

Children's Externalizing and Internalizing Behavior and Social Competence predicted by Home Environment: Are These Associations Mediated by Social Competence and Moderated by Child Maltreatment?

by

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Abstract

Home environment is often related to child functioning, including child social competence and child externalizing and internalizing behaviors. However, there is limited research that has examined how child abuse status, child sex, and child social competence can affect these relationships. The purpose of this study is to examine how the home environment, made up of family functioning, parenting attitudes, and parent relationship quality, when children are four years old affects child social competence at child age 10, and if home environment at age 4 and social competence at age 10 influence child externalizing and internalizing behaviors at child age 12. Additionally, this study examines whether these relationships differ according to child abuse status at age 4 and child sex, as well as if child social competence acts as a mediating variable. This study examines 1,204 children and mothers in a high-risk sample. We found that family functioning and parent relationship quality is predictive of child social competence and child externalizing and internalizing behaviors, while parenting attitudes had no effect. Furthermore, the relationship between home environment, child social competence, and child externalizing and internalizing behaviors were moderated by child sex and child abuse status. Child social competence did not mediate the relationship between home environment and child outcome behaviors.

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Introduction

According to the National Child Abuse and Neglect Data System, a total 3.9 million children experienced at least one report of abuse or neglect in the United States in 2013 (US Department of Health and Human Services: ACF, 2013). The effects of child maltreatment have been widely studied; however, the steady and high prevalence rate of child abuse highlights the importance of investigating further the influence of child abuse (Mills et al., 2013). To understand the processes of normal development, it is informative to study high-risk populations and their outcomes (Cicchetti, 1993). The examination of these issues can increase the understanding of the effects of child maltreatment and have major implications for social policy (Salzinger, Feldman, Ng-Mak, Mojica, & Stockhammer, 2001).

Maltreatment research has increased over the past two decades, providing better understanding of the etiology and correlates of child maltreatment (Kim & Cicchetti, 2004). However, one of the limitations of maltreatment research is the lack of agreed-upon operationalization and measurement for the different types of maltreatment (Salzinger et al., 2001). Physical abuse includes children being pushed, grabbed, shoved, hit, or attacked physically in another way, whereas sexual abuse is commonly defined as unwanted sexual experiences (i.e. indecent exposure, sexual threats, touching, attempting sex) committed by an adult (MacMillan et al., 2001). The common understanding of child neglect is the failure of caregivers to provide a child with the basic necessities of his or her life: food, clothing, shelter, and parental monitoring (Mills et al., 2013). Researchers use different combinations of these

criteria for defining maltreatment. Even with this limitation, maltreatment research shows fairly consistent findings.

Evidence exists that abused children's early experiences of social relationships are different from non-abused children's (Bolger & Patterson, 2001; Kim & Cicchetti, 2010; Smetana & Kelly, 1989). Attachment theory suggests that children develop attachment patterns with their initial caregivers that allow them to maintain some form of secure base, and therefore a somewhat safe harbor from which to explore (Bolger & Patterson, 2001). Maltreated children experience aggressive, avoidant, and disorganized behaviors from their caregivers in their home environments, and subsequently develop similar or accommodating attachment behaviors based on these interactions with parents that then carry over later into peer relationships (Kim & Cicchetti, 2010; Salzinger et al., 2001). Maltreated children, ages 6 to 13, have more contentious and less satisfying parent and peer relationships (Capaldi, Dishion, Stoolmiller, & Yoerger, 2001) and are primarily exposed to deviant models of social interaction while growing up (Lansford, Criss, Pettit, Dodge, & Bates, 2003) that, in turn, operate as poor contexts for learning appropriate social skills (Patterson, Reid, & Dishion, 1992).

Research has shown consistently that maltreating parents fail to provide a supportive relationship for infants and children in which they might feel safe and learn how to regulate their arousal; that then, influences the later development of maladaptive functioning in children from ages 6 to 12 years old (Kim & Cicchetti, 2010). In families with high levels of parental conflict, aggression, and hostility, a lack of acceptance, warmth, and support often exists. These risky home environments are associated with children's increased externalizing and internalizing behaviors in childhood and adolescence, as well as lowered social competence throughout childhood (Kouros, Cummings, & Davies, 2010). Problematic peer relationships and peer

rejection are associated with a variety of developmental and psychological difficulties in childhood and adolescence, including increased externalizing and internalizing behaviors (Pedersen, Vitaro, Barker, & Borge, 2007). Children who have high levels of social competence are more accepted by peers, whereas children who have lower levels of social competence are more rejected by peers (Criss et al., 2002).

The direct effects of risky home environments on the increased externalizing and internalizing behaviors and lower social competence have been consistently documented (Kouros et al., 2010), as well as the direct effects of children's social competence on their externalizing and internalizing behaviors (Guerra & Leidy, 2008; Kim & Cicchetti, 2004). However, even with the consistent findings of direct effects of social competence, few studies have examined social competence as a mediator between home environments and child outcomes for maltreated versus non-maltreated children. The existing research is limited and inconsistent (Bornstein, Hahn, & Haynes, 2010; Kiesner, 2002). Also, few researchers have examined the influences of negative home experiences, such as maltreatment and parental conflict, and experiences of peer rejection and acceptance among children in the first years of school (Anthonysamy & Zimmer-Gembeck, 2007).

The following investigation will explore the relationship between home environment (caregiver to caregiver relationship quality; parenting attitudes regarding appropriate expectations, empathy, use of physical punishment, and family roles; basic family functioning; and domestic violence) when the child is 4 years old, the child's social competence at age 10, and the child's externalizing and internalizing behaviors at age 12, controlling for family socioeconomic status and maternal caregiver's marital status. Also, this analysis will investigate child maltreatment (physical abuse, sexual abuse, and neglect) versus no child maltreatment at

age 4 and child sex as moderators of these relationships, as well as the child's social competence at age 10 as a mediator of this relationship. We will use attachment theory as our theoretical framework.

Based on the existing literature, we expect that home environments consisting of domestic violence, inappropriate parenting attitudes, lower family functioning, and more conflict between the caregivers will be associated with children having lower social competence and increased externalizing and internalizing behaviors. We hypothesize that maltreatment and child sex will moderate this relationship with abused children displaying increased externalizing and internalizing behaviors compared to non-abused children. We also expect that a child's social competence at age 10 will mediate the relationship between his or her home environment and outcome behaviors. Children with lower social competence will exhibit increased externalizing and internalizing behaviors, whereas children with higher social competence will exhibit lower levels of externalizing and internalizing behaviors.

The proposed analysis will contribute to this body of research in several ways. First, it examines the relationship between home environment, social competence, and child outcomes in an at-risk population over the span of eight years. Most researchers looking at these relationships focus on cross-sectional designs instead of longitudinal designs. Second, this analysis will use child maltreatment as a moderator to examine how these relationships may differ for children who have been physically abused, sexually abused, or neglected compared to non-abused children. Lastly, by using social competence as a mediating variable, the current analysis will contribute to the limited and inconsistent research that already exists on this subject (Bornstein et al., 2010; Kiesner, 2002).

Review of the Literature

Consequences of Child Maltreatment

The widespread, negative individual, familial, and societal consequences of child maltreatment have been widely studied. However, research has shown the importance of continued investigation of the specific types of child abuse in understanding the long-term effects of childhood maltreatment (Powers, Ressler, & Bradley, 2009; Schultz, Tharp-Taylor, Haviland, & Jaycox, 2009). Research has consistently shown that maltreated children, more than non-maltreated children, evidence greater disturbances in areas ranging from child social functioning to child behavior (Rogosch & Cicchetti, 1994).

The effect of maltreatment on the development of externalizing and internalizing behaviors for children has been well documented. Some research has found that the lasting effects of maltreatment on children's internalizing and externalizing behaviors appear to extend from the victimization itself and not necessarily from family environment (Herrenkohl & Herrenkohl, 2007), while other research suggests that it is the interaction of adverse social environments with child maltreatment (Scerbo & Kolko, 1995). However, research consistently shows the direct effects of child maltreatment on children's externalizing and internalizing behaviors, (Herrenkohl & Herrenkohl, 2007; Keiley, Howe, Dodge, Bates, & Pettit, 2001; Schultz et al., 2009) with abused children being more physically and verbally aggressive, withdrawn, and engaging in more deviant behaviors, thus displaying increased externalizing and internalizing behaviors (Anthonysamy & Zimmer-Gembeck, 2007; Kim & Cicchetti, 2010; Repetti, Taylor, & Seeman, 2002). Based on attachment theory, children exposed to maltreatment by parents and later by peers often develop decreased social competence and

increased externalizing and internalizing behaviors throughout early childhood to adolescence (Lansford et al., 2003; Patterson, Reid, & Dishion, 1992).

Children can experience different types of maltreatment, including physical abuse, sexual abuse, and neglect in their family and community environments. Children of all ages who have been abused exhibit greater difficulties in regulating their emotions, showing increased negative emotion, aggression, deviancy, and overall externalizing behaviors (Kim-Spoon et al., 2012; Kent, 1975; Salzinger et al., 2001). Abused children also show more withdrawal symptoms, depression and anxiety than non-abused children (Anthonysamy & Zimmer-Gembeck, 2007; Tyler, 2002). Girls often develop more internalizing behaviors, such as depression and anxiety, whereas boys develop more externalizing behaviors, such as aggression and deviant behavior (Moynan et al., 2010; Scaramella, Conger, & Simons, 1999). However, some research has shown that girls exhibit both increased internalizing and externalizing behaviors (Loeber, Burke, Lahey, Winters, & Zera, 2000; Sternberg et al., 1993).

Experiencing child maltreatment can also have a serious negative influence on children's social competence and peer relationships. Maltreated children, ages 4 to 11, are perceived by their teachers as having less social competence, engaging in lower levels of prosocial behavior, being less socially accepted by their peers, and displaying higher levels of externalizing problems (Anthonysamy & Zimmer-Gembeck, 2007; Rogosch et al., 1994). Abused and neglected children respond to their peer interactions with either more aggression or become more withdrawn than non-abused children, leading to increased peer conflict and more peer rejection (Coie & Kupersmidt, 1983; Howes & Eldredge, 1985; Kim & Cicchetti, 2004; Parker & Herrera, 1996). Research has shown that friendships can act as a buffer for children who have experienced abuse; however, because of lower social competence abused children tend to be

more rejected and have fewer friendships (Pettit, 2000). Therefore, abused and neglected children may be at a higher risk for poor peer relationships and low social competence because of their inappropriate interactions with their peers (Howes & Eldredge, 1985; Howes & Espinosa, 1985) that are influenced by their insecure attachments to their caregivers (Kim & Cicchetti, 2010).

Risky Home Environments That Exacerbate the Consequences of Child Maltreatment

Families characterized by high levels of parental conflict, aggression, and hostility are often lacking in the acceptance, warmth, and support needed to help prevent some of the negative effects of maltreatment, leading to more damaging outcomes for children's psychological health (Criss, et al., 2002; Kouros et al., 2010; Repetti et al., 2002). Home environments that consist of caregivers with inappropriate parenting attitudes, poor caregiver relationship quality, poor family functioning, and expose children to domestic violence can be classified as risky home environments (Lutenbacher, 2002; Repetti et al., 2002). Children in single-parent families or female-headed households are more at risk to develop negative outcomes as well (Repetti et al., 2002). Risky home environments have been shown to have direct effects on children's externalizing and internalizing behaviors, as well as a direct effect on children's social competence (Kouros et al., 2010). Risky home environments, as described above, in the presence of child maltreatment and/or neglect, only exacerbate the deleterious effects on children (Bolger & Patterson, 2001; Kim & Cicchetti, 2010).

Mothers who lack social support from their significant others are at risk for having more inappropriate attitudes about parenting children and adolescents, as well as being emotionally unavailable and unable to show warmth to their infants and children, placing their children at risk for developing insecure attachments (MacKenzie, Kotch, & Lee, 2011). Maternal and paternal

caregivers who engage in inconsistent discipline techniques, often criticize their children, are easily emotionally aroused, or engage in parent-child role reversal, display more inappropriate parenting attitudes (Lutenbacher, 2002). These inappropriate parenting attitudes have been shown to be associated with lower quality home environments that include more conflict and violence (Daggett, O'Brien, Zanolli, & Peyton, 2000). Research shows that from early childhood to adolescence, children who are exposed to violence and harsh family environments, including parental conflict or domestic violence, have higher levels of externalizing and internalizing behaviors (Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008; Moylan et al., 2010). These children are at risk for developing conduct problems, as well as more depression and anxiety.

The relationship between caregivers can also influence child outcomes. Poor relationship quality between caregivers consists of inter-parental withdrawal and hostility (Sturge-Apple, Davies, & Cummings, 2006). Parental conflict is associated with children's increased externalizing and internalizing behaviors, especially aggression and withdrawal throughout childhood and adolescence. Appropriate parenting and family cohesion have been shown to provide a supportive context for children to develop and sustain social competence (Leidy, Guerra, & Toro, 2010), however, children living in hostile home environments respond to peer interactions with aggression or avoidant behaviors (Boyum & Parke, 1995). Risky environments provide children with few opportunities to learn the appropriate skills needed to facilitate successful interactions with peers (Repetti et al., 2002). This difficulty in interacting with peers increases young maltreated children's risk for developing poor peer relationships, lower social competence, and increased externalizing and internalizing behaviors throughout childhood to adolescence (Kim & Cicchetti, 2010).

Social Competence as a Mediator

Social competence characterizes the social and emotional skills and behaviors that children need for positive developmental outcomes and peer relationships (Bierman & Welsh, 2000). Most research categorizes social competence as the ability for children to exercise self-control and monitor their negative emotions, as well as the ability to use social problem-solving skills (Wang, 2009). Research suggests that social competence has an important role in the promotion of positive youth development and the prevention of risky behaviors during childhood and adolescence (Bradshaw, O'Brennan, & McNeely, 2008). Cicchetti and Schneider-Rosen (1986) suggest that failure to obtain social competence, often a result of maltreatment or neglect in childhood, can create vulnerabilities for children that influence their development of negative outcomes in the future. Abused and neglected children have been shown to have lower social competence compared to non-abused children, responding to their peer interactions with more aggression and/or more withdrawal that increases their risk for experiencing peer conflict and greater peer rejection (Kim & Cicchetti, 2004; Kim & Cicchetti, 2010). Problematic peer relationships and peer rejection are associated with a variety of developmental and psychological difficulties in childhood and adolescence, including increased externalizing and internalizing behaviors, depression, and anxiety (Pedersen et al., 2007).

During infancy and toddlerhood, maltreated children who have developed insecure attachment relationships with their caregivers have difficulties with emotion regulation, thus leading them to respond to arousal and social situations with aggression, withdrawal, or freezing (Keiley, 2002). This difficulty in emotion regulation increases young maltreated children's risk for developing poor peer relationships, lower social competence, and increased externalizing and internalizing behaviors throughout childhood into adolescence (Kim & Cicchetti, 2010). The

lack of social skills leave young maltreated children with little social competence throughout middle school, thus amplifying the externalizing and internalizing behaviors of these at-risk children as they continue into adolescence (Lansford et al., 2003) and possibly increasing the likelihood of them developing friendships with peers who engage in deviant behaviors (Keiley, 2002). However, research has also consistently shown how children's social competence is directly associated with their externalizing and internalizing behaviors. The direct effect relationship between social competence and externalizing behaviors in children is not as well documented as the relationship between social competence and internalizing behavior (Schultz et al., 2009).

Guerra and Leidy (2008) found that child social competence is important for children's adjustment, with higher levels of social competence being linked to lower levels of aggression, violence, and other problem behaviors during childhood and adolescence. Children who exhibit lower levels of social competence in early childhood (ages 4 to 6) exhibit increased levels of externalizing and internalizing problems in late childhood (ages 8 to 11) and adolescence (ages 12 to 14) (Bornstein et al., 2010; Burt, Obradovic, Long, & Masten, 2008; Schultz et al., 2009). Lower social competence has been associated with more depressive symptoms and antisocial behavior (Kim & Cicchetti, 2004). Higher levels of social competence are associated with peer acceptance, whereas lower levels of social competence are associated with peer rejection (Criss et al., 2002). Children who are rejected by peers tend to display more aggressive and disruptive behavior, as well as more overall externalizing behaviors and are at an increased risk for behavioral and emotional problems (Kupersmidt & Patterson, 1991; Masten & Coatsworth, 1998; Patterson, DeBaryshe, & Ramsey, 1989).

Rockhill, Stoep, McCauley, and Katon (2009) found that low social competence served as a risk factor for the development of comorbid symptoms (e.g. depression, conduct problems), but also as a mediating pathway to poor functional outcomes among children with comorbid symptoms. Social competence has also been shown to mediate the links between predictors and negative child outcome behaviors, though the research is inconsistent and limited (Bornstein et al., 2010; Kiesner, 2002). Thus, we examine whether children's social competence at age 10 mediates the relationship between their home environment at age 4 and their externalizing and internalizing behavior at age 12.

Research Questions

Do children's home environments at age 4, including family functioning, maternal caregivers' parenting attitudes, relationship quality between maternal caregivers and significant others, and history of domestic violence, predict children's social competency at age 10 and does their social competency then predict their externalizing and internalizing behaviors at age 12, controlling for family income and race? Furthermore, does social competency mediate the effect of home environment on child outcomes? Does the occurrence of maltreatment at age 4 or child sex moderate these relationships across time (See Figure 1)?

Methods

Data for this analysis were collected as part of the Consortium of Longitudinal Studies in Child Abuse and Neglect (LONGSCAN) project. LONGSCAN is a longitudinal study looking at the etiology and impact of child maltreatment in high-risk samples of children, from childhood to young-adulthood.

Participants

Participants ($N=1204$) were recruited as caregiver-child dyads from 5 sites across the United States located in the East (EA; 13%), Midwest (MW; 36%), South (SO; 14%), Southwest (SW; 9%), and Northwest (NW; 28%). Each site recruited participants through different sampling criteria that were chosen to represent varying levels of exposure to maltreatment. The East site recruited low-income children from pediatric clinics who experienced risk in their first year: one group defined by a child factor of inadequate growth in the first two years of life, one group defined by a parent factor of HIV infection or drug use, and a comparison group solely at risk because of their low-income status. The Midwest site focused on families reported to Children's Protective Services (CPS) and neighborhood controls. The South site recruited children identified as high-risk at birth by a state public health tracking effort and a group of matched non-reported children. The Southwest site focused on children placed in foster care. The Northwest site recruited children identified as moderate-risk following a report to CPS for suspected child maltreatment. Site is used as a control variable in this study. This study follows children and their families across eight years, from ages 4 to 12.

Forty-nine percent (49%) of the children are African American ($n=586$), 28% are European-American ($n=336$), and 23% Hispanic ($n=282$). Of the children in this sample, 52% are female ($n=624$). Race is used as a control variable in this study. The majority of families are of low-income status, with 78% making less than \$20,000 per year ($n=843$). Family income is used as a control variable in this study. The sample is made up of mostly single-parent families ($n=909$; 76%). We examined differences in the proposed model across four groups: male ($n=261$; 22%) and female ($n=314$; 26%) children who were reported as having allegations of being physically abused, sexually abused, neglected, or combinations of these abuses ($n=575$;

48%) and male ($n=319$; 26%) and female ($n=310$; 26%) children who had no reported allegations of being maltreated in any fashion ($n=629$; 52%), controlling for family income, race, and geographic location (site).

Procedure

Face-to-face interviews with caregivers and children were administered when children were 4 years old. At age 10, interviews were conducted by phone and at age 12, the Audio-Computer Assisted Self Interview (A-CASI) system was chosen to offer participants the greatest privacy with their responses. A lead abstractor trained from each site conducted reviews of Case Records and Maltreatment Data Forms from Child Protective Services and Central Registry records to gather information about the number of physical abuse, sexual abuse, and neglect allegations for when the child was 4 years old. Information about the child's home environment at age 4 was obtained through interviews with the child's primary maternal caregiver: information about family functioning was obtained using the Family APGAR (Smilkstein, 1978), the caregiver's history of victimization by husband was obtained using the Caregiver's History of Loss and Victimization (Hunter & Everson, 1991), the caregiver's attitudes toward parenting was obtained using the Adult-Adolescent Parenting Inventory (Bavolek, 1984), and the caregiver's relationships quality with a significant other was obtained using the Autonomy and Relatedness Inventory (Schaefer & Edgerton, 1982).

Caregivers completed paper forms of the Child Behavior Checklist (Achenbach, 1991) to assess for their child's internalizing and externalizing behaviors at age 12, unless they required assistance in reading the instruments, in which the questionnaires were given orally. The child's teacher completed paper forms of the Teacher's Estimation of Child's Peer Status (Lemerise & Dodge, 1990) to assess for the child's peer status at age 10.

Outcome Measures

Child Behavior Checklist (CBCL). Child emotional and behavior functioning were assessed at age 12 using the Child Behavior Checklist (Achenbach, 1991). This study looks at the Internalizing Problems and Externalizing Problems of the CBCL. The Internalizing Problems subscale includes the CBCL subscales of Social Withdrawal, Somatic Complaints, and Anxiety/Depression Scales, while Externalizing Problems subscale combines the Delinquent Behavior and Aggressive Behavior scales. The Internalizing Problems subscale consists of 33-items, with possible scores ranging from 0 to 62, while the Externalizing Problems subscale consists of 33 items with possible scores ranging from 0 to 66. The CBCL items are coded from 0 to 2 (0 (*not true*), 1 (*somewhat true*), or 2 (*very true or often true*)) based on caregiver reports of observed behaviors over the last six months. The CBCL has been shown to have internal and test-retest reliability established by Achenbach (1991) with an α reliability coefficient of .89 for externalizing and an α reliability coefficient of .88 for internalizing in this study.

Predictor Measures

Adult-Adolescent Parenting Inventory (AAPI). Caregiver's parenting and child-rearing attitudes were assessed at age 4 using the Adult-Adolescent Parenting Inventory (Bavolek, 1984). The AAPI consists of 32 items grouped into renamed subscales: Inappropriate Parental Expectations of the Child, Lack of Empathy towards Children's Needs, Parental Value of Physical Punishment, and Parent-Child Role Reversal. To reflect more accurately the behavior being measured, LONGSCAN renamed the subscales as Appropriate Expectations, Appropriate Empathy, Rejection of Physical Punishment, and Appropriate Family Roles. The items are scored from 1 to 5 (1 (*strongly agree*), 2 (*agree*), 3 (*uncertain*), 4 (*disagree*), or 5 (*strongly disagree*)) based on caregiver reports of being a parent and raising children. The AAPI displayed

good reliability in this study ($\alpha = .93$). This measure has good construct validity as well (Bavolek, 1984).

Autonomy and Relatedness Inventory (ARI). Caregiver's relationship quality with a significant other at age 4 was assessed using the Autonomy and Relatedness Inventory developed by Schaefer & Edgerton (1982). The ARI includes 30 items that comprise six scales: Relatedness, Hostile Control, Acceptance, Detachment/Rejection, Control, and Autonomy. Two subscales were used in this study, one showing a Positive Relationship that includes the original subscales of Relatedness, Acceptance, and Autonomy (α reliability = .86), and one for showing a Negative Relationship (α reliability = .86) that includes the original subscales of Hostile Control, Detachment/Rejection, and Control. Items are scored from 1 to 5 (1 (*not at all like him*), 2 (*very little like him*), 3 (*somewhat like him*), 4 (*much like him*), or 5 (*very much like him*)), with possible scores ranging from 4 to 20. The ARI has been shown to have good construct validity as well (Schaefer & Edgerton, 1982).

Caregiver's History of Loss and Victimization. Caregivers' history of physical assault at age 4 was assessed using the Caregiver's History of Loss and Victimization, which was developed by Hunter and Everson (1991). A score of 1 on any of the items indicates a history of physical assault by the caregiver's husband/partner in adulthood; a score of 0 indicates an absence of physical assault by the caregiver's husband/partner in adulthood. The Caregiver's History of Loss and Victimization has been established to be a valid measure of history of physical assault in adulthood (Hunter & Everson, 1991).

Family APGAR. Family functioning at age 4 was assessed using the Family APGAR (Smilkstein, 1978). The Family APGAR consists of five parameters of family functioning: Adaptability, Partnership, Growth, Affection, and Resolve. Items were originally scored on a

scale from 0 to 2, however LONGSCAN changed the scale for the responses to be scored from 1 to 3 (1 (*hardly ever*), 2 (*some of the time*), or 3 (*almost always*)). Scores can range from 5 to 15. The Family APGAR has a reliability coefficient of .84 in this study and has acceptable validity (Smilkstein, 1978).

Mediator Measure

Teacher's Estimation of Child's Peer Status. Child's peer status at school was estimated by teacher's reports using the Teacher's Estimation of Child Peer Status (Lemerise & Dodge, 1990). The instrument includes 7 items assessing for how well the child is liked by peers, the child's social skills, and how many nominations they would receive from fellow peers. This study focused on the item that assessed for how well the child was liked at school. This item was scored from 1 to 5 (1 (*very well liked*), 2 (*above average liked*), 3 (*right in the middle*), 4 (*below average liked*), or 5 (*liked very well*)). The Teacher's Estimation of Child's Peer Status has a reliability of .86 in this study and has shown acceptable validity (Lemerise & Dodge, 1990).

Moderator Measure

Child History of Abuse: To code official Child Protective Services records of child physical abuse, sexual abuse, and neglect, a LONGSCAN modified version of the Modified Maltreatment Classification System was used (MMCS; Barnett, Manly, & Cicchetti, 1993; English & the LONGSCAN Investigators, 1997). This study defines child physical abuse, sexual abuse, and neglect as any allegation of abuse or neglect made at age 4 or earlier, as reported by Child Protective Services. Previous research indicates no significance differences in behavioral and emotional outcomes for children who have an alleged report versus a substantiated report (Hussey et al., 2005). Therefore, this study uses allegations rather than substantiations of abuse as indicators of child physical abuse, sexual abuse, and neglect. A score of 1 on any of the items

indicates any history of child abuse or neglect, whereas a score of 0 indicates an absence of child abuse or neglect.

Plan of Analysis

Preliminary Analysis: Univariate and Bivariate Analysis

Descriptive statistics including means, standard deviations, and distributions were examined for all continuous study variables. Skewed variables were transformed before use. Correlations among all variables were examined.

Main Effects Model (See Figure 2)

We fit the main effects model using Mplus (Version 6: Muthen & Muthen, 1998-2010). Mplus allows for the inclusion of participants with missing data by using full information maximum likelihood (FIML) estimation (Enders, 2010; Muthen & Muthen, 1998-2010), drawing on the theory by Little and Rubin (1987). When using FIML estimation with missing data, observations are sorted into missing data patterns and each parameter is estimated using all available data for that particular parameter. Muthen and Muthen (1998-2010) recommended that the amount of missing data not exceed 90%; in other words, they recommended that there be at least 10% available data in the observed information matrix. In this main effects model, we included the control variables for family income, race, and geographic site.

Test of Mediation

A variable is considered a mediator if the variations in levels of the predictor significantly account for variations in the presumed mediator; variations in the mediator significantly account for variations in the outcome, and simultaneously, a previously significant relationship between the predictor and the outcome is no longer significant (Baron & Kenny, 1986). We fit the models required to ascertain if mediation exists in Mplus.

Test of Moderation

After assessing for possible mediation, between children's home environment at age 4, social competency at age 10, and child outcomes at age 12, multi-group analysis was used to test the moderation of the hypothesized model across the four groups of children: abused female, abused male, non-abused female, and non-abused male children, simultaneously. We tested each path for significant differences across the four groups by conducting delta chi-square tests.

Results

Descriptive Statistics

The descriptive statistics for all the study variables for the full sample are in Table 1a, for the abused group in Table 1b, and for the non-abused group in Table 1c. The descriptive statistics for the control variables are in Table 1d. The variables for family functioning, parenting attitudes, positive relationship between caregivers, child social competence, and child externalizing behaviors were fairly symmetrically distributed, but the variable for the negative relationship between caregivers and the variable for child internalizing behaviors were skewed. We will continue to use the labels negative relationship between caregivers and child internalizing behaviors, but to create more normal distributions for use in multivariate analyses these variables were log transformed.

The variable for total income of the families was skewed toward lower values, with the majority of families making less than \$20,000 per year. The mean family income for the families was around \$12,000 per year, on average. To create a more normal distribution for use in multivariate analyses, total family income was log transformed. Approximately equal numbers of male ($n = 580$) and female ($n = 624$) children were included, with the majority of the children being African-American or Hispanic ($n = 868$) compared to European-American ($n = 336$). The majority of the mothers of the children in our study were not married ($n = 909$).

Bivariate Analysis

Pearson correlations were estimated among all variables used in our analysis. Results are presented in Table 2. Child externalizing and internalizing behaviors at child age 12 are

significantly negatively related to family functioning at child age 4 and child social competence at age 10. Child social competence at age 10 is significantly, negatively related to positive relationship between caregivers at child age 4. Therefore, for these relations, high levels of one variable are associated with lower levels of the others, and vice versa. Child externalizing and internalizing behaviors at age 12 are significantly, positively related to a negative relationship between caregivers at child age 4. Therefore, high levels of one of the variables are associated with high levels of the other, and vice versa. Parenting attitudes at child age 4 are not significantly correlated with any outcome variables. Bivariate plots of the relationships between these associations were also examined, and these plots denote linear relationships between each of these outcome variables and the predictor variables at child age 4.

Multivariate Analysis

We fit the main effects model that included all the control variables (family income, race, and site). Mother's domestic violence had no effect therefore it was removed from further analyses. The reduced main effects model fit had somewhat adequate fit ($\chi^2/df=654/39=16.7, p = .00$; RMSEA = .11, $p = .00$). In this model, family income and race were used as control variables on all the predictor variables (family functioning, good parenting, positive parent relationship, negative parent relationship), but site was only used to control good parenting because it was only related to the parenting variable ($r=-.21_{\text{east}}$ to $.31_{\text{west}}$).

The main effects model is illustrated in Figure 2. Because we tested for moderation of this model by sex of the child and their abuse history, we will not dwell on this main effects model as it is superseded by the model in which we tested for moderation by child sex and abuse status. Briefly, family functioning at child age 4 predicts social competence ($\beta = .04, r = .09, p < .05$) at child age 10 and child externalizing ($\beta = -.36, r = -.11, p < .01$) and internalizing

behaviors ($\beta = -.06, r = -.19, p < .001$) at child age 12. A positive relationship between caregivers at child age 4 predicts social competence ($\beta = -.07, r = -.22, p < .001$) at child age 10 and child internalizing behaviors ($\beta = .04, r = .16, p < .01$) at child age 12. A negative relationship between caregivers at child age 4 predicts social competence ($\beta = -.36, r = -.11, p < .05$) at child age 10 and child externalizing ($\beta = 4.05, r = .16, p < .001$) and internalizing behaviors ($\beta = .42, r = .16, p < .001$) at child age 12. At age 10, child social competence predicts child externalizing ($\beta = -1.74, r = -.21, p < .001$) and internalizing behaviors ($\beta = -.10, r = -.12, p < .01$) at child age 12. Controlling for all else in the model, 6.8% of the variance in child social competence at child age 10, and 10.1% of the variance in child externalizing behavior and 11.8% of the variance in child internalizing behavior at child age 12 is predicted by home environment at child age 4.

We tested the moderation of the main effects model simultaneously by child sex and child's maltreatment history, using delta-chi-square tests to determine which estimates were the same across all groups and which were not (See Figures 3-6). The final model fit statistics for this multi-group model with control variables indicate adequate model fit ($\chi^2/df = 1447/231 = 6.26, p = .00$; RMSEA = .13, $p = .00$). The final fitted multi-group model indicates that the relationship between child social competence and internalizing and externalizing behaviors is not moderated by maltreatment status and child sex. Some of the regression coefficients for home environment variables predicting child social competence at child age 10 and externalizing behaviors at child age 12 are significantly different across child sex and child's maltreatment status, while others were the same across groups.

Child maltreatment status and child sex moderated the relationship between a positive relationship between caregivers at age 4 and child social competence at age 10 and child externalizing behaviors at age 12, but not child internalizing behaviors at age 12. For all groups,

a positive relationship between caregivers significantly predicts child internalizing behaviors at child age 12 ($\beta = .04, r = .14, p < .01$). However, a positive relationship between caregivers significantly predicts social competence at age 10 only for abused, female children ($\beta = -.12, r = -.38, p < .001$), abused, male children ($\beta = -.04, r = -.14, p < .01$), and non-abused, male children ($\beta = -.08, r = -.27, p < .001$). If caregivers have a positive relationship with each other, then the children's levels of social competence will be lower at age 10, and vice versa. A positive relationship between caregivers also predicts externalizing behaviors at child age 12 for abused, male children ($\beta_{FAB} = .34, r = .11, p < .05$). If at age 4 all children have caregivers who have a positive relationship with each other, then the children's levels of internalizing behaviors eight years later appear to be higher, and vice versa ($\beta = .04, r = .14, p < .01$).

Child maltreatment status and child sex moderated the relationship between a family functioning at age 4 and child social competence at age 10 and child internalizing behaviors at age 12, but not child externalizing behaviors at age 12. For all groups, family functioning significantly and equally predicts child externalizing behaviors ($\beta = -.39, r = -.12, p < .001$), but for internalizing behaviors the effects were different across groups ($\beta_{FAB} = -.07, r = -.21, p < .001$; $\beta_{FNA} = -.07, r = -.19, p < .001$; $\beta_{MAB} = -.05, r = -.14, p < .001$; $\beta_{MNA} = -.39, r = -.22, p < .001$) at child age 12, however, family functioning only significantly predicts child social competence at age 10 for abused, female children ($\beta_{FAB} = .06, r = .17, p < .01$) and non-abused, male children ($\beta_{MNA} = .05, r = .11, p < .05$). If at age 4 children have families who function very well, then the child's levels of internalizing and externalizing behavior eight years later are lower, and vice versa. Family functioning appears to have the greatest effect on internalizing behaviors for non-abused, male children and the least effect for abused, male children. Family functioning has the greatest effect on child social competence for abused female and non-abused

male children and no effect for abused male or non-abused female children. If at age 4 children have families who function very well, then abused, female children and non-abused, male children appear to have higher levels of social competence, and vice versa.

Child maltreatment status and child sex did not moderate the relationship between a negative relationship between caregivers at age 4 and child social competence at age 10 or child externalizing and internalizing behaviors at age 12. For all groups, a negative relationship between caregivers significantly predicts social competence at child age 10 ($\beta = -.39, r = -.14, p < .05$) and child internalizing ($\beta = .39, r = .16, p < .01$) and externalizing behaviors ($\beta = 3.73, r = .12, p < .01$) at child age 12. If at age 4 children have caregivers with a more negative relationship, then the children's levels of social competence six years later are lower and the children's levels of internalizing and externalizing behavior eight years later are higher, and vice versa. Child maltreatment status and child sex did not moderate the relationship between child social competence at age 10 and child externalizing behaviors at age 12 ($\beta = -1.56, r = -.18, p < .001$), or the relationship between child social competence at age 10 and child internalizing behaviors at age 12 ($\beta = -0.09, r = -.10, p < .01$). If at age 10 children have higher levels of social competence, then they have lower levels of internalizing and externalizing behaviors two years later, and vice versa. One result from this study was difficult to interpret. Parenting, controlling for all else in the model, had no effect on either child competence at age 10 or problem behaviors at age 12 across all groups of children.

Residual variances were constrained to be equal and delta-chi square tests were used to determine whether R^2 values were different across groups. Based on this analysis, the amounts of variance accounted for in child social competence at child age 10 and child externalizing behaviors at child age 12 are significantly different across groups. Controlling for all else in the

model, the four home environment variables at child age 4 predict the largest proportion of variance in child social competence for abused, female children (18.7%), followed by non-abused, male children (10.2%), abused, male children (5%), and non-abused, female children (2.1%). Controlling for all else in the model, the four home environment at child age 4 predicts the largest proportion of variance in child externalizing behaviors for non-abused, male children (11.6%), followed by non-abused, female children (10.7%), abused, female children (9.0%), and abused, male children (6.3%). The amount of variance explained in child internalizing behaviors at child age 12 did not vary according to child sex or child maltreatment status.

We tested if the effects of the home environment variables at age 4 taken together on children's internalizing and externalizing behaviors at age 12 was mediated by social competence at age 10. The delta chi-square test indicated that mediation did not exist ($\Delta\chi^2 = 48.6, \Delta df=8, p=.000$).

Discussion

We hypothesized that home environments consisting of risky characteristics, including inappropriate parenting attitudes, poor family functioning, and more conflict between caregivers, would be associated with children having lower social competence and increased externalizing and internalizing behaviors; also, lower levels of social competence would be associated with increased levels of externalizing and internalizing behaviors. We also expected that child abuse status would moderate these relationships, with abused children experiencing increased externalizing and internalizing behaviors, as well as displaying lower levels of social competence. We also hypothesized that child social competence at age 10 would mediate the relationship between home environments at child age 4 and child externalizing and internalizing behaviors at age 12. Some, but not all of our results support these hypotheses.

Children who grow up in families who function well together and have caregivers who have lower levels of hostility between them, are more socially competent at age 10 and have fewer problem behaviors by age 12. Our results indicate support for previous research that has established that children who live in households with poor family functioning or with more hostility and negative behavior between caregivers, display less social competence (Criss et al., 2002; Kouros et al., 2002). This relationship between family functioning and social competence exists only for abused female and non-abused male children. Risky home environments can expose children to deviant models of social interaction other than abuse, such as aggressive or avoidant behavior, that can then be carried over into children's peer relationships as they get older (Kim & Cicchetti, 2010; Lansford et al., 2003). Therefore, experiencing high levels of

conflict in the family system may have a similar impact on social competence for non-abused males as experiencing abuse or multiple risk factors has on abused, female children. Perhaps this is evidence that experiencing social support from parents or caregivers, specifically warmth and acceptance in the family, is more beneficial for the development of positive peer relationships (Haskett, Nears, Ward, & McPherson, 2006), especially for abused female and non-abused, male children. Future research should examine whether specific aspects of family functioning, such as affection, partnership, or resolving problems has a greater influence on child social competence.

Previous research also indicates that children in risky home environments consisting of poor family functioning or who have caregivers with negative relationships with each other show higher levels of externalizing and internalizing behaviors (Herrenkohl et al., 2008; Moylan et al., 2010). Our results support these findings. In our study, children who live in poor functioning families and have caregivers with a negative relationship quality have more problem behaviors at age 12 across all groups of children. Family functioning has a fairly large effect on non-abused, male children's problem behaviors. Overall, children who are exposed to home environments with multiple risk factors are at risk for developing more negative outcomes (Repetti et al., 2002), but perhaps this is evidence that male children are more vulnerable to developing negative outcomes as a result of relationship conflict early within the family system than female children (Davies & Lindsay, 2004; Loukas, Zucker, Fitzgerald, & Krull, 2003). Research shows that single-parent mothers view male children as being more problematic than female children, leading them to having poorer parent-child relationships (Murry, Bynum, Brody, Willert, & Stephens, 2001). A lack of warmth and support from a maternal caregiver, plus the absence of a father figure may leave these male children at risk for not being protected from the negative outcomes of risky home environments (Haskett et al., 2006). Future research can benefit from

examining whether children in risky home environments during early childhood have social support from grandparents or other kin to offset the lack of parental support.

Children with lower levels of social competence at age 10 display higher levels of externalizing and internalizing behaviors at age 12, supporting previous research (Bornstein et al., 2010; Guerra & Leidy, 2008; Kim & Cicchetti, 2004). Maltreated children have difficulties with emotion regulation, leading them to be more sensitive to arousal and responding to situations in more aggressive or withdrawing ways (Keiley, 2002). The families in this study are particularly an at-risk population. The children in our study share experiences in family functioning, family structure, and low socioeconomic status. Perhaps this is evidence that experiencing risky environmental and social factors can place children at risk for developing negative behavioral outcomes whether abuse has occurred or not (Repetti et al., 2002).

Although a positive relationship between caregivers has been shown to be predictive of greater child social competence and lower levels of child externalizing and internalizing behaviors (Boyum & Parke, 1995; Leidy et al., 2010), surprisingly, our results show that children whose parents report a positive relationship with each other were *less* socially competent at age 10, except for females who had not been abused. In addition, these caregivers with positive relationships with their partners have children who appear to have more problem behaviors at age 12. Perhaps this is evidence that when children experience multiple risk factors, including single-parent families, poverty, unstable home environments, and insecure attachments to caregivers, they are less protected by protective factors such as having caregivers who have positive relationships with each other (Masten, Garmezy, Tellegen, Pellegrini, Larkin, & Larsen, 2006). Also, the majority of families in this study consisted of single-parent mothers. Children may have been exposed to several different caregiver dyads and therefore, may not have

experienced a positive caregiver relationship for an extended period of time, leading to it not being a protective factor (Ackerman, D'eraimo, Umylny, Schultz, & Izard, 2001).

Contrary to our hypotheses, child social competence at age 10 did not mediate the relationship between home environment and child outcome behaviors. Home environment during early childhood influences children's outcome behaviors in later adolescence. This may be evidence that early experiences with caregivers have more influence on later outcome behaviors than concurrent experiences with peers. Children in risky home environments are more likely to develop insecure attachments to their caregivers, leading them to develop avoidant, aggressive, or disorganized patterns of interacting with others (Keiley, 2002). Children with insecure attachments have difficulties with regulating their emotions in arousing situations, possibly leading them to have lower levels of social competence and displaying more problematic behaviors (Kim & Cicchetti, 2010). Therefore, perhaps emotion regulation is an important factor that future research can benefit from, when including it in examining these relationships.

Our findings that child sex and child abuse status moderate the associations between home environment, social competence, and externalizing and internalizing behaviors are particularly interesting. Previous research shows that abused children experience riskier households, lower social competence, and higher levels of externalizing and internalizing behaviors than non-abused children (Anthonysamy & Zimmer-Gembeck, 2007; Kim & Cicchetti, 2010), and that male children tend to display higher levels of externalizing behaviors, while female children display higher levels of internalizing behaviors (Moynan et al., 2010; Scaramella et al., 1999). However, we found that for the relationships that were moderated by these variables, the associations were greatest for abused, female children and non-abused, male children. Research shows that children's behaviors most often mirror the parental behaviors of

the same-gender parent (Crockenberg & Langrock, 2001). Our study consisted of single parent, mother-child families, with some children being exposed to male parental figures that were their mothers' boyfriends. Female and male children were exposed to one consistent mother figure, whereas these children experienced the inconsistent presence and absence of a father figure throughout their childhood (Ackerman et al., 2001). This inconsistency may place male children at a higher risk to developing insecure attachments with caregivers, being exposed to deviant models of social interactions, and therefore developing lower social competence and higher externalizing and internalizing behaviors (Kim & Cicchetti, 2010; Loukas et al., 2003).

For our study, home environment at child age 4 was comprised of family functioning, parenting attitudes, and the positive and negative relationship quality between caregivers. Our results showed that parenting attitudes did not significantly predict child social competence or child outcome behaviors for any groups of children. Therefore, it appears that the relationship between home environment, child social competence, and child externalizing and internalizing behaviors is determined by relationships, specifically in this case, the negative and positive relationships between caregivers and the overall family functioning, but not the attitudes about parenting that the mothers had. Future research can benefit by examining whether these relationships have the same effect for children in two-parent families, single-father families, or foster families, as well as, whether a positive caregiver relationship could act as a protective factor similar to family functioning in these other types of families.

Although all results must be considered in terms of the small amount of variance in child social competence, externalizing, and internalizing behavior that is explained by child home environment, this study provides evidence for the need to consider specific variables of home environments in the understanding and treatment of child social, emotional, and behavioral

difficulties. Our study used four separate measures to construct the home environment at child age 4 and our results showed that family functioning and the relationship quality between caregivers significantly predicted our child outcomes. Future investigations should consider what types of relationships, whether it is specifically family functioning, the relationship quality between caregivers, or other relationships directly effecting children that affects child social, emotional, and behavioral outcomes.

This investigation is limited because our study only examined mother-child dyads. However, at-risk children are more likely to have non-traditional caregivers, including grandparents, single fathers, or foster parents. Even though the data were obtained using self, mother, or teacher report, the variables were not constructed using multiple informants. Last, we did not consider information about the perpetrators of the sexual abuse or the severity, duration, or timing of child abuse or neglect. These limitations should be addressed in future studies.

Strengths of this study include having social competence as a mediating variable for the relationship between home environment and child outcome behaviors. This study was able to provide more evidence to the current, somewhat scant literature. The validity of our findings is strengthened by the large sample size and longitudinal design spanning eight years. The sample of mother-child dyads used in this investigation is similar across socioeconomic status, community environments, marital status, and other demographic variables; one of the only differences in the sample is whether the child has experienced abuse or not. This decreases the amount of confounds between the child abuse status groups.

This investigation informs future research to examine how family relationships affect child social competence and child outcome behaviors for abused and non-abused children. Even though research is inconsistent in determining whether male or female children are more

vulnerable to early childhood experiences, research does give support that male children who are exposed to family conflict in early childhood, whether abuse has occurred or not, can be more vulnerable to displaying more externalizing and internalizing behaviors in later childhood (Davies & Lindsay, 2004). This male-vulnerability hypothesis should be examined further due to our inconsistent findings in regards to child sex being a moderating variable. Also, future research should examine other factors that place children at risk for developing negative outcome behaviors, such as the absence of a father, the child's emotion regulation, or the mother's psychopathology, to determine if these factors have more of a direct effect on these outcomes than maltreatment.

Based on previous research, it appears that the effects of risky home environments in early childhood are enduring for all groups of children (Repetti et al., 2002). However, there are differences in some findings based on the child's sex and child's abuse status. In general, we found that family functioning and a negative or positive relationship between caregivers predicts child social competence, externalizing, and internalizing behaviors. We also found that child social competence predicts child externalizing and internalizing behaviors. Some of these relationships varied according to child sex and child abuse status, but not all. Most of these relationships were greatest for abused, female children and non-abused, male children. In conclusion, we found that some aspects of home environments are related to child social, behavioral, and emotional adjustment, and that child sex and child abuse status matter to a degree.

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Table 1a

Descriptive statistics for main predictor, mediator, and outcome variables in the full sample (N=1204)

	Overall Sample (N = 1204)	
	M	(SD)
Main Predictors (Age 4)		
Family Functioning	12.20	(2.66)
Good Parenting	3.75	(0.56)
Positive Relationship	14.99	(3.37)
Negative Relationship	2.11	(0.35)
Mediator Variable (Age 10)		
Child Social Competence	3.29	(1.08)
Child Outcomes (Age 12)		
Externalizing Behaviors	11.32	(8.96)
Internalizing Behaviors	1.77	(0.88)

Table 1b

Descriptive statistics for main predictor, mediator, and outcome variables for abused children (N=575)

	Males (N = 261)		Females (N = 314)	
	M	(SD)	M	(SD)
Main Predictors (Age 4)				
Family Functioning	11.97	(2.60)	11.97	(2.80)
Good Parenting	3.86	(0.56)	3.82	(0.57)
Positive Relationship	15.08	(3.39)	14.96	(3.24)
Negative Relationship	2.14	(0.35)	2.13	(0.35)
Mediator Variable (Age 10)				
Child Social Competence	3.05	(0.98)	3.09	(0.99)
Child Outcomes (Age 12)				
Externalizing Behaviors	14.85	(10.26)	11.30	(8.92)
Internalizing Behaviors	2.01	(0.80)	1.79	(0.92)

Table 1c

Descriptive statistics for main predictor, mediator, and outcome variables for non-abused children (N=629)

	Males (N = 319)		Females (N = 310)	
	M	(SD)	M	(SD)
Main Predictors (Age 4)				
Family Functioning	12.42	(2.66)	12.39	(2.54)
Good Parenting	3.68	(0.56)	3.65	(0.54)
Positive Relationship	14.89	(3.62)	15.05	(3.23)
Negative Relationship	2.10	(0.37)	2.08	(0.31)
Mediator Variable (Age 10)				
Child Social Competence	3.45	(1.11)	3.63	(1.12)
Child Outcomes (Age 12)				
Externalizing Behaviors	10.70	(8.16)	8.95	(7.68)
Internalizing Behaviors	1.65	(0.91)	1.71	(0.85)

Table 1d.

Descriptive statistics for control variables

	Overall Sample (<i>N</i> = 1204)		Abused Children (<i>N</i> = 575)		Non-Abused Children (<i>N</i> = 629)	
	M	(SD)	M	(SD)	M	(SD)
White	0.28	(0.45)	0.35	(0.48)	0.21	(0.41)
Black	0.49	(0.50)	0.37	(0.48)	0.6	(0.49)
Female	0.52	(0.50)	0.55	(0.50)	0.49	(0.50)
Total Family Income	1.38	(0.44)	1.38	(0.41)	1.38	(0.47)
Abused	0.48	(0.50)	--		--	