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Evaluating the Role of Environmental Stressors and Sensitive Parenting on the Emergence of Behavior Problems during Early Childhood

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Evaluating the Role of Environmental Stressors and Sensitive Parenting on the Emergence of
Behavior Problems during Early Childhood

A Thesis

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Master of Science
in
Applied Developmental Psychology

by

Brenna Sapotichne

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Abstract

Repeatedly, parenting quality has been shown to affect children's level of behavior problems during early childhood (e.g., Bayer, Sanson, & Hemphill, 2006; Shaw, Gilliom, Ingoldsby, & Nagin, 2003). However, the parent-child relationship exists within a broader social context (Bronfenbrenner, 1986). Therefore, social contextual stressors such as financial strain, neighborhood danger, and residential overcrowding may affect children's adjustment through parenting. Based on The Family Stress model (Conger & Elder, 1994), the current study tests the theory that sensitive parenting mediates the relationship between these three environmental stressors (i.e., financial strain, neighborhood danger, and residential overcrowding) and children's behavior problems from ages 2 to 4 years. Results did not support this hypothesis. Though, alternative analyses provided some support for interactive effects of sensitive parenting and neighborhood danger on children's externalizing problems. When families experienced less neighborhood danger, sensitive parenting was associated with less externalizing problems.

Behavior problems, sensitive parenting, social contextual stressors, early childhood

Evaluating the Role of Environmental Stressors and Sensitive Parenting on the Emergence of Behavior Problems during Early Childhood

Early childhood is often identified as a point of entry onto developmental pathways of risk for behavior problems. That is, when internalizing and externalizing behavior problems develop during early childhood, the risk for psychopathology during middle childhood and adolescence increases (Campbell, Shaw, & Gilliom, 2000; Keenan, Shaw, Delliquadri, Giovannelli, & Walsh, 1998; Mesman & Koot, 2001; Moffitt & Caspi, 2001). Ecological theories emphasize that features of the social-contextual environment directly and indirectly affect children's development, either adaptively or maladaptively (Bronfenbrenner, 1986). For instance, in-home characteristics, like quality of parenting (Bayer, Sanson, & Hemphill, 2006; Shaw, Gilliom, Ingoldsby, & Nagin, 2003), level of financial strain (Scaramella, Sohr-Preston, Callahan, & Mirabile, 2008) and residential overcrowding (Evans, Saegert, & Harris, 2001) as well as environmental characteristics, like neighborhood dangerousness (Callahan, Scaramella, Laird, & Sohr-Preston 2011; Linares, et al., 2001), have been found to predict higher levels of problem behaviors during childhood. For impoverished families, risk for exposure to multiple environmental stressors, like financial strain, residential overcrowding, and neighborhood danger, is substantially greater than for more affluent families. Nonetheless, few studies have considered the direct and indirect effect of multiple home and community level stressors simultaneously on children's risk for elevated levels of behavior problems during early childhood.

Considering the impact of multiple stressors simultaneously is critical to fully test socio-contextual theories. All families exist in a broader social and physical environment (e.g., Bronfenbrenner & Evans, 2000; Evans, 2006). Bronfenbrenner and Morris (1998) argue that

parenting is one mechanism by which the external environment influences children's adjustment; that is, proximal processes in the form of the quality of parent-child interactions mediates the direct impact of environmental stressors on children's adjustment (see also Bayer, et al., 2006; Shaw, et al., 2003). Since economically impoverished families typically face multiple environmental stressors, such families also may be more vulnerable to the negative impact of environmental stress on reductions in the quality of parent-child interactions.

The present investigation is designed to examine the direct and indirect effects of social-contextual and family level stress on change in children's behavior problems, both externalizing and internalizing problems, during early childhood. Figure 1 depicts the hypotheses to be tested in the current study. Elevated levels of financial strain, neighborhood danger, and residential overcrowding are expected to be directly associated with sensitive parenting (Figure 1, path a, b, c) and change in problem behaviors (Figure 1, path d, e, f). Consistent with the Family Stress Model (FSM; Conger & Elder, 1994), elevated levels of social-contextual stressors, specifically, high levels of financial strain, neighborhood danger, and residential overcrowding, are expected to predict increases in children's problem behaviors indirectly reducing mothers' ability to sensitively parent. The following sections will first describe the developmental significance of elevated levels of behavior problems during early childhood, followed by a discussion of the importance of sensitive parenting during early childhood. Finally, the process by which home and neighborhood may directly and indirectly influence children's behavior problems will be described.

The developmental significance of problem behaviors during early childhood

Approximately 10 to 15% of preschool children have been identified with mild to moderate behavior problems (Campbell, 1995). Behavior difficulties are often grouped into two

major domains: externalizing behaviors, which consist of overt disruptive behavior, like aggression, tantrums and deliberate defiance and internalizing behaviors, which include more emotional, internal states such as withdrawal, sad affect, and anxiety (Gilliom & Shaw, 2004; Keenan, et al., 1998). The rate of externalizing behavior problems seems to peak between age 2 and 3 (Gilliom & Shaw, 2004), decreases until middle childhood (Shaw, Lacourse, & Nagin, 2004), and then begins to increase again during adolescence, particularly for boys (Moffitt, 1993). Conversely, internalizing problems increase in intensity after the toddler period with little difference between boys and girls until preadolescence; during puberty, the levels of depression and internalizing symptoms typically decrease for boys but increase for girls (Keenan & Shaw, 1997; Nolen-Hoeksema & Girgus, 1994). Importantly, boys and girls demonstrate very little differences in the rate of change in internalizing and externalizing problems during the early childhood period (e.g., Keenan & Shaw, 1997).

Severe behavior problems during early childhood can have serious implications for future development such as problems in school, delinquency, and later psychopathology (Campbell, et al., 2000; Keenan, et al., 1998). Experiencing externalizing problems during early childhood has been linked to disruptive disorders such as attention deficit hyperactivity disorder (ADHD), conduct disorder (CD), and antisocial behavior later in life (Campbell, et al., 2000; Robins, 1991). Similarly, internalizing problems during early childhood have been linked to serious problems such as depression, anxiety, and suicide during adolescence and early adulthood (Keenan, et al., 1998). As compared to internalizing problems, more research attention has considered the long-term effects of early externalizing behavior problems. Interestingly, disruptive behaviors that persist throughout childhood tend to be more serious and last until adulthood (Moffitt, 1993; Moffitt & Caspi, 2001). However, disruptive behaviors that develop

in adolescence are more normative and often diminish in adulthood (Moffitt & Caspi, 2001). Children who exhibit elevated levels of both externalizing and internalizing problems during early childhood are more likely to continue to have elevated problem behaviors during middle childhood, adolescence, or even adulthood (Asendorpf, Denissen, & van Aken, 2008; Campbell, et al., 2000).

During early childhood, children who are rated high on internalizing problems are often also rated high on externalizing problems despite the general trend for internalizing and externalizing problems to demonstrate different trajectories during the early childhood period. That is, even though externalizing problems tend to decline from age 2 to age 4 and internalizing problems begin to increase around age 4, the magnitude of the association between internalizing and externalizing problems is typically quite strong. For instance, among 3-year-old children McCartney and colleagues (2004) reported a bivariate correlation of .71 between internalizing and externalizing problems. Furthermore, Achenbach (1992) found a strong correlation between internalizing and externalizing problems during early childhood for referred ($r = .70$) and non-referred ($r = .76$) children. Because of these findings demonstrating such strong co-occurrence in internalizing and externalizing problems, internalizing and externalizing problems will be considered jointly. Confirmation of this procedure will occur by evaluating study hypotheses separately for internalizing and externalizing while also controlling for the co-variance of internalizing and externalizing problems.

The impact of sensitive parenting on problem behaviors during early childhood

Repeatedly, parenting quality has been found to affect levels of children's emotional and behavioral problems. Sensitive parenting has been defined as the parents' ability to respond to children's needs and interests rather than parents' own goals (Kochanska, 1997). More sensitive

parents tend to be more affectionate, give more positive reinforcement, respond based on children's signals and promote autonomy (Kochanska, 1997). Not coincidentally, children raised by more sensitive parents have better relationships with their parents, are rated as more social with peers, demonstrate better scholastic achievement and tend to be more successful in extracurricular activities and occupational achievement (Combs-Orme, Wilson, Cain, Page & Kirby, 2003). In contrast, less sensitive parenting is associated with higher levels of both internalizing and externalizing problems during early childhood (Bayer et al., 2006; McLeod, Wood, & Weisz, 2007; Shaw et al., 2003; Shaw, Keenan, & Vondra, 1994).

One critical limitation with much of the research examining the impact of parenting on children's problem behaviors is that the vast majority of these studies consider the role of harsh/intrusive parenting on problem behaviors during early childhood instead of a lack of sensitive parenting. Although less sensitive parenting may be correlated with high levels of harsh/intrusive parenting in that sensitive parenting promotes autonomy and harsh/intrusive parenting restricts autonomy, parents can be low on both sensitivity and harshness. Empirical research supports distinguishing sensitivity from harshness in that sensitivity and harsh/intrusive parenting tend to only be modestly correlated (e.g., Burchinal, Vernon-Feagans, Cox, & Key Family Life Project Investigators, 2008). Thus, harsh and sensitive parenting seems to represent somewhat distinct parenting styles and, while the two constructs may be negatively related, each parenting style affects risk for problem behaviors differently.

While high levels of sensitive parenting is frequently linked to more positive social, emotional and behavioral adjustment during early childhood (e.g., Ainsworth, Blehar, Waters, & Wall, 1978) and harsher parenting to more child problem behaviors (Campbell, Shaw, & Gilliom, 2000), less sensitive parenting also has been found to predict increases in externalizing

problems from ages 2 to 3.5, particularly among boys as compared to girls (Shaw et al., 2003). Bradley and Corwyn (2008) reported similar findings; less sensitive parenting during the infancy and toddler periods predicted higher levels of externalizing behavior problems at school entry. Similarly, low levels of sensitive parenting have been associated with increased levels of internalizing problems during the early childhood period. Using a community-based, low risk sample, parents who engaged in lower levels of warm-engaged and autonomy promoting parenting had children who demonstrated increases in internalizing problems from age 2 to 4 (Bayer et al., 2006). One problem with the research on sensitive parenting and internalizing problems is that the preponderance of work has focused on over-controlling and intrusive parenting (Rapee, Schniering, & Hudson, 2009) and indicates that more controlling and intrusive parenting is linked to higher levels of internalizing problems during early childhood (Bayer, Hiscock, Ukoumunne, Price, & Wake, 2008; Coplan, Arbeau, & Armer, 2008; McLeod, Wood, & Weisz, 2007; Wood, McLeod, Sigman, Hwang, & Chu, 2003). Very little research has considered how less sensitive parenting predicts change in internalizing problems during early childhood.

Although evidence is emerging to suggest that sensitive parenting protects children from developing problem behaviors during early childhood, responding to toddler-aged children's transgressions sensitively is challenging. Dramatic increases in mobility occur during the first two years of life, or as infants become toddlers. Since, toddler-aged children are not astute walkers and the home environment becomes a dangerous place requiring vigilant parental monitoring (Shaw & Bell, 1993). As toddlers become increasingly able to reach objects of interest, involved parents often rearrange the environment in ways to protect their safety (e.g., locking or moving cleaning products) and begin to manage misbehavior and to enforce

restrictions (Shaw, et al., 1994). Toddlers' desire to explore their environment combined with their limited cognitive and communication skills makes enforcing rules particularly stressful for parents (Bradley & Caldwell, 1980). The increased stress parents experience during the toddler period and the increased need for restrictions may mean that most parents are likely to demonstrate declines in sensitivity during this period (Shaw, et al., 1998).

In reality, parent-child relationships occur within a broader social context and characteristics of the social context should directly influence parents' ability to respond to their children's needs (e.g., Bronfenbrenner, 1986; Conger & Donnellan, 2007). Social-contextual characteristics, such as financial strain, residential overcrowding, and neighborhood dangerousness, may add to parents' stress making it difficult for parents to sensitively respond to their children (Fiese & Winter, 2010). In the next sections, theoretical and empirical explanations regarding the direct and indirect effects of social contextual stressors on children's development of problem behaviors during early childhood will be described. .

Social contextual effects on children's level of problem behaviors during the toddler period

A number of theoretical perspectives offer insight as to how environmental contexts influence, both positively and negatively, children's socio-emotional development (e.g., Bronfenbrenner & Morris, 1998; Conger & Elder, 1994; McLoyd, 1998). The current study is a partial replication and extension of the Family Stress Model (FSM, Conger & Elder, 1994). As depicted in Figure 1, children of families who are experiencing a variety of contextual stressors, in this case, financial strain, residential overcrowding, and neighborhood dangerousness, are expected to be at greater risk for experiencing increases in behavior problems during the toddler and preschool years because such stress and strain may diminish mothers' capacity for sensitive parenting. As compared to more affluent families who may only need to cope with one of these

stressors, impoverished families may be particularly vulnerable to the negative effects of financial strain, residential overcrowding and neighborhood dangerousness because of the high probability of co-occurrence. For instance, when families experience both financial strain and neighborhood disadvantage, children's risk for behavior problems should increase because disadvantaged neighborhoods may be worrisome for children (e.g., Callahan, Scaramella, Laird, & Mirabile, 2011) and because children are exposed to more models of antisocial behavior (e.g., Scaramella, et al., 2008).

Less frequently considered in stress models is the indirect impact of residential overcrowding on children's behavioral adjustment. Residential overcrowding may negatively affect parents' ability to sensitively respond to their children because the increased number of people in the home increases the level of disorder and chaos present in the home (Fiese & Winter, 2010). For instance, as the number of residents in the home increases, the ability to adhere to a consistent routine diminishes (Bronfenbrenner & Evans, 2000). A lack of predictable routines has been associated with more problem behaviors during early childhood (Ackerman, Kogos, Youngstrom, Schoff, & Izard, 1999). Relevant to the current study, residential overcrowding may undermine mothers' ability to attend to their children and respond to their children's actions in a timely and consistent manner.

Many of the identified social contextual characteristics primarily affect children's social adjustment through parenting. Most frequently studied is the indirect effect of financial hardship on children's behavioral adjustment. Scaramella and colleagues (2008) found support for the FSM in a sample of low-income, African American families in the New Orleans area. Financial strain was indirectly associated with children's problem behavior by way of increased maternal depressed mood, which was associated with lower perceptions of parenting efficacy among

mothers of 2-year-old children (Scaramella, et al., 2008). Similarly, Linver, Brooks-Gunn and Kohen (2002) demonstrated an indirect effect of poverty on both internalizing and externalizing problems through maternal emotional distress and parenting practices from infancy to ages 3 and 5 years. Using a nationally representative sample of preschool children who ranged in age from 3 to 5, Yeung and colleagues (2002) found that financial disadvantage was indirectly associated with increases in children's externalizing behavior problems through mothers' emotional distress and poor parenting. Among economically impoverished middle childhood age children, economic pressure was found to indirectly predict teacher's ratings of children's social competence and behavior problems through mothers' depression and less positive parenting (Mistry et al, 2002).

While neighborhood danger has been found to indirectly influence children's risk of problem behavior by way of parenting, the middle childhood (Brody, et al., 2001) or adolescent (Schonberg & Shaw, 2007) developmental period are most frequently studied. Very young children are assumed to be closely monitored and not allowed to spend much time in their neighborhood as compared to older children (e.g., Winslow & Shaw, 2007). However, children who live in disadvantaged neighborhoods actually may be more aware of what is happening outside the home because of poor housing quality. That is, impoverished families tend to reside in homes that are older, lack central air conditioning, and are closer to the street (Evans, 2006). As a result, homes are less insulated from the noise on the street and families may keep doors and windows open for airflow. Thus, families in impoverished areas may have more opportunities to witness and hear activities in their neighborhood.

Level of exposure to neighborhood danger is emerging as a critical risk for problem behaviors even during the early childhood period. For instance, Callahan and colleagues (2011)

found that higher levels of neighborhood danger were significantly correlated with higher levels of internalizing and externalizing problems and that the strength of the association was moderated by exposure to harsh parenting. Specifically, among mothers and 2-year-old children, the association between harsh parenting and internalizing problems was only statistically significant at high levels of neighborhood danger (Callahan, Scaramella, Laird, & Sohr-Preston, 2011). No statistically significant interaction between harsh parenting and neighborhood danger emerged for problem behaviors or externalizing problems. In addition, Linares and colleagues (2001) found that neighborhood violence was indirectly associated with children's internalizing and externalizing behavior problems during the preschool years by way of mothers' psychological distress. Both studies focused on harsh parenting and no study has considered the indirect effect of neighborhood danger on children's problem behaviors by way of sensitive parenting, a goal of the proposed study.

Finally, very few studies have considered the role of residential overcrowding on changes in toddler-aged children's behavior problems. Among a sample of toddlers and their families, Scaramella and colleagues (2008) replicated the FSM, considering the indirect effect of number of adults residing in the home on children's problem behaviors by way of mothers' depression and parenting efficacy. However, there was not a significant association between adult residents and mothers' depression indicating there was not an indirect relationship between number of adult residents and children's problem behaviors. Though, this was a smaller sample of pre- ($n = 55$) and post- ($n = 47$) Katrina families living in the New Orleans area and the study focused on parenting efficacy rather than observed parenting (Scaramella, et al., 2008).

When residential overcrowding is considered during middle childhood the presence of more residents in the home is linked with elevated levels of internalizing and externalizing

problems. For instance, among a low-income sample of third through fifth grade children, more overcrowding was associated with elevated levels of overall problem behaviors (Evans, Saegert, & Harris, 2001). Importantly, both rural and urban families were included in the study because often residential overcrowding is assumed to occur in urban settings where housing options may be limited (Evans et al., 1998). However, overcrowding occurred in rural settings as well, perhaps suggesting that overcrowding is more closely tied to financial hardship rather than decreased housing options. Among a sample of pre-adolescent children and their parents, Evans and colleagues (1998) reported that parent-child conflict mediated the direct association between residential overcrowding and teacher reported behavior problems (Evans et al., 1998). Virtually no research has considered the indirect effect of residential overcrowding on toddler-aged children's adjustment by way of sensitive parenting. The present investigation will address this research gap by considering the extent to which residential overcrowding is directly and indirectly, by way of sensitive parenting, associated with children's level of problem behaviors.

Study goals and hypotheses

The goal of the current study is to evaluate the direct and indirect effects of environmental stress on increases in problem behaviors during early childhood. While environmental stressors are expected to predict increases in children's behavior problems from age 2 to age 4, any direct effect is expected to be explained by levels of observed sensitive parenting when children are 3 years old. Specifically, the present study will test the following hypotheses:

Hypothesis 1: Elevated financial strain, neighborhood danger, and residential overcrowding measured when children are 2 years of age will be associated with

statistically significant increases in problem behaviors from age 2 to age 4 (see Figure 1, paths a, b, and c).

Hypothesis 2: Elevated financial strain, neighborhood danger, and residential overcrowding measured when children are 2 years of age will predict lower levels of sensitive parenting when children are 3 years of age (Figure 1, path d, e, f).

Hypothesis 3: Less sensitive parenting when children are 3 years old will predict increases in children's behavior problems from 2 to 4 years of age (Figure 1, path g).

Hypothesis 4: Levels of observed sensitive parenting will mediate the direct associations between environmental stress and children's behavior problems.

Confirmation of study hypotheses will further be tested by estimating a series of alternative hypotheses. First, social contextual stressors are expected to indirectly affect children's risk for problem behaviors generally. This expectation will be empirically evaluated by estimating the models separately for internalizing and externalizing problems. This will determine if there are differences in the pattern of statistical significance when considering internalizing and externalizing problems individually than when considering behavior problems more generally. Second, mediation is only one mechanism by which social-contextual stressors affect children's level of behavior problems. Quite possibly, elevated levels of social-contextual stressors moderate the impact of sensitive parenting on change in level of problem behaviors, both generally (i.e., behavior problems) and for internalizing and externalizing problems specifically. To consider these alternative explanations, the direct and interactive effect of each of the social contextual stressors and sensitive parenting on change in behavior problems and internalizing and externalizing problems also will be considered.

Methods

Participants

Data from the Mothers and Preschoolers Study, a longitudinal study of mothers with children enrolled in Head Start and a 2-year-old younger target child, were used to test all study hypotheses. A total of 167 families participated at wave 1. All families resided in the greater New Orleans area and interviews took place 1 to 3 years after Hurricane Katrina struck the Gulf Coast. Mothers averaged 25.31 years of age ($SD = 3.57$ years), preschool children averaged 49 months ($SD = 7.63$) and target children averaged 24.16 months of age ($SD = 1.77$ months). Families were African-American (90.2%), White (4.9%), or Middle Eastern (1.2%). Of the 2-year old children assessed, 57.5% were female. On average, mothers had 3.19 children ($SD = 1.46$) and each household supported 4.35 people ($SD = 1.55$). Regarding mothers level of education, 52.7% of mothers graduated from high school and 33.9% of mothers were either married or living with a romantic partner at the time of the interview. Family SES was generally very poor, with an average income to needs ratio of 1.06 ($SD = .70$) and an average per capita income of \$2,801.

Retention for the present study was very good. One hundred fifty three (92%) families participating at child age 3 and 154 (92%) families participating at child age 4. One hundred fifty two (91%) of the families participated in all three waves of data collection and these data are used in the present report.

Procedures

Recruitment for the study took place at Head Start parent orientation meetings and when parents registered their children for Head Start. All interested mothers completed a brief recruitment screener in order to determine eligibility and their willingness to participate. Project

staff contacted mothers with eligible children who also were interested in participating to explain to the study in greater detail. Interviews were scheduled for interested mothers. Approximately, 10 to 15 percent of mothers met eligibility requirements and approximately 90 percent of eligible mothers participated.

Interviews primarily occurred in families' homes, but a few interviews were conducted in a lab setting or at Head Start centers at mothers' requests. Interviews lasted approximately 2.5 hours and consisted of three parts: a videotaped structured interview, a questionnaire completed by mothers, and a language assessment of the preschool-aged child. Mothers received \$100 for participating and each child received a small toy worth about \$5. Interviews were scheduled within 1 month of the target child's birthday and most occurred within two weeks of the target children's birthdays.

Informed consent occurred during the first (wave 1) in-home assessment. Before setting up any equipment, interviewers first read and reviewed the consent form with mothers and answered any questions mothers had. The interview did not proceed until the informed consent had been signed and all questions had been answered. Mothers were given a copy of the consent form. At each consecutive assessment, consent forms were reviewed with mothers. Next, the interviewing team set up the camera and equipment for the assessment while the interviewer reviewed a list of interview activities with mothers. Mothers were given an activity list that included brief descriptions of each activity that family members would complete so that they could follow along with the interview. Families completed essentially the same assessment when the target child was 2, 3, and 4 years of age and the interview procedures were identical across the three assessment waves.

The structured interview included a number of activity tasks, all of which were videotaped, but only two tasks which were designed to measure sensitive parenting, the matching task and the puzzle task, collected during the wave 1 (child age 2) and 2 (child age 3) assessments were used in the present study. During the matching task, interviewers first taught mothers how to play a matching game and then mothers were instructed to teach their children how to play the game and play the game with their children for 3 minutes. The game involved placing 14 cards face down in between mothers and children. Mothers and children took turns turning two cards over at a time. If the two cards match, a point is awarded. If the two cards do not match, both cards are turned back over. Then the next person takes a turn. If mothers and children finished the game before 3 minutes, mothers were instructed to play the game again. During the puzzle task, children were given a 12-piece board puzzle to solve. Mothers were instructed to let their children complete the puzzle alone, but to offer any help necessary. The interviewer showed children the puzzle, gave the task instructions, dumped out all of the pieces of the puzzle, and left the game area. After 5 minutes the interviewer returned and thanked children for playing. After completing all of the observational tasks, mothers completed a set of questionnaires, some of which measured children's problem behaviors, financial strain, neighborhood danger, and number of residents and characteristics of the home (e.g., number of bathrooms).

Later, trained undergraduate observational coders rated mothers' behaviors during the matching and teaching tasks. Prior to coding, each coder received a minimum of 20 hours of training and achieved an average inter-rater reliability estimate of .80 on training interactions. Twenty-five percent of all tasks were double coded to ensure adequate inter-rater reliability. To monitor ongoing adherence to coding procedures, coders attended weekly reliability meetings,

and disagreements in coding were resolved. If reliability dropped below .75 on any single code, additional training on that code occurred. All coders were blind to the identity of families and to study hypotheses.

Measures

Financial strain: Child age 2. Financial strain was measured using the same items described by Conger and colleagues (1992). Mothers answered three items regarding how difficult it has been to make ends meet, to pay bills on time, and how much money was left each month. The first two items were rated on a 5-point scale ranging from 1 (no difficulty) to 5 (very difficult). The third question was rated on a 4-point scale ranging from 1 (a lot of money left over) to 4 (not enough to make ends meet). To make scaling comparable across the three items, mothers scores on the last item was recoded such that 1 = 1, 2 = 2, 3 = 4, and 4 = 5. A financial strain score was created by averaging across the three items.

Neighborhood danger: Child age 2. Mothers' reports on the Me & My Neighborhood Questionnaire (Pittsburgh Youth Study, 1991) at wave 1 (age 2) were used to create the neighborhood danger measure. Mothers rated 20 items regarding the frequency with which events occurred during the past year on a 4-point Likert scale (0 = never, 1 = once, 2 = a few times, and 3 = a lot). Because less severe events (e.g., "Neighbors arguing loudly.") may occur more frequently than more severe events (e.g., "A family member was stabbed or shot."), all items were recorded as a 0 (never occurred) or 1 (occurred at least once) during the past year. Only items describing events that occurred in the neighborhood were used in the current study. The *neighborhood dangerousness* score consists of the following 9 events: "You hear neighbors complaining about crime in your neighborhood," "You carry a gun or knife for safety," "You see or hear about a shooting near your home," "You see strangers drunk or high near your home,"

“A gang fight occurs near your home,” “People in your neighborhood complain about being harassed by the police,” “You see cars speeding or driving dangerously on your street,” “You see people dealing drugs near your homes,” “You hear adults arguing loudly on your street.” Items were summed so that higher scores reflect more dangerous events occurring within the neighborhood during the past year.

Residential overcrowding: Child age 2. A modified version of Evans and colleagues (2001) residential density score was used to measure residential overcrowding. While Evans and colleagues (2001) based their measure of overcrowding on the number of rooms to residents, in the current investigation a ratio of bathrooms to residents was used instead. The primary reason for this modification is that homes in the greater New Orleans area tend to be very old, small, and have a lot of small rooms. The overall square footage of a home is not reflected in the total number of rooms in the home. However, the daily hassles associated with having a lot of residents living in small area may be the same as having too few bathrooms. A ratio of people to bathrooms was calculated by summing mothers’ reports of the total number of people who live in their home at least 4 days a week and total number of bathrooms in the home. Scores greater than 1 reflected households with more people than bathrooms and scores less than 1 indicated more bathrooms than residents.

Sensitive Parenting: Child age 2 and 3. Sensitive parenting was measured using observational ratings of mothers’ parenting behavior during the 3-minute matching task and 5-minute puzzle task collected at the age 2 (wave 1) and age 3 (wave 2) assessment periods. Test of the theoretical model depicted in Figure 1 used sensitive parenting measured when children were 3 years of age, while tests of the alternative, moderational analyses used the age 2 sensitive parenting scores.

Like the NICHD Early Childcare Study (e.g., Adi-Japha & Klein, 2009), sensitive parenting scores were computed by averaging coder ratings across three scales: sensitivity/supportive presence, positive regard, and stimulation of cognitive development. The *sensitivity/supportive presence* code measures mothers' behaviors that are child-centered rather than mother-centered. The code includes evidence of mothers' awareness of their children's needs, moods, interests, and capabilities as well as mothers' contingent responses to children's distress and non-distress. The *positive regard* code measures mothers' expression of positive feelings towards their children, including affection, liking, appreciation, care, praise, concern, or support. The *stimulation of cognitive development* code measures the degree to which mothers foster children's cognitive and language development. Behavioral indicators of stimulation of cognitive development include: labeling, encouraging children to speak, explanations, imaginary play, asking children questions, and responding to children's vocalizations. Each scale was rated on a 7-point Likert scale ranging from 1 (not at all characteristic) to 7 (very highly characteristic).

Inter-class correlation coefficients were computed to estimate the reliability of observational coders. The primary study hypotheses relied on assessments when children were 3 years of age and results indicated strong correspondence across the two raters (ICC = .78/.87 for sensitivity/supportive presence, .89/.85 for positive regard, and .77/.80 for stimulation of cognitive development during the puzzle/matching tasks, respectively). Regarding the alternative hypotheses, based on observed sensitive parenting at age 2, again interrater reliability estimates were very good (ICC = .76/.91 for sensitivity/supportive presence, .84/.86 for positive regard, and .75/.86 for stimulation of cognitive development during the puzzle/matching tasks, respectively). A sensitive parenting score was created by averaging across the 6 codes when children were 3

years of age (primary hypotheses) and when children were 2 years of age (alternative hypotheses).

Children's problem behaviors: Child age 2 and 4. Mothers completed the Child Behavior Checklist for ages 1 ½ to 5 (Achenbach & Rescorla, 2000) regarding the level of children's internalizing and externalizing behaviors when children were 2 and 4 years of age. Mothers rated 51 items regarding the level of children's internalizing and externalizing behaviors. All items were on a 3-point Likert scale (0 = not true, 1 = sometimes true, and 2 = very true). All 51 items were averaged to create an overall behavior problems score. For the purpose of exploratory analyses, 25 items were averaged to create the Internalizing Problems subscale, and 26 items were averaged to measure the Externalizing Problems subscale. Consistent with previous research, internalizing and externalizing scores were statistically and significantly correlated ($r = .64$, $p < .01$ at child age 2; $r = .74$, $p < .01$ at child age 4).

Data Analytic Plan

Prior to testing any study hypotheses, the means, standard deviations, skewness, and kurtosis were examined for all study constructs. Next, correlations were computed to evaluate the pattern of the associations among study constructs. Then, mediational hypotheses were computed to evaluate study hypotheses, using a series of multiple regression analyses, as suggested by Baron and Kenny (1986). Four conditions must be met for each of the three constructs of environmental stress in order to support mediation for each. Correlation analyses were used to evaluate the first three conditions. These analyses tested the expectation that each predictor, financial strain, neighborhood danger, and residential overcrowding, are statistically and significantly correlated with the mediator, sensitive parenting, (condition 1), the outcome, problem behaviors, (condition 2), and the mediator, sensitive parenting, are significantly

correlated with the outcome, problem behaviors (condition 3). If all of these conditions were met, the final condition involves estimating a regression equation in which the environmental stress constructs are no longer significantly associated with problem behaviors after controlling for sensitive parenting (mediator; Baron & Kenny, 1986).

Finally, alternative hypotheses were evaluated. First, all mediational models were re-estimated separately for internalizing and externalizing problems to consider the possibility that internalizing and externalizing problems were related to environmental stress and sensitive parenting differently. In each model, the co-variation between internalizing and externalizing problems were controlled statistically. Second, neighborhood danger has been found to moderate the association between parenting quality and problem behaviors (e.g., Callahan, et al., 2011) and it is possible that environmental stressors are not directly linked to children's problem behaviors but rather condition the impact of sensitive parenting on change in problem behaviors. The final set of analyses consider the direct and interactive effects of environmental stress and sensitive parenting on levels of problem behavior and internalizing and externalizing problems at age 2 as well as change in problem behaviors, internalizing and externalizing problems from age 2 to age 4. After centering all independent variables, interaction terms were computed by multiplying each stressor with sensitive parenting. Using hierarchical regression analyses, the magnitude of the association between the interaction term and the dependent variable were estimated after controlling for children's sex and earlier levels of the dependent variable if applicable in step 1 and the main effects of environmental stressors and sensitive parenting in step 2. Unique to the regression analyses for internalizing and externalizing problems, the co-variation between internalizing and externalizing problems was controlled statistically. Specifically, when predicting externalizing problems at child age 2, internalizing problems at

child age 2 was entered in step 1. When predicting change in externalizing problems from child age 2 to 4, internalizing problems at child age 4 was entered in step 1.

Results

Prior to computing any of the analyses designed to test study hypotheses, the distributional properties of the study constructs were examined. All study constructs were normally distributed as noted in skewness and kurtosis scores in acceptable ranges (e.g., all scores less than 3.0). As shown in Table 1, the means and standard deviations indicate good variability for the majority of the study constructs. The means and standard deviations also indicated that the sample experienced high levels of environmental stress and the children received very little sensitive parenting. Specifically, regarding the environmental stress indicators, most families reported moderate levels of financial strain ($M = 3.31$; $SD = .95$; possible range 1 to 5). Most families reported experiencing about 3 dangerous events in their neighborhood, with considerable variability around that mean ($SD = 2.24$), indicating that the majority of families were exposed to a number of dangerous events within their neighborhoods. In general, residences were crowded, with an average of slightly more than 3.5 residents per bathroom.

Considering sensitive parenting, the possible range on the sensitive parenting score was 1 to 7, with 1 indicating no evidence of sensitivity and 7 reflecting that sensitivity was highly characteristic of the mothers' interactional style with their children. A score of 3 indicates that at least 1 sensitive action occurred, while a score of 5 indicates that sensitivity was somewhat characteristic of the mothers' behaviors towards their children. In the present study, means for sensitivity were 3.26 ($SD = .87$) at age 2 and 3.17 ($SD = .78$) at age 3, indicating rather infrequent displays of sensitivity/supportive presence, positive regard, and cognitive stimulation

Table 1. *Summary of the bivariate correlations, means and standard deviations among study constructs*

	1	2	3	4	5	6	7	8	9	10	11	12	M	SD
1. Child's Sex (age 2)	-												.43	.497
2. Child's Age in Months (age 2)	-.13	-											24.16	1.77
3. Financial Strain (age 2)	.10	.10	-										3.31	.95
4. Neighborhood Danger (age 2)	.02	-.06	.09	-									3.26	2.24
5. Residential Overcrowding (age 2)	.04	.06	.02	.09	-								3.62	1.56
6. Sensitive Parenting (age 2)	-.17*	-.07	-.01	-.01	-.08	-							3.26	.87
7. Sensitive Parenting (age 3)	-.17*	-.11	-.03	.03	-.03	.49**	-						3.17	.78
8. Behavior Problems (age 2)	.07	.02	.19*	.07	-.02	-.14	-.16	-					.62	.29
9. Behavior Problems (age 4)	.01	-.05	.20*	.05	-.06	-.10	-.20*	.43**	-				.55	.29
10. Externalizing Problems (age 2)	.09	-.05	.18*	.11	-.05	-.07	-.13	.92**	.46**	-			.69	.34
11. Externalizing Problems (age 4)	.06	-.08	.21*	.08	-.04	-.07	-.16	.40**	.94**	.48**	-		.60	.33
12. Internalizing Problems (age 2)	.04	.09	.18*	.01	.01	-.20*	-.16	.90**	.31**	.65**	.23**	-	.54	.30
13. Internalizing Problems (age 4)	-.04	-.01	.16	.02	-.07	-.13	-.22**	.41**	.93**	.38**	.74**	.35**	.51	.29

Note: + $p < .10$; * $p < .05$; ** $p < .01$.

on behalf of mothers. Finally, behavior problem scores were generally low with means ranging from .51 ($SD = .29$; problem behaviors at age 4) to .69 ($SD = .34$; externalizing problems at age 2).

In order to rule out the possibility that environmental stressors and sensitive parenting varied systematically by child sex, all study constructs were correlated with child sex. While child sex was not statistically and significantly correlated with the environmental indicators, child sex was statistically and significantly correlated with sensitive parenting ($r = -.17$; $p < .05$), indicating that mothers were more sensitive with girls than boys. Consequently, child sex was statistically controlled in all regression equations.

Evaluation of study hypotheses. The first step in evaluating study hypotheses was to compute correlations among the environmental stress indicators, sensitive parenting, and behavior problems. Table 1 summarizes the results of the correlational analyses. The first condition for mediation is that the predictor and mediating constructs are significantly correlated. This condition was not supported because none of the environmental stressors were statistically significantly correlated with sensitive parenting. The second condition for mediation is that the predictor variables are correlated with the outcome constructs. Of the three environmental constructs, only financial strain was positively correlated with behavior problems at child age 4 ($r = .19$; $p < .05$), indicating that more financial strain was associated with more problem behaviors. The third condition stipulates that the mediator is significantly correlated with the outcome and this condition was met. Sensitive parenting at child age 3 was significantly correlated with behavior problems at child age 4 ($r = -.20$; $p < .05$), indicating that higher levels of sensitive parenting were associated with lower levels of problem behaviors. Mediation was not possible since condition 1 was not met and condition 2 was only met for one of the

environmental stressors. Thus, the final step in evaluating mediation, determining whether sensitive parenting accounted for the association between social contextual stressors and children's level of behavior problems was not estimated.

Alternative analyses: Considering internalizing and externalizing problems separately. Alternative models also were considered whereby sensitive parenting mediated the association between social contextual environmental stressors and internalizing or externalizing problems. Correlation analyses again were computed to examine the extent to which sensitive parenting mediated the associations between social contextual stressors and internalizing or externalizing problems (see Table 1). As with the hypothesized model, no evidence for mediation emerged because the first condition, significant associations between the environmental stressors and sensitive parenting did not occur. In addition, like behavior problems more generally, only financial strain measured at age 2 was significantly correlated with levels of externalizing problems at child age 4 ($r = .20; p < .05$), with a trend towards statistical significance with internalizing problems ($r = .16, p > .10$). While social contextual stressors were unrelated to sensitive parenting, sensitive parenting at child age 3 was statistically and significantly associated with levels of internalizing problems at child age 4 ($r = -.22; p < .01$; condition 3) with a trend towards statistical significance with externalizing problems ($r = -.16; p > .10$).

Alternative hypotheses: Social contextual stress moderates the association between sensitive parenting and general and specific indicators of problem behaviors. The final set of analyses considered the extent to which environmental stressors moderated the association between sensitive parenting and child problem behaviors. Interaction terms were computed for each of the social contextual stressors and sensitive parenting. Since social contextual stressors

were measured at the first assessment, sensitive parenting measured at age 2 was used in these analyses rather than the age 3 parenting. As shown in Table 1, sensitive parenting was statistically and significantly correlated across the two time points ($r = .49$; $p < .01$). However, parenting at age 3 was more strongly correlated with behavior problems, internalizing problems and externalizing problems at age 4 than parenting measured at age 2. Nonetheless, age 2 sensitive parenting was selected to test for moderation because this age period corresponded with the same measurement period of the social contextual characteristics.

Three regression equations were computed for each age 2 and age 4 dependent variables (i.e., behavior problems, internalizing problems, and externalizing problems). In the longitudinal analyses, the corresponding age 2 construct was statistically controlled and in the models considering child internalizing or externalizing problems, the covariation of internalizing and externalizing problems also was controlled. The following sections first describes the results regarding behavior problems more generally beginning with the contemporaneous, age 2, analysis and then describing the longitudinal, age 4, analysis. Next, the results for internalizing and externalizing problems will be described following the same format.

Moderational analysis: Behavior problems. Results of the moderational analyses evaluating the within time effects of social contextual stress and sensitive parenting on behavior problems is summarized in Table 2. After centering each of the independent variables, separate interaction terms were computed for each of the social contextual stressors and sensitive parenting. In the first two steps of the equation, the main effects of child sex, sensitive parenting, and the social contextual characteristics were entered. Support for moderation would occur if the R-square change and the beta coefficient associated with each interaction term was statistically significant. The magnitude of the effect of each social contextual x sensitive parenting

Table 2. *Summary of the regression analyses considering the direct and interactive effects of sensitive parenting and sociocontextual risk on behavior problems at child age 2*

		Behavior Problems Age 2		Internalizing Problems Age 2		Externalizing Problems Age 2	
		ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1		.01		.42**		.43**	
	Child's Sex		.08		-.03		.07
	Externalizing Problems				.65**		
	Internalizing Problems						.65**
Step 2	Age 2 Main Effects	.06+		.03		.02	
	Sensitive Parenting		-.14+		-.15*		.06
	Financial Strain		.19*		.08		.05
	Neighborhood Danger		.05		-.07		.10*
	Residential Overcrowding		-.10		-.04		-.03
Step 3		.00		.00		.00	
	Financial Strain x Parenting		.05		-.03		.06
Step 3		.02+		.00		.00	
	Neighborhood Danger x Parenting		.13+		.03		.06
Step 3		.00		.01		.01	
	Residential Overcrowding x Parenting		-.03		.05		-.07

Note: + $p < .10$; * $p < .05$; ** $p < .01$

interaction terms on behavior problems was estimated separately. Regarding the main effects, after controlling for child's sex, only the beta associated with financial strain ($\beta = .19$; $p < .05$) was statistically significant and a trend towards statistical significance emerged for sensitive parenting ($\beta = -.14$; $p < .10$; see Table 2). Next, separate regression equations were computed to test the effect of each interaction term. Only the neighborhood danger x sensitive parenting interaction term demonstrated a trend towards statistical significance ($\beta = .13$; $p < .10$; see Table 2).

Next, the interaction term was decomposed by calculating the simple slopes of the association between sensitive parenting and problem behaviors at 1 standard deviation above and below the mean of neighborhood danger (Cohen, Cohen, West, & Aiken, 2003). At 1 standard

deviation below the mean of neighborhood danger, the association between sensitive parenting and behavior problems was statistically significant (see Figure 2; $t = -2.47$; $p < .05$), but not at mean levels ($t = -1.66$) or high levels ($t = 0.02$) of neighborhood danger, indicating that in less dangerous neighborhoods, more sensitive parenting is associated with lower levels of behavior problems at child age 2.

Next, the effect of social contextual stress and parenting on change in behavior problems was evaluated. After controlling for child sex, behavior problems at age 2, parenting and social contextual stress, each interaction term was estimated independently. As shown in Table 3, none of the social contextual stress x sensitive parenting interaction terms resulted in a statistically significant change in R-square or a statistically significant beta coefficient.

Moderational analyses: Internalizing problems. Like the behavior problems analyses, the contemporaneous associations with internalizing problems were estimated first. As shown in Table 2, after statistically controlling for child age, externalizing problems at age 2, social contextual stress and sensitive parenting, none of the social contextual stress x sensitive parenting interaction terms were statistically significant. Instead, only a statistically significant main effect of sensitive parenting emerged ($\beta = -.14$; $p < .05$).

Like the contemporaneous models, after controlling for the main effects of child age, internalizing problems at age 2, externalizing problems at age 4, social contextual stressors and sensitive parenting, none of the contextual stressor by sensitive parenting terms accounted for statistically significant portions of the variance associated with change in internalizing problems. However, a trend towards statistical significance emerged for the financial strain by sensitive parenting interaction ($\beta = -.09$; $p < .10$; see Table 3).

In order to evaluate the nature of this statistical interaction, the interaction term was decomposed by calculating the simple slopes of the association between sensitive parenting and internalizing problems at 1 standard deviation above and below the mean of financial strain (Cohen, Cohen, West, & Aiken, 2003). The association between sensitive parenting and internalizing problems was marginally significant at 1 standard deviation above the mean of financial strain (see Figure 3; $t = -1.95$; $p < .10$), but not at mean levels ($t = -1.07$) or 1 standard deviation below the mean ($t = 0.34$) of financial strain. These results suggest that as financial strain increases, more sensitive parenting is associated with lower levels of internalizing problems.

Moderational analyses: Externalizing problems. Finally, the direct and interactive effects of sensitive parenting and social contextual stress, net of child sex and levels of internalizing problems, on levels of externalizing problems at age 2 were estimated. As shown in Table 2, none of the main effects or interaction terms was statistically significant. Considering the longitudinal analyses (see Table 3), again none of the main effects were statistically significant, but a trend towards statistical significance emerged for the financial strain and sensitive parenting interaction ($\beta = .10$; $p < .10$) and neighborhood danger and sensitive parenting interaction ($\beta = .10$; $p < .10$) terms (see Table 4).

Both of the interaction terms were decomposed following the same procedures described previously. Regarding financial strain and sensitive parenting, at 1 standard deviation above the mean of financial strain, the association between sensitive parenting and externalizing problems was marginally significant (see Figure 4; $t = 1.85$; $p < .10$), but was not statistically significant at mean ($t = 0.74$) and low ($t = -0.73$) levels of financial strain. as financial strain increases, higher levels of sensitive parenting are associated with elevated levels of externalizing problems at age

4 adjusted for levels of externalizing problems at age 2. Similar findings emerged for neighborhood danger. As depicted in Figure 5, the association between sensitive parenting and externalizing problems was marginally significant at 1 standard deviation above the mean on neighborhood danger ($t = 1.95$; $p < .10$), but not at mean ($t = 0.89$), or 1 standard deviation below the mean ($t = -0.72$) levels of neighborhood danger. Again, as levels of neighborhood danger increased, higher levels of sensitive parenting were associated with elevated levels of externalizing problems at age 4 net of earlier levels.

Table 3. *Summary of the regression analyses considering the direct and interactive effects of sensitive parenting and sociocontextual risk on behavior problems from child age 2 to 4*

	Behavior Problems Age 4		Internalizing Problems Age 4		Externalizing Problems Age 4	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.19**		.60**		.60**	
Child's Sex		-.02		-.09+		.06
Behavior Problems Age 2		.44**				
Internalizing Problems Age 2				.20**		
Externalizing Problems Age 4				.70**		
Externalizing Problems Age 2						.23**
Internalizing Problems Age 4						.65**
Step 2	.02		.01		.01	
Age 2 Main Effects						
Sensitive Parenting		-.01		-.06		.05
Financial Strain		.03		-.02		.05
Neighborhood Danger		.01		-.02		.04
Residential Overcrowding		.06		-.03		.08
Step 3	.00		.01		.01	
Financial Strain x Parenting		.00		-.09+		.10+
Step 3	.01		.00		.01	
Neighborhood Danger x Parenting		.02		-.06		.10+
Step 3	.01		.00		.01	
Residential Overcrowding x Parenting		-.02		.06		.02

Note: + $p < .10$; * $p < .05$; ** $p < .01$

Discussion

As highlighted by Bronfenbrenner and Morris (1998), families function within a larger social ecology (e.g., neighborhoods, schools, work). Theoretically, the larger environmental context in which families reside indirectly affects children's adjustment during early childhood by way of interactions with parents and caregivers (Bronfenbrenner & Morris, 1998). A number of studies have considered the indirect and interactive effects of social contextual stress, like financial strain and neighborhood danger, and harsh parenting on children's behavior problems during early childhood. Much of this work has focused on harsh parenting and indicates that harsh parenting mediates the association between social contextual stress and child problem behavior (e.g., Yeung et al., 2002) or interacts with social contextual stress to predict elevated levels of child problem behaviors (e.g., Callahan et al., 2011). While these studies are significant in that they highlight mechanisms by which social contextual stressors affect levels of problem behavior, they offer little information on how parenting may protect children from the potentially negative influences of disadvantaged social contexts.

The goal of the present study was to consider the extent to which parents' ability to sensitively care for their children was negatively impacted by the level of social contextual stress to which they were exposed. Specifically, social contextual stressors were expected to negatively affect children's risk for behavior problems by reducing mothers' ability to sensitively parent their children. Although sensitive parenting was expected to mediate the direct association between social contextual stress on behavior problems, alternative mechanisms also were considered. First, the extent to which sensitive parenting mediated the negative impact of social contextual stressors on specific indices of maladaptation, namely internalizing or externalizing

problems, was considered. Second, the possibility that social contextual stressors conditioned the association between sensitive parenting and children's adjustment was examined.

In contrast with expectations, no evidence that sensitive parenting mediated the direct association between social contextual stressors and children's behavior problems emerged. Perhaps most surprisingly, very little evidence emerged that social contextual stress even affected children's level of behavior problems contemporaneously or longitudinally. Of the three contextual stressors examined, only levels of financial strain were associated with children's behavior problems. Moreover, none of the environmental stressors were related to levels of sensitive parenting and sensitive parenting was only weakly associated with children's behavioral adjustment.

In contrast, some, albeit weak, evidence that social contextual stressors may condition the association between sensitive parenting and children's adjustment emerged. Of the 18 interaction terms evaluated, a trend towards statistical significance emerged for four interaction terms. Results suggest that under conditions of less neighborhood danger, more sensitive parenting was associated with lower levels of behavior problems at age 2. Conflicting results emerged regarding the interaction between financial strain and sensitive parenting. Specifically, when considering levels of externalizing and internalizing problems at age 4 adjusted for age 2 levels, results suggest that under conditions of high financial strain, more sensitive parenting was associated with lower levels of internalizing problems but higher levels of externalizing problems. In addition, more sensitive parenting also was associated with higher levels of age 4 externalizing problems, but only when families reported high levels of neighborhood danger.

While inconsistent with hypothesized expectations, these results do have some important implications. First, social contextual stress does not equally affect children's behavioral

adjustment. That is, of the three environmental stressors considered no support for the residential overcrowding construct as an important predictor of children's maladjustment emerged. In contrast to previous research which focuses on residential overcrowding during the middle childhood and adolescent developmental periods (e.g., Evans, Lepore, et al., 1998; Evans, Saegert, et al., 2001), residential overcrowding may be less important during early childhood. That is, a lack of privacy may be more important to older rather than younger children and privacy may not be a concern of toddler and preschool aged children. Alternatively, many studies considering the impact of residential overcrowding on children's adjustment also consider the impact of overcrowding on disrupting family routines and environment (e.g., noise), or "chaos" (e.g., Fiese & Winter, 2010). The resident to bathroom ratio may be a poor proxy for household chaos. That is, since the average resident to bathroom ratio was 3.5 and all participating families had to have a minimum of 3 residents (i.e., mother, target child and sibling), it is possible that small families shared a single bathroom but did not have disruptions to their daily routine. Future studies that more carefully consider the number of residents, variability in household routines, ambient noise and interruptions, or family chaos, may find more evidence that more chaotic home environments negatively impact sensitive parenting.

Second, the process by which social contextual stress affects children's adjustment may be more complex than originally hypothesized. The following sections discuss this idea more fully as well as the broader implications of the findings in terms of the role of parenting in reducing children's risk for problem behaviors. Given that all of the participating children resided in very disadvantaged contexts, the challenges associated with evaluating the effect of social contextual stress on children's social adjustment within a disadvantaged context will be described first. Next, implications of the findings for intervention will be considered. Finally,

strengths and limitations of the present investigation and suggestions for future directions of research will be discussed.

Considering social contextual risk and parenting within a disadvantaged sample

Families who participated in the present investigation are quite unique in that they characterize the vast array of challenges faced by socioeconomically disadvantaged families. Since all families were recruited from Head Start orientations and registration settings, all families had income levels at or below the poverty line. Eligibility requirements meant that only families with more than one child could participate. Thus, families included in the present study are most representative of impoverished families with multiple, and very young, children.

Not surprisingly, then, most families reported experiencing high levels of each of the social contextual stressors. All families reported experiencing modest to high levels of financial strain. Virtually all families reported experiencing some financial strain, at least 1 dangerous event within the past 12 months (more than 3 events was the average) and, on average, had about 3 people for every bathroom. Given the high levels of stress the families who participated in the present study faced, evaluating the extent to which variations in stress affect parenting may not be possible because the full range of stress is not represented. In other words, families in the current study may represent the extreme end of the distribution of social contextual stress.

Similar problems may exist with sensitive parenting. That is, if social contextual stress does negatively affect sensitive parenting everyone in the study may be impacted such that little variability in sensitive parenting exists. Consistent with this explanation, sensitive parenting scores were generally very low and very few children, if any, experienced high levels of sensitive parenting. On average, mothers demonstrated only 1 or 2 sensitive behaviors across two different interaction tasks. Sensitive parenting scores were computed following the same

procedures outlined by the NICHD Early Childcare Study (e.g., Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004). The average sensitive parenting scores were a full 2 points lower in the current study than what was reported in the NICHD Early Childcare Study (ECS) of families with children the same age as the current study (NICHD ECS: $M = 5.45$ at age 2; $M = 5.72$ at age 3; e.g., Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004). Several explanations may account for the discrepant findings between the current study and the NICHD ECS. First, the NICHD ECS was a nationally representative sample which over recruited for low income families. Thus, all participating families were not impoverished and that study may contain a better representation of actual sensitivity score ranges. Second, the NICHD ECS was culturally diverse, while the current study was primarily African American. Low-income, African American and other minority parents have been found to be less warm and more intrusive during interactions with their toddler-aged children (e.g., Ispa, et al., 2004). Quite possibly, sensitive parenting represents only one dimension of parenting which may influence children's behavioral adjustment.

Relatedly, while few studies have considered the role of sensitive parenting on behavioral adjustment in highly disadvantaged social contexts, some empirical research suggests that sensitive parenting may be less effective in highly stressed social contexts. Grusec, Goodnow, and Kuczynski (2000) hypothesize that in a context with many environmental stressors, more controlling parenting may be necessary to protect children from negative influences in the environment. While previous research has focused on the role of rejecting (Shaw, et al., 1998) and harsh (e.g., Callahan, et al., 2011) parenting on levels of more behavior problems in disadvantaged contexts, additional research which considers alternative parenting strategies is

clearly needed. Perhaps elevated levels of parental control and monitoring better protect children against experiencing behavior problems.

Implications for Intervention

While sensitive parenting was ineffective in reducing risk for children's externalizing problems, sensitive parenting was associated with lower levels of internalizing problems particularly in the most financially strained contexts. Under conditions of high environmental stress, sensitive parenting may not be protective against the effects of social contextual stressors on the development of externalizing problems, but it may be protective for the development of internalizing problems. Sensitive parenting as measured in the present study consists of responding to children's cues, positive regard for the child, and stimulating cognitive development, such as talking to the child, providing explanations, and encouraging them to talk. This type of parenting may be beneficial in reducing internalizing problems because it provides support for children and a safe base, particularly in a highly disadvantaged context. Conversely, sensitive parenting on its own may not be sufficient to protect children from the development of externalizing problems in a context that has high levels of stress. Quite possibly, a certain level of control and monitoring may be necessary to protect children against modeling of externalizing behaviors in the environment (e.g., Grusec, et al., 2000). Furthermore, parents of children with externalizing problems may need to employ other parenting strategies such as behavioral management. Thus, interventions that are designed to target children's internalizing problems in impoverished families may want to focus on promoting sensitive parenting. However, interventions that are designed to address the development of externalizing problems may benefit from promoting other methods of parenting, as sensitive parenting by itself does not seem to be sufficient in reducing externalizing problems in very disadvantaged families.

Strengths, Limitations, and Future Directions

Although results did not support hypotheses, the present investigation had a number of strengths and weaknesses and raises issues for future research. Regarding the strengths of the study, observational measures of sensitive parenting were used, which reduces the concern of shared method variance. Although mothers reported on social contextual stressors and children's behavior problems, observational measures of parenting reduce the risk of inflated correlations between sensitive parenting and environmental stressors due to perceptual biases when using the same person to report on both constructs. Second, the majority of research regarding the effects of parenting on children's problem behaviors examines harsh or overcontrolling parenting. As compared to previous research, less support for sensitive parenting as reducing risk for behavior problems emerged indicating that sensitive parenting alone may be insufficient to protect children from experiencing behavior problems within a stressed context. Finally, a number of alternative competing models were considered in addition to the expected mediational model. A focus on competing mechanisms helps advance understanding of how social contextual stress affects adjustment. Results of the present study provide some support that stress may condition the effect of parenting on adjustment rather than diminish levels of sensitive parenting.

A number of limitations with this work exist. First, a ceiling effect may have occurred in that levels of social contextual stress experienced by families was very high and there may not have been enough between family variability in levels of environmental stressors. Second, the residential overcrowding measure may be a poor proxy for the social challenges associated with overcrowding (e.g., household chaos). Future studies which more comprehensively measure the environmental challenges associated with residential overcrowding are clearly needed. Third, parenting was only measured during two interactions, a matching task and a puzzle task. Quite

possibly, measures of parenting in these contexts may not generalize to other contexts that may more accurately reflect parenting in a stressful situation. Relatedly, only sensitive parenting was included. As suggested by Grusec and colleagues (2000), other parenting styles may need to be considered to fully understand the influence of environmental stressors on parenting and the effects of parenting on children's development in disadvantaged contexts.

Despite these limitations, findings of the present study have some implications for future research. First, financial strain and neighborhood danger emerged as important contexts which conditioned the impact of sensitive parenting on children's behavior problems. Future studies may want to consider how financial strain and neighborhood danger affects the association between parenting and children's adjustment. Perhaps the psychological distress associated with economic hardship and neighborhood danger is physiologically taxing for parents, resulting in elevated cortisol levels, and restricts parents' ability to be emotionally available to their children. Future research may benefit from including biological markers of stress in addition to parents own reports of stress. Second, restricting assessments to sensitive or harsh parenting may provide a distorted picture of how parents function within highly stressful contexts. Future studies may wish to include multiple dimensions of parenting in order to better disentangle which styles of parenting most effectively protect children from experiencing adjustment problems within a stressed context.

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Appendix

Figure 1. *Direct and indirect effects of environmental stress on externalizing and internalizing behavior problems through sensitive parenting.*

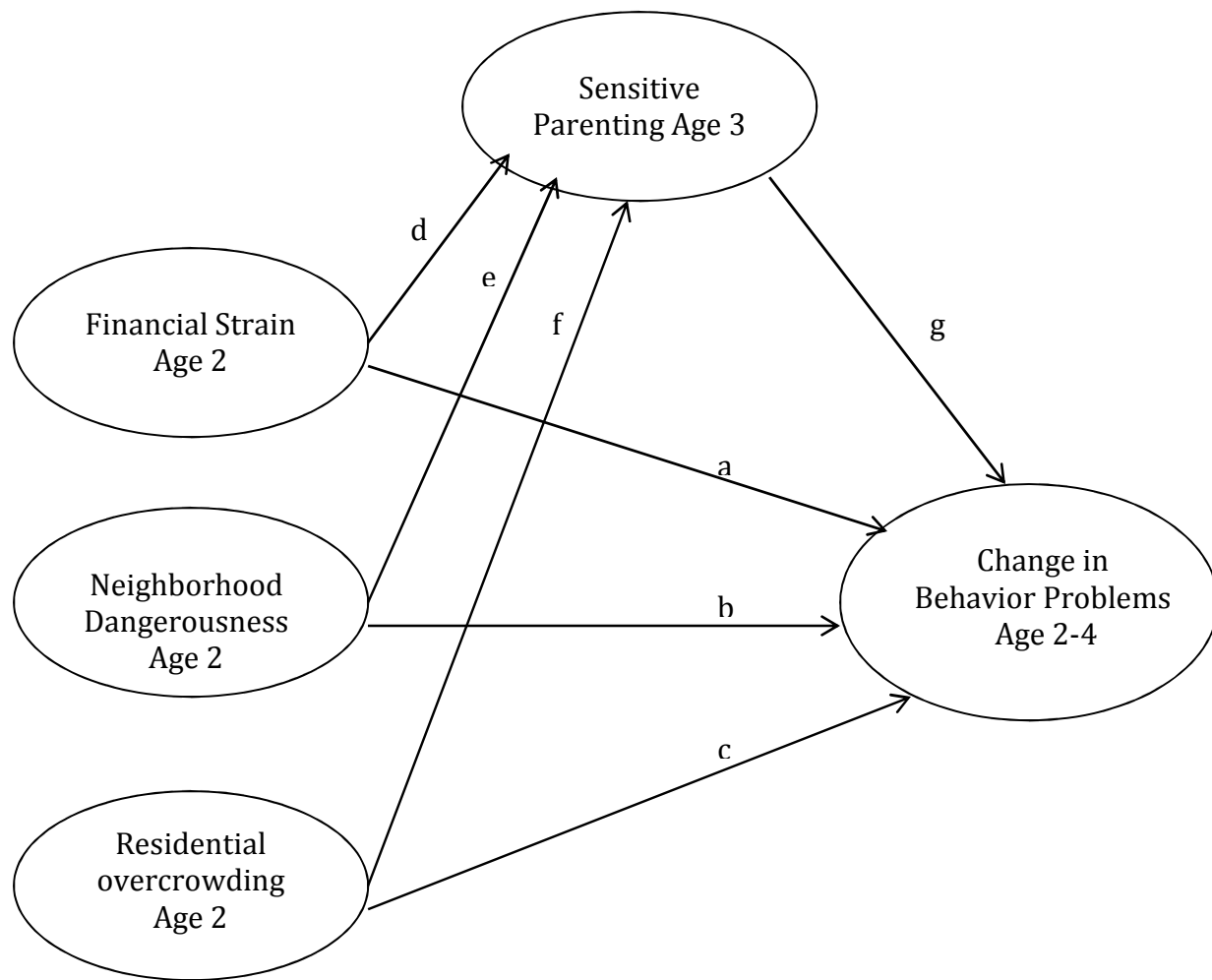


Figure 2. *Graphic decomposition of neighborhood danger x sensitive parenting interaction on levels of behavior problems at 2 years of age.*

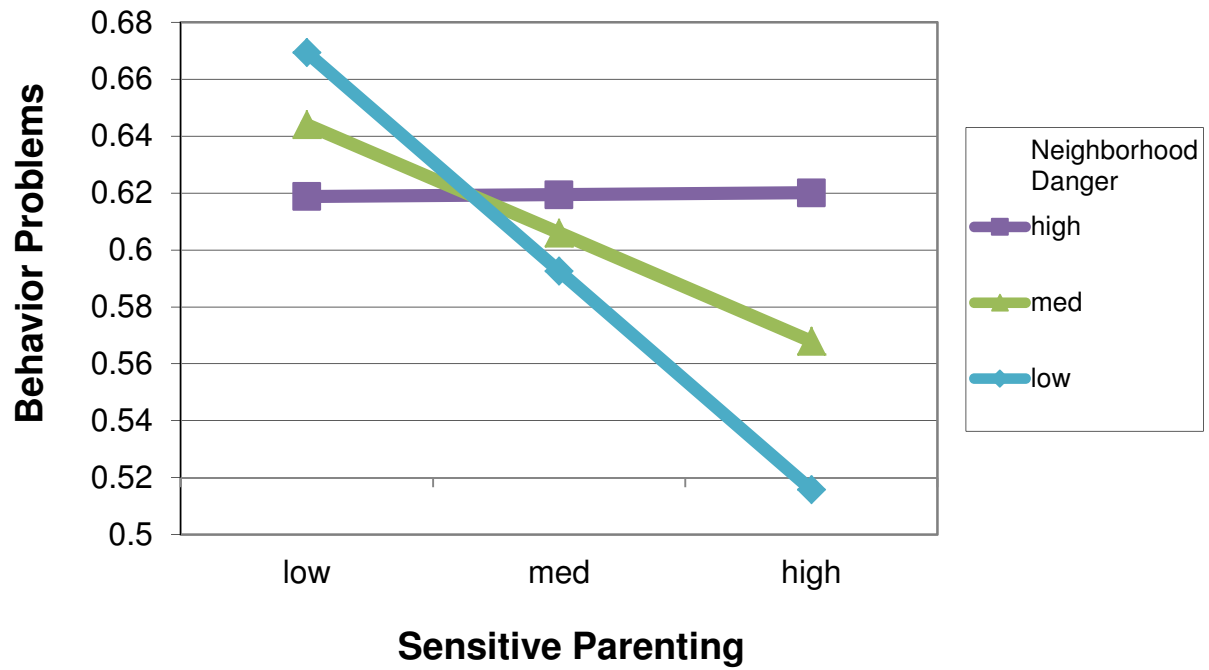


Figure 3. *Graphic decomposition of financial strain x sensitive parenting interaction predicting change in internalizing problems from age 2 to 4*

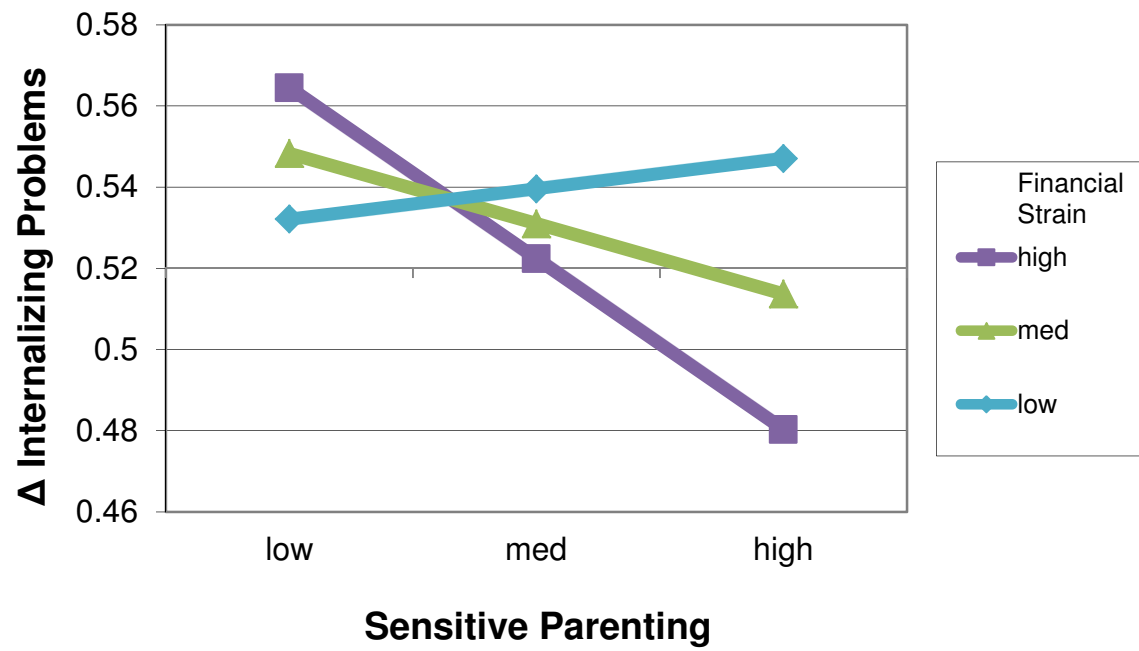


Figure 4. *Graphic decomposition of financial strain x sensitive parenting interaction predicting change in externalizing problems from age 2 to 4*

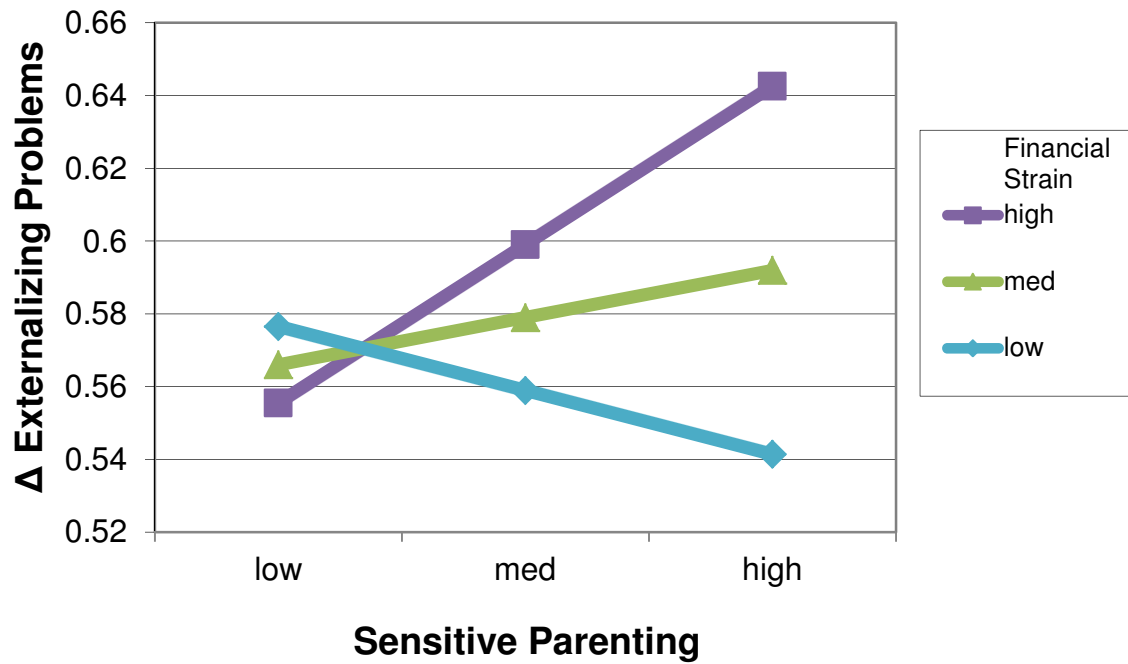
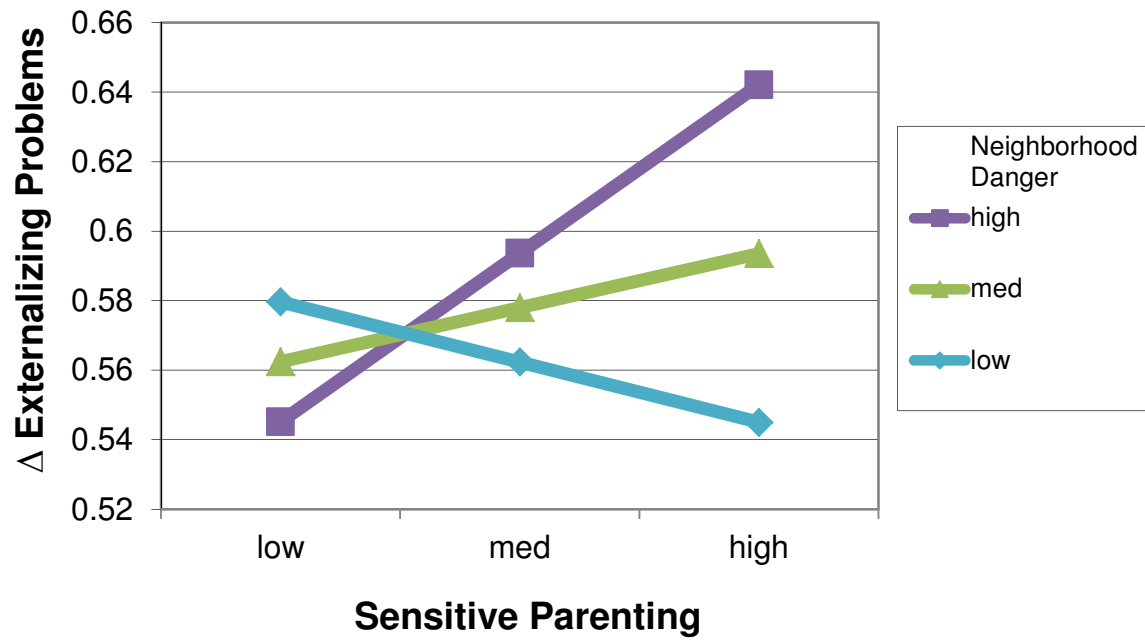


Figure 5. *Graphic decomposition of neighborhood danger x sensitive parenting interaction predicting change in externalizing problems from age 2 to 4*



VITA

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