THE EFFECT OF PARENTING STRESS ON CHILDREN'S COGNITIVE DEVELOPMENT: EXAMINING THE VARIABLES OF SEX AND RACE/ETHNIC ORIGIN

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by

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The undersigned, appointed by the dean of the Graduate School, have examined the thesis entitled

THE EFFECT OF PARENTING STRESS

ON CHILDREN'S COGNITIVE DEVELOPMENT:

EXAMINING THE VARIABLES OF SEX AND RACE/ETHNIC ORIGIN

presented by Tamara Coon,

a candidate for the degree of master of science,

and hereby certify that, in their opinion, it is worthy of acceptance.

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ABSTRACT

Little research has focused on children's age, sex, and race/ethnicity as variables that may moderate the relations between parenting stress and children's cognitive development. Using Bronfenbrenner's (1986) bioecological systems theory as a basis, this study used a sample of mothers and their children who participated in the Early Head Start Research and Evaluation Project to examine the effects of parenting stress when children were 14 months old on children's cognitive scores on five measures when children were 24 and 36 months. Hierarchal multiple regression analyses revealed that there was a significant negative association between 14 month parenting stress and 24 and 36 month child cognitive scores. Analyses on four measures indicated that this relation was not moderated by child sex. However, analyses on two measures suggested that European American and African American children showed stronger negative relations between maternal parenting stress and children's cognitive outcomes than Mexican American children.

CHAPTER ONE: INTRODUCTION

Most parents experience parenting stress to some extent while performing parenting responsibilities in their day-to-day lives. Parenting stress, defined as "the aversive psychological reaction to the demands of being a parent" (Deater-Deckard, 1998, p. 315), is determined by many factors. Higher levels of parenting stress have been related to difficult child temperament, child behavior problems, low levels of cognitive readiness for parenting, low parental self-efficacy, less knowledge of children's development, younger parental age, being single, low socioeconomic status (SES), and low levels of social support (Abidin, 1976; Chang et al., 2004; Corcoran & Kunz, 1997; Dix, Ruble, & Zambarano, 1989; Ostberg & Hagekull, 2000; Passino et al., 1993; Wakschlag, Chase-Lansdale, & Brooks-Gunn, 1996). Parenting stress is of key interest in the current study because it can be detrimental to the familial system by influencing the cognitions, behaviors, and affect displayed by the parent to the children (Chang et al., 2004; Mash & Johnston, 1990). Research suggests that these negative cognitions and behaviors tend to spill over into the parent-child subsystem and can eventually affect the child's well-being (Corona, Lefkowitz, Sigman, & Romo, 2005; Gutman, McLoyd, & Tokoyawa, 2005).

Although little is known regarding the impact that parenting stress has on young children's developmental outcomes, there is support for the notion that parenting stress negatively affects parenting discipline strategies and that these discipline strategies potentially have an adverse effect on children's developmental outcomes (Corona et al., 2005). Additionally, some research has studied whether social support and age moderate

the relation between maternal life stress, which is typically related to parenting stress, and children's developmental outcomes (Crnic, Greenberg, & Slough, 1986; Werner & Smith, 1989). However, there is no known research that has examined the moderating variable of race/ethnicity and very little is known about the effects of child sex as a moderator. Therefore, the link between parenting stress and child cognitive developmental outcomes and moderators of this relation warrant attention in research.

Using a sample of mothers and their children who participated in the Early Head Start Research and Evaluation Project, this study examined the effects of parenting stress when children were 14 months old on children's cognitive development at ages 24 and 36 months. Sex and race/ethnic origin were also considered. Previous work on the effects of parenting stress, and associated variables, on children is examined to provide a foundation for generating hypotheses for the current study.

Parenting Stress, Parenting Styles, and Children's Outcomes

Most research suggests that there is an inextricable link between parenting behaviors and parenting stress. Research suggests that parenting behaviors can be affected by parental stress and related concepts as early as the first year of a child's life. Crnic et al. (1986) found that maternal stress 1 month after childbirth predicted less positive parental affect toward that child at 12 months. Furthermore, parental psychological distress, a characteristic related to parenting stress marked by depression and the perception of an inability to master life events, is predictive of less cognitive stimulation in the home (Nievar & Luster, 2006), more aggression and conflict in parent-adolescent interactions, and less positive parent-adolescent interactions (Gutman et al., 2005). Because parenting stress and parental psychological distress have been found to

have an adverse effect on parenting behaviors, such as child abuse, child neglect, and power-assertive discipline (Mash & Johnston, 1990; McLoyd, 1990; Rodgers, 1993; Rodriguez & Green, 1997), studies have begun to examine parenting behaviors as a possible mediator of the relation between parenting stress and children's developmental outcomes. Parents have a remarkable influence on their children's scholastic achievement throughout early and middle childhood (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002), so it is of no surprise that many of the dysfunctional parenting strategies used by distressed parents are associated with poor social, emotional, and cognitive child outcomes (Wolkind & Rutter, 1985).

Studies that have focused on the overall effects of parenting stress and behavior have generally found that inconsistent and unsupportive parenting styles, often displayed in distressed parents, result in poorer developmental functioning in children ranging from childhood to adolescence, such as child attention problems, higher levels of disobedient behavior, and aggression (Jackson, Brooks-Gunn, Huang, & Glassman, 2000), lower levels of school readiness and ability, and lower levels of cognitive ability and social competence (Barry, Dunlap, Cotton, Lochman, & Wells, 2005; McLoyd, 1998). However, only a few studies have investigated the association between parenting stress and young children's developmental outcomes. One such study, noted earlier, examined the consequences of maternal stress on young children and found that maternal stress measured at 1 month after the birth of a child was related to less infant compliance and less secure infant attachment at 12 months (Crnic et al., 1986). Consequently, these toddlers who fail to create secure attachments in the first three years of life are more likely to have externalizing behaviors, a lack of guilt, and difficulties forming lasting

relationships with others later in life (Rutter & Madge, 1976). Contrary to these findings, Miller, Miceli, Whitman, and Borkowski (1996) found that mothers who perceived their parenting role as more stressful when their children were 6 months of age also perceived that their children had more internalizing, but not externalizing, behaviors when they were 3 years old, marked by an increase in the child's depression and anxiety.

Many studies have examined the effects of parenting stress in middle childhood through adolescence, which may provide useful information on predicting the outcomes of parenting stress in younger children. These studies provide evidence that parenting stress may continue to negatively impact children even through adolescence. In fact, there is an association between distressed parents providing low levels of cognitive stimulation in the home and children scoring below average on verbal intelligence and scholastic aptitude tests at ages 4-9 (Nievar & Luster, 2006). In addition, Stern, Smith, and Jang (1999) found that parenting stress and parent-child relationship dissatisfaction predicted parents' dysphoric mood, ineffective parental discipline and control, and also unproductive family processes. These effects, in turn, have been found to be related to adolescent internalizing behaviors, such as depression, and externalizing behaviors, such as substance abuse (Corona et al., 2005). Furthermore, negative parent-adolescent relations, which tend to be both a cause and an effect of parenting stress, predict decreased adolescent academic achievement, resourcefulness, and self-efficacy (Gutman et al., 2005).

Although these studies found a relation between parenting stress and negative child outcomes, most studies that have examined the effect of parenting stress on children have focused primarily on the social and emotional aspects of child development rather

than cognitive developmental outcomes. Therefore, the present study examined the influence of parenting stress on young children's cognitive well-being.

Moderators of the Relation between Parenting Stress and Child Outcomes

A moderator is a third variable that either strengthens or weakens the effect of the independent variable on the dependent variable (Baron & Kenny, 1986). Bronfenbrenner's (1986) bioecological systems theory serves as a framework for examining and hypothesizing about the effects of parenting stress by depicting several variables that influence developmental processes, cognitions, and behaviors. This theory suggests that persons develop and are embedded in an ecological context of multiple systems (microsystem, mesosystem, exosystem, macrosystem, chronosystem), each of which influences the person. Therefore, characteristics of the child, parent, and environment predict and moderate the magnitude of parenting stress, how the stress is perceived and projected, and how children adapt to and are affected by parenting stress. Unlike the aforementioned researchers, some researchers have focused on determining whether the effects of parenting stress and parenting behaviors on children's developmental outcomes are moderated by the child's sex, an individual level characteristic, and race/ethnicity, a macrosystem level influence.

Child sex.

There is a lack of literature that has focused on the independent variable of parenting stress together with the moderating and dependent variables of sex and children's development, respectively. However, a few studies have analyzed the effects of concepts related to parenting stress, such as parenting style, mood, and strain. The

findings from these studies will be used to theorize about the effects of parenting stress on boys' and girls' cognitive abilities.

Using an adolescent sample from the Great Depression period (1939), the Oakland Growth study examined the impact of financial strain and poor parenting behavior on the outcomes of children (Elder, Nguyen, & Caspi, 1985) and found that economic hardship created a rejecting and unsupportive paternal parenting style, which, in turn, adversely influenced the psychosocial well-being of girls. However, this paternal parenting style did not have a universal effect across the sexes in that a dysfunctional parenting style was not found to negatively influence the psychosocial well-being of boys.

Other, more recent, research has provided inconsistent findings, indicating that parental depressed mood, often associated with parenting stress, is related to neglectful, uninvolved parenting, which tends to lead to poor school performance, low self confidence, and difficulty with peer relations in adolescent boys, but not girls (Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1992). Similar to Conger and colleagues, Campbell, Pierce, Moore, Marakovitz, and Newby (1996) found that negative parenting control, characterized as negative affect and intrusive control, was highly related to externalizing behavior in males aged 4 and 9. In this study, externalizing behavior was described as hyperactivity, inattention, aggression, noncompliance, anxiety, and depression, whereas negative parenting practices were described as using criticism, physical punishment, yelling, and threatening tactics. As a result of these inconsistent findings on variables associated with parenting stress, in this study I tested whether sex moderates the influence of parenting stress on young child cognitive outcomes.

Race/ethnic origin.

To my knowledge, race/ethnicity has not been examined as a moderator of the relation between parenting stress and child's developmental outcomes. However, research suggests that African Americans and other minorities tend to either be less affected by or have a different perception of stressors or non-normative events, such as spanking, marital conflict, divorce, and non-authoritative parenting styles, than are non-minority groups (Deater-Deckard & Dodge, 1997; Ispa et al., 2004; Nievar & Luster, 2006). For example, Lansford et al. (2005) found that physical discipline was less strongly related to children's aggression and anxiety in cultural environments that consider physical discipline as normative, while, in cultures that consider physical discipline as less normative, there was a stronger association between the use of physical discipline and more adverse child outcomes. These findings suggest that cultural normativeness moderates the effects of physical discipline on children's negative adjustment. Although physical discipline is different from the current study's primary focus on parenting stress, these findings suggest that parents from different cultures may perceive or respond to events differently, which may affect how parenting stress influences child outcomes in various minority and majority cultures. Based on these findings, it is possible that minority children could possibly develop more positively, even in the presence of unhealthy parenting strategies or parenting stress, than non-minority children.

Race/ethnic origin has also been found to influence mother-child interactions and attachment styles. In their study of low-income families with young children, Ispa et al. (2004) found that maternal intrusiveness was negatively related to child engagement in

European American families, but not the other ethnic minorities (African American, less acculturated Mexican American, and more acculturated Mexican American). In addition, maternal intrusiveness was associated with parenting stress only for European American mothers. These findings suggest that race/ethnicity may play an important role as an influence on the relation between parenting style and parent-child interactions, especially for European American families. As a result, I included race/ethnicity as a moderator in the present study to test whether certain ethnic families are at greater risk for poor child outcomes in the presence of parenting stress.

Gaps in the Literature

Considering that few researchers have focused on the moderating variables of children's sex and race/ethnicity in previous research on cognitive development, more work is needed to investigate the underlying, contributing factors to healthy, as well as inadequate, cognitive development. Although many studies have examined the effects of parenting stress on adolescent outcomes, few have looked at the outcomes in younger children and those that have have yielded inconsistent conclusions. In addition to the gaps in the literature regarding age, the inconsistent findings on the role of child's sex in coping with parenting stress also warrant further investigation. Although research from the Depression Period provides evidence that females may be at greater developmental risk resulting from parenting stress than males (Elder et al., 1985), more recent literature suggests that males may be at greater risk (Campbell et al. 1996; Conger et al., 1992). With these conflicting findings, further research is clearly necessary.

Similarly, to my knowledge no other studies to date have examined whether race/ethnicity moderates the relation between parenting stress and children's cognitive

adjustment. This is an area in which differences would be expected because of racial differences in socialization processes and access to family and community support. There is also a possibility that certain racial/ethnic groups could manage stress in more positive ways that are less detrimental to child outcomes.

Also, most research on parenting stress has examined differences in child outcomes between low-income and middle-class families. It is difficult to disentangle the influences of race/ethnicity and SES on familial outcomes because measures of race/ethnicity and SES are generally empirically overlapping (Gutman et al., 2005; Nievar & Luster, 2006). Therefore, I attempted to disentangle these influences and control for SES by using a sample of low-income families. By using a sample with similar SES backgrounds, SES was accounted for and was less likely to contribute to any observed race/ethnicity differences.

A low-income sample was also chosen because low-income pre-school age children are at greater risk for poor developmental outcomes as a result of financial deprivation (Peterson et al., 2004). Research suggests that being from a lower income family increases the risk of child psychological distress, child behavior problems, child abuse and neglect, and decreased reading attainment in early and middle childhood (Elder et al., 1985; Kadushin & Martin, 1981; Nievar & Luster, 2006; Rutter & Madge, 1976). Because children from middle to high income families who have an educated mother and who are from intact homes are less affected by parental stress (Werner & Smith, 1989), it appears that low SES children may also show more adverse consequences of parenting stress than other groups. As a result, children from low SES families could perhaps be at a greater risk for poor developmental outcomes as a result of parenting stress.

Another important reason for using a low-income sample is that this is a population in which parenting stress is typically high. Although Barry et al. (2005) did not find a significant link between SES and parenting stress, suggesting that SES and parenting stress are independent constructs, several other studies found contrary findings. Lower economic standing and financial strain have been found to predict higher levels of parenting stress, maternal depression, parental insecurity, and parental anxiety (Conger et al., 1992; Jackson et al., 2000; McLoyd, 1998; Nievar & Luster, 2006). Additionally, models of parenting stress present the notion that low parental income often triggers parenting stress and negative parenting behaviors, such as anger and resentment of children, which later cause negative outcomes for children (Mayer, 1997). Because low income families are more likely to have elevated parenting stress, they provide an ideal sample to study the effects of differing levels of parenting stress. Alternatively, if a sample with low parenting stress were to be used, it would be harder to find variation in the levels of parenting stress and, therefore, in the effects of parenting stress on children's cognitive performance. Also, because low SES families are more vulnerable to increased parenting stress than higher SES families, they are in greater need of study so that parenting stress interventions can be tailored to this population.

Research Questions

Using the eligible (low-income) families from the National Early Head Start Research and Evaluation Project as a sample, I examined the effects of parenting stress when the child was 14 months old on children's cognitive outcomes at 24 and 36 months of age. The effects of parenting stress on children's well-being can be understood by using Bronfenbrenner's (1986) bioecological systems theory, which provides a

framework that proposes that children develop and are embedded in an ecological context of multiple systems, each of which influences the child. This theory suggests that such variables as the child's age and sex (individual level characteristics), and race/ethnic origin and family income (macro and exosystem level influences, respectively) would be expected to influence the effect that parenting stress has on children's cognitive outcomes. For instance, a child's sex is related to both innate (e.g., hormonal sex differences) and gender socialization (e.g., the manner in which boys and girls are socialized) processes that may influence the way that children respond to parenting stress. Although child's race/ethnicity is actually an individual level characteristic, it also serves as a proxy for broader, external race-related issues that affect children's adjustment. Thus, I examined the effects of parenting stress based on sex and race/ethnic origin of the child.

Three primary research questions were considered in this study: 1) Is there a relation between parenting stress measured at 14 months and the cognitive development of children as young as 24 and 36 months old? 2) Does child sex moderate the relationship between parenting stress and child cognitive outcomes at 24 and 36 months? 3) Does child race/ethnic origin moderate the relationship between parenting stress and child cognitive outcomes at 24 and 36 months?

Hypothesis 1:

I expected to find that parenting stress at 14 months would negatively influence the cognitive development of the entire sample of children, regardless of sex and race/ethnicity, at 24 and 36 months of age. Although some literature suggests that parenting stress is not detrimental to child outcomes, the few studies that have

investigated the developmental outcomes of young children suggest that parental distress, a characteristic related to parenting stress, is predictive of less infant compliance, less secure infant attachment (Crnic et al., 1986), and more internalizing behavior, such as depression and anxiety, in the toddler years (Miller et al., 1996). Because child well-being is considered to be a holistic and interrelated combination of social, emotional, and cognitive development, these social and emotional developmental outcomes are likely to affect cognitive processes. Furthermore, the few studies that have researched child cognitive outcomes have found that parental distress is related to child attention problems, lower levels of school readiness and ability, and lower levels of cognitive ability (Jackson et al., 2000; McLoyd, 1998). Therefore, using previous research on children's social, emotional, and cognitive effects of parenting stress and related variables as a foundation, I hypothesized that the negative effects of parenting stress would be visible in children's cognitive development at ages as early as 2 and 3 years old.

Hypothesis 2:

I hypothesized that the relation between parenting stress and children's cognitive outcomes would be stronger for girls than boys. As research from the Depression Period suggests that parenting stress may put females at greater developmental risk than males (Elder et al., 1985), more recent studies suggest that males may be at greater risk (Campbell et al. 1996; Conger et al., 1992). Although the inconsistencies could be explained by macrosystem level factors, such as social and historical context, there is evidence that males and females are differentially sensitive to the exposure of particular circumstances or environmental factors. For instance, boys tend to have higher self-

esteem, whereas girls are more prone to depression (Rudolph & Hammen, 1999). Additionally, girls are more likely to be affected by interpersonal relationship stressors than boys (Rudolph & Hammen, 1999). Because the relationship between parenting stress and child outcomes is typically mediated by parenting behaviors and parent-child interactions (Crnic et al. (1986), a strain in the parent-child relationship caused by parenting stress may be more detrimental to the well-being of girls than boys. Consequently, I expected to find that parenting stress would have a stronger impact on the cognitive outcomes of girls than boys.

Hypothesis 3:

I expected to find that the relation between parenting stress and children's cognitive outcomes would be stronger for European American children than African American and Mexican American children. Considerable attention has recently been paid to the role of protective and preventive factors, such as access to emotional, informational, and parenting support, on the effect of parenting behaviors on child outcomes (Crnic et al., 1986; Prevatt, 2003). Because ethnic minority families are generally larger and have stronger family ties than European American (Castillo, Conoley, & Brossart, 2004; Driesson, 2003; Gaines et al., 1997; Marin & Gamba, 2003), parenting stress may not serve to be as powerful of an influence on ethnic minority children as it is on non-minority children. As socio-cultural context impacts the developmental outcomes of children, I hypothesized that the effect of parenting stress would be greater on European American children's cognitive outcomes than on African American and Mexican American children.

CHAPTER TWO: METHODOLOGY

Data and Sample

The data used in the present study were gathered by the Early Head Start (EHS) Research and Evaluation Project. Eligible families, those who had a family income at or below the federal poverty line, were randomly assigned to either the EHS program group or the comparison group. The program group received EHS services, which were designed to enhance the overall development of the child, encourage positive parent-child and parent-caregiver relationships, offer personal and professional support to families, and encourage healthy parenting practices by teaching skills and knowledge about children's developmental processes (Administration on Children, Youth, and Families [ACYF], 2001). The comparison group did not receive EHS services, although they had the liberty to obtain services from elsewhere and typically did so.

Data on multiple parent, child, and community constructs were collected by parent interviews on 3,012 families between 1996 and 1998 as a part of the National Early Head Start Research and Evaluation Project, consisting of evaluations of 17 EHS programs. Overall retention rates for the EHS Research and Evaluation Project were 72.2 percent between the 14- and 24-month parent interviews and 70.3 percent between the 24- and 36-month parent interviews (Administration on Children, Youth, and Families [ACYF], 2002a). However, the sample size of this study was smaller because some families had missing data on the 14 month parenting stress and the child cognitive development variables.

Previous analyses of this data set revealed that children who participated in the EHS program had higher scores in the areas of cognitive development and verbal communication than children in the comparison group (ACYF, 2002b). Furthermore, EHS children demonstrated fewer signs of aggression and EHS parents showed more positive parenting behaviors and became more self-sufficient through job training and education than parents in the comparison group. Because of these positive EHS program effects, they were controlled for in the current study. Therefore, I included children in both the intervention and the comparison groups while controlling for the effects of the EHS intervention program.

Measures

Although several constructs were evaluated as part of the larger EHS project, parenting stress and child cognitive abilities were of primary interest in the current study.

Parental Measures

Parenting Stress Index (PSI).

Parenting stress was measured when children were 14, 24, and 36 months old using the Parent-Child Dysfunctional Interaction and Parental Distress subscales of the Parenting Stress Index (PSI), Short Form (Abidin, 1990). This measure assesses stress related to parenting and parent-child interactions. The PSI Short Form is a 3 subscale, 36-item self-report questionnaire and profile in which most responses require answers of 1 (*Strongly Disagree*), 2 (Disa*gree*), 3 (*Not Sure*), 4 (*Agree*), or 5 (*Strongly Agree*). Total PSI scores, therefore, can range from 36 to 180, with higher scores indicating higher levels of parenting stress. Because the EHS project only used 2 subscales to measure levels of parenting stress, PSI scores for the current study could range from 24 to 120.

Within the National Early Head Start Research and Evaluation Project, these measures had high internal consistency with .80 for the Parent-Child Dysfunctional Interaction subscale and .87 for the Parental Distress subscale (Kisker et al., 2003). For this study, the sum of the two subscale scores was used to create a total parenting stress score.

Although parenting stress was measured at all three points, for this study, only the 14 month combined assessment was used. By examining the relationship between earlier parenting stress and later child outcomes, the design of the study is stronger by examining the longitudinal nature of the relation between these constructs. Although this design does not allow us to conclude that there are causal relations between parenting stress and child outcomes, it allows us to test whether parenting stress precedes child cognitive outcomes rather than simply occurring simultaneously.

Child Outcome Measures

To provide a comprehensive measurement of children's cognitive outcomes, I included 3 cognitive measures at 24 months and 2 cognitive measures at 36 months.

Bayley Scale for Infant Development, Second Edition (BSID-II).

When children were 24 and 36 months old, child cognitive and language development was measured using the Bayley Mental Development Index (MDI) Standard Score of the Bayley Scale for Infant Development, Second Edition (BSID-II) (Bayley, 1993). By presenting infants and toddlers with tasks that are designed to evoke behavioral responses, this measure is used to assess the cognitive, language, and personal-social developmental functioning of children aged 1 to 42 months. Healthy and normal BSID-II scores for 24 month children range from 84 to 116, while scores below 84 are representative of delayed language development and scores above 116 are

representative of advanced language development (Siegel, Cooper, Fitzhardinge, & Ash, 1995). The internal consistency reliability of the MDI in the National Early Head Start Research and Evaluation Project across measurement points was .88, and the test-retest reliability was .91 (Kisker et al., 2003). The MDI is also correlated with the McCarthy Scales of Children Abilities and the Wechsler Preschool and Primary Scale of Intelligence-Revised, with concurrent validities of .79 and .73, respectively.

MacArthur Communicative Development Inventories (CDI).

The MacArthur Communicative Development Inventories: Words and sentences (CDI-WS) were used to obtain children's early language and vocabulary skills at 24 months (Fenson et al., 1993). Particularly, the Vocabulary Production Score and the Sentence Complexity Score subsections were used to gather the parents' report on their children's language efficiency. Using a word checklist for age-appropriate language skills, parents report on their children's use of language. The mean score for 24 month old toddlers on the Vocabulary Production Score portion of the CDI is between 52 and 68 (Fenson et al., 2000). Internal consistency reliabilities of these measures were also high in the National Early Head Start Research and Evaluation Project. The vocabulary production subscale had an internal consistency reliability of .96, while the sentence complexity scale had an alpha of .95 (Kisker et al., 2003). The test-retest reliabilities at 6-week and 6-month intervals were .90 and higher for both scales as well.

These scales also have high concurrent validities with the Preschool Language Scale and the Expressive One Word Picture Vocabulary Test with correlations ranging from .40 to .85. The predictive validities for the total vocabulary and grammatical

complexity subscales were supported by correlations of .71 with the vocabulary production scale and .62 with the sentence complexity scale, respectively.

Woodcock-Johnson III (WJ-III).

When children were 24 months old, the Woodcock-Johnson III (WJ-III) Tests of Achievement, Test 14: Picture Vocabulary (Mather & Woodcock, 2001) was also used to measure children's cognitive abilities by assessing children's oral expression. Also in the National Early Head Start Research and Evaluation Project, split-half reliabilities for the WJ-III Tests of Achievement ranged from .56 to .98, with almost all of the correlations at the .80 level or above (Kisker et al., 2003). Test-retest reliabilities for these tests ranged from .57 to .96. In addition, the Picture Vocabulary test was correlated .92 with the Verbal Comprehension test, another WJ-III Test of Achievement.

Peabody Picture Vocabulary Test, Third Edition (PPVT-III).

At the 36 month assessment, children's cognitive and language development was measured by the Peabody Picture Vocabulary Test, Third Edition (PPVT-III) Standard scores (Dunn & Dunn, 1997). This instrument assesses listening comprehension and receptive vocabulary of standard English. During the assessment, an examiner orally introduces a word and a set of pictures to the child. The child is asked to select the picture that best represents the word's meaning. This process continues until a child's "basal" and "ceiling" sets are established, "basal" meaning the item set in which a child makes one or no errors and "ceiling" meaning the item set in which a child makes eight or more errors. The national mean score for children of this age on this measure is 100, with a standard deviation of 15 (Champion, Hyter, McCabe, & Bland-Stewart, 2003). This measure has a Form A and a Form B. The Cronbach's alpha for this measure in the

National Early Head Start Research and Evaluation Project was quite high, with values of .93 on both forms (Kisker et al., 2003). The Spearman-Brown split-half reliability coefficients for both forms were .89 or above for ages 2 years, 6 months and 3. Test-retest reliabilities, measured approximately one month apart, were above .90 for both forms.

The concurrent validity was assessed by correlating the PPVT-III with other intelligence and language tests. Correlation coefficients ranged from .82 to .92 with the Wechsler Intelligence Scale for Children—Third Edition, .76 to .91 with the Kaufman Adolescent and Adult Intelligence Test, and .63 to .83 with the Oral and Written Language Scales, suggesting that the PPVT-III is a valid measure of children's listening comprehension and receptive vocabulary (Kisker et al., 2003).

Data Analysis

For descriptive purposes, univariate analyses of variance (ANOVAs) were conducted on all child cognitive and parental measures to determine the effects of child sex and race/ethnicities on these scales. If ANOVAs found that there was significant race/ethnic differences, post-hoc tests were done to determine which racial/ethnic groups had higher and lower scores on that particular measure.

Hierarchical multiple regressions were conducted to analyze the effect of parenting stress on the children's cognitive outcome measures: Bayley Mental Development Index (MDI), MacArthur Communicative Development Inventories (CDI), Woodcock-Johnson III (WJ-III), and Peabody Picture Vocabulary Test, Third Edition (PPVT-III).

The Bayley MDI was used to measure children's cognitive and language development at both 24 and 36 months of age. In this analysis, the dependent variable was the 36 month MDI score. Step 1 consisted of controlling for the EHS program effects, parental age, parental education, and partner status (whether or not there is a partner or spouse living in the home at 14, 24, and 36 months), because previous studies suggest that these variables may influence the relationship between parenting stress and children's outcomes (Jackson, 2003; DiPietro, Hilton, Hawkins, Costigan, & Pressman, 2002; Werner & Smith, 1989; Whiteside-Mansell, Pope, & Bradley, 1996).

Longitudinal, rather than concurrent, links between parenting stress and child cognitive outcomes were assessed by controlling for the Bayley MDI at the prior wave of data collection (i.e., at 24 months). Thus, Step 2 of the regression analysis consisted of entering in the 24-month score on the Bayley MDI, testing for its effect on the 36-month outcome. Controlling for the 24 month Bayley MDI scores allowed me to test whether parenting stress was related to *changes* in children's MDI scores, which was not possible with analyses involving the other child cognitive outcomes. At step 3, I entered the mean centered 14 month parenting stress score into the equation. This tested Hypothesis 1, which posited a negative relation between parenting stress at 14 months and the cognitive development of children at 24 and 36 months old. Hypothesis 1 would be supported if the PSI score made a significant unique (and inverse) contribution to the variance in 36 month child cognitive development outcomes.

At step 4, I entered in dummy variables for child race/ethnicity and child sex. Child race/ethnicity variables were dummy coded as AA (African American) vs. European American and MA (Mexican American) vs. European American. These

minority groups were compared with European American children because parenting stress research has focused more extensively on non-minority children and families than on minority families, suggesting that European American families have previously served as a reference. The child sex and the two child race/ethnicity variables (AA and MA) were entered into the equation at this step so that their potential moderating effects could be tested at the next step.

Step 5 tested the moderating effects of child sex and race/ethnicity on parenting stress by examining the product terms of parenting stress by child sex, parenting stress by the AA race/ethnicity dummy code, and parenting stress by the MA race/ethnicity dummy coded variable. Hypotheses 2 and 3, which predicted that sex and race/ethnicity, respectively, would moderate the relationship between parenting stress and child outcomes at 24 and 36 months, were tested at this step of the analysis. Hypothesis 2 would be supported if the sex X parenting stress product term made a significant unique contribution to the dependent variable and if follow-up tests of simple main effects revealed that girls were more detrimentally cognitively affected by parenting stress than were boys. Hypothesis 3 would be supported if one or both race/ethnicity dummy coded variable made significant unique contributions to the cognitive development score and if subsequent analyses showed that the negative relation between parenting stress and later child cognitive outcomes was stronger for European American children than children in the other groups.

Because all of the other child cognitive measures were administered at only one age interval, Step 2 was not necessary and was eliminated for further analyses. All other steps followed the same pattern as mentioned earlier.

CHAPTER THREE: RESULTS

Preliminary Analyses

At 24 months, the control variables (i.e., maternal education, maternal age, and partner status) accounted for approximately 2%, 9%, and 27% of the variance in child cognitive outcome scores on the 24 month MacArthur CDI, BSID-II, and WJ-III, respectively. These control variables also accounted for approximately 7% and 10% of the variance in 36 month BSID-II and PPVT-III scores, respectively. In each case, higher levels of maternal education, older maternal age, and mothers having a romantic partner living in the home were associated with higher child cognitive scores. In addition, controlling for 24 month BSID-II scores in the 36 month BSID-II analysis accounted for 36% of the variance in child cognitive scores at 36 months. As expected, higher BSID-II scores at 24 months were related to higher BSID-II scores at 36 months.

For descriptive purposes, the means, standard deviations, and correlations between all variables used in the analyses are presented in Table 1. As the table shows, the mean age of the mothers was 23.44 years, with a mean education level of 11.88 years. Higher maternal education was significantly associated with lower 14 month maternal PSI scores. Maternal age was also significantly negatively correlated with mother's parenting stress scores. Partner status was significantly negatively related to 14 month maternal PSI scores, indicating that mothers with partners living in the home had lower levels of parenting stress than mothers without partners living in the home. All 24 and 36 month child cognitive measures were significantly and highly correlated with one another and negatively correlated with 14 month parenting stress scores.

Table 2 shows the means and standard deviations of the child cognitive scores by child sex and race/ethnicity. Univariate analyses of variance (ANOVAs) were conducted on each dependent measure to determine which sex had higher cognitive scores. These analyses revealed that female children scored significantly higher than male children on the cognitive development measures at 24 and 36 months of age, *F*s(1, 1421 to 2070 = 11.58 to 39.24, *ps* < .01), except for the 24 month WJ-III measure.

ANOVAs and post-hoc tests were also used to analyze race/ethnic differences on each dependent variable. Because ANOVAs on all five measures found that there were significant race/ethnic differences, *F*s(2, 1278 to 1857 = 11.09 to 311.99, *p*s < .01, post-hoc tests were done to determine which racial/ethnic groups scored significantly higher and lower than other groups. Post-hoc tests revealed that European American children scored significantly ($p < .01$) higher than both Mexican American and African American children on all five child cognitive measures. On the 24 month BSID-II, 24 month MacArthur CDI, and 36 month PPVT-III measures, there were no significant differences between Mexican American and African American children. However, there were significant differences between these two groups on the 24 month WJ-III and the 36 month BSID-II measures. African American children scored significantly ($p < .01$) higher than Mexican American children on the WJ-III, but Mexican American children scored significantly ($p < .01$) higher than African American children on the 36 month BSID-II.

Univariate analysis of variance was also conducted on the Parenting Stress Index measure to determine the impact of child sex on levels of parenting stress. This analysis (shown in Table 2) revealed that, at 14 months, the parents of male children had

significantly higher levels of parenting stress than the parents of female children, $F(1, 2323 = 4.208, p < .05)$..

ANOVAs and post-hoc tests were also used to analyze the effect of child race/ethnicity on 14 month PSI scores. Because this analysis found that there was a significant race/ethnicity effect, $F(2, 2041 = 11.33, p < .01$, post-hoc tests were done to determine which child racial/ethnic groups had higher levels of parenting stress. Post-hoc tests revealed that the parents of Mexican American children scored significantly ($p < .05$) higher than parents of African American and European American children on the 14 month PSI measure. Additionally, parenting stress scores were significantly higher for the parents of African American children than for the parents of European American children.

Tests of Hypotheses

Results pertaining to each of the three hypotheses are presented in turn below. For each hypothesis, the results for each of the five child cognitive development outcomes will be sequentially presented. Tables 3 through 10 display the results from the hierarchal multiple regressions on all 24 and 36 month dependent variables.

Hypothesis 1

Hypothesis 1 predicted that parenting stress at 14 months would negatively influence the cognitive development of children, regardless of sex and race/ethnicity, at 24 and 36 months of age. As shown in Step 2 of Tables 3-10, in all five analyses (i.e., 24 month Bayley MDI, 24 month MacArthur CDI, 24 month WJ-III, 36 month PPVT, 36 month Bayley MDI), there was a significant negative association between 14 month parenting stress and 24 and 36 month child cognitive outcomes, suggesting that higher

levels of parenting stress predicted lower child cognitive scores. Hypothesis 1 was strongly supported.

Hypothesis 2

Hypothesis 2 posited that the relation between parenting stress and children's cognitive outcomes would be stronger for girls than boys. As shown in Table 3, analyses on the 24 month child cognitive MacArthur CDI scores revealed a significant interaction effect between parenting stress scores and child sex. However, contrary to Hypothesis 2, the relation between 14 month parenting stress and 24 month MacArthur CDI scores was stronger for boys than girls (see Table 4). However, there were no significant child sex X parenting stress interactions on any of the remaining child cognitive scores. Thus, Hypothesis 2 was not supported.

Hypothesis 3

Hypothesis 3 predicted that the relation between parenting stress and children's cognitive outcomes would be stronger for European American children than African American and Mexican American children. As shown in Table 3, analyses of the 24 month MacArthur CDI scores revealed that there was a significant interaction between race/ethnicity and parenting stress, with both dummy coded race/ethnicity variables having significant interactions with parenting stress.

To examine the meaning of these significant interaction effects, follow-up analyses were done for each racial/ethnic group separately. As shown in Table 5, the relation between parenting stress and the 24 month MacArthur CDI score, after controlling for the control variables, was significant for European-American and African-American children, but not Mexican-American children. The interaction involving the

African American versus European American dummy coded variable suggests that the negative relation between parenting stress and 24 month MacArthur CDI scores was stronger for European American than for African American children, even though the relations were significant for both groups.

Similar to the 24 month MacArthur analyses, analyses of the 36 month Bayley-MDI (BSID-II) scores (see Table 6) revealed that there was an interaction effect between race/ethnicity and maternal PSI scores, with the Mexican American versus European American dummy coded variable X parenting stress term being significant. Separate regression analyses for each racial group (see Table 7) found that the relation between PSI and 36 month BSID-II scores was significant for European American and African American children, but was not for Mexican American children. This explains why the Mexican American versus European American X parenting stress interaction term was significant. Hypothesis 3 was partially supported, as it was supported on the 24 month MacArthur CDI and 36 month BSID-II scores, but not on the 24 month BSID-II (see Table 8), 24 month WJ-III (see Table 9), and 36 month PPVT-III measures (see Table 10).

Summary

The results indicated that, regardless of race/ethnicity and sex, higher levels of parenting stress when the children were 14 months old had a significant negative effect on children's cognitive development at 24 and 36 months of age.

With respect to whether child sex moderated the parenting stress-cognitive development relation, subsequent analyses on one of the 24 month measures (MacArthur CDI) indicated that the relation between 14 month parenting stress and this index of

cognitive development was stronger for boys than girls, suggesting that the negative relation between parenting stress and cognitive development was stronger for boys than girls. However, analyses on the four other measures of cognitive development indicated that the nature of the relation between parenting stress and child cognitive scores was similar for boys and girls.

With respect to whether or not race/ethnicity served as a moderating variable, follow-up regressions on two measures (24 month MacArthur CDI and 36 month BSID-II) indicated that the relation between 14 month parenting stress and these measures of cognitive development was stronger for European American and African American children than for Mexican American children. On the remaining three measures, the relation between 14 month parenting stress and child outcomes was similar for the race/ethnicity groups examined in this study.

CHAPTER FOUR: DISCUSSION

Many parents experience parenting stress to some extent while performing parenting responsibilities in their day-to-day lives. This stress can easily influence parents' cognitions, behaviors, and affect toward their children (Chang et al., 2004; Mash & Johnston, 1990). However, until now, research that examined the link between parenting stress and young children's cognitive developmental outcomes was lacking, and the role of children's sex and ethnicity in this relation was nonexistent. Using Bronfenbrenner's (1986) bioecological systems theory as a framework, the primary purpose of the current study was to examine the influence of parenting stress measured when children were 14 months of age on children's cognitive performance when they were 24 and 36 months old. A secondary purpose of this study was to determine whether child sex (individual level characteristic) and/or race/ethnic origin (macrosystem level influence) moderated the effect of parental stress on children's cognitive abilities.

The results of this study generally were consistent with this theoretical model and previous research in that this study yielded evidence that parenting stress influences children's cognitive development as early as 24 months of age. Although the strength of this association was not moderated by child sex, child race/ethnicity was found to be a moderating factor. A more extensive review of the findings is presented below, followed by the strengths and limitations of the current study design. Lastly, implications for future research and implications for future interventions are discussed.

Review of the Findings

The relations between the control variables and 14 month maternal PSI scores suggest that younger mothers, mothers with lower education levels, and mothers who did not have a partner living in their home had higher levels of parenting stress than mothers who were older, who had higher levels of education, and who had a partner living in their home at all three time points. This is not surprising because previous research suggests that these variables are related to parenting stress (Jackson, 2003; DiPietro et al., 2002; Werner & Smith, 1989; Whiteside-Mansell et al., 1996). Particularly, the maternal characteristics of being older, of having more education, and of having a partner living in the home are associated with greater emotional control, informational tools, parenting support, and access to positive role models, which tend to reduce the detrimental effects of parenting stress on children's well-being (Musil et al., 2006). Controlling for these demographic variables had an additional benefit: their inclusion suggests that the negative relation between parenting stress and children's later cognitive development cannot be explained by mothers' age, education, and partner status, thus strengthening the internal validity of the study.

All variables were correlated in the expected fashion, meaning that the 24 and 36 month measures were measuring similar child cognitive developmental abilities, except for the 24 month MacArthur CDI child assessment. This measure was not significantly correlated with maternal age and maternal partner status. A possible explanation for this inconsistency in results between measures is that the MacArthur CDI is a parent-report measure, rather than a measure of direct researcher observation or a standardized test of children's cognitive abilities. Five cognitive assessments were used to assess children's development in this study; four were administered directly to the child or used researcher

observation, and the MacArthur CDI used parent-report. Additionally, although using both child observation and parent-report provides a more comprehensive picture than had only one source of data been used, it also may have resulted in the discrepancies in the findings between the two measurement techniques.

Hypothesis 1

As predicted, there was a negative relation between 14 month parenting stress and 24 and 36 month child cognitive outcomes in both boys and girls and in all three racial/ethnicity groups. These data support and extend previous work in this area as Jackson et al. (2000) and Nievar and Luster (2006) found that parental stress was related to child attention problems, lower levels of school readiness and ability, and lower levels of cognitive ability in school-aged children. Previous work has also found a relationship between parenting stress and children's social and emotional outcomes (Miller et al., 1996). However, the current study extends previous research because it was the first known study to find a direct link between parenting stress and the later cognitive development of children as young as 24 and 36 months of age. This supports the notion that parenting stress begins to have detrimental effects on children's cognitive well-being at a very young age, much the same as it does on older, school-aged, children. However, as noted in more detail below, the correlational, albeit longitudinal, nature of this study's design suggests that caution should be exercised in concluding that parenting stress *causes* negative cognitive outcomes for young children.

Hypothesis 2

Results from the current study did not provide support for a moderating effect of child sex on the relation between parenting stress and children's cognitive development.

This hypothesis was somewhat tentative because it was based on a lack of previous empirical evidence. Only a few other studies had previously examined the role of child sex in similar associations. Findings inconsistent with a sex moderating effect emerged from studies by Elder et al. (1985) and Conger et al. (1992), who found that financial strain, poor parenting behaviors, and parental depressed mood led to poorer psychosocial performance in teenage girls and boys. Because of these opposing findings, this hypothesis was largely based upon research by Rudolph and Hammen (1999), who found that boys tend to have higher self-esteem, that girls are more prone to depression, and that girls are more likely to be affected by interpersonal relationship stressors than boys. However, results from this study do not support the idea that there are sex differences in the way that 24 and 36 month old children are cognitively affected by parenting stress. Instead, this study suggests that very young boys and girls respond similarly to parenting stress in terms of their cognitive development. A possible explanation for this finding is that gendered socialization processes impact the way that older male and female children respond to parenting stress, but that the current sample of toddlers had not yet been exposed to gendered socialization processes that would lead boys and girls to have differential responses to parenting stress.

Hypothesis 3

The final hypothesis tested in the current study was particularly important because child race/ethnicity had not previously been examined as a moderator of the relationship between parenting stress and children's later developmental outcomes. Although results from this study suggest that children in general are negatively affected by parenting stress, we also found that race/ethnicity moderated the relationship between 14 month

parenting stress and children's later cognitive outcomes on two of the measures used, the 24 month MacArthur CDI and the 36 month Bayley BDI. Specifically, this relationship was stronger for European American and African American children than it was for Mexican American children.

This finding is consistent with previous research that suggests that race/ethnicity moderates the relationship between maternal parenting behaviors and aspects of the mother-child relationship (Ispa et al., 2004) , as well as ideas set forth by Bronfenbrenner's (1986) bioecological systems theory, which assumes that macrosystem level variables, such as race/ethnicity, influence the development of the child. Children develop in a socio-cultural context, marked by differences in socialization processes and access to family and community support, which directly impact their developmental outcomes.

Previous research has shown that family cohesion, family and community social support, and a strong family moral–religious orientation predict adaptive child behaviors (Crnic et al., 1986; Prevatt, 2003). Ethnic minority families, such as Mexican American and African American, are generally larger and have stronger family and community ties than European American families (Castillo et al., 2004; Driesson, 2003; Gaines et al., 1997; Marin & Gamba, 2003), so it would be expected that minority children would fair better in the presence of parenting stress than nonminority children. Although the current study found that this was true for Mexican American children, it did not find that African American children were less detrimentally affected by parenting stress than were European American children.

These findings tentatively support the expectation that the negative effects of parenting stress are partially compensated for in Mexican American children by socio-cultural factors present in Mexican American families, such as family support and cohesion (Castillo et al., 2004; Driesson, 2003). However, the findings are inconsistent with previous research in that the effect of parenting stress on African American and European American children's cognitive scores was similar. This suggests that Mexican American children may have access to additional resources not accessible to African American and European American children that may promote their resiliency to the effects of parenting stress.

Also noteworthy are the differences in results between the various child development measures used in this study. For example, on one 24 month cognitive measure (the MacArthur CDI) and one 36 month cognitive measure (the Bayley MDI), the various races/ethnicities responded to parenting stress differently. However, on two 24 month measures (the Bayley MDI and the WJ-III) and one 36 month measure (PPVT-III), there were no significant racial/ethnic differences in this relationship between parenting stress and children's cognitive outcomes. This discrepancy may have been due to the various cognitive measures capturing different aspects of cognitive abilities. The MacArthur CDI examination is a parent-report measure of children's language efficiency, while the WJ-III is a child-based assessment of children's oral expression. The Bayley MDI evaluates how well children respond to tasks that are designed to evoke behavioral responses, and the PPVT-III assessment assesses listening comprehension and receptive vocabulary. These findings suggest that there are multiple aspects of cognitive development that can have differential relations with parenting stress. Another possible

reason why there were racial/ethnic differences in the relations between parenting stress and child cognitive outcomes, is the possibility that there are racial differences in language usage and development. Champion et al. (2003) found that African Americans may be more likely to assign informal and playful meanings to words than other ethnicities. For example, the word 'fly' is sometimes used by African Americans to refer to something that is cool or stylish and African American children may think of this meaning before defining fly as the insect. Depending on the approach used for each measure, different understandings of the meanings of words could at least partially explain racial/ethnic differences in how parenting stress relates to cognitive development.

Strengths and Limitations of the Present Study

There are several strengths of this study that should be noted. First, the sample size was quite large, which reduced the chance of making a Type II error. The sample was also demographically diverse and included children from many regions and contexts (rural and urban) of the United States, which reduced the possibility that there were contextual/geographic effects that may have influenced children's cognitive abilities and the way that they would respond to parenting stress.

Second, due to the EHS program eligibility criteria, only those families with incomes below the federal poverty guidelines were eligible to participate in EHS services. Consequently, this study examined low-income families, which means that income level had limited variability in this study, as it was restricted to a fairly narrow range. Therefore, by using a sample of exclusively low income families, the possible confounding effect of socioeconomic status was lessened.

Third, this study used reliable and valid measurement tools to assess parenting stress and children's cognitive development. All of the measures used in the present study had excellent psychometric properties.

A fourth strength of this study is that several demographic variables were controlled for in each hierarchal multiple regression analysis. Using this method of statistical analysis allowed us to formulate a matrix of variables to be entered into the equation at various steps to eliminate the effects of extraneous variables. Controlling for these variables strengthened the internal validity of the present study because the chances that they could have confounded the relation between parenting stress and children's cognitive performance were reduced.

Fifth, by assessing children and their mothers at three different points in the child's early years, it was possible to assess how parenting stress when the children were approximately 1 year old predicted children's *later* cognitive development. Further, on the Bayley MDI measure, it was possible to predict the 36 month score while controlling for the 24 month score, which provided the opportunity to examine the extent to which parenting stress predicted *changes* in children's cognitive development on this measure.

Finally, this study also offers a substantive contribution to the literature. Until now, few researchers had previously examined the effect of parenting stress on young children's cognitive outcomes, and the moderating child variables of sex and race/ethnic origin on this association had never previously been examined. Therefore, this study contributed greatly to the literature in this area by extending our knowledge of the age at which the effects of parenting stress are visible in children's cognitive performance and

determining whether child sex and race/ethnic origin affect the extent to which children are affected by their parents' parenting stress.

Despite the strengths of this research study, there are a few limitations that should be noted as well. The first limitation of this study is that these data do not allow one to draw inferences that parenting stress *causes* children to fare more poorly in the cognitive domain of development. With this type of independent variable (i.e., a dispositional one like parenting stress), an associational study design had to be used rather than an experimental or quasi-experimental design. It should be noted, however, that an associational study design was the only option available for this type of research.

Second, the sample for the current study was gathered by nonprobablity sampling, as mothers were not randomly selected into the EHS Research and Evaluation project. This type of sampling approach is weaker than probability sampling approaches because it produces a sample that is less representative of the population of interest, even though the EHS sample contained a wide range of families from most geographical regions of the country.

Third, the current study had an issue with lost and missing data. The response rate between 24 and 36 month assessments was fairly high, although several hundred participants were "lost" between these time points. Additionally, hundreds of participants in each analysis were lost due to missing data on at least one variable. For example, the EHS Research and Evaluation Project presented data for 1,781 children on the 24 month Bayley MDI, but only 1,336 of those children had data on all of the other variables, including PSI scores, maternal age, maternal education, and mother's partner status. Therefore, only 1,336 children could be analyzed rather than the possible 1,781.

These issues involving missing data could possibly affect the representativeness of the sample if these particular children and/or families were biased in some way or possessed qualities that set them apart from the larger sample. Although many participants were excluded from the analyses, the sample size was still large enough to detect statistically significant differences between groups.

Fourth, the analyses conducted for this study only used the parenting stress score when the child was 14 months old, even though the EHS data set contains PSI data when the child was 24 and 36 months. Although a longitudinal design is a strength (see above), examining parenting stress at only one time interval does not take into account any changes in parenting stress that occurred as the children aged from 14 to 24 to 36 months old. In fact, if changes were present in the parenting stress of mothers in this sample, or if a mother was having a particularly stressed (or nonstressed) day when she was administered the PSI when the child was 14 months old, the results may have been misleading or nonrepresentative for those mothers.

Fifth, in addition to study design limitations, this study solely used maternal parenting stress reports. Because of this, caution is needed in generalizing the findings to paternal parenting stress as there may be differences between mothers and fathers in the impact that their parenting stress may have on their children's overall well-being.

Lastly, these findings can be generalized only to low-income families. Findings from a sample that is more heterogeneous with respect to socioeconomic status would be more generalizable.

Implications for Future Research

Findings from this study can be used to develop new research ideas. First, because nonprobability sampling approaches are not as representative of the population as probability approaches, if at all possible, random or stratified sampling should be utilized in the future.

Second, I suggest that future research analyze data on parenting stress from several time intervals to better understand how fluctuations in parenting stress affect children's well-being. Drastic changes in parenting stress may have differing effects on children than those that arise from parenting stress that is measured only at a single time point. Analyzing data on parenting stress at more than one time point provides a more complete picture than only using data from a single time point.

Third, future research should conduct longer longitudinal studies to gather data on children's general well-being throughout their development. Although the present study was longitudinal, it was limited to very young children under the age of 3. It would be informative to conduct longitudinal studies that gather data on parenting stress and children's outcomes throughout childhood and adolescence. Such studies would be more able to shed light on the possible causal relation between parenting stress and children's outcomes. For instance, there could be a possible reciprocal relation between parenting stress and children's development over time in that delayed child developmental milestones could increase levels of parenting stress, which, in turn, could reinforce the developmental delays in children. It should be noted that the children in the EHS National Research and Evaluation Project have already been studied when they were 5 years old and efforts are being made to study them even into the school years.

Fourth, based on the findings related to maternal parenting stress from this study and taking into consideration that researchers have rarely looked at the effects of paternal parenting stress, I suggest that future research should examine the association between paternal stress and child outcomes. There could be differences in the way that mothers and fathers experience, behaviorally manifest, and cope with parenting stress, and, thus, there could be differences in the way that children respond to maternal and paternal parenting stress. These differences could also be moderated by child age, ethnicity, presence of social support, presence of siblings, level of parenting stress, or an array of other variables. Therefore, literature in this area would benefit from further research on paternal parenting stress, as well as the moderating effects of other variables at various ages.

Fifth, because this study found the parents of minority children and the parents of boys tend to have significantly higher levels of parenting stress than other children, research should look at the reasons behind why the parents of these groups of children experience higher levels of parenting stress than other parents. Research in this area should focus on finding attributes that set these parents apart from other parents, identifying characteristics that these children have that may influence how their parents react to stress, and finding differences in the family dynamics or the parent-child relationship in these families. For instance, social support, parenting behaviors, and socialization processes may have an effect on the way that various racial groups respond to parenting stress.

Lastly, future research could benefit from using qualitative data from parents and children in combination with quantitative data to capture children's and parents' feelings

and perceptions when the parents are (and are not) experiencing parenting stress. Such information may be helpful for parents and practitioners. For example, such data may help parents recognize the early cues when parenting stress is about to occur.

Implications for Intervention

The information resulting from this study also has implications for intervention. While most research has found negative child outcomes resulting from parenting stress, some research suggests that, under certain circumstances, the effect of parenting stress is compensated by other variables and does not negatively affect the parent-adolescent relationship or child outcomes. These characteristics and contexts serve as moderators of the relationship between stressors and child outcomes. Resiliency models suggest that resiliency in children, defined as the ability to effectively cope with vulnerabilities and external stresses (Werner & Smith, 1989), is shaped by individual characteristics, family context, and support from social networks (McCubbin & McCubbin, 1993; McLoyd, 1990). Child temperament and child sex are examples of individual characteristics, while variables such as parental marital status and the presence of siblings are family contextual influences that may influence resiliency in children.

Research in this area has supported the claims of these resiliency models by finding that some children are at decreased risk for adjustment difficulties despite their exposure to stressful conditions (Garmezy & Rutter, 1985). Research suggests that positive child dispositional attributes (e.g., easy temperament), the presence of informal and professional support (Crnic et al., 1986; Musil, Warner, Zauszniewski, Jeanblanc, & Kercher, 2006; Werner & Smith, 1989), an affectionate caregiving environment, a positive parent-child relationship (Gutman et al., 2005), a strong family moral–religious

orientation (Prevatt, 2003), family social support, family cohesion, and positive parenting practices (e.g., parental involvement) (Kliewer et al., 2006) are among factors that promote child resiliency to the effects of negative events. Interventions would be improved by promoting and addressing some of these resiliency-oriented factors. More detailed intervention ideas are presented below.

First, interventions with high school students may help prevent later parenting stress. Contributing factors to parenting stress are difficult child temperament, child behavior problems, lack of cognitive readiness for parenting, low parental self-efficacy, a lack of knowledge of children's development, young parental age, being unpartnered, low socioeconomic status, and low levels of social support (Abidin, 1976; Chang et al., 2004; Corcoran & Kunz, 1997; Dix et al., 1989; Ostberg & Hagekull, 2000; Passino et al., 1993; Wakschlag et al., 1996). Obviously, some of these factors cannot be modified or prevented, but some can. Based on the previous research cited earlier, parenting stress can be greatly reduced with the presence of social support, appropriate parenting knowledge, and knowledge about child development. Consequently, I support high school programs that promote the postponing of child birth until individuals are cognitively aware of parenting responsibilities, know more about parenting, and have more knowledge of normal child development.

There are programs already in place in some school districts (Cifelli, 2007; Jenson, 1986; Vik, 2007), but many schools are prohibited from teaching contraceptive use and other sexual content (Christopher & Roosa, 1990). I think children and teens would benefit from the guidance of these types of courses, in addition to individual after-school education sessions with a health educator and lessons from their parents. Other

researchers have made similar intervention suggestions. For example, Chang et al. (2004) stated that mothers' cognitive readiness for parenting can be enhanced by promoting knowledge of child development and building their sense of parenting self-efficacy, which would, in turn, promote the use of more positive parenting behaviors.

Second, based on the relational findings between child race/ethnicity and level of parenting stress from the current study, practitioners and public institutions, such as the public school system, should be more sensitive in the way that they interact and relay information to the parents of minority children. Correspondingly, the relation between child race/ethnicity and child cognitive scores lends itself to similar implications. Public institutions should be aware of the child race and sex differences on developmental tasks and tailor lessons to be developmentally appropriate to each individual child.

Third, as the current study showed that parenting stress leads to poorer child cognitive performance, and because key links to parenting stress are poor parent-child dyad interactions (Hubbs-Tait, McDonald, Culp, & Miller, 2002), poor parental disciplining strategies, limited access to social support (Rodgers, 1993), and low levels of parenting confidence (Sammons, Elliot, Sylva, Melhuish, Siraj-Blatchford, & Taggart, 2004), families would benefit from programs that offer guidance in these areas. Studies of parents who struggle with communication and child-rearing have found that parent-child dyadic interventions can lead to an improvement in children's IQ scores (Rutter & Madge, 1976). As a result, I suggest employing similar intervention techniques for those families experiencing stressors (parenting and other) that may influence them to use destructive parenting behaviors. These interventions should focus on showing parents ways to enhance the quality of parent-child interactions using an approach that builds on

the unique strengths that parents have. These types of interventions would be most beneficial to the family unit if they were offered by community centers and through the public school system.

Appropriate interventions should also concentrate on behavioral parent training techniques, such as helping parents exercise effective parenting discipline and control, promoting healthy parent-child communication strategies, reducing stress by utilizing stress management techniques, and helping parents network with other families and to perhaps form support groups. Behavioral parent training has been demonstrated as a successful tool to reduce parenting stress, as Tucker, Gross, Fogg, Delaney, and Lapporte (1996) found that Caucasian and African American mothers and fathers who participated in a behavioral parent training intervention rated their 2-year-old children's behavior problems and temperament as more favorable than parents who did not participate in the training intervention. These parents also reported lower parenting stress, higher parenting self-efficacy, and more positive parent-child interactions following the intervention than their comparison counterparts. A similar intervention with comparably positive findings was carried out in a sample of Puerto Rican families by Matos, Torres, Santiago, Jurado, and Rodriguez (2006). This research illustrates the idea that parenting stress interventions can enhance positive family and child outcomes across racial/ethnic backgrounds.

Fourth, because the current study found some evidence of racial/ethnic differences in the way that children respond to parenting stress, and because parenting values, beliefs, and practices vary by culture (Garcia-Coll, Meyer, & Brillon, 1995), practitioners should be educated to have a multicultural understanding of parenting,

family, and community contexts and to appropriately tailor such interventions according to the cultural/ethnic background of their clientele.

Finally, the present study lends itself to intervention approaches geared toward the child. Based on evidence that social, emotional, and cognitive domains holistically work together to shape a functioning individual (Shaffer, 2005) and the current finding that parenting stress influences children's cognitive development as early as 24 months of age, we should devote resources to developing and implementing intervention approaches to counteract the effects of parenting stress and enhance the child's overall well-being throughout their lifespan. An example of an effective program is the Early Head Start program. This program is designed to enhance the overall development of the child, increase parents' skills and knowledge of child development, promote positive interactions between the parent and child, and offer personal and professional support to families (ACYF, 2001). As mentioned earlier, children who participated in the EHS program had higher scores in the areas of cognitive development and verbal communication than children in the comparison group and demonstrated fewer signs of aggression (ACYF, 2002b). Parents who participated in the program also showed more positive parenting behaviors and became more self-sufficient than parents in the comparison group. These types of programs may help to generate resiliency in children before they enter the public school system.

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Table 1

Descriptive Statistics and Intercorrelations Among the Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Mother's Ed.	-								
2. Mother's Age	.01	-							
3. Partner Status[a]	-.03	.16**	-						
4. PSI[b]	-.21**	-.03	-.04	-					
5. 24m BSID[c]	.27**	.04	.09**	-.17**	-				
6. 24m MacA[d]	.14**	-.03	.02	-.17**	.44**	-			
7. 24m WJ-III[e]	.48**	.01**	.11**	-.25**	.37**	.21**	-		
8. 36m BSID[f]	.23**	.07**	.07**	-.17**	.57**	.38**	.31**	-	
9. 36m PPVT[g]	.29**	.12**	.11**	-.17**	.51**	.31**	.36**	.57**	-
N	2050	3000	3012	2325	1781	2070	1687	1658	1424
M	11.88	23.44	.23	44.70	89.08	54.78	89.00	90.63	83.01
SD	2.64	5.76	.42	13.07	13.68	22.95	11.44	12.63	15.56

** $p < .01$.

a. Partner Status: 0 = *no partner living in home*, 1 = *partner living in home*

b. PSI = *Parenting Stress Index measured at 14 months*

c. 24m BSID = *Bayley Scale for Infant Development measured at 24 months*

d. 24m MacA = *MacArthur Communicative Development Inventories measured at 24 months*

e. 24m WJ-III = *Woodcock-Johnson, Tests of Achievement, test 14 measured at 24 months*

f. 36m BSID = *Bayley Scale for Infant Development measured at 36 months*

g. 36m PPVT = *Peabody Picture Vocabulary Test measured at 36 months*

Table 2

Means and Standard Deviations (SD) of Child Cognitive and Parenting Stress Scores by Child Race/Ethnicity and Child Sex

	Child Race/Ethnicity			Child Sex		
Measures	African American	Mexican American	European American	Male	Female	Total
14m PSI[d]	44.74 [b] (13.85)	46.78 [a] (14.12)	43.05 [c] (11.55)	45.25 [a] (13.60)	44.14 [c] (12.47)	44.70 (13.07)
24m BSID[e]	86.42 [b] (12.58)	86.25 [b] (13.78)	92.31 [a] (14.35)	87.50 [b] (13.86)	90.86 [a] (13.53)	89.09 (13.68)
24m MacA[f]	54.12 [b] (20.47)	51.25 [b] (25.71)	57.43 [a] (23.77)	51.98 [b] (23.03)	57.97 [a] (22.95)	54.78 (22.95)
36m WJ-III[g]	86.37 [b] (8.69)	80.79 [c] (10.92)	96.37 [a] (10.03)	88.72 [a] (11.53)	89.69 [b] (11.70)	89.00 (11.44)
36m BSID[h]	87.24 [c] (11.12)	89.68 [b] (11.91)	95.14 [a] (12.51)	89.36 [b] (12.50)	91.91 [a] (12.75)	90.63 (12.63)
36m PPVT[i]	80.09 [b] (13.69)	77.23 [b] (18.32)	87.75 [a] (15.44)	81.46 [b] (15.61)	85.73 [a] (15.41)	83.01 (15.56)

Note: Means in the same row and column grouping that do not share subscripts (indicated by either a, b, c) differ at $p < .05$.

d. 14m PSI = *Parenting Stress Index measured at 14 months*

e. 24m BSID = *Bayley Scale for Infant Development measured at 24 months*

f. 24m MacA = *MacArthur Communicative Development Inventories measured at 24 months*

g. 24m WJ-III = *Woodcock-Johnson, Tests of Achievement, Test 14 measured at 24 months*

h. 36m BSID- MDI = *Bayley Scale for Infant Development measured at 36 months*

i. 36m PPVT = *Peabody Picture Vocabulary Test measured at 36 months*

Table 3

24 Month MacArthur CDI Vocabulary Production Regression Analysis (N = 1525)

		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Step 1	Constant	43.05	3.60		11.94	.00
	Mother's Education	1.18	.22	.14	5.39	.00**
	Mother's Age	-.15	.10	-.04	-1.53	.13
	Partner Status[a]	.76	1.23	.02	.62	.54
	EHS Program Group	2.05	1.18	.04	1.73	.08
Step 2	PSI[b]	-.28	.05	-.15	-5.92	.00**
Step 3	Dummy 1 (MA)	-1.44	1.75	-.02	-.82	.41
	Dummy 2 (AA)	-2.23	1.37	-.04	-1.63	.10
	Child Sex	-5.49	1.16	-.12	-4.74	.00**
Step 4	PSI X MA	.27	.12	.07	2.22	.03*
	PSI X AA	.25	.11	.08	2.42	.02*
	PSI X Child Sex	-.25	.09	-.10	-2.71	.01**

Note. Parenting Stress Index scores were mean centered. Race/Ethnic Origin were dummy coded with European American children serving as the reference group. MA = *European American versus Mexican American.* AA = *European American versus African American.*

** $p < .01$, * $p < .05$

a. Partner Status: 0 = *no partner living in home*, 1 = *partner living in home*

b. PSI = *Parenting Stress Index measured at 14 months*

Table 4

24 Month MacArthur CDI Follow-up Regressios Analysis by Child Sex

Child Sex			Unstandardized Coefficients		Standardized Coefficients		
			B	Std. Error	Beta	t	Sig.
Female N = 740	Step 1	Constant	39.19	4.99		7.86	.00
		Mother's Education	1.60	.31	.19	5.21	.00**
		Mother's Age	-.12	.14	-.03	-.83	.41
		Partner Status[a]	.36	1.73	.01	.21	.84
		EHS Group	4.21	1.66	.09	2.53	.01**
	Step 2	PSI[b]	-.10	.07	-.05	-1.35	.18
Male N = 785	Step 1	Constant	48.43	5.12		9.45	.00
		Mother's Education	.72	.31	.08	2.36	.02*
		Mother's Age	-.23	.14	-.06	-1.65	.10
		Partner Status[a]	1.05	1.74	.02	.60	.55
		EHS Group	.00	1.64	.00	.00	1.00
	Step 2	PSI[b]	-.41	.06	-.23	-6.48	.00**

Note: Parenting Stress Index scores were mean centered
** $p < .01$, * $p < .05$.

a. Partner Status: 0 = *no partner living in home*, 1 = *partner living in home*

b. PSI = *Parenting Stress Index measured at 14 months*

Table 5

24 Month MacArthur CDI Follow-up Regression Analysis by Race/Ethnicity

Race/ Ethnic Group			Unstandardized Coefficients		Standardized Coefficients		
			B	Std. Error	Beta	t	Sig.
European American N = 614	Step 1	Constant	53.77	7.11		7.57	.00
		Mother's Education	.93	.52	.07	1.79	.07
		Mother's Age	-.38	.17	-.09	-2.20	.03*
		Partner Status[a]	1.39	1.94	.03	.72	.47
		EHS Group	.74	1.92	.02	.39	.70
	Step 2	PSI[b]	-.36	.09	-.16	-4.06	.00**
African American N = 482	Step 1	Constant	37.15	7.20		5.16	.00
		Mother's Education	1.67	.55	.14	3.04	.00**
		Mother's Age	-.27	.17	-.07	-1.60	.11
		Partner Status[a]	.25	2.52	.00	.10	.92
		EHS Group	4.31	1.86	.11	2.32	.02*
	Step 2	PSI[b]	-.16	.07	-.10	-2.26	.02*
Mexican American N = 277	Step 1	Constant	34.34	8.77		3.92	.00
		Mother's Education	1.33	.44	.19	3.05	.00**
		Mother's Age	.27	.25	.07	1.06	.29
		Partner Status[a]	-4.75	3.15	-.09	-1.51	.13
		EHS Group	.21	3.05	.00	.07	.95
	Step 2	PSI[b]	-.18	.11	-.10	-1.65	.10

Note: Parenting Stress Index scores were mean centered.
** $p < .01$, * $p < .05$.

a. Partner Status: 0 = *no partner living in home*, 1 = *partner living in home*

b. PSI = *Parenting Stress Index measured at 14 months*

Table 6

36 Month Bayley Regression Analysis (N = 1068)

		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Step 1	Constant	72.86	2.22		32.79	.00
	Mother's Education	1.15	.14	.25	8.47	.00**
	Mother's Age	.13	.06	.06	2.17	.03*
	Partner Status[a]	2.75	.76	.11	3.63	.00**
	EHS Program Group	.80	.74	.03	1.08	.28
Step 2	24m BSID[b]	.52	.02	.56	21.91	.00**
Step 3	PSI[c]	-.06	.03	-.06	-2.26	.02*
Step 4	Dummy 1 (MA)	.02	.89	.00	.02	.99
	Dummy 2 (AA)	-4.03	.73	-.15	-5.55	.00**
	Child Sex	-.35	.60	-.01	-.58	.56
Step 5	PSI X MA	.19	.06	.09	3.00	.00**
	PSI X AA	.02	.06	.01	.44	.66
	PSI X Child Sex	.06	.05	.05	1.30	.19

Note. Parenting Stress Index scores were mean centered. Race/Ethnic Origin were dummy coded with European American children serving as the reference group. MA = *European American versus Mexican American.* AA = *European American versus African American.*
*** p < .01, * p < .05*

a. Partner Status: 0 = *no partner living in the home*, 1 = *partner living in the home*

b. 24m BSID = *Bayley Scale for Infant Development measured at 24 months*

c. PSI = *Parenting Stress Index measured at 14 months*

Table 7

36 Month Bayley Follow-up Regression Analysis by Race/Ethnicity

Race/ Ethnic Group			Unstandardized Coefficients		Standardized Coefficients		
			B	Std. Error	Beta	t	Sig.
European American N = 436	Step 1	Constant	66.60	4.19		15.91	.00
		Mother's Education	2.17	.30	.33	7.15	.00**
		Mother's Age	-.03	.10	-.01	-.26	.80
		Partner Status[a]	2.22	1.14	.09	1.95	.05*
		EHS Group	1.23	1.13	.05	1.08	.28
	Step 2	24m Bayley MDI [b]	.53	.03	.59	15.12	.00**
	Step 3	PSI[c]	-.10	.04	-.08	-2.15	.03*
African American N = 319	Step 1	Constant	67.74	4.58		14.80	.00
		Mother's Education	1.48	.35	.24	4.22	.00**
		Mother's Age	.05	.11	.03	.49	.62
		Partner Status[a]	-.77	1.57	-.03	-.49	.62
		EHS Group	.05	1.24	.00	.04	.97
	Step 2	24m Bayley MDI [b]	.52	.04	.57	12.16	.00**
	Step 3	PSI[c]	-.08	.04	-.10	-2.11	.04*
Mexican American N = 209	Step 1	Constant	72.61	4.64		15.66	.00
		Mother's Education	.83	.23	.26	3.60	.00**
		Mother's Age	.34	.13	.18	2.56	.01**
		Partner Status[a]	-.15	1.67	-.01	-.09	.93
		EHS Group	1.94	1.60	.08	1.21	.23
	Step 2	24m Bayley MDI [b]	.38	.06	.44	6.80	.00**
	Step 3	PSI[c]	.04	.06	.05	.76	.45

Note: Parenting Stress Index scores were mean centered. Race/Ethnic Origin were dummy coded with European American children serving as the reference group. MA = *European American versus Mexican American.* AA = *European American versus African American*.

** $p < .01$, * $p < .05$.

a. Partner Status: 0 = *no partner living in home*, 1 = *partner living in home*

b. 24 m Bayley MDI = *Bayley Scale for Infant Development measured at 24 months*

c. PSI = *Parenting Stress Index measured at 14 months*

Table 8

24 Month Bayley Regression Analysis (N = 1336)

		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Step 1	Constant	68.18	2.22		30.73	.00
	Mother's Education	1.42	.13	.28	10.55	.00**
	Mother's Age	.08	.06	.04	1.38	.17
	Partner Status [a]	2.89	.75	.10	3.83	.00**
	EHS Program Group	1.73	.72	.06	2.39	.02*
Step 2	PSI [b]	-.12	.03	-.11	-4.07	.00**
Step 3	Dummy 1 (MA)	-1.28	1.06	-.04	-1.21	.23
	Dummy 2 (AA)	-4.46	.84	-.15	-5.31	.00**
	Child Sex	-2.95	.71	-.11	-4.17	.00**
Step 4	PSI X MA	.06	.08	.03	.83	.41
	PSI X AA	.08	.06	.04	1.24	.21
	PSI X Child Sex	.00	.06	.00	.04	.97

Note. Parenting Stress Index scores were mean centered. Race/Ethnic Origin were dummy coded with European American children serving as the reference group. MA = *European American versus Mexican American.* AA = *European American versus African American.*
*** p < .01, * p < .05.*

a. Partner Status: 0 = *no partner living in home*, 1 = *partner living in home*

b. PSI = *Parenting Stress Index measured at 14 months*

Table 9

24 Month Woodcock Johnson Regression Analysis (N = 1275)

		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Step 1	Constant	58.13	1.73		33.65	.00
	Mother's Education	2.14	.10	.50	20.79	.00**
	Mother's Age	.19	.05	.09	3.89	.00**
	Partner Status[a]	3.14	.58	.13	5.38	.00**
	EHS Program Group	-.09	.56	.00	-.17	.87
Step 2	PSI[b]	-.12	.02	-.13	-5.31	.00**
Step 3	Dummy 1 (MA)	-7.61	.81	-.25	-9.38	.00**
	Dummy 2 (AA)	-6.35	.62	-.26	-10.32	.00**
	Child Sex	-.34	.52	-.01	-.64	.52
Step 4	PSI X MA	.03	.05	.02	.63	.53
	PSI X AA	.06	.05	.04	1.30	.19
	PSI X Child Sex	.01	.04	.01	.23	.82

Note. Parenting Stress Index scores were mean centered. Race/Ethnic Origin were dummy coded with European American children serving as the reference group. MA = *European American versus Mexican American.* AA = *European American versus African American.*

** $p < .01$, * $p < .05$.

a. Partner Status: 0 = *no partner living in home*, 1 = *partner living in home*

b. PSI = *Parenting Stress Index measured at 14 months*

Table 10

36 Month Peabody Picture Vocabulary Test Regression Analysis (N = 1104)

		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Step 1	36m PPVT	50.27	3.20		15.70	.00
	Mother's Education	2.29	.24	.28	9.60	.00**
	Mother's Age	.13	.08	.05	1.64	.10
	Partner Status[a]	2.39	.96	.07	2.48	.01**
	EHS Program Group	1.70	.90	.05	1.89	.06
Step 2	PSI[b]	-.15	.04	-.12	-4.03	.00**
Step 3	Dummy 1 (MA)	-7.14	1.64	-.13	-4.36	.00**
	Dummy 2 (AA)	-5.67	.97	-.17	-5.87	.00**
	Child Sex	-3.40	.87	-.11	-3.91	.00**
Step 4	PSI X MA	.19	.13	.04	1.44	.15
	PSI X AA	.10	.07	.05	1.38	.17
	PSI X Child Sex	-.02	.07	-.01	-.23	.82

Note. Parenting Stress Index scores were mean centered. Race/Ethnic Origin were dummy coded with European American children serving as the reference group. MA = *European American versus Mexican American.* AA = *European American versus African American.*

** $p < .01$, * $p < .05$

a. Partner Status: 0 = *no partner living in home*, 1 = *partner living in home*

b. PSI = *Parenting Stress Index measured at 14 months*

VITA

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