which affect a child's mental health and ability to healthfully socialize.

Because so much of young children's lives are spent at home, parents and parenting are the predominant determinants of this age group's development. Positive parenting can teach children prosocial behavior, moral skills, and emotion regulation. Negative parenting and maltreatment – including poor conflict resolution tactics - can have the opposite effect, resulting in poor outcomes including problem behaviors and anxiety (e.g. Gershoff, 2002; Maughan & Cicchetti, 2002) not only at home, but in school and peer interactions as well. Use of abuse, neglect, or corporal punishment has resulted in observable negative outcomes

from parents and children, as well as from teachers (Snyder, Cramer, Afrank, & Patterson, 2005). Unfortunately, most child maltreatment is committed by parents; in 79.3% of the abuse cases reported in the United States 2014, parents were the perpetrators (U.S. Department of Health and Human Services, 2016), placing all of these children at risk for negative life-long consequences.

Poor parenting is not the only determinate of negative outcomes in young children. Some researchers have found that a child's perception of parenting also affects the prevalence of problem behavior and anxiety (Lansford, Malone, Dodge, Lei Chang, et al., 2010; Stadelmann, Perren, Von Wyl, & Von Klitzing, 2007), perhaps even more so than other family variables. Negative perceptions of parenting and parent discipline tend to be associated with more negative child outcomes. Reciprocally, positive perceptions of parenting could result in more prosocial behavior in young children (Stadelmann, Perren, Von Wyl, & Von Klitzing, 2007). Apparently, whether or not the child believes a parent's behavior to be justified or fair impacts the child's reaction to being disciplined, and these perceptions could in turn influence the child's reaction to maltreatment and harsh disciplinary tactics. In other words, the effects of maltreatment might be minimized or exacerbated, depending upon the child's beliefs.

Because early childhood maltreatment is such an issue, it is important to understand its causes so that appropriate interventions can be established to minimize its occurrence. One possible pathway for maltreatment is poor parenting, through negative conflict resolution strategies. Even the use of corporal punishment has negative consequences, and because corporal punishment is linked to maltreatment (Gershoff, 2002), its use is even more troubling. This proposal seeks to confirm prior research on the association between negative

parent conflict strategies and two negative child behavior constructs – externalizing and internalizing behavior – in preschool, kindergarten, and first-grade children. This age group was chosen because they are among the most vulnerable to maltreatment, and because these children are going through an important developmental transition from home to school. Analysis of conflict resolution at home and its outcomes at school will provide rich data on the influence of harsh parenting in a different context, examining how it impacts kindergarteners' relationships with peers. Additionally, this proposal seeks to further knowledge of the conflict resolution and child outcome connection by exploring child perceptions of parenting as a possible mediator between the two.

This proposal will begin with a discussion of the importance of this age as it relates to social development, highlighting the maturational variables which could be affected by maltreatment. This section serves as reasoning for the value of this research. Following this will be a review of the literature on internalizing and then externalizing behavior. A review of the literature on parenting and parent-child conflict, including perceptions of parenting will follow. A final review will focus on peer interaction in kindergarten, and prior literature examining the effects of parenting on peer reaction in school. After providing this foundational groundwork, hypotheses, methods, and data analytic strategies will be presented.

## CHAPTER 2

### Literature Review

#### Early Childhood Development

Because of the rate at which children learn and change in early life, maltreatment has the potential to affect multiple social, cognitive, and physiological developmental stages, potentially with long-term consequences. To fully understand the possible negative effects of maltreatment in the social development of this age group, I will first explore the ways in which young children are maturing.

Beginning in infancy, children form attachments to parents. Attachment theory postulates that children form enduring and affectational bonds with caregivers, the quality of which depends on the quality of the caregiver's interaction (Ainsworth, Blehar, Waters & Wall, 1978). Four main attachment types have been identified based on the literature: secure, anxious/avoidant, anxious/ambivalent, and disorganized. Maltreated children tend to be disorganized (Carlson, Cicchetti, Barnett, & Braunwald, 1989), anxious/avoidant (abuse) or anxious/ambivalent (neglect) (Finzi, Cohen, Sapir, & Weizman, 2000). Most serious of these is disorganized attachment, which is a predictor for serious psychopathology and maladjustment, including internalizing and externalizing behavior and emotion dysregulation (Benoit, 2004).

In addition to forming attachments, preschoolers are also beginning to develop emotional reactivity and emotional regulation, which have been found to be related to internal and external factors. Vagal tone, which is related to emotional reactivity, and vagal tone regulation, which in turn has been found to be related to emotional, cognitive, and behavioral challenges, have been found to differ between 5-year old children who display

problem behavior and children who did not. (Calkins, Graziano, & Keane, 2007). Perhaps relatedly, Maughan & Cicchetti (2002) used simulated arguments between a research assistant and mothers and found that maltreatment in 4-6- year-old children was associated with a 5.6 to 6.3-fold increase in emotion regulation dysfunction. Specifically, over the researcher-mother interaction which included friendly, angry, and reconciliatory periods, maltreated children tended to display one of two negative emotional responses: over-controlled/unresponsive children displayed less emotional reactivity than either the well-adapted or under-controlled/ambivalent children, who exhibited significantly higher rates of both hostility and smiling/laughing. The study additionally linked under-controlled/ambivalent emotional regulation with higher maternal ratings of social problems and as a mediator between maltreatment and anxious or depressed behavior.

One danger of early childhood maltreatment is the increased potential for long-term negative outcomes. One 12-year prospective study using data from the Child Development Project found that children who suffered maltreatment by age 5 were more likely to be aggressive, anxious or depressed, experience dissociation and posttraumatic stress disorder, have social and thought problems, and be socially withdrawn in adolescence (high school) (Lansford JE et al., 2002). 74% of adolescents who had experienced maltreatment at age 5 displayed behavior problems 12 years later. These adolescents also tended to be absent more days of school and had lower chances of attending college. A later study additionally found increased likelihood of having committed both violent and nonviolent offenses, and social problems like job retention and teen parenthood in girls (Lansford et al., 2007).

As victims of abuse move into adulthood, evidence also suggests that they are more likely than non-abused individuals to become abusers themselves. One meta-analysis found

associations between corporal punishment and multiple adult domains, including aggression (Gersun, 2002; Lansford et al., 2007). The existence of intergenerational violence is also well supported. (Alexander, 2014).

Potential factors contributing to the difficulties these children face are the numerous negative behavioral outcomes which have been found through decades of research to be associated with child abuse. Cumulative parental violence against children has been found to predict internalizing behaviors (e.g. somatic complaints), externalizing behaviors (e.g. aggression, delinquency), and academic failure over time (Margolin, Vickerman, Oliver, & Gordis, 2010). The next two sections will discuss in further detail these outcomes, their causes and correlations, and their implications.

### **Internalizing Behavior**

Internalizing behavior is negative behavior which is directed at oneself, and includes anxiety, depression, social withdrawal, somatic complaints (physiological disturbances), and negative self-concepts. Internalizing behavior has been found to increase from early childhood to adolescence in girls but not boys (Leve, Kim, & Pears, 2005). In the age group in this proposal, loneliness is positively associated with social anxiety (Coplan, Closson, & Arbeau, 2007). Internalizing behavior in 3-5-year-old children, as established by teacher report using Achenbach's Teacher report form, has also found to be correlated with maternal factors such as education and the amount of social support the mother receives from others (Burlaka, Bermann, & Graham-Bermann, 2014). Though the sample in this study was limited to children in the Head Start Program, this research lends credence to the argument that mothers have a significant influence on behavior patterns in this age group.

Maltreated children tend to portray more internalizing behaviors than non-maltreated children. The 2002 Maughan & Cicchetti study mentioned above, which directly compared non-maltreated and maltreated child-parent dyads, found that 4-6-year-old maltreated children were more likely to be both withdrawn and anxious/depressed than their non-maltreated comparisons, according to maternal report on the Child Behavior Checklist. Even corporal punishment, seen by many researchers as a distinct place on the less severe end of the maltreatment continuum, has been connected with negative outcomes - lower mental health ratings (e.g. more depression and distress, decreased confidence and assertiveness, and increased feelings of humiliation and helplessness) in children (Gershoff, 2002).

### **Externalizing Behavior**

Whereas internalizing behavior has a focus on the self, externalizing behavior includes behaviors which are harmful to others, such as physical harm (e.g. hitting, kicking, biting), delinquent behavior, and relational aggression. Externalizing behavior has been found to be significantly positively correlated with internalizing behavior in young children (Burlaka, Bermann, & Graham-Bermann, 2014). Studies suggest that there are gender differences in the manifestation of externalizing behavior; girls tend to more often display relational aggression while boys tend to use physical aggression (e.g. Keane & Calkins, 2004). Normative developmental patterns suggest that externalizing behavior decreases from young childhood to adolescence (i.e. Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Keiley, Howe, Dodge, Bates, & Pettit, 2001; Leve, Kim, & Pears, 2005), presumably as a product of maturation which encourages suppression of aggression. One concern regarding aggression is its relation to peer rejection, which could inhibit the development of appropriate responses to social situations (Dodge et al., 2003). Lansford, Malone, Dodge, Pettit, & Bates

(2010) has also provided evidence for a cascade effect in which peer rejection influences aggression, which in turn influences peer rejection. Most toddlers use physical aggression, but few children continue to use physical aggression as they age (Brame, Nagin, & Tremblay, 2001; Broidy et al., 2003; Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006). Toddlers who use aggression more often have also been found to be more likely to continue along a high-aggression trajectory throughout (Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006). Boys have been found to display more physical aggression than girls, and Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay (2006) found that almost twice as many boys as girls continued to display physically aggressive tendencies as they aged from toddlerhood to pre-adolescence.

Some theorists suggest that aggression is a learned behavior derived from social influences (Bandura, Ross, & Ross, 1961; Gershoff, 2002), including parents. Based upon this social learning theory, children could learn externalizing behaviors like aggression from parents who are themselves aggressive. Additionally, Coplan, Closson, & Arbeau (2007) found that, controlling for peer exclusion, in kindergarten-aged girls' loneliness was positively related with aggression. Perhaps another avenue towards aggression is parental neglect, which leads to loneliness and then externalizing behaviors. The parent-child relationship will be discussed in the next two sections, first in relation to conflict tactics, and then in relation to child perceptions of parenting.

### **Parent-Child Conflict Tactics**

Conflict between parents and children is inevitable and because parents are an integral part of a young child's life, these conflicts have the potential to affect child development. Negative parent-child conflict tactics have been studied for decades and

research, especially regarding corporal punishment, has at times conflicted. In an effort to clarify the relationship between corporal punishment, Gershoff (2002) conducted a meta-analysis on studies dating from modern times back to the 1930s. Researchers have debated over the years on the pros and cons of corporal development and Gershoff (2002) added to evidence of its deleterious effects by finding an association between corporal punishment ten of the eleven negative behavior outcomes in her study; decreased moral internalization, increased child aggression, increased child delinquent and antisocial behavior, decreased quality of relationship between parent and child, decreased child mental health, increased risk of being a victim of physical abuse, increased adult aggression, increased adult criminal and antisocial behavior, decreased adult mental health, and increased risk of abusing own child or spouse. In fact, in nine of the eleven meta-analyses, the results were highly and significantly consistent, suggesting a strong association between these constructs and corporal punishment. Only criminal and antisocial behavior and the one positive association, immediate compliance, showed inconsistencies between studies. That 88 studies conducted over 62 years evinced such similar outcomes, and that these outcomes included both long- and short-term constructs, strongly supports the notion that corporal impact has lasting negative effects on child development.

Additional support for the negative impact of corporal punishment can be found in a study from 2010. Taylor, Manganello, Lee, & Rice (2010) conducted a longitudinal study with a large number of urban mother-child dyads and found that the frequency with which mothers spanked their three-year olds was associated with a child's aggression at age 5, over and above child aggression level at age three, family demographic information, and maternal parenting stress. Though this study used only parent report when collecting data and assessed

child aggression scores at a binary level (lower vs. higher on the Child Behavior Checklist) that the significance of corporal punishment remained despite the inclusion of a host of confounders is highly suggestive of the association between parent conflict tactics and child outcomes.

Negative conflict tactics are not limited to corporal punishment, and sometimes parents will use more aggressive techniques to discipline a child. There are many examples in the literature of the negative outcomes of harsh discipline on children. Sheehan & Watson (2008) found a reciprocal relationship between aggressive discipline (verbal and physical) and child aggression, whereby the one predicts the other. Some evidence suggests that physical aggression in children such as kicking, hitting, biting, anger, and fighting is predicted by hostile or ineffective parenting, for example the parent getting annoyed or angry, not praising the child, or parent disapproval (Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006). Feldman, Masalha, & Derdikman-Eiron (2010) found that aggressive behavior in toddlers was related to marital hostility, co-parent undermining, and ineffective discipline. Maughlan (2005) differentiated physical abuse and neglect and discovered that both groups exhibited more delinquent and aggressive behavior and more social problem than non-maltreated children, according to maternal rating on the Child Behavior Checklist. Using a measure of cumulative violence, Margolin, Vickerman, Oliver, & Gordis (2010) found that parent violence against children predicted somatic complaints and aggression, academic failure, delinquency in late elementary-to-middle school-aged children. Though research is less clear regarding the relationship between physical abuse and internalizing behavior, there is some evidence for a relationship between abusive child-parent relationships in younger children and anxiety and depressive symptoms when they become adolescents

(Mrug, Loosier, & Windle, 2008,). The impact of child abuse also has implications for outcomes as adults (Gershoff, 2002) which could affect victims throughout their lives.

Not all research on parent-child conflict is concerned with negative outcomes; in fact, some research suggests that conflict, under certain conditions, can be beneficial to children. Using a prospective design, Laible & Thompson (2002) assessed the influence of parenting styles on toddler's behavioral internalization, emotional understanding, and prosocial behavior six months later and found evidence that some parenting styles promoted socioemotional and sociomoral development. High levels of justification (reasoning), low levels of aggravation, maternal mitigation (compromise), and maternal resolution all significantly impacted social developmental outcomes, though these results were context dependent. Sheehan & Watson (2008) supports the association between reasoning and aggression, though further research is needed to confirm the potential of conflict for positive outcomes. Another interesting finding of the Laible & Thompson study is a tendency for children to emulate maternal conflict resolution strategies. Maternal use of justification or aggression was positively correlated with the same strategies in the children, irrespective of context. These results lend weight to social theorists who posit that behavior is learned (Bandura, Ross, & Ross, 1961). It is also important to note that Laible & Thompson's study was conducted with mostly middle-class, white, American children, so the results are not generalizable.

### **Parenting and Child Perceptions of Parenting**

An examination of parent-child conflict was warranted because young children spend a lot of time at home with a least one parent, so parenting strongly influences children's lives. Evidence suggests that family factors can have immediate and pervasive influences on a

child's development, including a child's behavior, attitude, and socialization. Direct and immediate effects of maltreatment can cascade through multiple domains of life, causing negative self-representations, negative effects on school life, and rejection by peers (Cicchetti & Toth, 2005). Aunola & Nurmi (2005) found that a high level of maternal psychological control combined with high affection predicted increases in the levels of kindergartener's internal and external problem behaviors. Further, a high level of maternal behavioral control combined with a low level of psychological control predicted decreases in the level of children's external problem behavior. One study found that maternal depression and harsh discipline at an early age can result in negative behavioral outcomes years later (Leve, Kim, & Pears, 2005). Similarly, paternal depression is significantly related to child internalizing and externalizing behavior and influences parent-child relationships (Keane & Calkins, 2004) which are foundational and can in turn influence short- and long-term child outcomes in multiple domains of children's lives (e.g. Aunola & Nurmi, 2005; Gershoff, 2002; Snyder, Cramer, Afrank, & Patterson, 2005). Even seemingly indirect parenting factors can affect child development. In one longitudinal study using observation of family interaction as well as parent report, Crnic, Gaze, & Hoffman (2005) found that cumulative life stress and parenting hassles (as reported by parents) between ages three and five contributed to child negativity (e.g. pouting, physical expressions of anger, yelling) and behavior problems (as measured using the Child Behavior Checklist) concurrently as well as two years later. Further support for the effects of cumulative parental violence against children has been by Margolin, Vickerman, Oliver, & Gordis (2010), who found it predicted negative outcomes including somatic complaints, aggression, academic failure, and delinquency over time. Direct and immediate effects of maltreatment can cascade through multiple domains of life, causing

negative self-representations, negative effects on school life, and rejection by peers (Cicchetti & Toth, 2005).

Further evidence of parent influence on child behavior was documented in a recent study which assess parenting stress, negative parental reactions (punitive, distressed, or minimizing), and externalizing behavior in a normative sample of children at ages 4, 5, 7, and 10 years old (Mackler et al., 2015). This study was unique in that it was both longitudinal and transactional, and so was able to examine concurrent direct effects as well as then influence of the three constructs over time. Researchers found support for the association of negative parental reactions and both concurrent parenting stress and concurrent child externalizing behavior at ages 4, 7, and 10. Concurrent parenting stress and child externalizing behavior were strongly positively associated at all data collection points. Interestingly, the study also showed bidirectional effects between child externalizing behavior and parenting stress, such that child externalizing behavior strongly positively affected parenting stress at the subsequent data collection point and parenting stress affected child externalizing behavior at the subsequent data collection point. Additionally, there was some support for the indirect effect of negative parental reactions on later child externalizing behavior, through parenting stress. At the very least this study supports the influence that problematic child behavior and parenting have one another.

Research further supports a link between children's perceptions of their relationship with their parents, and child adjustment. Stadelmann, Perren, Von Wyl, & Von Klitzing (2007) found that a greater number of negative parent representations at age five correlated with conduct problems a year later, whereas a greater number of positive parent representations and a lower number of negative parent representations were correlated with

pro-social behaviors. Their research suggest that parent perceptions could have a greater impact on child adjustment than other factors such as overall family conflict.

If child perceptions of parents are salient predictors of child adjustment, then perhaps they could influence the effect that harsh discipline has on child adjustment. Lansford, Malone, Dodge, Lei Chang, et al. (2010) provide evidence a model connecting parent perceptions with harsh discipline and adjustment in a sample of 8-12-year old children in Asia. The authors found evidence that children's perception of maternal hostility mediated the relationship between physical and harsh verbal discipline and maternal perceptions of children's anxiety and aggression. The study did not, however, find a significant connection between physical discipline and harsh verbal discipline and children's perceptions of their own anxiety and aggression. These findings not only suggest a connection between discipline and child outcomes, but also highlight the importance of methodology in the study findings. Results differed when reported by children and parents, suggesting the importance of gathering data from multiple sources when testing the association between two variables. The current study uses data collected from parent and children, because of the importance of parents in children's lives. The third source of the data is teacher reports on behavior at school, another environment in which children spend a lot of time.

### **Child Behavior in School**

Starting kindergarten is a normative transition in the lives of most children in the population to be served by this study, and is a developmental milestone that poses new challenges and opportunities. Child-peer interactions, like child-parent interactions, are important, and as children transition from home to school they see more of their peers, who have an increasing effect on their socioemotional development. Behavior problems have been

linked with peer rejection and fewer friendships, which in turn could have immediate and long-term detriments. Engle, McElwain, & Lasky (2011) noted the importance of the quality of friendships in kindergarten both concurrently and throughout the early elementary school years. Researchers used a normative sample and found a significant association between quality of friendship and externalizing behavior in kindergarteners, and then used ANCOVA's to connect kindergarten quality and presence of friendship and gender differences with internalizing behavior in Grade 1 and externalizing behavior in Grades 1 and 3. Further analyses revealed associations between friendship groups and social skills. Though researchers did not assess reciprocity or mediation between these variables, the study does suggest that problem behaviors, friendships, and social skills are connected both in and over time. Connecting this research with the findings of Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay (2006) that more aggressive toddlers tend to maintain aggressive tendencies, early problem behavior could also predict lower-quality friendships later. Engle, McElwain, & Lasky's (2011) study has additional relevance to the present proposal because it uses maternal and teacher-report to assess behavior, therefore linking two major influences on this age-group together.

Because kindergarten is such an important developmental transition in a child's life, it is important to understand how a young child's two major influences – home and school – influence each other. Until kindergarten, children's lives have been dominated by parent influence and as evidenced by the research described above, parents affect child development in innumerable ways including shaping personalities and teaching appropriate and inappropriate social behavior. This influence could spill over into other domains of children's lives. In fact, Snyder, Cramer, Afrank, & Patterson (2005) assessed child conduct problems

at home and school between kindergarten and first grade in a normative community sample and found that conduct problems at home during the Fall term of Kindergarten predicted concurrent conduct problems at school. Also, ineffective/irritable discipline from parents was also significantly related to an increase in child conduct problems at school, but this effect was mediated through child conduct problems at home. This research supports the influence of home life on school life in young children.

Though this research is suggestive, no conclusive evidence exists to explain the link, if any, between child abuse, child adjustment, and child perceptions of parenting in 5-6- year old children in the Southeastern United States. This is an important developmental age for these children because they are beginning kindergarten and therefore perhaps gaining independence from their parents and increasing interaction with their peers. The influence of abuse at home on child adjustment could impact child interaction with peers and school success, which could then have implications for future adjustment (Smith & Thornberry, 1995). Studies also support evidence for a cognitive shift between ages five and seven (Lansford, Malone, Dodge, Pettit, & Bates, 2010) which could be influenced by abusive relationships.

### **Current Study**

Given the importance of this age for child development and the influence of child abuse on short-term child adjustment and long-term problem behavior, an examination of potential mediators of this harmful relationship could illuminate important interventions which could encourage positive development despite difficult situations. Accordingly, this study examines the relationships between maternal-child conflict tactics, problem behavior, and one possible mediator of the relationship between child maltreatment and adjustment:

child perceptions of their relationship with their parents. The proposed research will focus on whether and how parental discipline impacts externalizing and internalizing behavior.

The study will control for three variables which have been found to have a significant impact on the variables under scrutiny. Prior research suggests that the effects of maltreatment are stronger for girls than boys (Lansford JE et al., 2002), that girls are less physically aggressive than boys (Lansford et al., 2007), and that boys and girls differ in their degrees of internalizing behavior (Leve, Kim, & Pears, 2005). Because of the strong evidence of gender differences in behavior problems, gender will be controlled for in this study.

Some evidence suggests racial differences exist when examining the relationship between conflict resolution strategies and problem behavior. European and African Americans have been found to display differing levels of negative behavior following corporal punishment, though this difference disappears when the punishment is severe (Campbell, Shaw, & Gilliom, 2000). Another study found higher negative effects of maltreatment in all racial minorities (Lansford JE et al., 2002). Multiple other studies (e.g. Lansford JE et al., 2002; Engle, McElwain, & Lasky, 2011) have also cited racial differences when examining maltreatment and problem behavior. Because of the evidence of its significance, race will also be controlled for in the study.

Lastly, socioeconomic status has been found to be associated with problem behaviors in children (e.g. Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Lansford et al., 2007). Multiple studies using multiple measures such as the Hollingshead index, maternal education, and income, have found that socioeconomic status matters when examining

conflict resolution tactics and problem behaviors, therefore it will be controlled for in this study.

It is important to note that the proposed study will examine this relationship in changing contexts, as children transition from home to school. This transition is important to study because it is a part of almost all children's lives in the site where the study was conducted. This transition also allows for the collection of a richer body of data. The majority of the studies cited above collect data from parents and children. Examining this mediating model at the home-school transition allows for data collection from parents and children as well as teachers.

### **Research Questions and Hypothesis**

The ultimate purpose of this study is to determine whether child perceptions of parenting mediate the association between hostile maternal-child conflict tactics and child behavior in young children who are just starting school (Figure 1).

1. Research Question #1: What is the relationship between hostile parent-child conflict tactics and problem behaviors in a longitudinal sample of 94 maltreated children, across preschool, kindergarten, and first grade?
  - a. H<sub>1</sub> Hostile parent-child conflict tactics will positively predict child internalizing and externalizing behaviors when behavior is measured as one construct.
2. Research Question #2: What is the relationship between hostile parent-child conflict tactics strategies and child perceptions of parenting in a longitudinal sample of 94 maltreated children, across preschool, kindergarten, and first grade?

- a. H<sub>1</sub> Hostile parent-child conflict tactics will be significantly negatively associated with parent perceptions, measured as warmth, structure, and hostility reverse-coded.
3. Research Question #3: What is the relationship between child perceptions of parenting and problem behaviors in a longitudinal sample of 94 maltreated children, across preschool, kindergarten, and first grade?
  - a. H<sub>1</sub> Parent perceptions, measured as warmth, structure, and hostility, will be negatively associated with child internalizing and externalizing behaviors when behavior is measured as one construct.
4. Research Question #3: Will child perceptions of parenting mediate the relationship between hostile maternal-child conflict resolution tactics and child behavior problems in a longitudinal sample of 94 maltreated children, across preschool, kindergarten, and first grade?
  - a. Parent perceptions, measured as warmth, structure, and hostility reverse-coded, will mediate the relationship between hostile parent-child conflict resolution and child internalizing and externalizing behaviors when behavior is measured as one construct.

## CHAPTER 3

### Methods

#### Sample

The data were drawn from a larger longitudinal study of 94 young children from economically disadvantaged families, who had also suffered substantiated physical abuse or neglect (as documented by a social worker in North Carolina) by their mothers within a year of enrollment. The purpose of this larger study was to examine adaptation of abused children as they transition from preschool to kindergarten to first grade, and to assess the developmental consequences of abuse.

Eligible families were recruited through Child Protection Service (CPS) social workers, who distributed information packets giving them the option of joining the study. The principal investigator further identified eligible families through the CPS register and mailed them information packets about the study. The number of letters mailed was not recorded, so the response rate is unknown. Interested parents contacted the project offices, were screened, and if eligible participated in a 3-hour family data collection session. Participation from both parents was encouraged when possible. Data were collected in three cohorts over three years: the first collection occurred in the middle of the child's final year of preschool, the second at the end of kindergarten, and the third at the start of first grade. Parents were provided with small incentives of \$70, \$80, and \$90 for each data collection and children were given small gifts. Teachers received \$15 for school supplies for their participation.

Forty-three (43) children were included at Time 1 (in the middle of the final year of preschool), 63 children at Time 2 (the end of kindergarten) and 54 children at Time 3 (the

beginning of 1<sup>st</sup> grade). The number of children involved at each time point differed because additional children were enrolled after Time 1, and because of attrition. Data were available at all three time points for 32 (34.0%) of the children, at two time points for 29 (30.85%) of the children, and at a single time point for 34 (36.17%) of the children.

Children's ages ranged from 4 to 7, with a mean child age of 4.89 (SD = .39) at Time 1, 5.82 (SD = .39) at Time 2, and 6.62 (SD = .39) at Time 3. 58 (61.70%) of the children were boys. The sample was 71% African American (N = 67), 21% European American, 2% Latino, and 6% other ethnic groups. Primary caregivers also participated in the study at all time points: 87% biological mothers, 10% grandmothers, and 3% other mother figures, and 5% biological fathers. 90 caregivers were female and 4 were male. The mean of Hollingshead's (1975) index of socioeconomic status was 3.68 (SD = 1.11; range 1–5, 5 = lowest) at Time 1, 3.69 (SD = 1.09) at Time 2, and 3.58 (SD = 1.08) at Time 3. The mean age of parents was 32.07 (SD = 8.03) at Time 1, 33.03 (SD = 9.26) at Time 2, and 34.66 (SD = 8.27) at Time 3. About 33% of parents were married at Time 1, 24% at Time 2, and 27% at Time 3. In all but 3 cases, mothers were the perpetrators of physical abuse incidents. Procedures were approved by the university. The current study will be longitudinal and use data collected from all time points.

### **Dependent Variable**

Both internalizing and externalizing behavior were assessed using the Achenbach Caregiver and Teacher Report Form (C-TRF; Achenbach & Rescorla, 2001) for children five and under or the Child Behavior Checklist Teacher Report Form (CBCL-TRF) for children over six years old (Table 1). These assessments have been commonly used over more than two decades (see Crnic, Gaze, & Hoffman, 2005; Maughan, 2002, Burlaka, Bermann, &

Graham-Bermann, 2014, etc.) and are considered a reliable measure of child behavior for this age group. Data were recorded from teachers in preschool, kindergarten, and first grade. The C-TRF measure is a 99-item report of a range of emotional, social, and behavioral problems the teacher has observed in the child over the preceding 6 months. It is a three-item Likert scale wherein 0 = not true, 1 = sometimes or somewhat true and 2 = very true or often true, so that scores could range between 0 and 180 overall. The CBCL-TRF is similar but includes 118 items, so that scores can range up to 354. Items can be grouped into six factors: emotional reactivity, anxious/depressed, somatic complaints, withdrawn, attention problems, and aggressive behavior. These scores can be further clustered into either externalizing (attention problems and aggressive behavior) or internalizing (emotionally reactive, anxious/depressed, somatic complaints, and withdrawn). Examples of externalizing items on the measure include “Cruelty, bullying, or meanness to others” and “difficulty following directions”. Examples of internalizing items on the measure include “nervous, high-strung, or tense” and “stomachaches or cramps without medical cause”. T-scores (continuous variables based on age and gender) were generated for these two broadband dimensions of child psychopathology: externalizing symptomatology ( $\alpha = .95$  for the C-TRF in this study) and internalizing symptomatology ( $\alpha = .90$  for the C-TRF in this study). For the CBCL-TRF, alphas typically range between .72 and .95. Approximately 35% of the children at Time 1 (the start of the study) showed externalizing symptomatology above the borderline level (T score  $\geq 60$ ). 21% of the children at Time 1 showed internalizing symptomatology above the borderline level (T score  $\geq 60$ ). This study combined both internalizing and externalizing behavior into one variable because of the limited amount of data.

### **Independent Variable**

The frequency and type of conflict resolution tactics between parent and child were collected using a modified version of the Conflict Tactics Scale (Straus, 1979). The Conflict Tactics Scale (CTS) is a widely-used parent report (count) of how often different conflict resolution strategies were used by parents over the past 3 months (Table 1). It has been shown to have high acceptability and low refusal rates in across multiple versions (Straus, 1979) and to illuminate rates of physical abuse ten times more than Child Protection Service (Straus, 2005). Items in the measure can be grouped into three factors: reasoning, verbal aggression, and physical aggression (Straus, 1979). The original scale has shown reasonable construct and concurrent validities, and reasonable Cronbach's alphas for the verbal and physical aggression factors (.79 and .82, respectively). Reliability for the reasoning scale was lower, perhaps because of the small number of items in the factor. For this study, the eleven items representing harsh physical discipline (e.g "hit your child with strap, belt, or rope") were rated on a three-point scale ranging from 1 (never used) to 2 (once, isolated incident) to 3 (used more than once) such that a continuous variable was created within the range of 11 to 33. Responses were recorded from mothers during the initial face-to-face interview in year one.

### **Mediator**

Child Perceptions of Parenting (Table 1) were measured at all three data collection points using puppet interviews, an approach developed in 2001 (Sessa, Avenevoli, Steinberg, & Morris, 2001) which generates results as continuous variables. The puppet interviews are a child report of parent approach with three factors: warmth, hostility, and structure. Warmth and hostility have six items, and structure has five. Each item is rated between one and three

so that warmth and hostility factors will total between 6 and 18, while structure will total between 5 and 15. The examiner presents the child with two identical hand puppets that were the same sex as the child. The puppets “say” opposing statements about the parent or the family routine (“My mommy says I do a good job”; “My mommy does not say I do a good job”) and the child points to the puppet most like them. Items represent one of three scales, each with acceptable internal consistency for this sample: Warmth (6 items;  $\alpha = .60$ ), Hostility (6 items;  $\alpha = .56$ ), and Structure (5 items;  $\alpha = .57$ ). Factor analyses support the structure, correlations among scales confirmed the dimensions are distinct, and scores were stable over 4 weeks (Sessa, Avenevoli, Steinberg, & Morris, 2001).

### **Covariates**

Gender was determined by a binary male-female scale. Race was determined using a categorical scale with the options European American, African American, Hispanic, Asian, and Other/biracial. Socioeconomic status (SES) was assessed using the Hollingshead Four Factor Index (Hollingshead, 1979), which measures SES based upon occupation, education, marital status, and sex.

### **Analysis**

Externalizing and internalizing behavior was assessed using Achenbach’s Teacher Report form and Child Behavior Checklist Teacher Report Form (1991). Though the measures assess multiple items for both internalizing and externalizing, they were collapsed into their respective factors. It would have been interesting to examine connections between the independent variables and the individual items but the small sample size and missing data in the proposal will preclude us from doing so.

The data collected from the Conflict Tactics Scale were collapsed into one variable, also to account for the small sample size and missing data. A modified version of the scale is being used which assesses only physical aggression, to the exclusion of verbal aggression and reasoning. The decision to remove verbal aggression and reasoning was made because the sample was already selected on the basis of maltreatment, so the study designers knew prior to the study that parents were using these negative tactics at least some of the time. The modified measure was included to assess the frequency of physical aggression, not its presence or absence. Further, this proposal sought to establish connections between maltreatment and problem behavior so the items on the modified scale were deemed more pertinent to the study.

Child perceptions of parenting were assessed through puppet interviews. The three factors in the puppet interviews – warmth, hostility, and structure – will be combined, with hostility reverse-coded. Though connections with perceptions of parenting are less clear than the association between physical conflict tactics and parenting behavior, and therefore warrant more thorough analysis, the three factors were again collapsed because of the limited data.

## CHAPTER 4

### Results

#### Test of Hypotheses

Descriptive statistics were collected prior to analysis. Bivariate correlations were also determined, to test the relationships between variables.

Hierarchical linear modeling (HLM) was used to test all hypotheses. HLM is an appropriate analysis because it can be used to analyze longitudinal data and therefore is more powerful than regression, which would require a much larger sample size for a mediation analysis (Fritz & MacKinnon, 2007). HLM also accounts for missing data and can be used to simultaneously evaluate data within and between individuals. The HLM mediational analysis will follow the suggestions made in Kenny, Korchmaros, & Bolger (2003). First, regression analyses were used to determine whether or not a significant relationship existed between the negative conflict tactics used by parents with their children in preschool and the externalizing and internalizing behavior betrayed by these children in kindergarten (to answer Research Question 1). The relationship between maternal conflict tactics and child perception of parenting were then assessed (to answer Research Question 2). Finally, child perceptions of parenting was tested as a mediator between parent-child conflict tactics and child behavior as measured by teachers (to answer Research Questions 3 and 4). This section begins with the findings from the descriptive statistics and correlation, and then discusses the three steps in the HLM analysis, as delineated above. All analyses were run using R v.3.3.1 and RStudio.

#### Descriptive and Frequency Statistics

Descriptive and frequency statistics were first conducted for the variables of interest and the covariates (Tables 2 and 3). A total of 282 counts of data were collected across the

three times points, and the N values of the modified Conflict Tactics Scale, the puppet interviews, the teacher reports of child behavior, and socioeconomic status suggest that large amounts of data are missing. Specifically, 33.69% of the Conflict Tactics data were missing, 36.88% of the puppet interview data were missing, 49.64% of the teacher reports were missing, and 36.52% of the socioeconomic (SES) data were missing. As discussed above, one of the reasons for using hierarchical linear modeling (HLM) to analyze the data is its ability to handle large amounts of missing data. The additional covariates, race and gender, were assessed only once and were therefore available across all parent-child dyads for all time points. Of the 94 dyads, nearly all parents were female (N = 90) and of the children, most were male (N = 58). Because most dyads identified racially as African American (N = 67), race was dichotomized from 5 categories (European American, African American, Hispanic, Asian, or Other/biracial) to either African American or some other race.

Data were typically right-skewed, except SES which was left-skewed (Table 2). The puppet interviews were least skewed (0.15) and the other variables were similarly skewed. Kurtosis varied between -0.75 (Conflict Tactics Scale) and 1.04 (puppet interviews). Histograms (Figures 2 through 5) also suggest non-normality of the Conflict Tactics Scale and SES. The puppet interview data were closer to normal, and the dependent variable, the teacher reports of behavior, was relatively normally distributed. The relative normality of the dependent variable simplified data analysis, as HLM assumes normality of the dependent variable (Fitzmaurice & Laird, 2004; Raudenbush and Bryk, 2002).

As mentioned above, the dataset was missing many data points, and so it was examined to determine whether the data were missing at random (MAR), missing completely at random (MCAR), or missing not at random (MNAR). Ideally data are MCAR, meaning

that the probability of a missing response is related to neither the value of the response had it been obtained nor the value of other observations. The data are missing completely at random, for example participants failing to return to subsequent data collection for no pertinent reasons. MAR indicates that missing data is related to observed data but not the value of the data had it been collected. MNAR suggests that the probability of a missing response is related to the observed variable, for example if parents who are more prone to using harsh discipline refuse to complete the Conflict Tactics Scale.

Figures 6 and 7 portray visual representations of the Conflict Tactics Scale, puppet interview, and SES as it relates to the teacher report of child behavior. The margin plots in Figure 6 compare missing and non-missing data between two variables. Blue dots or boxplots represent data that are available for both variables; red dots or boxplots represent missing data for one of the variables. If MCAR can be assumed, the boxplots should be identical (Zhang, 2015). The boxplots tend to overlap somewhat and show similar but not identical lengths, suggesting that the data were MAR. For example, the teacher reports of child behavior that are not missing were within a more constrained SES than the missing reports relative to SES, suggesting that teacher reports of child behavior were missing across a wider range of SES, including a higher SES score (indicating a lower economic status). Teacher reports of child behavior tended to be missing more for children of lower SES than of higher SES. Reciprocally though, missingness of SES relative to the teacher reports was smaller than reported SES, indicating that teacher report scores were similar across missing and non-missing SES scores. Additionally, missing scores on the Conflict Tactics Scale included higher scores on of teacher reports of child behavior, such that teacher reports of more negative behavior tended to have more missing corresponding reports of the level of harsh

parenting. The missingness of the teacher reports relative to the child puppet scores was similar, indicating that relative to one another these scores were MCAR.

In comparing boxplots between variables that did not include the dependent variable, the association between SES and conflict tactics missingness shows no overlap in boxes between missing and non-missing conflict tactics scores relative to SES, suggesting that the difference in missingness were not at random.

Figure 7 suggests the same findings when comparing the scores of the dependent variable with those of the independent variables. This boxplot compares the dependent variable with the independent variables of interest. MCAR would be indicated by overlap of the boxplots (Zhang, 2015). MAR would be suggested if the teacher reports were significantly lower or higher than the independent variables. The boxes indicating both missing and non-missing data tend to overlap with slight differences (e.g. elevated teacher report scores relative to missing conflict tactics scores), and therefore suggest the data are missing at random.

### **Correlations**

Pearson and point-biserial Pearson correlations were obtained for the data (Table 4). Pearson correlations were used to compare interval-level variables, while point-biserial correlations compared the strength of association between the dichotomous and the interval variables. The correlations suggested no relationship between the independent variable of interest, conflict tactics score, and either the dependent variable (teacher report of child behavior) or the mediator (puppet interview scores). The lack of correlation between the variables suggested that the model being tested would not be significant. Examination of the correlations also suggested that SES and the puppet interview scores were weakly correlated

with the teacher report scores positively and negatively respectively, and that race was moderately positively associated with SES and teacher report scores, and weakly positively associated with conflict tactics scores and negatively associated with puppet interview scores. Parent sex was moderately correlated with conflict tactics scores and strongly correlated with SES but not correlated with puppet scores or, more importantly, teacher report scores and will therefore not be included in further analysis. The inclusion of parent sex would also have been questionable given the large imbalance between male and female parents. Child sex was weakly negatively associated with conflict tactics scores and puppet interviews scores but not associated with teacher report scores and will therefore not be included in subsequent analyses.

### **Hierarchical Linear Modeling**

Hierarchical Linear Modeling (HLM) was next used to test the hypotheses and answer the research questions. HLM uses nested models to test significance between variables, and was an appropriate model for this analysis because the variables of interest – teacher reports of child behavior, parent conflict tactics, and child perceptions of parenting via puppet interviews – were all nested within children, by time point. HLM also treats each time point within each child as a different data point thereby increasing the degrees of freedom 3-fold. Finally, HLM is a powerful analysis that can also handle missing data, of which there is a lot, as noted above.

HLM analysis began with testing a null, or unconditional model, to confirm that enough variation existed in the dependent variable to continue with the analyses:

$$\text{Level 1: } Y_{ij} = \beta_{0ij} + r_{ij} \quad (r_{ij} \sim N(0, \sigma^2))$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + u_{0j} \quad (u_{0j} \sim N(0, \tau_{00}))$$

In which  $Y_{ij}$  represented the teacher report of child behavior,  $\beta_{0j}$  represented the intercept.

Questions that this model answer included:

Is the level of the dependent variable significantly different from zero? ( $\gamma_{00}$ )

How much variability in dependent variable is between groups? ( $u_{0i}$ )

How much variability in dependent variable is within groups? ( $\tau_{00}$ )

Is the variability within groups significantly different from zero? ( $\sigma^2$ )

Is the variability between groups significantly different from zero? ( $\tau_{00}$ )

In this analysis,  $r_{ij}$  represents  $\sigma^2 + \text{random error}$  and  $u_{0j}$  represents  $\tau_{00} + \text{random error}$ . From this model, the intraclass correlation was determined by the formula  $\rho = \tau_{00} / (\tau_{00} + \sigma^2)$ , which provides the level of variability between groups. The intercept of the unconditional model was significantly different from 0 ( $\beta_{0ij} = 51.75, p < .001$ ), indicating significant variability in the model. Intraclass correlation established that 7.09% of the variance in the model was between children, signifying that most of the difference in the model is across time.

### **Research Question 1**

The next step in analyzing the mediation model in HLM was to test the significance of the independent variable (conflict tactics) against the dependent variable (teacher reports of child behavior). A conditional growth model was used to test this relationship. Aside from the level relationship with conflict tactics, this model included the level 2 variable for family race because significant correlation between family race and the dependent variable was indicated:

Level 1: Teacher report of child behavior $_{ij} = \beta_{0ij} + \beta_{1ij}(\text{conflict tactics}) + r_{ij}$

Level 2:  $\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{family race}) + u_{0j}$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$

In which the questions asked included:

How much within-group variance does conflict tactics account for? ( $r_{it}$ )

Is the level of the teacher report of child behavior significantly different from zero when conflict tactics and family race equal zero ( $\gamma_{00}$ )?

Are there any Level 2 differences in teacher report based on family race (is there a main effect) ( $\gamma_{01}$ )?

How much between-group variability is accounted for by family race ( $u_{0i}$ )?

Is there a within-group relationship between X and Y ( $\gamma_{10}$ )?

Significant variance of teacher report around the intercept ( $\gamma_{00} = 50.74$ ,  $t(78) = 8.26$ ,  $p < .001$ ) was indicated by the model. Family race was significantly related to teacher report ( $\gamma_{01} = 6.70$ ,  $t(50) = 2.82$ ,  $p = .007$ ), indicating that children of African American families were more likely to have higher teacher report scores. The variable of interest, conflict tactics, was not significantly related to teacher report ( $\gamma_{10} = -0.13$ ,  $t(50) = -0.28$ ,  $p = 0.78$ ). Non-significance between the independent variable and the dependent variable indicated that hypothesis  $H_1$  was incorrect, and that the mediation model would not work.

Though the mediation model being tested in this report has been shown ineffective in modeling the relationship between parent conflict tactics, teacher report of child behavior, and child perceptions of parenting via puppet interviews, I will demonstrate the next two steps in mediation that are tested should the independent and dependent variables be shown to be significantly related. These analysis answer Research Questions 2 – 4.

## Research Question 2

The second step in a mediation model was to test the significance of the independent variable (conflict tactics) on the mediator variable (puppet interviews). The model for this relationship was:

$$\text{Level 1: puppet interviews}_{ij} = \beta_{0ij} + \beta_{1ij}(\text{conflict tactics}) + r_{ij}$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + \gamma_{01}(\text{family race}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$

Again, family race included in the model because of its moderate correlation with teacher report and its small correlation with the puppet interviews. This model is also a conditional growth model and therefore the questions answered by this model were the same as those indicated above. Results indicated that there was significant variability around the slope of the puppet interview ( $\gamma_{00} = 36.50$ ,  $t(90) = 16.50$ ,  $p < .001$ ). Family race was significantly related to the scores on the puppet interviews ( $\gamma_{01} = -1.85$ ,  $t(81) = -2.29$ ,  $p = 0.02$ ), indicating that children of African American families were more likely to have lower scores of perceptions of parenting via the puppet interviews. Conflict tactics was not significantly related to the scores on the puppet interviews ( $\gamma_{10} = 0.08$ ,  $t(81) = 0.50$ ,  $p = 0.62$ ). These results indicated a lack of support for hypothesis H<sub>2</sub>. Again, these results also indicated that the mediation model proposed is not an effective representation of the data.

## Research Questions 3 and 4

In the final model of a mediation analysis, the independent variable (teacher report) was tested against the dependent variable (conflict tactics), the mediator (puppet interviews) and any covariates (family race). The conditional model for this analysis is:

$$\text{Level 1: puppet interviews}_{ij} = \beta_{0ij} + \beta_{1ij}(\text{conflict tactics}) + \beta_{2ij}(\text{puppet interviews}) + r_{ij}$$

Level 2:  $\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{family race}) + u_{0j}$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$

$$\beta_{2ij} = \gamma_{20} + u_{2j}$$

Again, questions answered in this model were similar to those answered in the models above. Results indicated significant variability around the teacher report ( $\gamma_{00} = 60.01$ ,  $t(77) = 5.72$ ,  $p < .001$ ). Family race was still a significant predictor of teacher report ( $\gamma_{01} = 7.00$ ,  $t(42) = 2.89$ ,  $p = 0.006$ ), in the same direction as earlier analyses. Neither conflict tactics ( $\gamma_{10} = -0.27$ ,  $t(42) = -0.56$ ,  $p = 0.58$ ) nor the puppet interviews ( $\gamma_{20} = -0.22$ ,  $t(42) = -0.91$ ,  $p = 0.37$ ) were significantly related to the teacher reports. The non-significant relationship between puppet interviews and teacher reports did not support hypothesis H<sub>3</sub>. Also, because of the lack of significant relationships between the variables of interest, the mediation model hypothesized in Question 4 was unsuccessful.

### **Additional Analyses**

R software requires the analyzer to indicate how it handles missing data. For this analysis, I chose that the missing data be omitted, meaning that the formula uses the object with observations removed if they contain missing values. Because of the amount of missing data, the dataset was re-analyzed data to test whether the missingness was relevant to the outcomes. Imputation was conducted using 5 imputations with both 50 and 500 iterations. The number of iterations changed the data's shape only slightly and so subsequent analyses were conducted only with the dataset using 50 iterations.

Figure 8 shows a density plot comparing the imputations versus the original data for all interval variables. The figure suggests that the imputations aligned best for the conflict tactics scale, possibly because of its low variance ( $SD = 2.08$ ). The density plots for teacher reports and puppet interviews indicate that scores for the imputed values were lower than

those of the original dataset. The imputed data for the teacher report also has two humps, where the original data only had one. Histograms of the data (Figures X Through Y) suggest that the teacher reports and puppet interview were normally distributed, but the conflict scores were right-skewed. Table 5 provides descriptive statistics for this dataset. The means appear similar to those of the original dataset though the skew and kurtosis is altered.

Correlations suggested similar associations between the variables of interest (Table 6), though in this dataset the conflict tactics showed a weak correlation with teacher report. Family race, child sex, and parent sex were correlated with teacher report in this dataset, and were therefore be used in the models.

All models were set up in an identical fashion as the original dataset, with the exception of the inclusion of child sex and parent sex as covariates in the steps for mediation. Results can be seen in Figure 7. The imputed model still did not reach significance for mediation.

## CHAPTER 5

### Discussion

Children who have experienced harsh discipline tend to portray more negative outcomes than children who do not (e.g. Gershoff, 2002, Maughan & Cicchetti, 2002). Additionally, evidence suggests that child perceptions of parenting could influence behavioral outcomes such that poor child perceptions of parenting could lead to more negative behavior. Based on these suggestions from the literature, this study sought to determine whether child perceptions of parenting mediated the relationship between parent conflict tactics and negative behavioral outcomes in a group of 94 parent-child dyads, when data were collected in both home and school settings. Four main research questions were posed, each of which were found to have non-significant relationships between the variables of interest, and will be discussed below.

#### Research Question 1

Based upon hierarchical linear modeling (HLM) there was no relationship between hostile parent-child conflict tactics at home and problem behaviors at school. These results were surprising, given the amount of research suggesting otherwise (Gershoff, 2002; Margolin, Vickerman, Oliver, & Gordis, 2010; Maughlan, 2005). One reason for the non-significant findings could be the low variability of the conflict tactics scores. The scale ranges from a minimum value of 11 to a maximum value of 33, but the data collected ranged only from 11 to 20, with a mean of 13.44 and a standard deviation (SD) of 2.08. The histogram (Figure 3) provides more information, showing that 66 of the data points were 11 or 12, another 34 data points had scores of 13 or 14, and 58 had scores of 15 or 16. Most of the data fell within a few different scores on the scale, which limited the ability of the

analysis to show a relationship between conflict tactics scores and teacher report of child behavior, if there was one. Variability should not have been a problem within the teacher report of child behavior scores; with a mean of 54.49, a standard deviation of 11.62, and a minimum of 29 and maximum of 91, there should have been enough variability within the scores to detect significance, if there was any.

Another potential reason for the non-significant findings was the missingness of the data. Acceptable levels of missing data vary widely, but missing over 30% of the data points for the variables of interest was a lot and could have affected the variability of the conflict tactics score. Figure 6 demonstrates that missing data in the conflict tactics score tended to correspond to higher levels of teacher report of child behavior, and that missing teacher report scores tended to occur at higher levels of conflict tactics. This bias of missingness at higher report scores for both variables would have further lowered the variability of the dataset, again decreasing the chance of finding significance if there was any.

The missingness of the data, the bias of the missingness of the data, and lack of variability of the data would also have influenced the imputed data, rendering the imputation less effective than would a more complete and less biased dataset.

Lastly, the missing data also limited the power of the analysis, and therefore the ability to analyze the externalizing and internalizing subscales of the teacher reports of child behavior separately. Separate analyses might have revealed that conflict tactics are significantly related to one of these subscales.

## **Research Question 2**

HLM analysis found no significance between child perceptions of parenting as assessed through puppet interviews and parent conflict tactics scores, possibly for many of

the same reasons listed for Research Question 1. Because the conflict tactics score was the dependent variable of interest in this analysis as well as the analysis in Research Question 1, the lack of variability and missingness of the conflict tactics scores would also have affected any analysis of significance between it and the puppet scores. Additionally, when examining Figure 6, the missing puppet interview scores relative to the conflict tactics scores are in a more constricted range than the non-missing scores; missing puppet scores tended to be associated with higher conflict tactics scores, creating potential bias in the data.

The puppet interview scores showed a relatively normal curve and some variability ( $M = 36.29$ ,  $SD = 4.29$ ), with a range of 26. This normality and variability were also evident in the imputed data, although it also showed non-significant findings, and suggested that neither would have affected the findings of the analysis. Missingness within the puppet interview scores was also high (36.88%) and in combination with the missing conflict tactics data (33.69%) could have been a factor in the non-significance of the findings.

The missingness of the data also lowered the power of the analysis and precluded the ability to conduct a more thorough examination of the relationship between conflict tactics and the puppet interview. The puppet interview has three subscales which were originally meant to be examined separately. The level of missing data determined that the subscales – warmth, structure, and hostility (reverse-coded) would be combined. Correlations between these subscales suggested that they are unique and warrant separate analyses, which could not be examined within this study. Separate analyses might have revealed that conflict tactics were indeed related to one or two subscales.

### Research Questions 3 and 4

Because mediation involves a 3-step process that includes testing the dependent variable against the independent variable, the mediator against the independent variable and the dependent variable against the independent variable and the mediator, Research Questions 3 and 4 will be answered together, within the third step of the mediation analysis.

Regarding Research Question 3, the mediator was not significantly related to the independent variable (i.e. puppet interviews and teacher reports of child behavior were not significantly related). Both variables had relatively normal curves when examined by a histogram. Teacher report of child behavior also had good variability. The puppet interview scores had less though some variability, though. The variability of the puppet interview might have affected the significance findings between these two variables, but it is more likely that the non-significant findings were related to the missingness of the data (49.65% for the teacher reports of child behavior and 36.88% for the puppet interviews). The missingness of the data for the teacher reports is especially high, perhaps reflecting the difficulty of obtaining teacher buy-in, or the difficulty teachers have in completing their assessments of the children on top of their other responsibilities. The missingness of the data between the teacher reports and puppet interviews was balanced and unbiased (Figure 6), reflecting that the data between these variables were missing at random. The significance of the missingness in the non-significance between the two variables, if any, was not bias but the presence of missing data itself. The imputed dataset showed a stronger relationship between the two variables ( $p = 0.37$  vs.  $p = .11$ ), suggesting that missingness could be a factor in determining the significance between teacher reports and puppet interviews.

Research Question 4, examining the mediation relationship between conflict tactics, puppet interviews, and teacher report of child behavior, could not be assessed because of the non-significance between the dependent and independent variables, and between the independent variable and the mediator. Because the other relationships were non-significant, mediation cannot occur.

The one variable displaying significance with the variables of interest was family race. Family race was dichotomized because the majority ( $N = 67$ ) of the participants identified as African-American. There was a significant positive relationship between race and teacher report of child behavior and a marginally significant negative relationship between race and puppet interviews. These results indicated that teacher reports of negative behavior was higher for African American children and that African American children had lower positive perceptions of parenting, though no reasons for the significance of the relationship can be deduced from the data.

### **Limitations and Future Directions**

This study examined the relationship between parent conflict tactics, child perceptions of parenting, and teacher reports of negative child behavior, across the final year of preschool, kindergarten, and first grade. One of the major limitations of the study was the amount of missing data. One solution to this problem could have been to use only parent-child dyads that had data for all three time points, but this would have meant losing data and would have been a different form of bias. Imputing the data was chosen instead for this study, but that was an imperfect solution as well because the imputations were based on the available data and could not account for any differences that might have occurred, had the dataset been complete. Missingness suggested that the data were not missing completely at

random, which makes sense in a longitudinal study but also effected the reliability of the imputation. Aside from the missingness of the data, the variance limitations in the data could have been in part due to self-selection process for joining the study. Parents who use harsh discipline often might not choose to participate in a study in which they are asked to divulge this information.

Another limitation of the study was the imbalance of the data. The majority of the data involved African American boys and their female caretakers, which could have affected the analysis of the significance of child sex and rendered the analysis of parent sex meaningless. This imbalance also prohibited a more in-depth analysis of the influence of different races on the teacher reports, and even when family race was dichotomized the variable was still imbalanced and could have affected the results.

A final limitation of the study is in the measures used. The Achenbach scales of teacher reports of child behavior have been used extensively and are well validated, but the conflict tactics scale used was an abridged version that has not been validated, and the original scale itself has shown spotty reliability. Child perceptions of parenting via puppet interviews is a relatively new method that also has spotty validity scores.

Future studies should examine the relationship of these variables with the set of 32 children who have data at all time points. Future studies should also seek to examine a more balanced set of parent-child dyads, displaying more diversity of parent sex, child sex, and race.

## **Conclusion**

This study was a preliminary study of a mediation model between conflict tactics, child perceptions of parenting, and teacher reports of child behavior. Though showing non-

significance at all points of the mediation analysis, the improvement of the imputed model over the original model suggests that with a more complete dataset the results might show significance. Higher variability also might influence the results. The data also had strengths that could be repeated in future studies, which include the use of data from multiple sources (parents, children, and teachers), as well the use of HLM for analysis of the nested data. Though non-significant, literature suggests this model could have relevance, and future studies with a more complete dataset are warranted.

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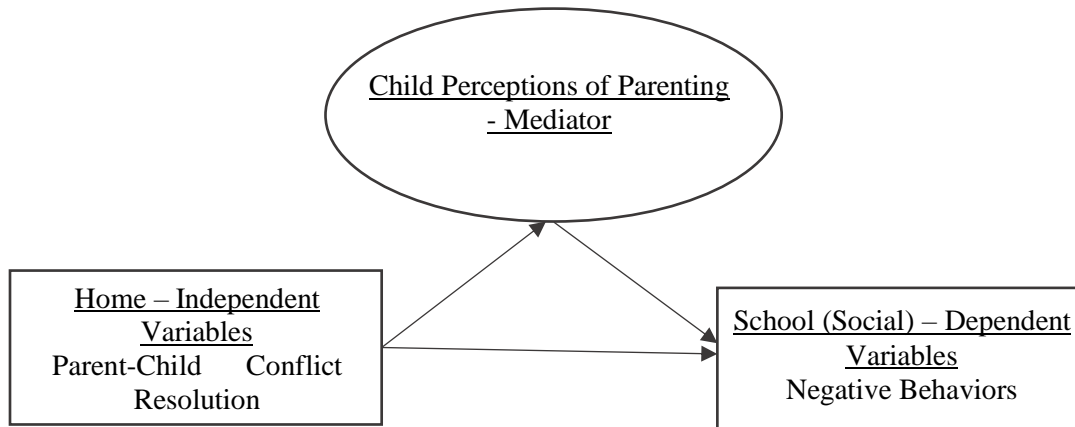


Figure 1. *Proposed Path of Mediation between Conflict Strategies and Child Behavior*

Table 1. *Measures Used to Collect Data for the Independent, Mediator, and Dependent Variables*

|                         | Measurement Names                                   | Subscales  | Number of<br>Items | Rating | Cronbach's<br>$\alpha$ |
|-------------------------|---|--|--------------------|--------|------------------------|
| Independent<br>Variable | Conflict Tactics Scale<br>Modified Version          | Physical Aggression  | 11                 | 1 - 3  |                        |
| Mediator                | Child Perceptions of Parenting<br>Puppet Interviews | Warmth   | 6                  | 1 - 3  | 0.60                   |
|                         |   | Hostility  | 6                  | 1 - 3  | 0.56                   |
|                         |   | Structure  | 5                  | 1 - 3  | 0.57                   |
| Dependent<br>Variable   | Caregiver Teacher Report Form                       | Externalizing Behavior<br>Attention Problems<br>Aggressive Behavior                                    | 99 (Total Scale)   | 0 - 2  | 0.95                   |
|                         |   | Internalizing Behavior<br>Emotional Reactivity<br>Anxious/Depressed<br>Somatic Complaints<br>Withdrawn |                    | 0 - 2  | 0.90                   |
|                         | Child Behavior Checklist<br>Teacher Report Form     | Externalizing Behavior<br>Attention Problems<br>Aggressive Behavior                                    | 118 (Total Scale)  | 0 - 2  | .94                    |
|                         |   | Internalizing Behavior<br>Emotional Reactivity<br>Anxious/Depressed<br>Somatic Complaints<br>Withdrawn |                    | 0 - 2  | .90                    |

Table 2. *Descriptive Statistics for Interval Variables*

|  | N   | Mean  | SD    | Range | Skew  | Kurtosis |
|--|-----|-------|-------|-------|-------|----------|
| Conflict Tactics Scale                                 | 187 | 13.44 | 2.08  | 9     | 0.33  | -0.75    |
| Socioeconomic Status                                   | 179 | 3.66  | 1.09  | 4     | -0.32 | -1.11    |
| Teacher Report of Child Behavior                       | 142 | 54.49 | 11.62 | 62    | 0.33  | 0.42     |
| Child Perceptions of Parenting Puppet Interview Scores | 178 | 36.29 | 4.29  | 26    | 0.15  | 1.04     |

Table 3. *Frequencies for Binomial Variables*

|        | Male                   | Female |
|--------|------------------------|--------|
| Parent | 4                      | 90     |
| Child  | 58                     | 36     |
|        | Black/African American | Other  |
| Race   | 67                     | 27     |

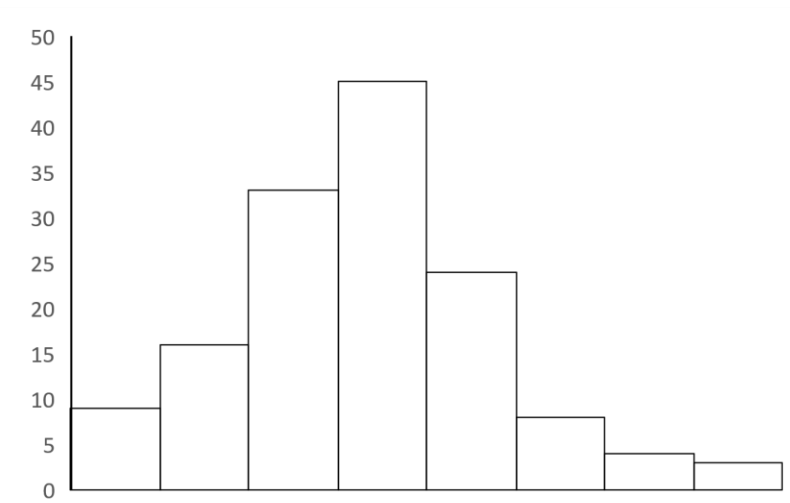


Figure 2. *Teacher Report of Child Behavior Histogram*

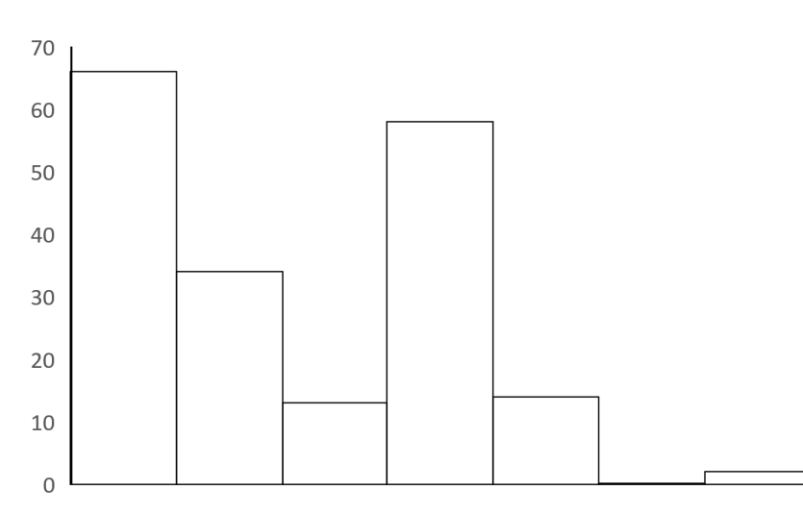


Figure 3. *Conflict Tactics Scale Histogram*

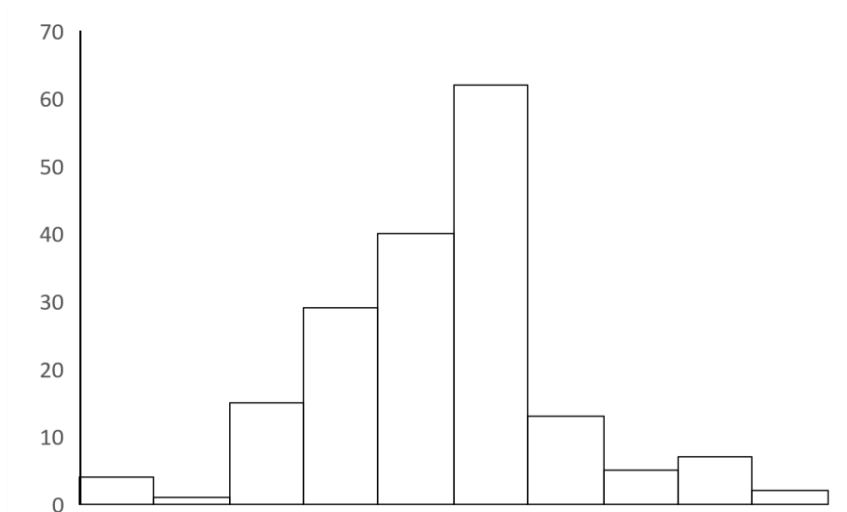


Figure 4. *Child Perceptions of Parenting Puppet Interview Scores Histogram*

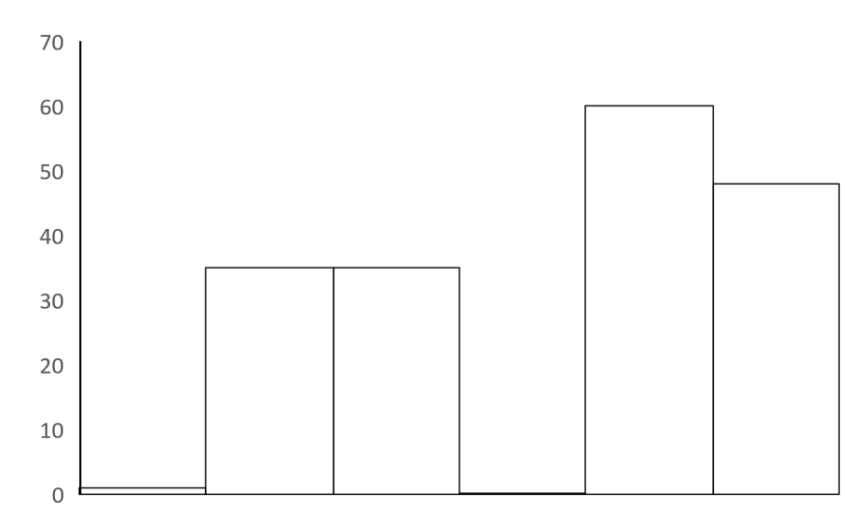


Figure 5. *Socioeconomic Status Histogram*

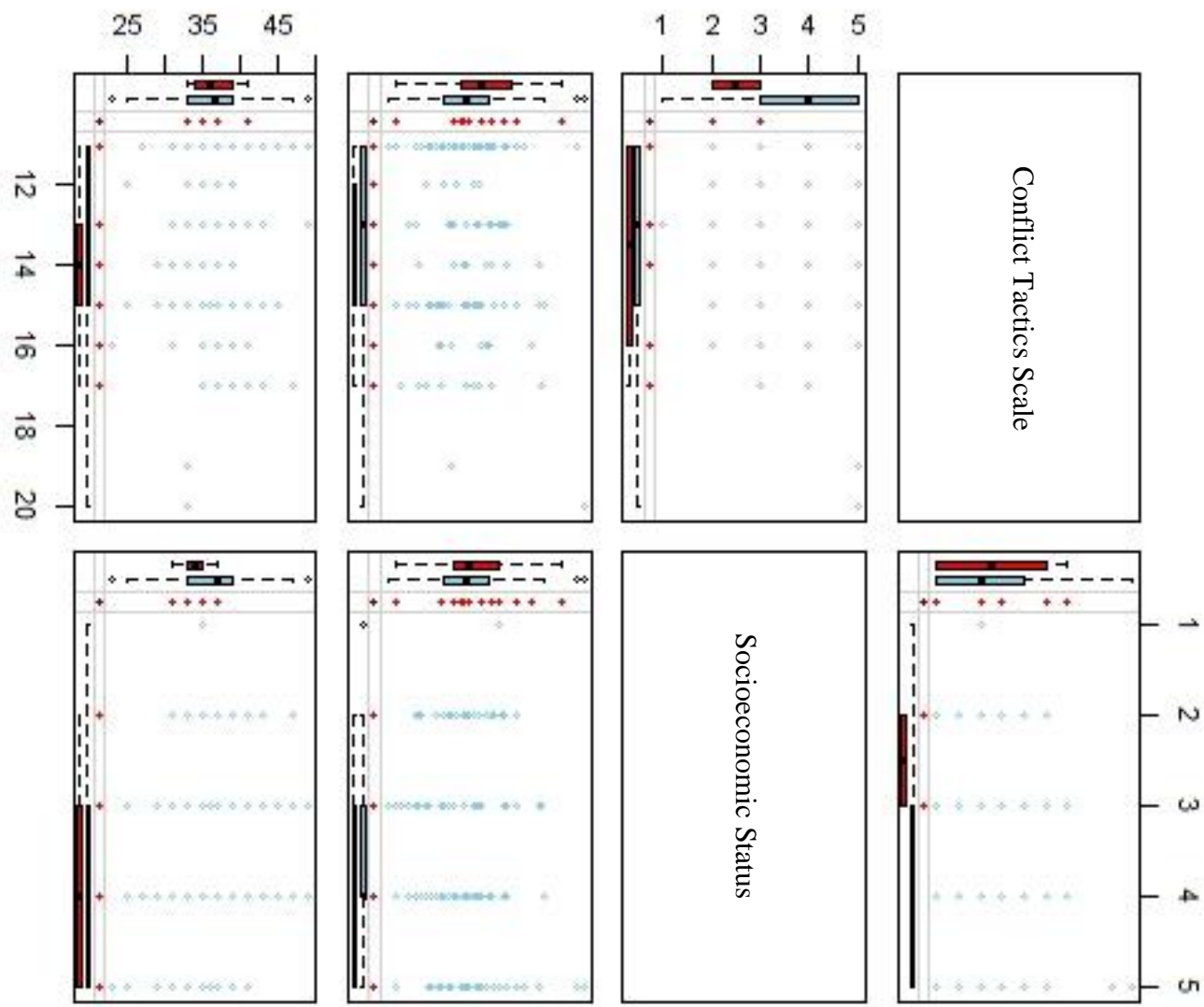


Figure 6. Margin Plots of the Missingness of the Data

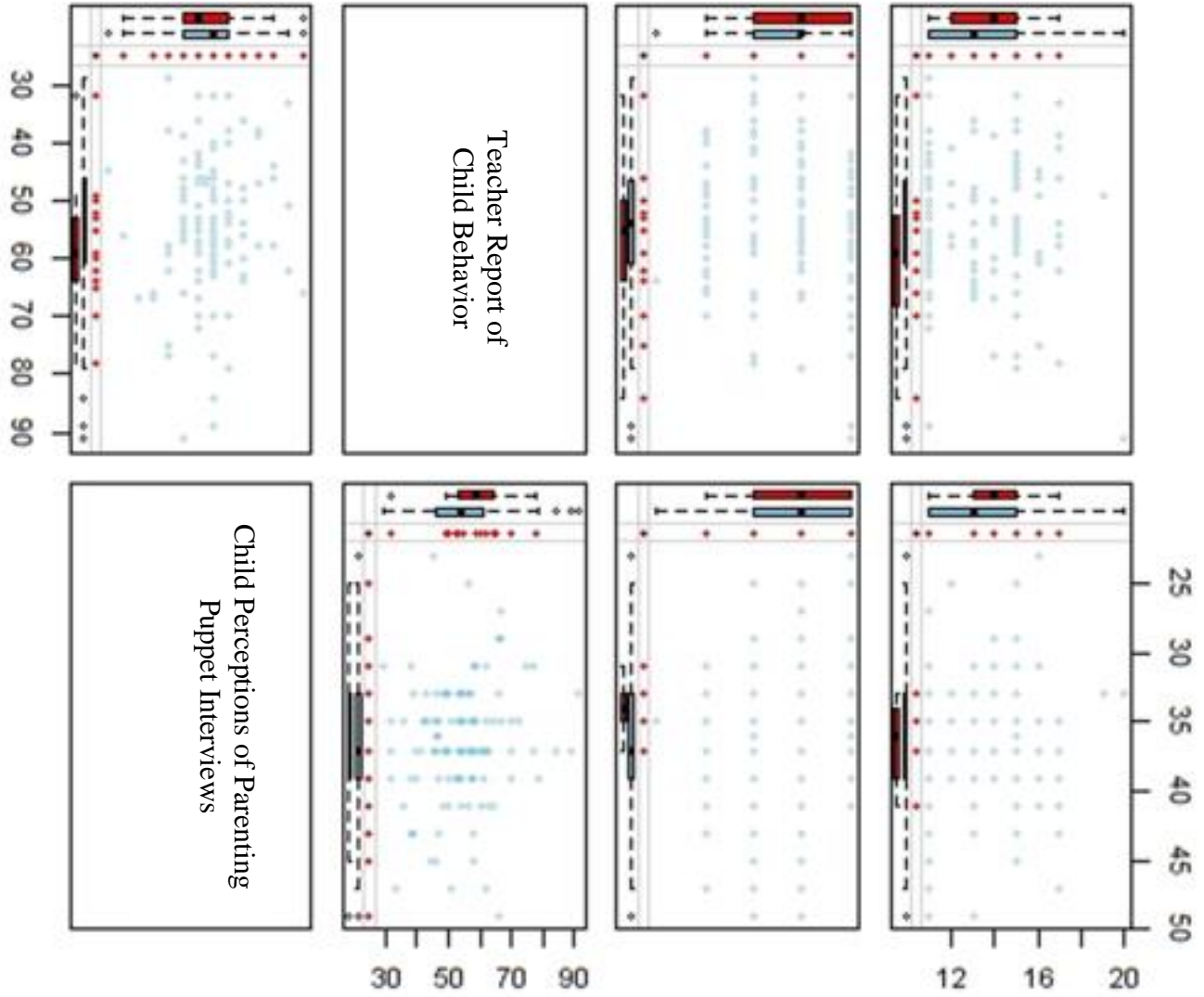


Figure 6. *Continued*

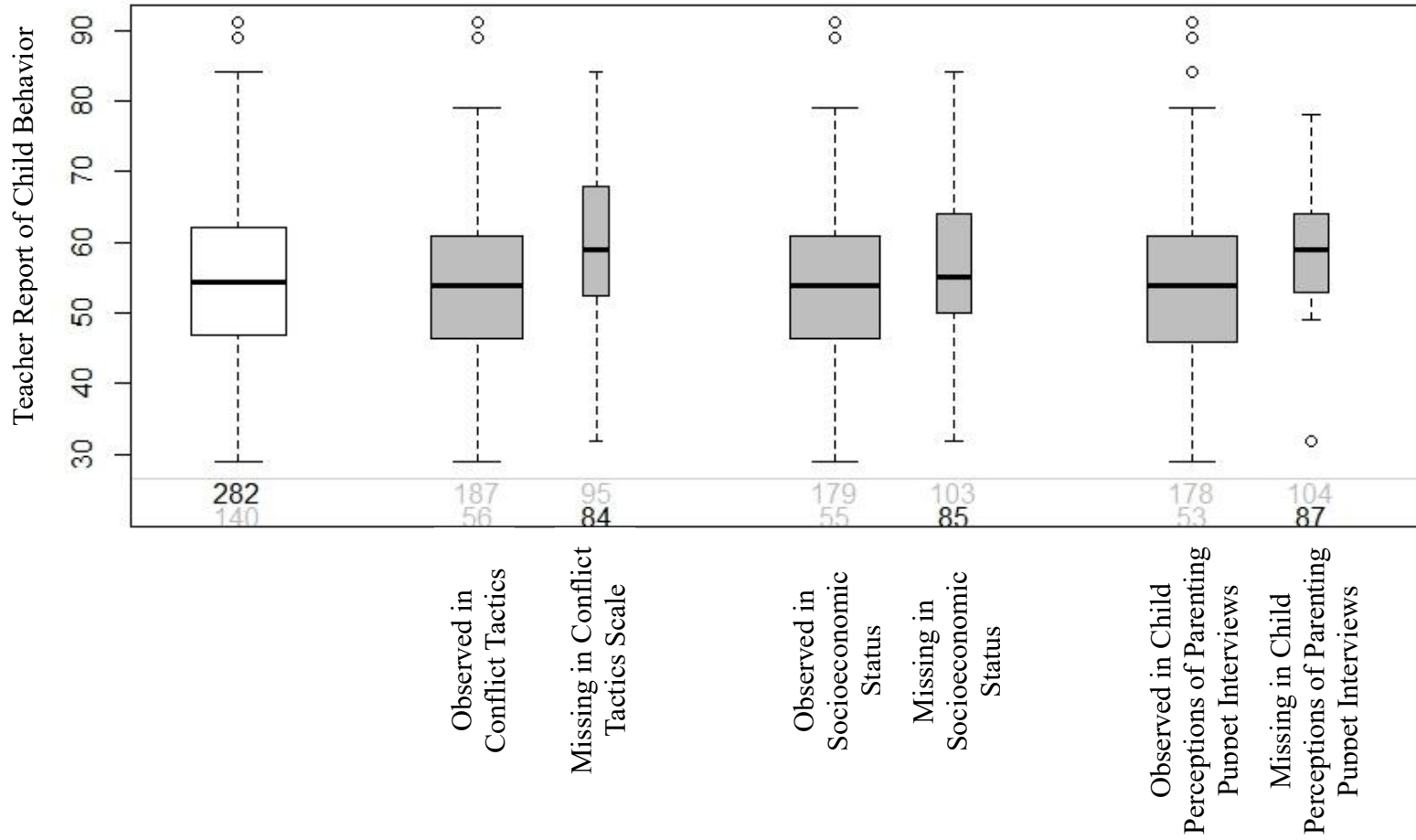


Figure 7: Boxplots Showing the Missingness of the Data

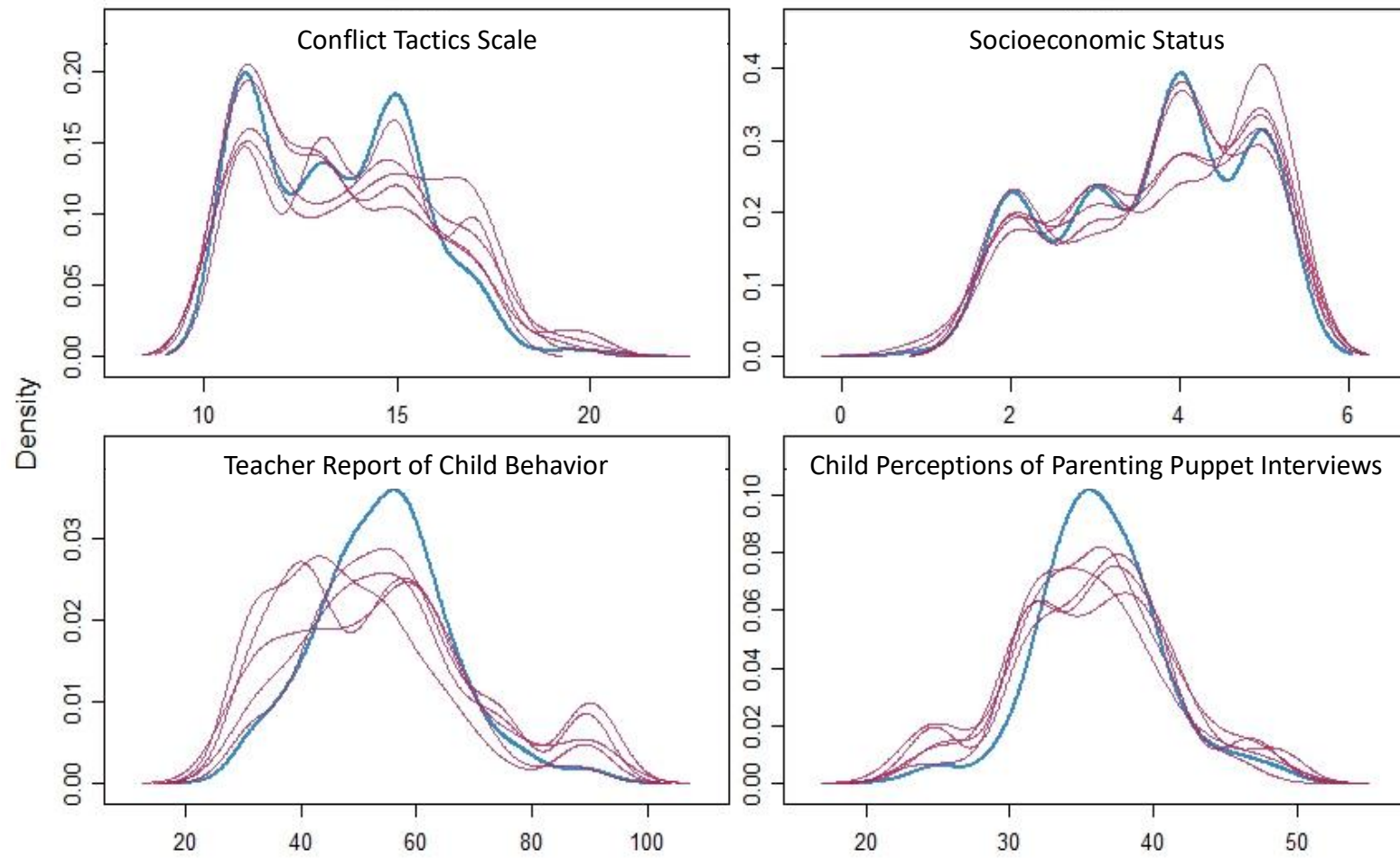


Figure 8. *Density Plot of Imputed vs Original Data*

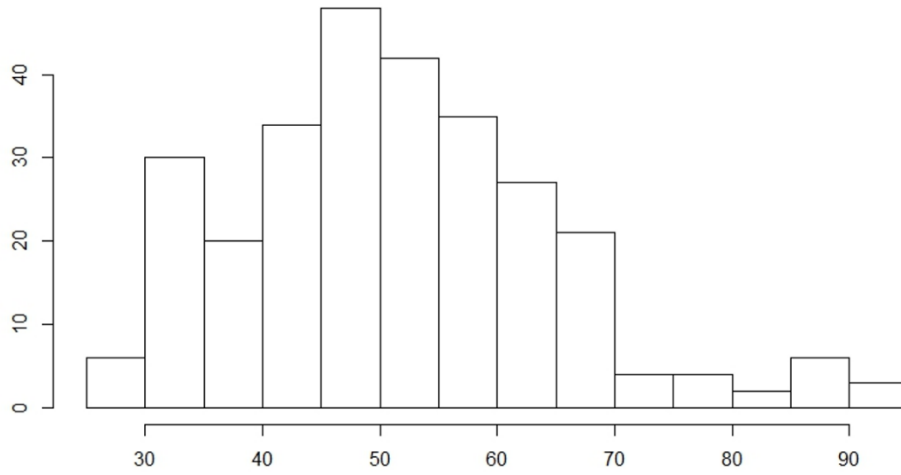


Figure 9. *Teacher Report of Child Behavior Imputed Data Histogram*

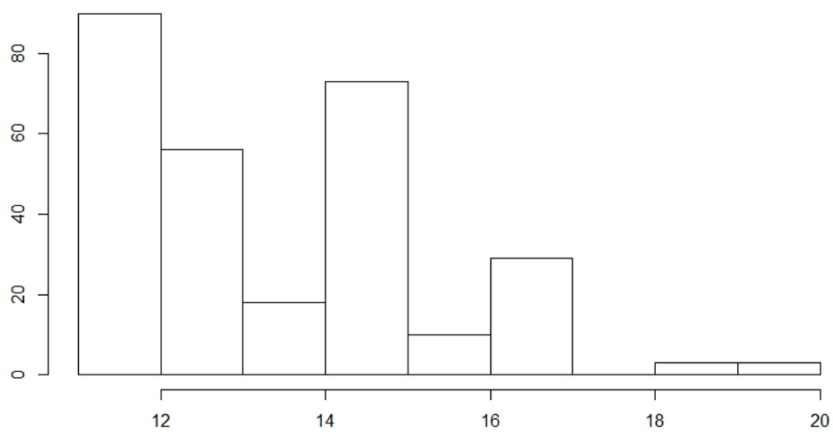


Figure 10. *Conflict Tactics Scale Imputed Data Histogram*

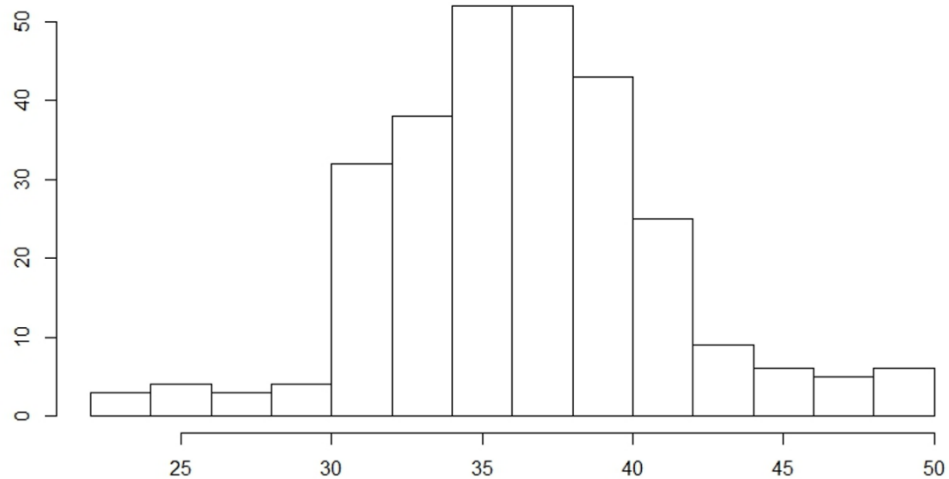


Figure 11. *Child Perceptions of Parenting Puppet Interview Scores Imputed Data Histogram*

Table 4. *Pearson and Bivariate Correlations Between Independent, Dependent, Mediator, and Covariate Variables*

|                                  | Conflict<br>Tactics | Socioeconomic Status | Teacher Report | Puppet Interview |
|----------------------------------|---------------------|----------------------|----------------|------------------|
| Conflict Tactics                 | 1.00                | 0.05                 | 0.03           | -0.01            |
| Socioeconomic Status             | 0.05                | 1.00                 | 0.13           | -0.07            |
| Teacher Report of Child Behavior | 0.03                | 0.13                 | 1.00           | -0.11            |
| Child Puppet Interview Scores    | -0.01               | -0.07                | -0.11          | 1.00             |
| Family Race                      | 0.27                | 0.35                 | 0.32           | -0.23            |
| Parent Sex                       | 0.41                | 0.72                 | -0.09          | 0.02             |
| Child Sex                        | -0.13               | -0.04                | -0.02          | -0.15            |

Table 5. *Descriptive Statistics for Interval Variables for Imputed Dataset*

|   | N   | Mean  | SD    | Range | Skew  | Kurtosis |
|---|-----|-------|-------|-------|-------|----------|
| Conflict Tactics Scale                                    | 282 | 13.63 | 2.18  | 9     | 0.39  | -0.55    |
| Socioeconomic Status                                      | 282 | 3.71  | 1.09  | 4     | -0.36 | -1.1     |
| Teacher Report of Child Behavior                          | 282 | 51.78 | 13.66 | 62    | 0.59  | 0.34     |
| Child Perceptions of Parenting<br>Puppet Interview Scores | 282 | 36.33 | 4.7   | 26    | 0.17  | 0.72     |

Table 6. *Pearson and Bivariate Correlations Between Independent, Dependent, Mediator, and Covariate Variables for Imputed Dataset*

|                                  | Conflict Tactics | Socioeconomic Status | Teacher Report | Puppet Interview |
|----------------------------------|------------------|----------------------|----------------|------------------|
| Conflict Tactics                 | 1.00             | 0.07                 | -0.01          | 0.04             |
| Socioeconomic Status             | 0.07             | 1.00                 | 0.03           | -0.04            |
| Teacher Report of Child Behavior | -0.01            | 0.03                 | 1.00           | -0.09            |
| Child Puppet Interview Scores    | 0.04             | -0.04                | -0.09          | 1.00             |
| Family Race                      | 0.20             | 0.25                 | 0.23           | -0.21            |
| Parent Sex                       | 0.33             | 0.70                 | -0.23          | 0.13             |
| Child Sex                        | -0.08            | 0.03                 | -0.19          | -0.13            |

Table 7: Models of Teacher Report of Child Behavior with Imputed Data

| Fixed Effects   | Unconditional Model | Step 1            | Step 2†            | Step 3                |
|---|---------------------|-------------------|--------------------|-----------------------|
| Teacher Report of Child Behavior                              |                     |                   |                    |                       |
| Intercept ( $\gamma_{00}$ )                                   | 51.75***(1.10)      | 55.89*** (7.37)   |                    | 65.27***<br>(9.5)     |
| Conflict Tactics Score ( $\beta_1$ )                          |                     |                   |                    |                       |
| Intercept ( $\gamma_{10}$ )                                   |                     | 0.13 $ns$ (0.42)  | 0.21 $ns$ (0.14)   | 0.19 $ns$ (0.42)      |
| Child Perceptions of Parenting Puppet Interview ( $\beta_2$ ) |                     |                   |                    |                       |
| Intercept ( $\gamma_{20}$ )                                   |                     |                   | 33.52***<br>(2.57) | -0.28 $ns$ (0.18)     |
| Family Race ( $\beta_3$ )                                     |                     |                   |                    |                       |
| Intercept ( $\gamma_{30}$ )                                   |                     | 7.29**(2.38)      | -2.16*(0.84)       | 6.74*(2.43)           |
| Child Sex ( $\beta_4$ )                                       |                     |                   |                    |                       |
| Intercept ( $\gamma_{40}$ )                                   |                     | -1.90 $ns$ (2.17) | -1.14 $ns$ (0.77)  | -0.18 $ns$ (2.19)     |
| Parent Sex ( $\beta_5$ )                                      |                     |                   |                    |                       |
| Intercept ( $\gamma_{50}$ )                                   |                     | -10.86*(5.45)     | 1.98 $ns$ (0.93)   | -10.33 $ns$<br>(5.49) |
| Teacher Report of Child Behavior ( $\tau_{00}$ )              |                     |                   |                    |                       |
|   | 8.65                | 10.50             | 3.08               | 8.50                  |
| Within-Child fluctuation ( $\sigma^2$ )                       |                     |                   |                    |                       |
|   | 10.63               | 8.41              | 3.47               | 10.43                 |

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

† dependent variable is Child Perceptions of Parenting Puppet Interview