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No Father Left Behind: Exploring Positive Father Involvement as a Protective Factor in the Prevention of Neglect and Promotion of Child Well-Being

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Brown School of Social Work

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No Father Left Behind: Exploring Positive Father Involvement as a Protective Factor in the
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by
Ericka M. Lewis

A dissertation presented to
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<div align="right">Ericka M. Lewis</div>

Washington University in St. Louis

May 2017

ABSTRACT OF THE DISSERTATION

No Father Left Behind: Exploring Positive Father Involvement as a Protective Factor in the
Prevention of Neglect and Promotion of Child Well-Being
by
Ericka M. Lewis, LMSW
Doctor of Philosophy in Social Work

Washington University in St. Louis, 2017

Professor Patricia L. Kohl, Chair

Despite the growing evidence highlighting the relationship between positive father behaviors and

child development, fathers still receive less research attention than mothers. As a result, little is

known about the direct effects of positive father involvement on child neglect risk and child

well-being. This dissertation study used data from the Longitudinal Studies of Child Abuse and

Neglect (LONGSCAN) and applied longitudinal structural equation modeling to examine the

role of father involvement in the reduction of neglect risk and adverse child outcomes among

low-income families. The specific aims guiding this dissertation study are (1) to test the direct

and indirect relationships between father involvement and child well-being among low-income

families at risk for neglect; (2) Examine the moderated effect of father type on the relationship

between father involvement and child well-being over time. A significant pathway was found

between father involvement at Wave 1 and family functioning (home environment) at Wave 2,

and home environment at Wave 2 and child well-being (child behavioral health) at Wave 3, after

accounting for home environment and child behavior in previous waves. These findings suggest

that fathers may have an indirect effect on child behavioral development by way of increases in

family expressiveness and cohesion. The dissertation study addresses father factors, child neglect

risk, and child developmental issues related to underserved and understudied populations (e.g.,

low-income families and fathers). Understanding these relationships sets the stage for the

development and implementation of evidence-based child mental health programs that include

fathers as a protective factor.

Chapter 1: Introduction

Although evidence highlighting the relationship between positive father behaviors and child development is growing, fathers are still understudied compared to mothers. As a result, less is known about the direct effects of positive father involvement on child well-being. The Administration of Children and Families has called for research that examines the safety and well-being of children (ACF, 2015). Furthermore, leading scholars have specified the influence of father involvement on maternal risk for child neglect as a research topic that needs further exploration (Chang, Halpern, & Kaufman, 2007; Choi & Aurora, 2010; Lee, Bellamy, & Guterman, 2009). This dissertation study is responsive to these calls and used data from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN; Runyan et al., 1998) to examine the role of father involvement in the reduction of neglect risk and adverse child outcomes among low-income families.

The specific aims guiding this dissertation study are (1) to test the direct and indirect relationships between father involvement (physical care, emotional support, companionship, and financial support) and child well-being (physical health, internalizing and externalizing behaviors, daily living skills, and social competence) among families at risk for neglect; and (2) examine the moderating role of father type (biological vs non-biological) on the relationship between positive father involvement and child well-being over time (Figure 1).

This dissertation study addresses father characteristics, child neglect risk and protective factors, and child developmental issues related to underserved and understudied populations (e.g., low-income families and fathers). Understanding these relationships sets the stage for the inclusion of fathers in evidence-based child neglect prevention programs, as well as child welfare practices and services. Additionally, findings may also guide the development and

implementation of programs that target positive fathering as a protective factor against adverse

child developmental trajectories.

Figure 1: Analytic Framework
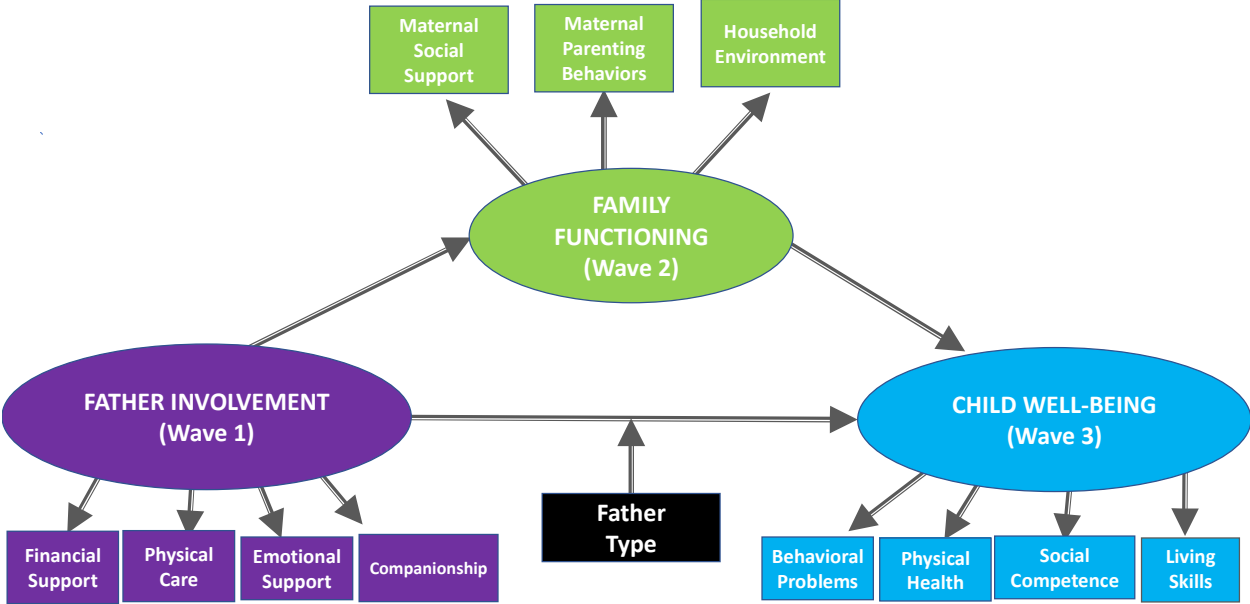
Chapter 2: Background and Significance

2.1 Scope of Child Neglect

The effects of child neglect have far reaching impacts that can be seen through proximal and distal child outcomes, which include developmental delays, poor academic achievement (Spratt et al., 2012; Jonson-Reid et al., 2004) and increased risk for illicit drug use (Bellis et al., 2014; Widom & Hiller-Sturmhofel, 2001). Child neglect accounts for close to 80% of all substantiated child welfare reports and is responsible for a large portion of the $585 billion lifetime cost of child maltreatment (USDHHS, 2016; Bellamy, & Guterman, 2009; Fang, Brown, Florence, & Mercy, 2012;). Neglect prevalence rates have soared over the past 30 years and despite neglect being the most prevalent form of child maltreatment, the phenomenon remains largely understudied. A few notable exceptions include studies focusing on neglect subtypes (Dubowitz et al., 2004; Jonson-Reid et al., 2013) and risk factors (DePanfilis, 1996; Slack et al., 2004). These seminal articles also discussed the need for further examination on the impact of neglect risk and protective factors on child outcomes over times.

It is important to note that the role fathers play in neglect risk and protection lacks empirical understanding. Given the strong positive relationship between parenting behaviors, family functioning, and child development, it is important to understand which aspects of fathering lead to the most favorable outcomes. This is especially important when considering families at risk for neglect, which includes fathers living both in and out of the home. low income, single parent households. Additionally, gaining a better understanding of the role of fathers can inform the development of prevention programs that encourage father involvement in parenting behaviors that strengthen the family unit, independent of father residency

2.2 Factors Associated with Neglect

Younger children are characterized by their natural curiosity, limited capacity for reasoning, and constant need for supervision-characteristics which place them at increased risk for child neglect. Child neglect is more prevalent among children 0 to 9 years old (OPRE, 2014). Empirical evidence suggests that the number of parents in the home and their relationship status, often referred to as family structure, have implications for child neglect risk (Sedlak et al., 2010; Widom & Hiller-Sturmhofel, 2001). For instance, nearly 35% of American children live in single parent households (A.E. Casey Foundation, 2011) and close to 50% of African American families consist of fathers who do not reside in the home (Adamsons & Johnson, 2013). Sedlak and colleagues (2010) found that homes containing married biological parents have lower rates of child neglect, compared to single parent households. Although single parent households are more common among families reported for maltreatment, the influence of fathers need not be restricted to those cohabiting with the mother.

Differential research of neglect risk factors based on parent gender is scant, and a major gap in the literature. In fact, fathers are often identified as the perpetrators of child maltreatment, yet few empirical studies exist to support this claim (Dubowitz, 2006). When considering the available evidence, the majority of studies consist of a Caucasian, two-parent, middle-class sample, which is not reflective of the families experiencing the majority of neglect reports (Finkelhor et al.,2014; Dufour et al., 2008). While not equivalent to mothers, there is emerging evidence that suggests more fathers (and males serving as father figures) contribute to neglectful practices than previously considered (Dufour et al., 2008; Trocme, Tourigny, MacLaurin, & Fallon, 2003).

Our knowledge of the influence of family characteristics, with the exception of the role of fathers, highlights the need for further exploration of youth, from diverse cultural backgrounds, and low-income backgrounds to better understand the risk and protective factors that are associated with child neglect risk, as they can impact child developmental outcomes. Previous research has also linked neglect and poverty, which tends to be more prevalent for certain ethnic and racial groups and can impact youth in late childhood and early adolescence (Drake & Pandey, 1996; Drake & Rank, 2009; Pelton, 2015: Slack et al, 2004). This highlights the need for more studies examining neglect risk and protective factors for youth of all ages. And, while community factors may also be important to both maltreatment and well-being (Coulton et al, 2007), it can be challenging to disentangle the role of community poverty from family poverty. This study focuses on dynamics that occur within the family between the father and child and father and mother.

Beyond demographic and income characteristics, there is an abundance of evidence highlighting the relationship between parenting behaviors and neglect risk (Ernst 2000; Lutzker, Bigelow, Doctor, & Kessler, 1998). These studies indicate that neglectful parents tend to display more maladaptive caretaking practices (Lutzker et al., 1998), lower quality child supervision, and less frequent parent-child interactions (Dufour, Lavergne, Larrivee, & Trocme, 2008) compared to parents with no history of neglect. It has further been established that these parenting behaviors may be the mechanisms through which other parent and family characteristics, such as parental stress and family functioning influence child behavior (Davis and Carter, 2008; Lamb, 1997).

2.3 Consequences of Child Neglect

Neglect not only impacts child victims, but also burdens families, service systems, and society. Child neglect is a significant contributor to disparities throughout the lifespan, which include increased risk for chronic diseases, mental health problems, health risk behaviors, and delinquency (Nyarko, Amissah, Addai, & Dedzo, 2014; Spinhoven et al., 2010; Widom et al., 2012). The effects of child neglect are often difficult to measure because neglect if combined (in study categories) or comorbid with other forms of child maltreatment (e.g., physical and sexual abuse). Adding further complexity, both factors and consequences of child neglect rarely work in silo. They may be correlated at a given point in time (e.g, poverty and single parenthood) or may influence each other over time (e.g., school problems increasing the risk of delinquency). This makes it difficult to parcel out individual paths from neglect to particular developmental outcomes. This dissertation study attempted to tease out the unique effects of neglect and risk factors paying special attention to the role of fathers. The consequences of child neglect were divided into two levels: (1) individual and (2) societal.

2.3.1 Individual Consequences

Child Well-Being

There is a significant body of research indicating the negative effects of neglect on child well-being. For the purposes of this dissertation study, child well-being was defined as the extent to which a child can perform stage-appropriate capacities needed to successfully transition into adulthood (Raghavan & Alexandrova, 2014), which include physical health, behavioral health, cognition, psychological functioning, and pro-social behavior. These capacities, often referred to as indicators, should include both a reduction in adverse (e.g., externalizing behaviors) and an increase in promotive behaviors (e.g., prosocial skills) (Ben-Arieh & Frones, 2011).

Physical Health

Child neglect is considered an act of omission of providing for a child's basic needs that can lead to both short-term and long-term physical health disparities. Studies have shown that neglect can impair brain development which in turn contributes to developmental delays in speech and cognition (Center on the Developing Child at Harvard University, 2012; De Bellis, 2010), as well as the ability to recognize other's thoughts and emotions (van Schie, van Harmelen, Hauber, Boon, Crone, & Elzinga, 2017). A young child's interaction with their parents impacts brain development, which impacts later educational, emotional, and behavioral functioning. Additionally, failure to receive the appropriate nutrition during infancy can lead to medical problems and poorer health outcomes in childhood and adolescence. In fact, children who experience extreme forms of neglect in early childhood have more adverse health outcomes than children without histories of neglect (Gilbert et al., 2009). Even in cases of less extreme neglect, studies find equal risk of a range of pediatric health outcomes for those whose initial allegation of maltreatment was for neglect as compared to abuse when controlling for recurrent maltreatment (Lanier et al., 2009). In regards to long-term outcomes, surveys of adults have shown that those who are neglected as children are at increased risk for chronic medical conditions, such as obesity and poorer lung functioning (Felitti & Anda, 2009), and have a greater likelihood of developing diabetes (Widom et al., 2012).

When considering the most extreme consequences of maltreatment, child neglect is responsible for almost 73% of all maltreatment fatalities (US Department of Health & Human Services, 2016). A recent case review study of 22 years of data on child neglect fatalities was conducted to determine which subtypes of neglect were most prominent among child welfare cases in Oklahoma (Welch & Bonner, 2013). Data was collected, retrospectively, from the

Oklahoma Division of Child and Family Services and the sample consisted of children between 0 and 17 years of age. This state level study revealed that of the child neglect fatalities ($n = 374$), most were identified as supervisory/environmental neglect (61%), medical neglect (10%), and physical neglect (8%). In a prospective study of child death following maltreatment, over half of the children with reported maltreatment who later died had prior reports of neglect (Jonson-Reid, Chance & Drake, 2007).

Behavioral Health

While not every child who experiences neglect will develop behavioral issues, they are at greater risk of engaging in risky behaviors (Bellis et al., 2014; Bright & Jonson-Reid, 2008). The literature indicates that maltreated children (e.g., abuse and neglect) are more likely to be involved in risk behaviors such as drug and alcohol use (Widom et al., 2012), sexual risk behaviors (Garwood, Gerassi, Jonson-Reid, Plax, & Drake, 2015), and criminal activities (Snyder & Merrittt, 2014; Williams et al., 2010). Child disruptive behaviors are one of the most prevalent mental health issues of concern among children ages 4 to 12. Disorders are characterized by a persistent pattern of impulsivity, aggressive physical behaviors toward others, violation of rules, and disturbed peer relationships; parenting factors are a major risk factor associated child disruptive behaviors (DSM-5, 2013). The 12-month prevalence of behavioral disorders is 9% among children in the general population (Kessler, Chiu, Demler, & Walters, 2005) and 42% in children investigated by child welfare services (Woodruff & Lee, 2011), suggesting that behavioral health is greatly impacted by child maltreatment. Studies indicate that child neglect victims are at a greater risk of developing such behavioral disorders (Friedman, 2010).

Cognition, Psychological Functioning, and Pro-Social Behavior

Neglect has been linked to a variety of cognitive, social and emotional difficulties in children. Previous research has identified the association between early child neglect, attachment problems, and emotion regulation (Jonson-Reid et al., 2004; O'Hara et al., 2015; USDDHS, 2016;). Attachment problems in maltreated children can impact their physical and cognitive development, which can also increase difficulties in creating and maintaining positive peer relationships, meeting educational milestones, and contribute to anti-social behaviors. A review of empirical studies on the effects of neglect on child outcomes found that children experiencing emotional neglect experience higher rates of social development delays, and depressive and anxiety symptoms (Perry, 2001).

Evidence has also indicated that neglect effects later psychological functioning (Duncan et al., 2015; Nikulina, Widom, & Czaja, 2011; Widom, 1999). One study examined whether age of onset of maltreatment in childhood predicts greater mental health impairment in adulthood (Kaplow & Widom, 2007). This prospective cohort design study collected substantiated childhood neglect cases from county juvenile and adult criminal court records in a Midwest city between 1967 and 1971 to identify study participants. A series of interviews were conducted to determine psychological functioning in adulthood. Analyses of hierarchical logistic regression models revealed that individuals with histories of neglect reported higher levels of depressive and anxiety symptoms.

2.3.2 Societal Consequences

The impact of child neglect has far reaching consequences on society that results in both direct and indirect costs. The lifetime cost of child maltreatment totals over $585 billion annually (Fang et al., 2012). Although there are no available cost estimates specific to neglect, Xiangming

and colleagues (2012) projected the annual cost of addressing child maltreatment to be higher than the annual cost of treating some of the most prevalent health conditions in the United States. Examples of direct costs associated with child maltreatment include, investigation, in-home services, foster care, medical care, and court fees. According to NCANDS reports (Child Welfare Information Gateway, 2016), 64% of children with substantiated reports of child maltreatment received in-home services, and over 23% (victims and non-victims) received both in-home and foster care services in 2014. Considering the fact that neglect is the most prevalent form of maltreatment and also comprises the majority of cases served by child welfare, it is reasonable to assume that neglect is responsible for a significant percentage of the annual cost of services related to child maltreatment.

Downstream consequences of child neglect lead tosignificant indirect costs. These include increased use of services for general health ($32, 648 per child), mental health, educational ($7,999 per child), child welfare ($7,728 per child), and criminal justice systems ($6,747 per child) (Fang et al., 2012). When considering the long-term financial costs associated with child maltreatment it is important to note that these costs are believed to be preventable. Many child maltreatment researchers believe that investing in the development and implementation of early intervention, such as evidence-based family interventions, community supportive services, and financial assistance, will not only decrease rates of child neglect, but also save hundreds of billions of dollars per year (ACF, 2013).

2.4 Father Involvement

The conceptualization of father involvement has transformed over the years. This may be due, in part, to changes in family structure in recent decades. For example, when marriage and a two-parent household was normative practice, father involvement was defined as a father's

presence in the home (Lamb, Pleck, Charnov, & Levine, 1985). However, as the rates of

marriages decreased and single-parent household and non-residential fathers increased, the

perception of positive father involvement shifted to the frequency of time spent with the child or

financial support given (Pleck, 2012). Measuring father involvement based solely on time spent

with the child did not capture the qualitative components of father behaviors, such as warmth and

emotional support that have been recently associated with positive parenting behaviors (Pleck,

2012; Pleck, 2010). Furthermore, while previous studies have identified a relationship between

paternal financial support (i.e., formal and informal) and physical health, there is no evidence

that this type of support directly impacts other facets of child well-being, such as social

competence and internalizing behaviors (Nepomnyaschy, Magnuson, & Berger, 2012).

2.4.1 Components of Father Involvement

According to Pleck (2010), father involvement comprises three primary components and

one secondary component. The primary components include positive engagement, warmth and

responsiveness, and control. ***Positive engagement*** is described as time spent on development-

promoting activities (e.g., companionship). ***Warmth and responsiveness*** refers to the sensitivity

and acknowledgement of the child's emotional needs (e.g., emotional support). ***Control*** focuses

on a father's ability to appropriately monitor his child's routine activities (e.g., physical care).

These components are reciprocal interactions that promote child well-being because they are

behaviors that can be modeled by parents and learned, through practice, by children. A recent

American Academy for Pediatrics clinical report (Yogman, Garfield, & Committee on

Psychosocial Aspects of Child and Family Health, 2016) reviewed the emerging literature related

to father involvement and found that children with fathers (and father figures) who are positively

engaged in their development tend to display less behavioral problems.

A secondary component of father involvement is ***material indirect care***, which includes activities that fathers perform for their child, not with their child (providing financial support and material goods). This component allows fathers to use their financial capital to aid in the provision of child's material needs, which is an integral part of child well-being (Pleck 2010; Pleck 2007). Financial support may have differential effects on child well-being when taking in account neglect risk. For example, financial support has been linked with academic achievement and may address aspects of physical and emotional health for children at risk for neglect because it provides means for access to resources needed to meet children's basic needs (Nepomnyaschy, Magnuson, & Berger, 2012).

Father involvement is a concept that will continue to evolve as alternative family structures emerge (e.g., co-habitation, stay-at-home fathers, etc.). To date, few studies have assessed the multiple components of father involvement simultaneously. Therefore, it is uncertain the impact of these collective components on children's psychological, emotional, behavioral, and developmental well-being. And, given that 40% of children in the United States are born to unmarried parents (Hamilton, Martin, Osterman, & Curtin, 2014) and 1 in 6 fathers are non-residential (Jones & Mosher, 2013), there is a great need to understand the effects of all aspects of father involvement from diverse backgrounds.

2.4.2 Policies Addressing Father Involvement

Public and social policies have shaped the perception of father involvement and its influence on family functioning (Cabrera, 2010). For instance, in the early 1990's there was a decrease in marriage rates and increase in divorce, non-marital childbearing, and single-parent households. There was also an increase in child poverty, which studies have consistently shown to be associated with households without a resident father (Caldwell et al., 2004; Hawkins,

Amato, & King, 2007). As a result of changes in demographic factors, federal initiatives, (e.g., Fatherhood Research Initiative, Responsible Fatherhood Initiative; Healthy Marriages Initiative) were developed to strengthen the role of fathers in families. These initiatives focused on responsible fatherhood through the promotion of healthy marriages and economic stability. Studies on the impact of marriage on child outcomes have revealed mixed results. Amato and Cheadle (2005) found that marriage is associated with positive child behaviors. Black and colleagues (1999) found little difference in the child cognitive and behavioral outcomes between resident and non-resident fathers. While, it remains unclear whether marriage improves child outcomes, both studies suggest that positive father involvement impacts child well-being.

Fatherhood initiatives also generated new child support policies as the conceptualization of father involvement shifted to include financial support. In fact, child support is among the most regulated and enforced forms of father involvement, yet studies have shown that child support alone is not associated with increased father-child interaction or more positive father-child relationships (Cabrera, 2010). This may be due, in part, to the fact that child support policies do not require child visitation, which may miss opportunities to provide contact between fathers and children. Pryor and Rodgers (2001) examined the relationship between child support and father involvement, and found that fathers who have good relationships with their children are more likely to have contact and pay child support.

Together, these findings support the idea that father involvement is a multi-faceted construct that includes financial support, parenting behaviors, and father-child relationships. In the last two decades, researchers, practitioners, and policy makers have shifted their views on the role of fathers in child and family functioning. By examining the importance of positive father

involvement on child well-being, this study may offer empirical support for involving fathers in services aimed at preventing neglect and adverse child outcomes.

2.4.3 Father Involvement and Child Well-Being

As more attention is given to the role of fathers in child rearing activities, there is a small, yet emerging body of evidence suggesting that fathers may uniquely shape the lives of their children. However, discrepancies exist in studies of the effect of fathering behaviors on aspects of child well-being. For example, in a systematic review examining the relationship between father involvement and child developmental outcomes among studies with a longitudinal design, Sarkadi et al., (2008) found that the majority of studies (22 out of 24) reported a strong and positive relationship between frequent father-child interaction *(i.e., positive engagement)* and children's social, behavioral, and psychological outcomes. In another study, the relationship between father involvement and child depression/anger was assessed among biological fathers (and father figures) at age 6 (Marshall, English, & Stewart, 2001). Marshall et al. (2001) defined father involvement consistent with Pleck's primary and secondary components and found no effect of father involvement on child behavioral problems. Similar findings were also highlighted in a study examining non-resident fathers and child behavioral problems among school-aged children (Flouri & Malmberg, 2012). Flouri & Malmberg defined father involvement as the frequency of father-child interactions, financial support, and father's interest in the child.

The inconsistency in study findings may be the result of a variety of conceptual and methodological limitations, which include methodically weak longitudinal studies, few studies including all four components of father involvement, and few studies assessing father involvement across varying family contexts. Given that there are over 70 million fathers residing

in the United States and close to 90% of children at risk for child maltreatment have a biological father or father-figure in their lives (Bellamy, 2008; U.S. Census Bureau, 2016), more research on positive father involvement should be conducted to improve the lives of children in need.

Chapter 3: Scope of the Dissertation

3.1 Study Rationale

Parenting factors such as inadequate involvement, emotional distance, and poor monitoring are among the strongest predictors of child social, emotional, and behavioral problems. The risk of developing these types of problems are even higher for neglected children. Despite recent empirical findings associating positive fathering behaviors with healthy child developmental trajectories, the evidence on the impact of fathers in neglect prevention efforts is unknown. Even less is known about the direct and indirect effects of positive father involvement on child well-being.

This dissertation study uses data from LONGSCAN to examine the role of father involvement in the reduction of neglect risk (e.g., family functioning) and adverse child outcomes. LONGSCAN is a consortium of five prospective research studies on the etiology and consequences of child maltreatment. The data provide a unique opportunity for policy-making and program planning because it allows for the examination of the child, family, and community factors that influence the probability of positive child outcomes. This study used a subset of the total sample (n=1,354). The subset (n=995) consisted of children who had at least one father or father-figure (i.e., stepfathers, primary caregiver's significant other, and foster fathers) present when children were 6 years old (e.g., age of data collection on father involvement). Children and their families resided in rural, urban, and suburban areas of Baltimore, Chicago, Seattle, North Carolina, or San Diego, and demonstrated low to high levels of neglect risk, Children were 4 years old at baseline and family functioning was assessed when children were 6 and 8, and 12 years old. Child well-being was examined at three time points (child age 6, 8, and 12).

3.2 Specific Aims and Research Questions

Specific Aim 1: Test the direct and indirect relationships between father involvement and child well-being among families at risk for neglect.

> **Research Question 1.1:** Does father involvement (financial support, physical care, emotional support, and companionship) influence child well-being (physical health, behavior problems, daily living skills, and social competence) over time?

> **Research Question 1.2:** Does family functioning (maternal social support, maternal parenting behaviors, and household environment) mediate the relationship between father involvement and child well-being over time?

Specific Aim 2: Examine the moderated mediation effects of father type on the relationship between father involvement, family functioning, and child well-being over time.

> **Research Question 2.1:** Does father type (biological vs. father-figure) moderate the relationship between father involvement, family functioning, and child well-being?

3.3 Preliminary Hypotheses

This dissertation study hypothesizes that father involvement at Wave 1 will predict child well-being outcomes at Wave 3, which is consistent with the current evidence (Marsiglio, Amato, Day, &Lamb, 2000; Stewart, 1999). And, although previous literature suggests that particular aspects of positive father involvement are associated with a decrease in internalizing and externalizing behaviors and social cognition (Byrd-Craven, Auer, Grangr, & Massey, 2012; Caldwell, Wright, Walsemann, Williams, &Isichei, 2004; Paquette, 2004), few studies have examined all four components of father involvement within the same study (Dubowitz et al., 2001; Marshall et al., 2001; Pleck, 2012). One study, examining the relationship between all the components of father involvement and child well-being among non-resident father families, did

not find any significant associations over time (Hawkins, Amato, & King, 2007). Marshall et al. (2001) also included all four components of father involvement and did not find an effect on child depression and aggression at age 6. Hawkins and colleagues (2007) suggested that findings may be different for a younger child population and suggested future studies test father effects on children in their preschool and primary school years. This dissertation study's sample includes children between the ages of 6 and 12. The authors hypothesized that the effects of father involvement may be indirect and the concept is being measured in a way that does not capture these influences. This dissertation study moves fatherhood literature by examining both direct and indirect effects of father involvement.

Next, the study hypothesizes that father involvement at Wave 1 will predict neglect risk (maternal and family factors) at Wave 2, and neglect risk will predict child well-being outcomes at Wave 3. Significant bodies of research relate father involvement with maternal stress/social support, parenting behaviors, and overall household functioning (Amato & Booth, 1997; Carter & Myers, 2007; Eiden, Chavez, & Leonard,1999). In fact, family socio-economic status, maternal social support, and family factors have been well documented as predictors of both neglect and child depression, anxiety, and aggression, (Kaplow & Widom, 2007; Sedlak et al., 2010; Slack et al., 2011). Furthermore, a review of fatherhood literature posits that individual relationships (e.g., father-child) have smaller effects on child developmental/behavioral outcomes, compared to household characteristics, such as family atmosphere and relational style (Lamb, 1997). It is also important to note that it is still unclear as to whether father involvement has indirect relationships (e.g., mediating factors) that contribute to the relationship between father involvement and developmental trajectories (Cabrera & Peters, 2000; Pleck, 2007).

Finally, the study predicts that the relationship between positive father involvement and child well-being will vary by father type. Specifically, the study seeks to examine the extent to which the mediational role of family functioning varies by father type. Previous LONGSCAN studies have examined the moderating effect of father type on father involvement and child outcomes and none (to date) have yielded statistically significant results (Dubowitz et al., 2001; Marshall et al., 2001). These findings may be due to the cross-sectional design of previous studies, which weakens the ability to support causal inferences. Nevertheless, there is consensus among researchers in the field that more focus should be placed on examining the impact of father involvement by father type (Dubowitz et al., 2001; Marshall et al., 2001; Sarkadi et al., 2008), may influence the promotion of child well-being, and this dissertation is responsive to the call. Given the complex contextual factors that impact children and families involved with child welfare, more empirical exploration of father involvement among this vulnerable population is warranted.

Chapter 4: Theoretical Frameworks

This dissertation draws on ecological, psychological, and sociological theory to guide the exploration of father involvement.

4.1 Sociological Perspective

Neglected children often reside in communities with multiple environmental risk factors, such as neighborhoods ridden with high rates of poverty, few economic resources, and social isolation (Coulton, Korbin, Su, & Chow, 1995; Jonson-Reid et al., 2013), and sociological models view these factors as a primary cause for child neglect. While there is evidence suggesting the relationship between environmental factors, social isolation, and neglect, this perspective assumes that when faced with adversity, parents lack positive coping skills or other protective factors, and thus are incapable of providing adequate care for their child.

4.1.1 Social Capital Theory

Building upon previous sociological theories proposing poverty and financial resources as the cause of child neglect, the social capital theory (Coleman, 1989) illustrates the role family relationships and community networks play in the relationship between parenting and child well-being. James Coleman, developer of the social capital theory, defined social capital as a resource created from one's interactions through personal relationships and community membership.

Social capital is conceptualized as a resource that can be accessed in times of need; therefore, it is advantageous for one to gain as much social capital as possible. This type of capital requires the existence of positive personal and community relationships, and has the potential to lessen the effects of certain risk factors associated with neglect, such as single parent households, and social isolation. Runyan et al. (1998) conducted a study to examine the extent to

which social capital serves as a protective factor among children at risk for maltreatment. Using baseline data from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN), this cross-sectional study assessed the relationship between social capital and child well-being. The sample consisted of LONGSCAN study children ($n = 667$) between the ages of 2 and 5, and residing in North Carolina, San Diego, Baltimore, or Seattle, all of which possessed family and environmental risk factors associated with maltreatment. Social capital was measured using an index that assigned one point to the five common indicators of social capital. The dependent variables were measured using a series of standardized instruments assessing child behavioral, developmental, and emotional outcomes. Study findings revealed that while few single indicators (e.g., organizational membership, personal support, and community support) had strong relationships with positive child outcomes, the combination of items on the social capital index held the strongest relationship with child outcomes. These findings suggest that social capital can serve as a protective factor for children at risk for child neglect and other adverse child outcomes.

For the purposes of this dissertation study, social capital was examined in the context of the family. Four common proxies of family social capital include: 1) parental resources (e.g., financial support), 2) parental attention (e.g., parenting behaviors), 3) family norms (e.g., expressiveness, cohesion, conflict), and 4) social relationships (e.g., father-child relationship). Organizational and community factors are outside the scope of this dissertation study, and therefore, will not be addressed. Family social capital can be examined by assessing the quality of relationships between parents and children, as well as the amount of social capital available for parents to give to the child (Cole, 1988; Pleck, 2007). Per this theory, a father provides social capital to his child, which can then influence child developmental outcomes. Additionally, the

relationship between positive father involvement and child well-being is both directly and indirectly influenced by social capital. For example, a father's ability to provide material resources, supervision, and emotional support can build stronger father-child relationships, which has a direct effect on child developmental outcomes (e.g., social skills, physical health, and behavior). These same parenting behaviors can serve as a source of social support for mothers and improve the household environment, which has also been linked to maltreatment risk and child well-being (Dufour et al., 2008; Fowler et al., 2013). It is important to note that even if adults are physically present, there can still be a lack of family capital, if strong relationships do not exist between parents and children.

4.2 Ecological Perspective

As one of the first perspectives to deviate from the single-factor, linear constructed models, the ecological perspective utilizes a multi-level approach to examine pathways to child neglect (Scannapieco & Connell-Carrick, 2005). Development of ecological theories began in the late 1970's, as theorists determined child neglect and adverse child outcomes to be results of multiple individual, community, and societal factors interacting with one another at various levels, simultaneously (Bronfenbrenner, 1979; Belsky, 1980). Examples of these factors include poverty, job satisfaction, community resources, racism, stress, and parental history of child maltreatment. Additionally, the ecological perspective incorporates culture and societal norms as contextual factors that impact the etiology of child neglect.

4.2.1 Belsky's Model of Child Maltreatment

Drawing from Bronfenbrenner's (1979) concept of proximal process, Belsky (1980) developed a model specifically focused on parenting and child development, and is arguably one of the most explanatory models in the field (Scannapieco & Connell-Carrick, 2005). The

proximal process is defined as reciprocal interactions between individuals and their immediate environment (Belsky, 1980). Per this process, development is viewed as a relational interaction that evolves over time, as opposed to development occurring within individuals in silo and at a single time point.

Belsky's model of child maltreatment (1980) posits that child development is determined by the interaction between various system levels, which are nested within one another. Interactions among systems are important because it produces risk and protective factors that contribute to child development. While it is recognized that all levels are important, the system levels that will be examined in this dissertation study include the microsystem and exosystem. The *microsystem* level refers to family characteristics that may influence child outcomes. Father involvement is a function of the microsystem. It is believed that the more the microsystem level supports a child, the greater the chance of a proximal process (e.g., positive parent-child interactions), which increases the possibility of healthy child development. Fathers play a significant role in a child's microsystem, independent of a mother's role. This may be due to differences in perspectives on parenting roles and parenting behaviors, which contribute to differences in the proximal process with the child. The *exosystem* level involves the individual and family's role within larger social structures. Factors associated with the exosystem do not directly involve the child, but may still influence parenting, which can then impact child development. Examples of these factors include the quality of maternal social support.

Belsky's ecological model for maltreatment asserts the need to examine every system level and its interactions with other levels when building potential pathways to healthy child development. Applying Belsky's model to positive father involvement and child outcomes, fathers are considered actors in the child's microsystem, with whom children can experience

proximal process. This reciprocal interaction can aid in healthy child development. Exosystem

level factors can impact the proximal process, which is directly related to child outcomes.

4.3 Heuristic Model of Father Involvement

Cabrera and colleagues (2007) developed the Heuristic Model of Father Involvement,

which supposes that children are influenced by father characteristics and behaviors, which are

moderated by cultural and contextual factors. Additionally, the model considers the factors that

mediate and moderate the relationship between father involvement and child well-being.

Cabrera's model expands on several decades of child development research by viewing fathering

unique and separate from mother behaviors, while also integrating father factors that may impact

family functioning. It is believed that this model can move fatherhood research forward because

it examines modifiable variables that can be addressed in preventive interventions (Cabrera,

Fitzgerald, Bradley, & Roggman, 2007).

4.4 Study's Conceptual Model: Father Involvement, Family Functioning, and Child Well-

Being

The conceptual model depicts the hypothesized relationships tested in the proposed study

(see Figure 2). This model illustrates the direct and indirect influence of father involvement and

child well-being overtime. Based on ecological and sociological theoretical perspectives

(Bronfenbrenner, 1979; Coleman, 1988) and guided by the Heuristic model of Father

Involvement (Cabrera et al., 2007), this study's conceptual model supposes that ***positive*** father

involvement in child rearing activities, qualitative dimensions of parenting (e.g., sensitivity and

responsiveness), and financial support, promote child well-being. Positive father involvement

may also have indirect effects on child well-being, which is enacted through the decrease of

neglect risk and increase in promotive factors. Examples of these factors include maternal and

family characteristics (e.g., household functioning, maternal social support, and maternal parenting behaviors), and have been well documented as predictors of child developmental trajectories (Sarkadi et al., 2008; Sedlak et al., 2010; Slack et al., 2011).

The study's conceptual model builds upon previous work in three substantial ways. First, it expands Bronfenbrenner's ecological model of child development (1979) (e.g., proximal process) because it identifies which components of fathering behaviors promote healthy child development. Second, the model shows a direct path between a father's use of his social capital to influence child well-being, which addresses one of the biggest critiques of Coleman's social capital theory (1988). Finally, the conceptual model can be beneficial to child welfare researchers and practitioners because it is a causal model that is designed to examine the direct, indirect, and moderating effects of father involvement and child well-being among families with histories of or at-risk for child neglect.

Figure 2: Conceptual Model of the Relationship between Father Involvement, Family Functioning, and Child Well-Being
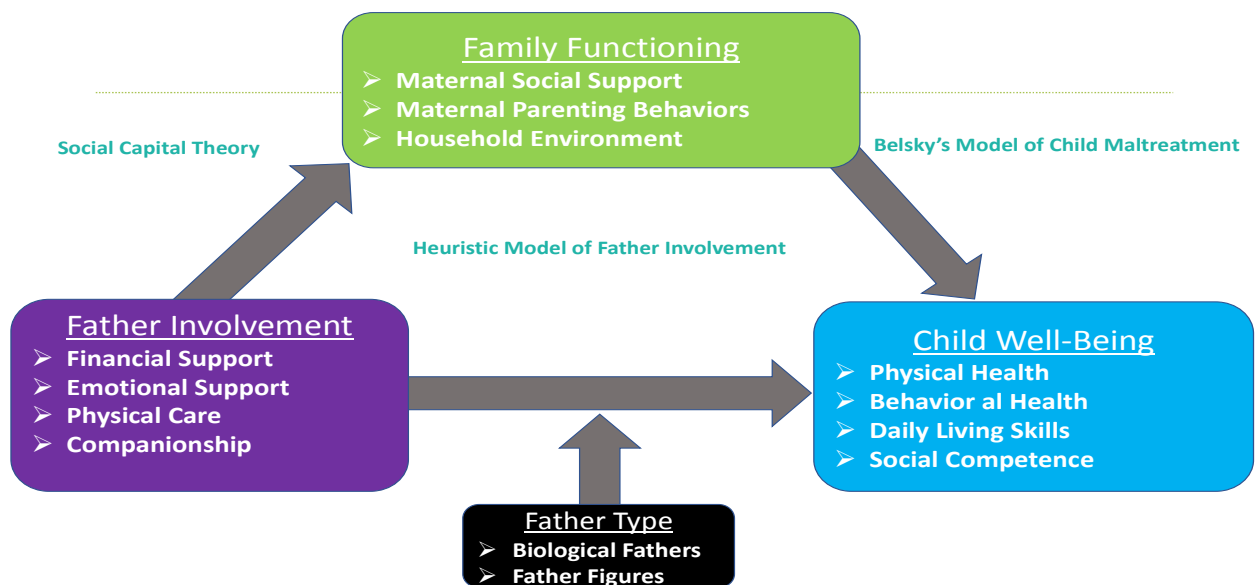
Chapter 5: Methods

5.1 Research Design

The dissertation study uses a longitudinal design to test the direct and indirect pathways between father involvement and child well-being over time. The pattern of change in child well-being was assessed at ages 6, 8, and 12 using child and parent reports from LONGSCAN. Longitudinal structural equation modeling (i.e., cross-lagged panel modeling) and conditional indirect effects processes (i.e., moderation) were conducted to examine the pathways of influence between father involvement and child well-being. The LONGSCAN dataset is appropriate for answering study questions due, in part, to its ability to examine individual and family-level factors that can increase the likelihood of positive family functioning and child development.

5.2 Key Data Source

LONGSCAN (Runyan et al., 2011) is a consortium of prospective research studies on the etiology and consequences of child maltreatment. Longitudinal studies were conducted across five sites within the United States and included urban, suburban, and rural communities. Cohorts representing the East, Midwest, Northwest, South, and Southwest were included in the study to increase the generalizability of findings. Study sites were linked through a coordinating center at the University of North Carolina. LONGSCAN data include families at various levels of maltreatment risk and history. Each region's sample of children, and their primary caregiver, were enrolled when children were between the ages of 0 and 4 (n=1,354). Data were collected when children were 4 years old, and children were followed until they reached young adulthood (ages 4, 6, 8, 12, 14, 16, and 18). Child data at ages 6, 8, and 12 were examined in this

dissertation study because (1) father involvement data were only collected between child ages 6 and 12; (2) early childhood (ages 3 to 8) is the time when neglect is most prevalent; and (3) appropriate developmental milestones are drastically different when comparing childhood and adolescent ages (13-17), therefore limiting the sample to childhood ages was the most appropriate analytical approach.

The study sites differed in their selection criteria, and thus, the regional samples represent varying levels of maltreatment risk (Table 1). Among the cohorts, participants were selected from urban communities (East, Midwest, and Northwest), a combination of urban, suburban, and rural communities (South), and suburban communities (Southwest).

East Regional Sample. Participants were selected from pediatric clinics serving low-income children from urban neighborhoods. To be included in the study, participants had to meet the clinic's criteria for risk. Risk was defined as low birth weight for children 0 to 1 or if parents were actively using drugs or HIV-infected. The comparison group for the cohort consisted of low-income families with no other risk factor for child maltreatment.

Midwest Regional Sample. This sample included children, born between 1991 and 1994, who were reported to Child Protective Services (CPS) for maltreatment. The comparison group included neighborhood controls.

Northwest Regional Sample. Children were recruited from CPS-involved families assessed as moderate risk following a report for maltreatment. Children were between the ages of 0 and 4. There was no comparison group for this regional sample.

South Regional Sample. This statewide sample selected children, between the ages of 4 and 5, who were identified as high risk for child maltreatment. A state public health tracking system

was utilized to identify participants. Children without CPS reports were matched to reported children (2:1 ratio).

Southwest Regional Sample. The sample included child welfare involved children with a substantiated report of child maltreatment. Children in this sample were placed in out-of –home foster care (kinship and non-kinship).

Multiple waves of data were collected July 1991 through September 2009. All sites shared measures and protocol related to data collection, entry, and management. Additionally, all sites used a standard battery of measures. Trained interviewers administered surveys to children and primary caregivers at ages 4, 6, and 8. Once children reached age 12, audio computer-assisted self-interview (ACASI) software was utilized. ACASI allowed for more privacy, as participants completed sensitive measures. The software also ensured data was being collected in systematically across the five sites.

In addition to child and caregiver interviews, various sources were utilized to collect maltreatment and family data, including self-reports from teachers, as well as administrative data from Child Protective Services (CPS). Teachers were mailed measures to complete, related to the child's academic achievement and social competence, beginning at age 6. CPS data were collected in the form of case narratives and central registry records, to capture the frequency and duration of child welfare involvement and receipt of services (e.g., counseling, Medicaid, food stamps, etc.). Administrative data were collected on an annual basis.

5.3 Sample

This dissertation study used a subset of the total sample from the study sites (n=935), which consisted of children and families residing in rural, urban, and suburban areas of Baltimore, Chicago, Seattle, North Carolina, and San Diego. Families included in the sample

were eligible for data collection at three time points (child age 6, 8, and 12), had low to high

levels of neglect risk, and had at least one father or father-figure (i.e., stepfathers, primary

caregiver's significant other, and foster fathers) who had contact with their children at age 6.

Most primary caregivers identified in the study were female. Due to small sample size (n=17), all

fathers who were identified as primary caregivers were excluded from the study sample. All

father data was collected from mother and child reports.

Table 1: Description of the Sampling at each LONGSCAN Site*

Regional Site	Birth Years	N (%)	Sampling Frame
East	1988-1991	200 (21%)	High Risk (Failure to thrive children, or mothers at risk for HIV infection, or low-income families)
Midwest	1991-1994	168 (18%)	Families reported to CPS (received 6-months of family treatment or usual CPS care) and neighborhood controls
Northwest	1988-1994	184 (20%)	CPS involvement (reports and substantiation)
South	1986-1987	174 (19%)	CPS involvement (reports) and matched controls
Southwest	1989-1991	209 (22%)	CPS involvement (foster care or adopted at age 4)

* (Runyan et al., 2011)

5.4 Measures

5.4.1 Measures of Child Well-Being

Physical Health

The Child Health Assessment (LONGSCAN, 1991) was used at Wave 1, Wave 2, and

Wave3 to measure physical health of children in the study. One assessment item, examining the

overall physical health status of the child, was utilized to measure physical health. Additionally,

individual items indicating the presence of chronic illnesses and conditions will be summed to

produce an index. The Child Health Assessment has demonstrated acceptable test-retest reliability and construct validity (LONGSCAN, 1991).

Behavioral Health

The total problem behaviors subscale, from the Child Behavior Checklist (CBCL) was used to examine clinically significant child internalizing (social withdrawal, somatic complaints, anxiety/depression) and externalizing (delinquency and aggression) behaviors. At Wave 1, Wave 2, and Wave 3 (Achenbach, 1991). The CBCL consists of items with a 3-point Likert-type response option (0= not true; 2= always true). Total problems T scores less than 60 are in the normal range, while 60-63 represent borderline scores, and greater than 63 is in the clinical range. The measure has shown acceptable test-retest reliability in assessments conducted in previous studies, and content, construct, and criterion-related validity have also been well documented (Achenbach, 1991).

Social Competence

The Vineland Screener (Sparrow, Balla, & Ciccheti, 1993) captures daily living and socialization skills at Waves 1, 2, and 3. Higher measure scores indicate a greater ability in performing tasks. The measure has been standardized and reports of interrater reliability has been high (α=.98) (Sparrow, Balla, & Ciccheti, 1993). The Vineland Screener has demonstrated good criterion validity.

5.4.2 Measures of Father Involvement

Father Involvement

Father involvement was measured using the Father Involvement with Child Instrument (Resnick et al., 1997) for Wave1 and Wave 2. This measure uses the primary caregiver's perception of the extent and quality of a father's (or father-figure's) involvement with the subject

child. Four items were used to measure father involvement and include financial support, physical care, emotional support, and companionship. Four items are measured on a 4-point scale (1=none; 4= a lot). Higher scores indicate greater involvement, as perceived by the maternal caregiver. The measure has demonstrated good construct validity (Resnick et al., 1997). For Wave 3, father involvement was measured using the Quality of Relationship: Child Report of Father (Resnick et al., 1997). Adolescents reported on the quality of their relationship with their father and the level of involvement/time spent engaging in shared activities (church event, shopping, movies, etc.,). Items related to quality of relationship were measured on a 5-point Likert scale (1=never 5=always). Level of involvement/time was assessed by summing yes/no questions about shared activities in the past 30 days. Higher scores indicate higher relationship quality and level of involvement. The moderating variable, father types, was dichotomized to represent two fatherhood categories: 1) biological fathers; and 2) father figures (i.e., step-father, boyfriend/significant other, foster father, relative, other).

5.4.3 Measures of Family Functioning

Maternal Social Support

The Duke-UNC Functional Social Support Questionnaire (Broadhead, Gehlback, DeGruy, & Kaplan, 1988) assessed the perception of the amount and type of maternal social support at Wave 1. The response options for this 14-item measure are on a 5-point scale (1= much less than I would like; 5=as much as I would like). Higher scores reflect higher perceived social support. The Social Provisions Scale (Russell & Cutrona, 1984) examined the degree to which a maternal caregiver's social relationships provide social support at Wave 2 and Wave 3. The 24-item measure is based on the six social provisions identified by Weiss (Weiss, 1974), with individual items for each provision identified based on factor analyses (Russell & Cutrona,

1984). Maternal caregivers utilized a 4-point scale to indicate the extent to which questionnaire items describe their current social network (1=strongly disagree; 4=strongly agree). The reliable alliance subscale was utilized in this study. Higher scores reflect higher perceived social support. The creators of the measure report test-retest reliability coefficient ranging from .37 to .66 (Russell & Cutrona, 1984).

Maternal Parenting Behaviors

Evidence suggests that while the use of substantiated reports to measure neglect is convenient, it does not account for those not reported to child protective services (CPS) and often captures only the most severe forms of neglect (Drake & Pandey, 1996; Zuravin, 1999). To account for neglect cases that may not have been captured through CPS data, a youth self-report of neglectful parenting behaviors (About my Parents; AMP; Straus, 1996) were examined. The dimensions of neglectful behaviors include neglect of basic needs, emotional, educational, and lack of supervision. The measure utilizes a four-point scale to assess maternal neglectful behaviors (0=Never; 3=A lot). Higher scores indicate less neglectful parenting behaviors. The AMP measure was administered to adolescents at age 12 and obtained self-reports of neglectful parent behaviors during the adolescent's elementary school years. Thus, the retrospective data will be analyzed at Wave 1 and Wave 2. Internal consistency for the measure's mean scores was moderate to good, ranging from .62 to .84 (Straus, 1996).

Household Environment

Household environment was measured using the Self-Report Family Inventory (Beavers, Hampson, & Hulgus, 1985). The Family Expressiveness, Family Cohesion, and Family Leadership subscales were utilized to examine overall household functioning at Wave 1, Wave 2, and Wave 3. Lower scores represent greater competence on subscales. Test-retest reliability

coefficients ranged from .79 to .89 for Family Expressiveness, .50 to .70 for Family Cohesion, and .41 to .49 Family Leadership (Beavers, Hampson, & Hulgus, 1985). Convergent and concurrent validity have been demonstrated through comparisons to other assessments of family functioning (Beavers, Hampson, & Hulgus, 1985; Hampson, Hulgus, & Beavers, 1991).

Table 2: Study Measures

Indicator Variable	Measure	Data Points (Child Age)	Respondent
Child Well-Being			
Physical Health	Child Health Assessment	6, 8, 12	Maternal Caregiver
Behavioral Health	Child Behavior Checklist	6, 8, 12	Maternal Caregiver
Social Competence	Vineland Screener	6, 8, 12	Maternal Caregiver
Living Skills	Vineland Screener	6, 8, 12	Maternal Caregiver
Father Involvement			
Financial Support	Father Involvement with Child	6, 8	Maternal Caregiver
Physical Care	Father Involvement with Child	6, 8	Maternal Caregiver
	Quality of Relationship: Child Report	12	Child
Emotional Support	Father Involvement with Child	6, 8	Maternal Caregiver
	Quality of Relationship: Child Report	12	Child
Companionship	Father Involvement with Child	6, 8	Maternal Caregiver
	Quality of Relationship: Child Report	12	Child
Family Functioning			
Maternal Social Support	Duke-UNC Functional Social Support	6	Maternal Caregiver
	Social Provisions Scale	8, 12	Maternal Caregiver
Maternal Parenting	About My Parents	6, 8,12	Child
Household Environment	Self-Report Family Inventory	6, 8,12	Maternal Caregiver

*Latent Factors are Italicized

5.5 Data Analysis Plan

5.5.1 Rationale

Longitudinal structural equation modeling (SEM) is the best analytic approach for this dissertation study because it combines measurement and structural models to determine directional relationships between latent constructs over time. Additionally, SEM can include multiple observed independent variables and multiple dependent variables, which allows for more complex models to be tested (Lomax & Schumacker, 2012; MacKinnon, 2008).

Measurement Models. Confirmatory factor analysis (CFA) is a type of measurement model used in SEM to examine the extent to which indicators accurately measure latent constructs (i.e., father involvement, family functioning, and child well-being), By accounting for both random and systematic measurement error in statistical models, SEM is helpful in determining the relationship between constructs, thus improving the ability the make inferences related to causality (Bowen & Guo, 2012; Kline, 2011; Little, 2013).Researchers conducting secondary analysis often use measurement models, such as confirmatory factor analysis (CFA), to test the dimensions of a latent variable created by combining a variety of study measures from the larger study. Furthermore, Bollen and colleagues (2014) recommend that determining measurement model fit prior to testing structural models.

Description of Latent Variables. In this dissertation study, latent constructs were formed to examine the change in multiple domains of child well-being from age 6 to age 12 (Wave 1= age 6; Wave 2=age 8; Wave 3=age 12). Latent variables were created for the following constructs: Father Involvement, Family Functioning, and Child Well-Being (see Table 3). In the model, Father Involvement (Wave 1) is an exogenous variable; Family Functioning (Wave 2) is a mediating variable; and Child Well-Being (Wave 3) is depicted as an endogenous variable in

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the model. Parceling was used to create latent constructs. Parceling is a procedure involving the use of combined individual measure items to create an observed variable in CFA. In this study, total scores from subscales of standardized measures were parceled to create the indicator variables used to develop latent factors.

Father Involvement. Four indicator variables (subscales of the Father Involvement measure) were used to measure father involvement: financial support, physical care, emotional support, and companionship.

Family Functioning. Three indicator variables were used to measure family functioning: maternal social support (Duke-UNC Functional Support Scale and Social Provisions Scale), maternal neglectful parenting (About my Parents), and household environment (Self-Report Family.

Child Well-Being. Three indicator variables were used to measure child well-being: physical health (Child Health Assessment), internalizing/externalizing behaviors (Child Behavior Checklist), and social competence (The Vineland Screener).

Structural Models. Cross-lagged panel modeling (CLPM) for longitudinal data is an approach that allows for the testing of mediating pathways (Cole & Maxwell, 2003; Joreskog, 1993). Specifically, CLPM examines the effect of an intermediary variable on the relationship between exogenous and endogenous variables over time and is most advantageous when examining developmental outcomes, especially when using longitudinal data. First, longitudinal mediation models improve inferential power, compared to cross-sectional designs of mediation, because multiple time points are assessed when examining change (Little, 2013; Selig & Preacher, 2009). Next, longitudinal mediation models are often utilized in developmental research because it can take into consideration the role environmental factors play in the

developmental process. Finally, longitudinal mediation modeling assumes that effects take time

to unfold and rarely occur concurrently with the predictor variable (Selig & Preacher, 2009). For

example, according to the principles of longitudinal mediation models, the direct and indirect

effects of father involvement on child well-being do not occur instantaneously, but rather takes

place over time. Results from CLPM informed the assessment of *conditional indirect effects*,

commonly referred to as moderated mediation. Essentially, the sample was grouped by father

type (biological father vs father-figure) to examine the indirect effect of father involvement,

family functioning, and child well-being outcomes, after accounting for the presence of a

moderator.

Table 3: Variable List

Indicator Variable		Min	Max
Involve1 Involve2	*Father Involvement (Wave 1 and Wave 22)*		
cares	How much he shows he cares about child	1	4
time	How much time he spends with child	1	4
monit	How much he contributes to everyday care	1	4
money	How much does he take care of child's financial needs	1	4
Involve3	*Father Involvement (Wave 3)*		
cares	How much he shows he cares about you	1	5
time	Total score for time spent in activities with him in the past 30 days	0	4
monit	How often you and he make decisions together about things in your life	1	5
Family1	*Family Functioning (Wave 1)*		
momsup*	maternal social support total score	1	17
famexp	family expressiveness mean score	1	5
famcoh	family cohesion mean score	1	5
famlea	family leadership mean score	1	5
emosup	maternal emotional neglect mean score	0	3
physup	maternal physical neglect mean score	0	3
watch	maternal supervisory neglect mean score	0	3
edusup	maternal educational neglect mean score	0	3
Family2 Family3	*Family Functioning (Wave 2 and Wave 3)*		
momsup*	maternal social support total score: Reliable Alliance	4	20
famexp	family expressiveness mean score	1	5
famcoh	family cohesion mean score	1	5
famlea	family leadership mean score	1	5
emosup	maternal emotional neglect mean score	0	3
physup	maternal physical neglect mean score	0	3
watch	maternal supervisory neglect mean score	0	3
edusup	maternal educational neglect mean score	0	3
W.Being1 W.Being2 W.Being3	*Child Well-Being (Wave 1, Wave2, and Wave 3)*		
behavior	T-score for Total internalizing and externalizing behavior problems	23	100
social*	Total score for social competence (socialization skills)	0	30
skills*	Total score for daily living skills	0	30
health	Child's general health compared to others their age	1	4
healthcon	Total count of chronic illness/conditions	0	10

*Latent variables are italicized   **Scales were reverse scored

5.5.2 Approach

The cross-lagged models hypothesizing causal paths between father involvement, family functioning, and child well-being for this dissertation study are illustrated in Figure 3. Cross-lagged panel models were estimated to determine the direct and indirect effects of father involvement on child well-being. The primary goal of the dissertation study was to examine the relationship between father involvement and child well-being over time. Therefore, pathways that did not assess linkages between Wave 1 and Wave 3 constructs were not included in the cross-lagged models.

Figure 3: Conceptual Model of Cross-Lagged Model with Latent Variables
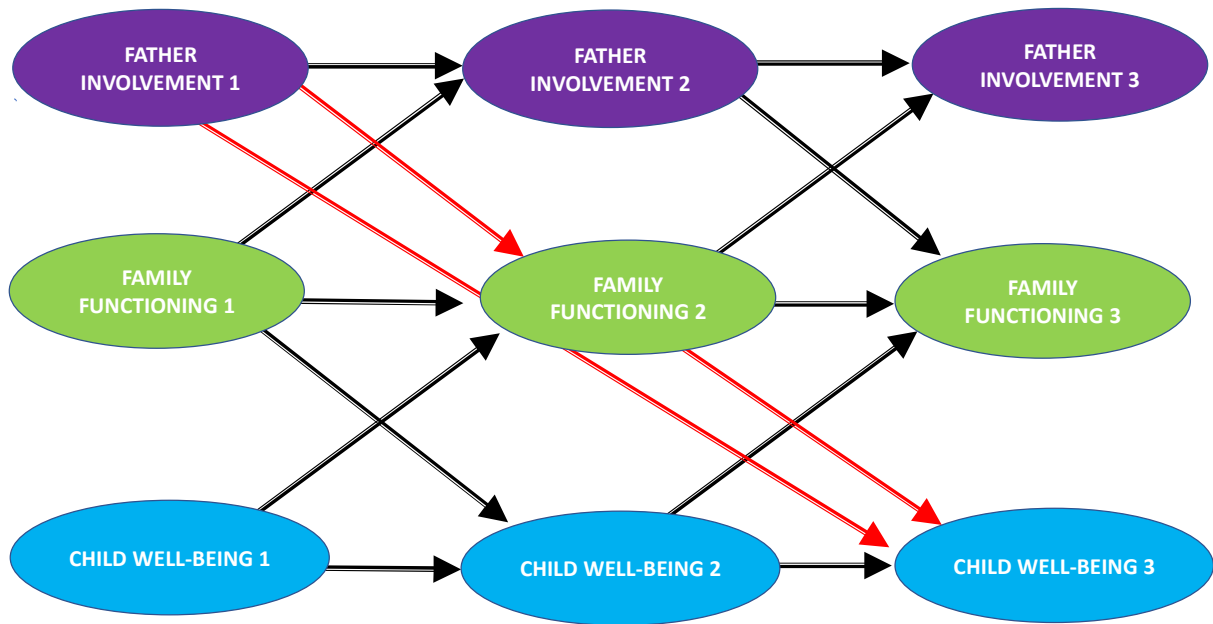
Cross-lagged models were assessed in MPlus 7.31 (Muthen & Muthen, 2010) using the maximum likelihood robust estimator (MLR). MLR accommodates the non-normality of indicator variables, while retaining the benefits of full information maximum likelihood estimation, which is considered to be one of the best strategies for addressing MAR or MCAR

data because it has fewer issues with model convergence (Bauer, Preacher, & Gil, 2006; Bowen & Guo, 2012; Kline, 2011). Several goodness-of-fit indices were assessed to determine model fit, and include Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). CFI/TFI values greater than .90, RMSEA less than .06, and SRMR less than .09 indicates acceptable fit between the implied model and observed variables. The Sattora-Bentler scaled chi-square difference test (TRd) was used to asses change among nested models.

The Sobel test was used to test the total direct and indirect effects of family functioning on the relationship between positive father involvement and child well-being. The Sobel test is the most commonly used method for estimating the standard error of indirect effects and is considered extremely conservative (Hayes, 2013; Little 2013; Sobel, 1986). The multiple group analysis technique was performed to examine the strength of direct and indirect effects of Wave 1 constructs on child and father constructs at Wave 3, after accounting for the moderating effects of father type. Significant mediation models were compared between father types.

Chapter 6: Results

6.1 Measurement Model

Prior to testing structural models, measurement models were developed and examined for convergent validity and measurement invariance. Per standard practice, one indicator per construct was fixed to 1 to scale the latent construct, which assumes latent constructs are measured without error. Error terms for indicator variables measured over time were allowed to correlate and all latent constructs were correlated. There were convergence issues with maternal parenting behaviors (i.e., physical neglect and emotional neglect) and a subscale from household environment (family leadership) having zero value factor loadings on latent variables. After removing the maternal parenting and family leadership variables, no convergence or identification problems present (*Base Model 1*). Non-significant parameter estimates, were removed from latent variables. Factor loadings under .30, combined with high residual variances were also removed because it suggests that indicators are not performing well. As a result, some child factor indicators (physical health and daily living skills) were removed from the model (*Base Model 2*). In summary, a variety of indicators were removed from the Family Functioning (maternal parenting behaviors and family leadership) and Child Well-Being (physical health and daily living skills) latent constructs, thus convergent validity was met (Kline, 1988). The measurement model had acceptable fit (X^2= 555.77, *df*= 259, *p*= .000, RMSEA=.04, CFI=.95, SRMR=.05). It is important to note that additional models testing individual CBCL subscales (i.e., aggression, depression, social withdrawal, attention problems, etc.), as well as individual items from the maternal social support subscales, were ran and compared with Base Model 1 and Base Model 2. Model fit did not improve; therefore, Base Model 2 was deemed the most

parsimonious, best fitting model. A summary of preliminary measurement models of interest is included in the appendices.

Measurement invariance testing was conducted to examine the extent to which factor structures were equivalent across the five regional sample sites. A configural model, which combines all groups together and allows factor loadings to vary across groups, was examined. Model fit indices revealed a higher RMSEA (.06), lower CFI (.88) and higher SRMR (.10), indicating that sites do not have the same factor structure. As a result, testing the structure would not be feasible because the latent constructs effects were not generalizable across groups.

6.2 Post-Hoc Analyses

6.2.1 Indicator Variables

Post-hoc analyses were performed to disentangle the broader latent constructs and gain a better understanding of the effects of father involvement on family and child outcomes using indicator variables. A description of indicator variables used in the post-hoc analyses are listed in Table 4. The effects of father involvement on child behavioral health (i.e., internalizing and externalizing behaviors total) and social competence were explored. The mediating role of home environment (i.e., family cohesion and expressiveness subscales) on the relationship between father involvement and child behavioral health and social competences were also explored.

LONGSCAN's codebook directs researchers to evaluate whether data from multiple regional sample sites can be combined. Post-hoc analysis revealed significant interactions between regional sample site and the predictor variable, father involvement. The interactions of site with other predictors in the model were also explored, and significant interaction effects were found. Examination of model fit was conducted for each sample site, and the inclusion of the Midwest site (Chicago) significantly decreased model fit indices (when combined with all of

the other sites). Additionally, unstandardized and standardized results were explored by site and

model effects for the Chicago site differed significantly from the other sites. As a result,

Chicago (Midwest site) was removed from the cross-lagged models, and the final sample size for

analysis consisted of 767 mother-child dyads. To account for potential confounding effects of

socio-economic status, sample site, and changes in father type across waves, time-variant (e.g.,

receipt of AFDC, primary father or father-figure) and time-invariant (e.g., regional sample site)

covariates were included in the cross-lagged models.

Table 4: Summary of Indicator Variables for Post-Hoc Models

	Operationalization	Min	Max
Exogenous Variable			
Father Involvement 1	Perception of financial support, physical care, emotional support, and companionship	4	16
Father Involvement 2	Perception of financial support, physical care, emotional support, and companionship	4	16
Father Involvement 3	Perception of total quality time, emotional support, and companionship	6	39
Mediating Variable			
Home Environment 1	Total family cohesion and expressiveness mean scores	2	10
Home Environment 2	Total family cohesion and expressiveness mean scores	2	10
Home Environment 3	Total family cohesion and expressiveness mean scores	2	10
Endogenous Variables			
Child Behavior 1	T-score for Total internalizing/externalizing problems	23	100
Child Behavior 2	T-score for Total internalizing/externalizing problems	23	100
Child Behavior 3	T-score for Total internalizing/externalizing problems	23	100
Social Competence 1	Total score for social competence (socialization skills)	0	30
Social Competence 2	Total score for social competence (socialization skills)	0	30
Social Competence 3	Total score for social competence (socialization skills)	0	30

6.2.2 Revised Cross-Lagged Models

The fully saturated, cross-lagged models hypothesizing causal paths between father involvement, home environment, and child behavioral health /social competence for this dissertation study are illustrated in Figure 4 and Figure 5. Cross-lagged panel models were estimated to determine the direct and indirect effects of father involvement on (a) child behavior problems and social competence at ages 6, 8, and 12, and (b) the effects of child behavior and social competence on father involvement. The primary goal of the dissertation study was to examine direct and indirect effects between father involvement and child well-being over time. The use of the same measures at different time periods may lead to inflated residual correlations. It is customary in longitudinal SEM to allow error terms with a synchronous relationship (within waves) to correlate (Kelloway, 2014). All correlations remained in the model, regardless of statistical significance. To account for the different respondents for the father involvement measure (Wave 1 & Wave 2 vs Wave 3), path coefficients for father involvement were constrained to be equal over time.

6.2.3 Power Analysis

Power analysis allows researchers to test the probability that a statistical test has the ability to detect an effect. According to recommendations by the statistical field, adequate power should be at least .80 in order to detect a true alternative hypothesis (Type II error), which rejects a hypothesis that is true. To determine the power of the dissertation study, a test of the null hypothesis of not-close fit was conducted (MacCullum, Browne, & Sugawara, 1996). Using a pwer estimation table by MacCullum et al., The null hypothesis of not-close fit was determined by comparing previous studies with similar degrees of freedom and sample size to reject the null hypothesis of not-close fit. Power analysis findings indicated that the study had adequate power

to detect an effect (1.00, *df= 70, n= 767*), suggesting a rejection of the null hypothesis of not-

close fit.

Figure 4[1]: Generic cross-lagged path model used to analyze pathways between positive father involvement, home environment, and child behavioral problems at ages 6, 8, and 12.
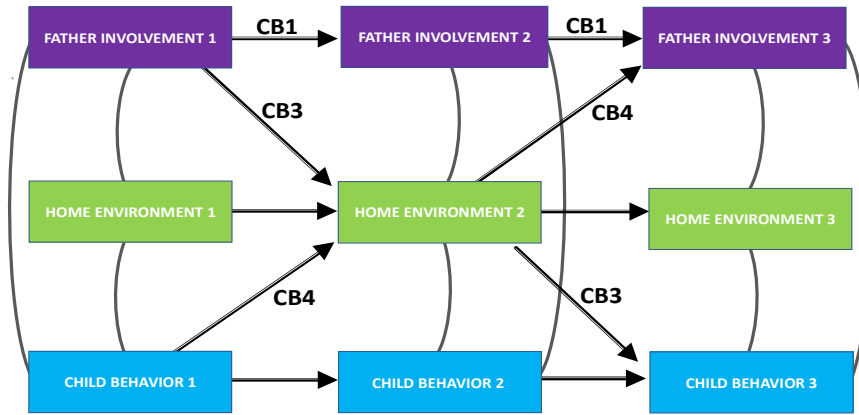
CB1/SC1= Stability Model (straight arrows)
CB2/SC2= Direct Effects Model (not shown)
CB3/SC3= Indirect Effects Model (down arrows)
CB4/SC4= Reverse Model (up arrows)
*The curved lines represent synchronous correlations

Figure 5[1]: Generic cross-lagged path model used to analyze pathways between positive father involvement, home environment, and social competence at ages 6, 8, and 12.
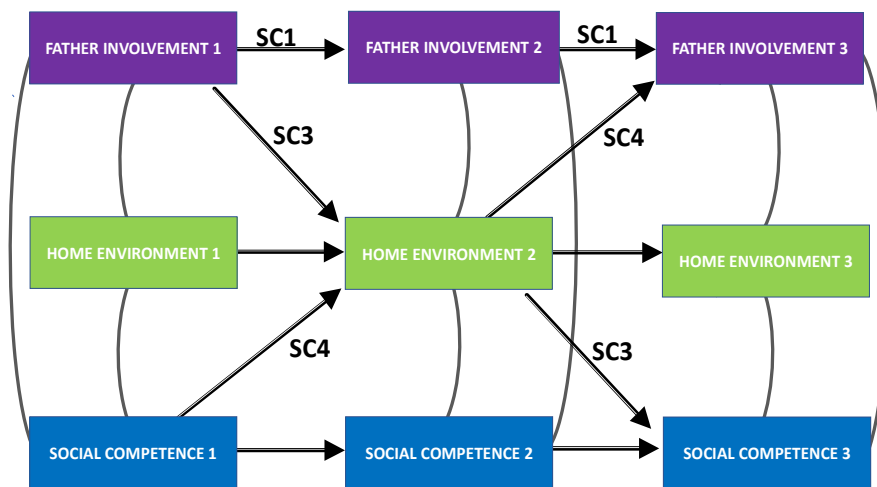
Four specific models were tested for each child well-being outcome, and will be referred

to as **CB** (child behavior) and **SC** (social competence) models. *CB1/SC1* models tested the

autoregressive effects, or stability, of the variables across time. In addition to the stability path models, three additional models were run to test cross-lagged relationships among father involvement, home environment, and child behavioral health /social competence. *CB2/SC2* models tested the direct effects of father involvement on child outcomes, independent of family factors. *CB3/SC3* models tested for the mediating effect of home environment on child behavioral health and social competence. *CB4/SC4* models tested a reverse relationship, by which child-related variables were hypothesized to influence the home environment and father involvement.

Table 5: Summary of Cross-Lagged Panel Models

Model Type	Model Name	Description
Stability	**CB1**- (Child Behavior) **SC1**- (Social Competence)	-No cross-lagged paths -Controls for correlations within and across time points
Direct Effects	**CB2**- (Child Behavior) **SC2**- (Social Competence)	-Includes stability paths - "Down-stream" cross-lagged paths - Bypasses potential mediating path
Indirect Effects	**CB3**- (Child Behavior) **SC3**- (Social Competence)	-Includes stability paths - "Down-stream" cross-lagged paths - Includes mediating path
Reverse	**CB4**- (Child Behavior) **SC4**- (Social Competence)	- Includes stability paths - "Up-stream" cross-lagged paths - Includes mediating path

6.3 Summary of Tests of Normal Distribution

Summary tables of univariate, bivariate, and multivariate tests of normality are included in the appendices.

6.3.1 Univariate Tests of Normality

Skewness, kurtosis and joint univariate tests were conducted for each variable. Significant skewness *p-values* for father involvement, home environment, and social competence (across waves) suggested that the majority of study variables did not meet assumptions for normality. Kurtosis *p-values* were significant for father involvement at Wave 2, social

competence at Wave 3, and home environment (across waves). Results from the joint univariate tests revealed significant *p-values* for father involvement, home environment, and social competence (across waves), indicating a rejection of the null hypothesis of normality of the majority of study variables.

6.3.2 Bivariate Test of Normality

Doornik-Hansen tests were conducted to assess for normal distribution on a bivariate level, and showed a rejection of the null hypothesis of normality for all pairs of variables that included father involvement, home environment (across waves). Additionally, all Doornik-Hansen tests with pairs of variables that included social competence at Wave 3 were statistically significant. Taken together, the majority of study variables did not meet assumptions for normality.

6.3.3 Multivariate Tests of Normality

The multivariate normality tests, Mardia Skewness, Mardia Kurtosis, Henze-Zirkler, and Doornik-Hansen, were statistically significant, therefore rejecting the null hypothesis of multivariate normality.

6.4 Descriptive Statistics

6.4.1 Sample Characteristics

Table 6 presents descriptive data on the sample at Wave 1 (n=767). The study sample consisted of maternal caregivers with a mean age of 35.67 years. Caregivers tended to be the biological mother of the child, however, caregivers also included foster care and adoptive mothers. More than half of the caregivers were single or separated/divorced (59%), but 55% had at least one adult male living in the home. Close to 50% of study families received AFDC. A little over half of the children were female (52%) and African American. Nine percent of the

Table 6: Descriptive Statistics for Sample (Baseline)

Variable Name	N	Proportion or M (SD)
Demographics		
Father Type	767	
Biological		45%
Step-Father		9%
Mother's Significant Other		14%
Foster Father		4%
Relative (e.g., Uncle, Grandfather, etc.)		13%
Other (e.g., Family Friend, Adoptive Father, etc.)		15%
Child Gender (% female)	764	52%
Child Ethnicity	658	
African American		50%
White		31%
Mixed Race/Ethnicity		11%
Other		8%
Mother's Age	672	35.67(10.61)
Mother's Marital Status	717	
Married		41%
Single (Never Married)		37%
Separated/Divorced/Widowed		22%
Family Characteristics		
Family SES: AFDC Recipient (% yes)	716	49%
Number of adult males in the home	703	
None		45%
1		51%
2+		4%
Family Expressiveness (mean score)	718	1.75(.73)
Family Cohesion (mean score)	718	2.17(.74)
Maternal Social Support	707	39.50(8.52)
Child Characteristics		
Total Behavior Problems	761	
Borderline Range (%yes)		9%
Clinical Range (%yes)		22%
Physical Health (1=great; 4=poor)	712	1.47(.63)
Chronic Illness (% yes)	711	20%

study sample were in the borderline range and 22% in the clinical range on the CBCL (total

problems subscale), indicating a severe emotional or behavioral problem. Fifty-five percent of

fathers were father-figures (e.g., step-fathers, foster fathers, relatives, etc.).

6.4.2 Bivariate Correlations

Indicator variable means, standard deviations, and correlations are included in Table 7. Correlations indicated that father involvement at Wave 1 was significantly associated with home environment (r = -0.25) and social competence (r= 0.11) at Wave 1. Home environment at Wave 1 was significantly correlated with child behavior problems at Wave 1 (r= 0.26), Wave 2 (r= 0.21), and Wave 3 (r= 0.22). Similar correlations were found between home environment at Wave 1 and social competence at all three waves (r= -0.17, r= -0.14, r= -0.16). Child behavior problems at Wave 1 was significantly correlated with home environment at Wave 2 (r= -0.14). A similar correlated relationship was found between social competence at Wave 1 and home environment at Wave 2 (r= -0.17).

Table 7: Means, Standard Deviations, and Correlations among Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	*M*	*SD*
Father Involvement 1	-											12.58	2.99
Father Involvement 2	.42*	-										12.90	2.87
Father Involvement 3	.22	.19*	-									27.94	6.46
Home Environment 1	-.25*	-.16*	-.11*	-								3.92	1.28
Home Environment 2	-.22*	-.28*	-.08	.54*	-							3.98	1.19
Home Environment 3	-.15*	-.17*	-.12*	.36*	.40*	-						4.21	1.44
Child Behavior 1	-.07	-.12*	-.06	.26*	.14*	.15*	-					54.78	10.91
Child Behavior 2	-.03	-.10*	-.12*	.21*	.23*	.19*	.67*	-				54.40	11.49
Child Behavior 3	-.05	-.10*	-.09	.22*	.21*	.21*	.54*	.65*	-			54.76	11.80
Social Competence 1	.11*	.11*	.13*	-.17*	.17*	-.11*	-.35*	-.29*	-.26*	-		15.25	4.85
Social Competence 2	.04	.07	.02	-.14*	.23*	-.14*	-.32*	-.42*	-.37*	.56*	-	17.63	5.16
Social Competence 3	.05	.13*	.11*	-.16*	-.17*	-.22*	-.27*	-.33	-.45*	.46*	.54*	21.06	5.39

*p ≤ .05

6.5 Model Results

6.5.1 Relationships between Father Involvement, Home Environment, and Child Behaviors

The stability model, CB1, fit the data adequately, X^2= 130.70, *df*= 60, RMSEA=.04, CFI=.94, SRMR=.06. Moderate and significant stability coefficients were found for home environment across time (Wave 1 →Wave 2 β=0.53, *p* < .000; Wave 2→Wave 3 β=0.26, *p* <.000). The strongest stability coefficients were found in total child behavior problems at Wave

1→Wave 2 (β=0.68, *p* <.000) and Wave 2→Wave 3 (β=0.52, *p* <.000). Taken together, modeling findings suggest stable and significant relationships between father involvement, the home environment, and child outcomes over concurrent waves.

All cross-lagged models related to child behavior and father involvement (i.e., *CB2, CB3, CB4*) acceptable fit, as evidenced by the goodness-of-fit indices. These models had CFIs at or above .94, RMSEAs below .05, and SRMRs below .09. A summary of path coefficients for child behavior models is provided in Table 8. There were no significant directs effects from father involvement at Wave 1 to child behavior problems at Wave 3 (*CB2,* Direct Effects Model). *CB4,* a model assessing a reverse hypothesis about the relationship between child behavior problems and father involvement, did not find significant paths between child behavior problems at Wave 1 and father involvement at Wave 3.

Table 8: Alternative Father Involvement Models-Child Behaviors (Path Coefficient Summary)

Paths	Estimate	*p*	Standardized Estimate
CB1. Stability Model			
Direct Paths			
Father Involvement 1→ Father Involvement 2	0.39	.000	0.41
Father Involvement 2 → Father Involvement 3	0.39	.000	0.17
Father Involvement 1 → Father Involvement 3	0.39	.00	0.18
Home Environment 1 → Home Environment 2	0.48	.000	0.53
Home Environment 2 → Home Environment 3	0.26	.000	0.26
Home Environment 1 →Home Environment 3	0.19	.000	0.20
Child Behavior 1→ Child Behavior 2	0.71	.000	0.68
Child Behavior 2 →Child Behavior 3	0.53	.000	0.52
Child Behavior 1 → Child Behavior 3	0.19	.000	0.18
Covariances (Exogenous & Residuals)			
Father Involvement 1 ← → Home Environment 1	-0.96	.000	-0.25
Father Involvement 1 ← → Child Behavior 1	-2.24	.06	-0.07
Home Environment 1 ← → Child Behavior 1	3.60	.000	0.26
Father Involvement 2 ← → Home Environment 2	-0.50	.000	-0.19
Father Involvement 2 ← → Child Behavior 2	-0.15	.89	-0.01
Home Environment 2 ← → Child Behavior 2	1.42	.000	0.17
Father Involvement 3← → Home Environment 3	-0.49	.20	-0.07
Father Involvement 3 ← → Child Behavior 3	-1.42	.59	-0.03
Home Environment 3← → Child Behavior 3	0.77	.08	0.08
CB2. Direct Effects Model			
Father Involvement 1 →Child Behavior 3	-0.003	.98	-0.001
CB3. Indirect Effects Model			
Father Involvement 1 →Home Environment 2	-0.04	.007	-0.10
Home Environment 2 →Child Behavior 3	0.89	.006	0.09
Total Indirect	-0.03	.05	-0.009
CB4. Reverse Model			
Child Behavior 1 →Home Environment 2	0.001	.76	0.01
Home Environment 2 → Father Involvement 3	-0.10	.75	-0.02

Model CB3 (Indirect Effects Model), depicted in Figure 6, examined the mediating role home environment played in the relationship between father involvement and child behavior problems. Results indicated that controlling for sample site, family SES, and changes in father/father-figure, positive father involvement at Wave 1 predicted a decrease in home

environment issues (family cohesion and expressiveness) at Wave 2, which predicted a decrease

in child behavior problems at Wave 3. Levels of significance for mediating effects were

estimated using the Sobel test and results indicated a fully mediated model, which supported the

hypothesis that father involvement and child behavior problems have an indirect effect through

home environment (β= -0.009, p = .05).

Figure 6: Final Model for Child Behaviors
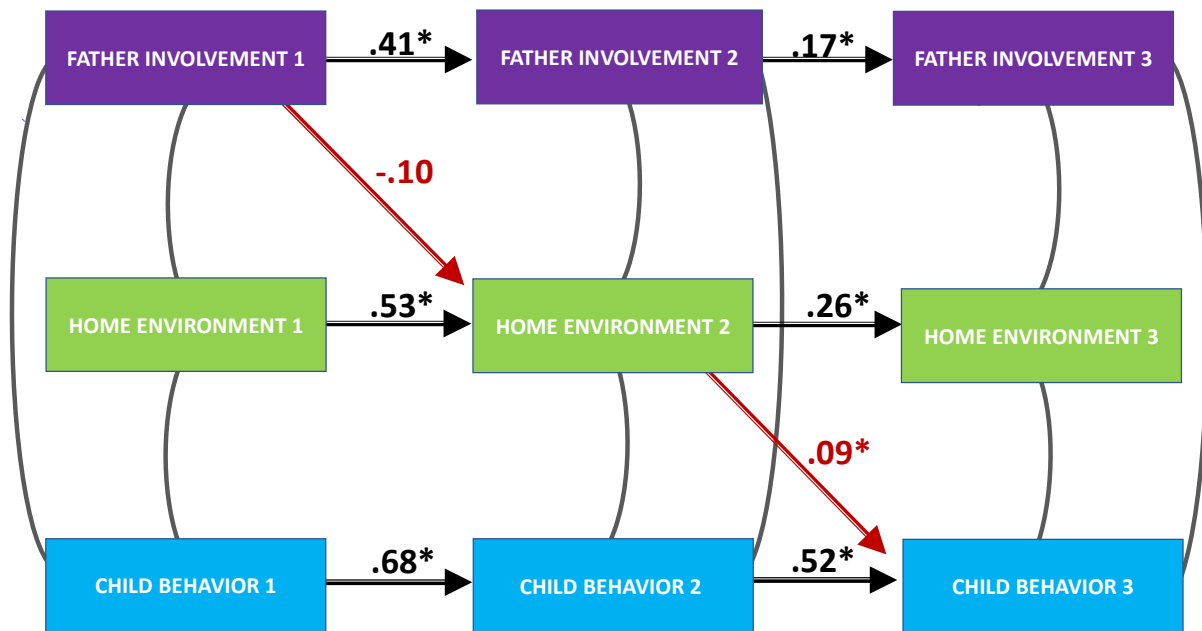
*p $\leq$ .05
**The curved lines represent synchronous correlations

6.5.2 Moderation Effects

To test the effects of father type on the relationship between father involvement and child

behavior, a multiple group analysis approach was applied on CB3 (indirect effects model). First,

data were separated by father type (i.e., biological father or father-figure) and examined for

model fit. Each model had acceptable model fit. Next, the two groups were combined in a

configural invariance model, which removed constraints on parameters, and served as a baseline

model. Three path invariance models were run to assess for differences between biological fathers and father figures in CB3's indirect effects model, and include: (1) Weak Invariance A, (2) Weak Invariance B, and (3) Strong Invariance. First, a weak invariance model (Weak Invariance A) was run, which constrained *CB3*'s exogenous to endogenous paths to be equal across groups. Next, another weak invariance model (Weak Invariance B) was run, which constrained CB3's endogenous to endogenous paths to be equal across groups. Finally, a strong invariance model was run, which constrained residuals terms across groups. Comparisons of the configural model with the three path invariance models were conducted using the Sattora-Bentler scaled chi-square difference test. Findings suggested that there are no moderating effects of father type on the indirect relationship between father involvement and child behavior when all factor loadings were set to equality (*TRd*=3.96, *df*=2, *p*= 0.14). However, when residuals were constrained to be equal across groups, moderated effects were detected by father type.

Table 9: Fit and Model Comparisons- Moderation Effects

Model	X^2	df	RMSEA	CFI	TLI	SRMR
Configural Invariance	164.72	81	.05 (.04-.07)	.93	.90	.07
Weak Invariance A	164.66	82	.05 (.04-.07)	.93	.90	.07
Weak Invariance B	168.68	83	.05 (.04-.07)	.93	.90	.07
Strong Invariance	190.89	82	.06 (.05-.07)	.91	.87	.08
Chi-Square Difference Test	$X^2\Delta$ (TRd)	df Δ	*p*			
Configural Invariance- Weak Invariance A	0.06	1	.81 *(ns)*			
Configural Invariance- Weak Invariance B	3.96	2	.14 *(ns)*			
Configural Invariance- Strong Invariance	26.17	1	<.000			

6.5.3 Model Comparisons- Child Behavior

The Sattora-Bentler scaled chi-square difference test was also utilized to test the alternative models and determine which model best fits the data. The goal was to have the most parsimonious model, without sacrificing model fit. The indirect effects model, *CB3*, was the only model that differed significantly from the baseline model. Additionally, a comparison of the CFI and TLI values suggest that the indirect effects model has the best model fit.

Table 10: Fit and Model Comparisons- Child Behavior

Model	X^2	df	Scaling Correction Factor	RMSEA	CFI	TLI	SRMR
CB1. Stability Model	130.70	60	1.02	.04 (.03-.05)	.94	.92	.06
CB2. Direct Effects Model	130.62	59	1.02	.04 (.03-.05)	.94	.92	.06
CB3. Indirect Effects Model	115.84	58	1.02	.04 (.03-.05)	.95	.94	.06
CB4. Reverse Model	130.87	58	1.02	.04 (.03-.05)	.94	.92	.06
Chi-Square Difference Test	$X^2\Delta$ (TRd)	$df\Delta$	p				
CB1-CB2	0.08	1	.77 (ns)				
CB1-CB3	14.86	2	<.000				
CB1-CB4	0.17	2	.91 (ns)				

6.5.4 Relationships between Father Involvement, Home Environment, and Social Competence

Examination of the stability model for social competence, *SC1*, revealed similar findings related to stability coefficients as those identified in *CB1*. *SC1* had acceptable fit (X^2= 117.96, *df*= 60, RMSEA=.04, CFI=.94, SRMR=.07). Path coefficients for home environment produced moderate stability over time (Wave 1→Wave 2, β=.53, p <.000; Wave 2→Wave 3, β=0.26, *p* < .000). Stability coefficients for social competence remained consistent across waves (Wave 1→Wave 2, β= 0.54, *p* <.000; Wave 2→Wave 3, β= 0.41, *p* <.000).

**Table 11: Alternative Father Involvement Models- Social Competence (Path Coefficient Summary)**

Paths	Estimate	*p*	Standardized Estimate
SC1. Stability Model			
Direct Paths			
Father Involvement 1→ Father Involvement 2	0.39	.000	0.41
Father Involvement 2 → Father Involvement 3	0.39	.000	0.17
Father Involvement 1 → Father Involvement 3	0.39	.000	0.18
Home Environment 1 → Home Environment 2	0.49	.000	0.53
Home Environment 2 → Home Environment 3	0.26	.000	0.26
Home Environment 1 → Home Environment 3	0.19	.000	0.20
Social Competence 1→ Social Competence 2	0.58	.000	0.54
Social Competence 2 → Social Competence 3	0.42	.000	0.41
Social Competence 1 → Social Competence 3	0.21	.001	0.19
Covariances (Exogenous & Residuals)			
Father Involvement 1 ← → Home Environment 1	-0.97	.000	-0.25
Father Involvement 1 ← → Social Competence 1	1.59	.003	0.11
Home Environment 1 ← → Social Competence 1	-1.04	.000	-0.17
Father Involvement 2 ← → Home Environment 2	-0.50	.000	-0.19
Father Involvement 2 ← → Social Competence 2	0.52	.37	0.05
Home Environment 2 ← → Social Competence 2	-0.67	.000	-0.16
Father Involvement 3← → Home Environment 3	-0.60	.11	-0.09
Father Involvement 3 ← → Social Competence 3	1.85	.27	0.07
Home Environment 3← → Social Competence 3	-0.76	.003	-0.16
SC2. Direct Effects Model			
Father Involvement 1 → Social Competence 3	0.04	.59	0.02
SC3. Indirect Effects Model			
Father Involvement 1 →Home Environment 2	-0.04	.005	-0.10
Home Environment 2 → Social Competence 3	-0.35	.08	-0.08
Total Indirect	0.02	.14	0.008
SC4. Reverse Model			
Social Competence 1 →Home Environment 2	-0.02	.01	-0.09
Home Environment 2 → Father Involvement 3	-0.12	.69	-0.02

The cross-lagged paths hypothesized for social competence models (*SC2, SC3*, and *SC4*) mirrored the child behavior models. All three models had good model fit. Of the three alternative models estimated, only two paths within two models, yielded significant findings (see Table 11). In *SC3*, the effect of father involvement at Wave 1 predicted home environment at Wave 2

(β= -0.10, *p*= .005). This finding was also identified in the child behavior model. The influence

of home environment at Wave 2 on social competence at Wave 3 appeared to be trending toward

significance (β= -0.08, *p*= .08). In the reverse model, *SC4*, social competence at Wave 1

predicted home environment at Wave 2 (β= -0.09, *p*= .02), but home environment at Wave 2 did

not predict father involvement at Wave 3 (β= -0.02, *p*= .69). Tests examining moderating effects

were not performed on the social competence models because there were no additional

significant findings related to father involvement.

Figure 7: Final Model for Social Competence
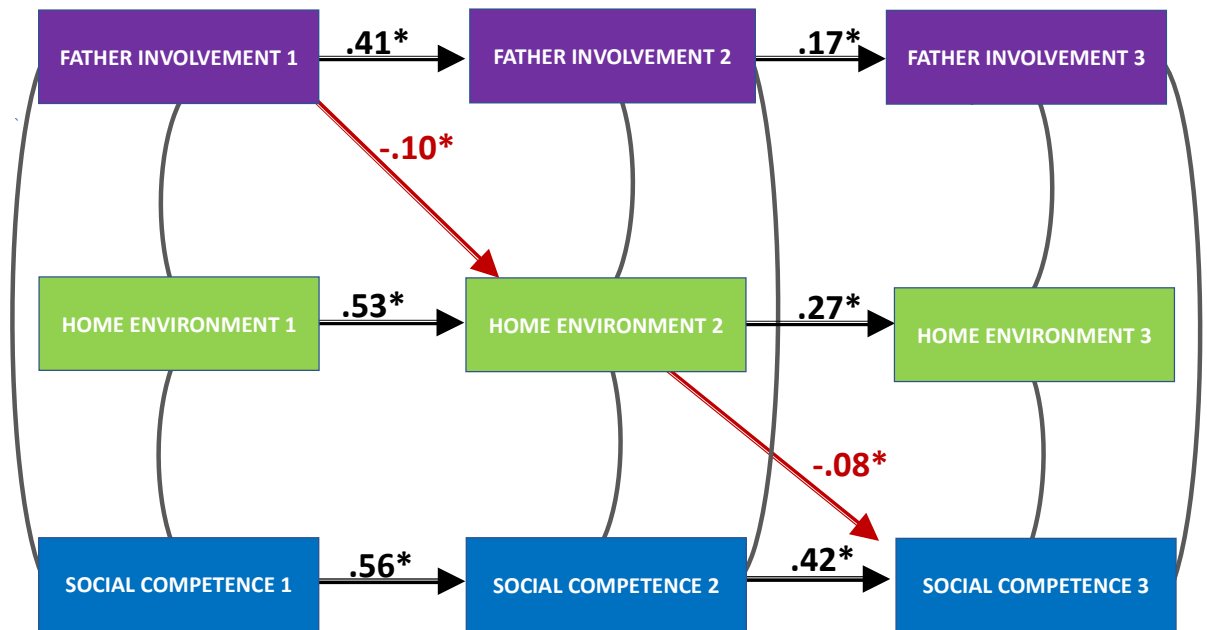
*p ≤ .05
**The curved lines represent synchronous correlations

6.5.5 Model Comparisons- Social Competence

To examine model fit between the stability model (*SC1*) and alternative models, the Sattora-Bentler scaled chi-square difference test was performed (see Table 12). *SC3* and *SC4* were found to be significantly different from the stability model. The Sattora-Bentler scaled chi-square difference test, comparing *SC3* and *SC4*, could not be performed because there were no differences in the degrees of freedom between the models. Therefore, comparison of model fit indices revealed a lower chi-square, lower RMSEA/SRMR, and higher CFI/TLI for the indirect model (*SC3*), which suggests better model fit.

Table 12: Fit and Model Comparisons- Social Competence

Model	X^2	df	Scaling Correction Factor	RMSEA	CFI	TLI	SRMR
SC1. Stability Model	117.96	60	1.05	.04 (.03-.05)	.94	92	.07
SC2. Direct Effects Model	117.77	59	1.05	.04 (.03-.05)	.94	.92	.07
SC3. Indirect Effects Model	105.92	58	1.05	.03 (.02-.05)	.95	.93	.06
SC4. Reverse Model	111.81	58	1.05	.04 (.03-.05)	.94	.92	.06
Chi-Square Difference Test	$X^2\Delta$ (TRd)	df Δ	p				
SC1-SC2	0.19	1	.66*(ns)*				
SC1-SC3	12.04	2	.002				
SC1-SC4	6.15	2	.05				

Chapter 7: Discussion

This study drew on social capital theory, Belsky's model of child maltreatment, and the heuristic model of father involvement to further our understanding of the relationship between positive father involvement and child development among families at risk for neglect. The main goal was to examine the direct and indirect effects of father involvement on child well-being over time, as well as test the mediating effect of family functioning on the relationship between father involvement and child well-being. Initially, the study sought to examine these relationships through latent constructs. However, results from CFA models indicated poor fit and multiple group analysis revealed that the latent constructs' factor structures varied across the five study sites. Therefore, post-hoc analyses were conducted to disentangle the aspects of family functioning (i.e., home environment) and child well-being to test the relationships between father involvement on aspects of family functioning and child outcomes over time. Specifically, further analysis focused on understanding the relationship between father involvement and home environment (family cohesion and expressiveness as a proxy for neglect risk), and its impact on child behavior problems and social competence.

This dissertation study also sought to examine the moderated effects of father type on the relationship between father involvement, home environment, and child behavior/social competence. Cross-lagged panel modeling techniques were incorporated to examine direct, indirect, as well as reverse effects of father involvement on child behavioral and social development.

7.1 Father Involvement and Child Behavioral Health

The study found no direct effects of father involvement at Wave 1 on child behavior at Wave 3. Findings from previous studies on the direct relationship between father involvement and child behavioral outcomes have been mixed. Marshall et al. (2001), found no effect of father involvement on child depression and anger. Similar findings were also highlighted in a study examining non-resident fathers and child behavioral problems among school-aged children (Flouri & Malmberg, 2012). Other studies on father involvement and child behavior have found that positive parenting beliefs and interactive play was significantly associated with a lower risk of externalizing problems in early childhood (Kroll, Carson, Redshaw, & Quigley, 2016; (Ramchandani, Domoney, Sethna, Psychogiou, Viachos, & Murray, 2013). Discrepancies in how father involvement is defined may contribute to inconsistent findings. For example, in a systematic review examining the relationship between father involvement and child development, Sarkadi and colleagues (2008) found that most studies (22 out of 24) reported a strong and positive relationship between frequent father-child interaction *(i.e., positive engagement)* and children's social, behavioral, and psychological outcomes. Marshall et al. (2001) defined father involvement consistent with Pleck's primary and secondary components and Flouri and Malmberg (2012) defined father involvement as the frequency of father-child interactions, financial support, and father's interest in the child. This dissertation study defined father involvement similar to Marshall et al. (2001) and Flouri and Malmberg (2012), and, similar to those studies, found no significant effects.

Discrepancies in findings may also depend on the age of the child and outcome being assessed. The present study was limited in the ability to follow children across all age ranges and developmental milestones. If father involvement does have an impact on child well-being,

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this may change in magnitude and relationship to specific outcomes over time. For instance, as children move through the stages of childhood to adolescence, it is possible that they rely less on daily routine care, and need more companionship with fathers, as well as guidance on decision-making. Longitudinal studies that can make these small reframes of theoretical relationships may help identify the aspects of father involvement that are most important to healthy developmental trajectories for youth in need.

A significant pathway was found between father involvement at Wave 1 and home environment at Wave 2, and home environment at Wave 2 and child behavioral problems at Wave 3, after accounting for home environment and child behavior in previous waves. These findings suggest that fathers may have an indirect effect on child behavioral development by way of increases in family expressiveness and cohesion. Aspects of family functioning, including maternal social support, and maternal parenting behaviors, are well documented as predictors of child developmental trajectories (Carter & Myers, 2007; Sedlak et al., 2010; Slack et al., 2010). Furthermore, these studies found that promoting aspects of family functioning has also been associated with a decrease in neglect risk.

Consistent with previous research (Bzostek, 2008; Waldfogel, Craigie, & Brooks-Gunn, 2010), father type did not moderate the longitudinal indirect effects of father involvement on child behavior problems. Studies have shown that father-figures may be linked to positive child emotional and physical health outcomes (Bronte-Tinkew, Horowitz, & Scott, 2009; Nepomnyaschy, Magnuson, & Berger, 2012; Sarkadi et al., 2008). Taken together, father-figures who are supportive to mothers may be as influential in children's lives as biological fathers.

It is also important to discuss the effects of child behaviors on fathering. In the reverse cross-lagged model, child behavior problems at Wave 1 did not have a significant effect (direct

or indirect) on father involvement at Wave 3. This finding is inconsistent with recent studies examining this relationship; especially in studies focused on adolescent behaviors. For example, in a study assessing the association between adolescent internalizing and externalizing behaviors, academic achievement, and father involvement among non-resident fathers, Hawkins and colleagues found the levels of adolescent well-being to be the cause, not the result of father involvement (Hawkins, Amato, & King, 2007). The study also found adolescent externalizing and internalizing behaviors at Time 1 to be negatively associated with active fathering at Time 2, suggesting that child outcomes influence father involvement. Another study found a reciprocal relationship between parental attachment and adolescent delinquency (Gault-Sherman, 2012). Therefore, it is possible that because measurement of father involvement ended at age 12, the direct effect between father-child interactions and child development may not be captured.

7.2 Father Involvement and Social Competence

The study did not find any direct or indirect effects of father involvement at Wave 1 on social competence at Wave 3. The only significant pathways identified were father involvement at Wave 1 on home environment at Wave 2 and social competence at Wave 1 on home environment at Wave 2. Findings suggest that both father and child behaviors shape aspects of the home environment (e.g., neglect risk), which may impact other child well-being outcomes over time, such as physical health, daily living skills, and academic achievement. Additionally, a direct relationship between father involvement and social competence may exist, however, the relationship may not have been detected because of measurement issues related to father involvement, as discussed below.

Although significant pathways between father involvement, home environment, and child outcomes exist, it is important to note that all effects were modest in magnitude. This may be

due, in part, to the stability of child behavior problems and social competence over time. Once stability is accounted for, there is little variance left to explain father involvement and family functioning factors. These weak relationships may also be due to limitations with measurement of father involvement.

7.3 Study Limitations and Future Directions

This dissertation study raises a few methodological issues that should be noted, and addressed in future research. First, the study relies on secondary data analysis, which limits the analysis to variables obtained from the original study. Second, the use of indicator variables did not allow for the cross-lagged models to account for measurement error over time. Therefore, it is uncertain how much of what has been explained is due to measurement error. Attempts to create latent constructs for father involvement, family functioning, and child well-being proved difficult using the LONGSCAN data. This may have been due to differences in the factor structure of latent variables among the five study sites. In future studies, a person-centered approach to longitudinal analysis, such as growth mixture modeling (GMM), may be a useful strategy to deal with issues related to quantifying the role of study variables of interest (i.e., confirmatory factor analysis). GMM classifies individuals into subgroups based on particular trajectories. Person-centered approaches have been used to examine child development for the past 20 years. and has been especially useful when examining development across time (Lanza & Cooper, 2016; Mandara, 2003).

The use of self-reported measures is a potential limitation. The disadvantage of self-report methods is that there are potential problems of validity, as participants may be influenced to respond to questions due to social desirability or may have issues recalling behaviors or feelings that occurred in the past (Barker, Pistrang, & Elliott, 2005). If self-reported measures are

the most feasible data collection method, future studies may benefit from incorporating multiple reports (such as mother, father, and child reports) of variables of interest to examine potential discrepancies, which may address the methodological issue related to using self-reporting methods. Additionally, including and examining variables of interest by multiple respondents could also address the exclusion of father reports on father-involvement measures. Failure to assess fathers on parenting and child outcomes is problematic because they may have an alternative perspective on the quality of their parenting, as well as the perception of child behavioral problems. This rationale could also be applied to improving the measure of certain child outcomes, as LONGSCAN data collection methods did not include child reports of child behavioral problems and social competence at Wave 1 and Wave 2.

The use of different measures to assess father involvement may also be a study limitation. Total father involvement scores were assessed through mother reports at Wave 1 and Wave 2. Adolescent reports of father involvement were utilized to assess quality and frequency of father behaviors at Wave 3. Changes in measurement instruments across waves was also apparent in the scale used to assess maternal social support. For example, the Duke-UNC Functional Social Support Questionnaire was used to measure maternal social support at Wave 1 and included specific questions related to parenting support. The Social Provisions Scale was used to measure maternal caregivers' social relationships at Wave 2 and Wave 3 and assessed support more broadly, which resulted in the removal of questions specific to parenting support. The exclusion of key parenting support questions at later waves made it difficult to assess the influence of fathers' behaviors on maternal parenting over time. Changes in instruments, as well as respondents, may be the associated with weaker stability coefficients at Wave 2→Wave 3, compared to Wave 1→ Wave 2. However, it is important to note that measurement revisions and

the use different measures are common practice in longitudinal studies. Especially, studies with multiple waves (i.e., more than four) across various child developmental periods.

Another measurement-related limitation was the instrument used to capture father involvement. Data collected from The Father Involvement with Child scale assessed the magnitude and quality of paternal parenting behaviors and only included 4 questions to examine multiple components of father involvement. While LONGSCAN is one of the first large datasets to attempt to measure all father involvement components, it is possible that more questions are needed to properly assess the concept. Additionally, these questions may not be appropriate for all children and adolescents, as father involvement behaviors will change as children get older. Future studies will benefit from using measures that assess the various components of father involvement, accounts for age appropriate parenting behaviors, and captures the frequency and quality of father involvement. The Fatherhood Research and Practice Network Father Engagement Scale (Dyer, Kaufman, Cabrera, Fagan, & Pearson, 2015) is a brief father-reported scale that addresses the measurement concerns common to assessing father involvement. The scale comprises 10 items related to specific parenting skills and behaviors. Items are measured on a 5-point scale (0=never; 5=every day or almost every day). There are 4 versions of the scale, each one targeted to specific age groups (e.g., infancy, early childhood, middle childhood, and adolescence). A separate measure would need to be incorporated to ascertain fathers' financial contributions, as the Father Engagement Scale does not capture this component.

Finally, fathers' socio-economic status (SES) was not controlled for in this dissertation study. This is a potential methodological weakness because the higher rates scores on the father involvement measure may be a function of higher SES. Fathers who are better educated are more likely to be financially stable, which may increase their ability to be more involved with their

children (Sarkadi et al., 2008). Study sites did not collect data on SES for many fathers/father-figures, therefore, no controls, related to fathers' SES, were included in the cross-lagged models[2]. However, it is important to note that family poverty was controlled for in the models.

7.4 Implications

This dissertation study uses multi-wave longitudinal models to inform our understanding of the role fathers play in preventing neglect and promoting child well-being, and has implications for research and practice, as well as organizations serving families in need.

7.4.1 Research Implications

There is a paucity of neglect research, specifically research examining the relationship between paternal parenting behaviors, child neglect risk and protective factors, and child behavioral and social development (ACF, 2015), which is addressed by this study's research questions. Considering the negative impact of neglect on child developmental trajectories and that close to 90% of children at risk of child maltreatment have a biological father or father-figure in their lives (Bellamy, 2008; U.S. Census Bureau, 2016), more research is needed to understand the extent to which positive father involvement improves the lives of children.

Study findings demonstrated the effects of father involvement on child behavior over time, however, more research is needed on the reciprocal relationship between father involvement and child well-being. Specifically, the field needs a better understanding of the role of child effects on father involvement, as the current evidence is scant (Cabrera et al., 2007; Pleck, 2012). One hypothesis is that fathers may feel inadequate about their parenting skills, especially when children are experiencing social and behavior problems. Feelings of inadequacy may decrease fathers' level of positive involvement and increase neglect risk (i.e., less resources to help meet children's basic needs).

Overall, the dissertation findings highlight the importance of understanding the role fathers and father-figures play in reducing neglect risk and adverse child developmental outcomes. More research is needed to understand if the effects of father involvement remain for families that have had the opportunity to benefit from recent federal efforts to improve father-child relationships (i.e., Healthy Marriage and Responsible Fatherhood initiatives). For example, the Fragile Families and Child WellBeing Study (FFCWS; National Center for Family & Marriage Research, 2012) follows 5,000 new parents and their children from birth (1998-2000). The study collects data on developmental outcomes of children living within diverse family structures (e.g., single-mother, married-couple families, and cohabiting families), and includes families who were eligible to participate in programs funded under the Healthy Marriage and Responsible Fatherhood initiative. Furthermore, the impact of father involvement on child well-being could be compared between the LONGSCAN and FFCWS data, which has the ability to not only capture trends and changes in father behaviors overtime, it also allows for further examination on the relationship between the implementation of fatherhood policies and positive father involvement.

7.4.2 Practice Implications

Study results demonstrated the indirect effects of father involvement on child behavior problems. Given findings that the relationship between father involvement and child outcomes is mediated by the home environment, understanding how fathers can contribute to strengthening overall family functioning is of great importance, and directly aligns with federal initiatives promoting fatherhood. In fact, the United States Department of Health and Human Services has invested $300 million toward programs aimed at fostering positive father-child relationships

(USDHHS, 2012). Identifying ways in which father involvement leads to healthy child development is imperative to developing and providing services to fathers in need.

Lastly, this study included both risk and protective factors related to family functioning (i.e., home environment), which is key to preventing child neglect and promoting child well-being. Considering that father involvement had an effect on the home environment, study findings also have implications for the development of programs that specifically target fathers, as there are few examples of father-focused evidence-based programs, services, and strategies to reduce neglect or adverse child outcomes. For example, identifying which components of father involvement have the strongest impact on neglect risk and child well-being can lead to interventions that incorporate training to enhance specific fathering behaviors.

7.4.3 Organizational Implications

Current study findings showed the role of positive father involvement in decreasing neglect risk (i.e. improving home environment). Understanding the impact of father behaviors on the home environment can help to identify areas that prevention interventions should target with families at risk for child maltreatment. It will be important for the child welfare system, along with other systems serving children, to engage fathers in evidence-based programs, such as behavioral parent training interventions (BPT). There is emerging evidence that suggests that BPT interventions prevent child maltreatment (Prinz, Sanders, Shapiro, Whitaker, & Lutzker, 2009), yet, fathers rarely participate in these interventions. Engagement efforts may include educating families on the unique contributions of fathers in their children's lives, and removing potential barriers to fathers' participation in services (Bayley, Wallace, & Choudhry, 2009; Panter-Brick, Burgess, Eggerman, McAllister, Pruett, & Leckman, 2014). Training service

providers on strategies to engage and retain fathers in evidence-based programs may also be necessary.

7.5 Summary

The present dissertation study advances our understanding of the role of father involvement in family and child outcomes. Using a longitudinal panel design, findings from this dissertation study support the benefits of positive father involvement in reducing neglect risk (i.e., home environment) and child internalizing/externalizing behaviors and social problems over time. Specifically, study findings suggest that a father's involvement in daily care routines, monitoring, financial support, and companionship during early childhood increases household family expressiveness and cohesion among families with histories or at-risk of child neglect. Additionally, this study found that healthier family interactions, during middle childhood, has a direct impact on both internalizing and externalizing behaviors in adolescence. These findings suggest that father involvement can have an impact on overall functioning among some of the most vulnerable families.

This dissertation study builds upon child maltreatment and fathering theories (i.e., Social Capital Theory, Heuristic Model of Father Involvement) supposing that father involvement uniquely contributes to family and child functioning. Study findings suggest that while fathers may not directly impact child behavioral and social development, they contribute to healthier child outcomes through their distribution of social capital to the family. It is important to note that 80% of biological fathers did not live in the home at Wave 1 and 45% of families did not have any father-figures living in the home at Wave 1. In essence, fathers impacted child development, over time, by offering social support to their family through their social capital, which occurred regardless of fathers residing in the home with their children. Explicit testing of

father involvement on a variety of family functioning components, such as maternal social support and maternal social support, may set the stage for strategies that include fathers as major contributors to the household environment, independent of residential status.

This study also provides support for the role father-figures play in reducing neglect risk and adverse child outcomes. Both biological fathers and father figures had a positive impact on family functioning. This builds upon the body of evidence suggesting that father-figures (i.e., social fathers) can positively contribute to the household environment and child outcomes over time. These findings also encourage more research focused on identifying potential father-figures who can serve as a source of support for families at risk for neglect and adverse child outcomes.

Study findings reinforce prevention studies that have shown an inverse relationship between household environment and neglect risk (Carter & Myers, 2007; Sedlak et al., 2010; Slack et al., 2010). Given that children with histories of neglect are at a greater risk of developing behavioral disorders (Friedman, 2010), and child disruptive behaviors are one of the most prevalent mental health issues of concern among children ages 4 to 12, understanding how to utilize fathers' social capital to improve family and child functioning is of great importance. Thus, teasing apart which aspects of father involvement impact the home environment and child development can inform prevention efforts targeting at-risk families and youth.

[1] The fully cross-lagged panel models incorporates autoregressive (stability paths), synchronous effects (covariances between endogenous residuals) and cross-lagged direct effects. Cross-lagged direct effects partial out the influence of autoregressive, synchronous, and other exogenous variable effects (Finkel,1995).

[2] Fully cross-lagged panel designs that include covariances, act as a form of control for omitted control variables (de Lange, 2003).

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APPENDIX A: Results for CFA Models

Model	X^2	df	p	RMSEA	CFI	TLI	SRMR
Base Model 1 (all variables)	1003.64	450	.000	.04	.93	.91	.06
Base Model 2	555.77	259	.000	.04	.95	.93	.05
Configural Model	2194.29	1431	.000	.06	.88	.87	.10

APPENDIX B: Testing of Univariate Normality

Model Type	Skewness (p-value)	Kurtosis(p-value)
Father Involvement 1	0.00	0.44
Father Involvement 2	0.00	0.01
Father Involvement 3	0.00	0.15
Home Environment 1	0.00	0.00
Home Environment 2	0.00	0.00
Home Environment 3	0.00	0.01
Child Behavior 1	0.69	0.28
Child Behavior 2	0.57	0.13
Child Behavior 3	0.95	0.97
Social Competence 1	0.02	0.44
Social Competence 2	0.01	0.34
Social Competence 3	0.00	0.01

APPENDIX C: Testing of Bivariate Normality (Doornik-Hansen)

Pair of Variables		X^2	df	p
Father Involvement 1	Father Involvement 2	227.93	4	0.00
	Father Involvement 3	133.57	4	0.00
	Home Environment 1	198.63	4	0.00
	Home Environment 2	129.54	4	0.00
	Home Environment 3	121.05	4	0.00
	Child Behavior 1	109.50	4	0.00
	Child Behavior 2	111.14	4	0.00
	Child Behavior 3	106.69	4	0.00
	Social Competence 1	110.76	4	0.00
	Social Competence 2	113.744	4	0.00
	Social Competence 3	121.78	4	0.00
Father Involvement 2	Father Involvement 3	150.34	4	0.00
	Home Environment 1	224.60	4	0.00
	Home Environment 2	155.40	4	0.00
	Home Environment 3	144.09	4	0.00
	Child Behavior 1	111.03	4	0.00
	Child Behavior 2	116.19	4	0.00
	Child Behavior 3	114.20	4	0.00
	Social Competence 1	114.92	4	0.00
	Social Competence 2	121.21	4	0.00
	Social Competence 3	135.03	4	0.00
Father Involvement 3	Home Environment 1	100.09	4	0.00
	Home Environment 2	68.19	4	0.00
	Home Environment 3	51.63	4	0.00
	Child Behavior 1	29.21	4	0.00
	Child Behavior 2	30.24	4	0.00
	Child Behavior 3	27.18	4	0.00
	Social Competence 1	37.49	4	0.00
	Social Competence 2	40.02	4	0.00
	Social Competence 3	55.28	4	0.00
Home Environment 1	Home Environment 2	100.09	4	0.00
	Home Environment 3	106.09	4	0.00
	Child Behavior 1	106.09	4	0.00
	Child Behavior 2	104.50	4	0.00
	Child Behavior 3	93.96	4	0.00
	Social Competence 1	104.87	4	0.00
	Social Competence 2	105.65	4	0.00
	Social Competence 3	112.39	4	0.00

APPENDIX C: Testing of Bivariate Normality (Continued)

Pair of Variables		X^2	df	p
Home Environment 2	Home Environment 3	54.17	4	0.00
	Child Behavior 1	39.18	4	0.00
	Child Behavior 2	40.61	4	0.00
	Child Behavior 3	36.61	4	0.00
	Social Competence 1	48.24	4	0.00
	Social Competence 2	48.94	4	0.00
	Social Competence 3	56.13	4	0.00
Home Environment 3	Child Behavior 1	23.24	4	0.00
	Child Behavior 2	23.93	4	0.00
	Child Behavior 3	21.09	4	0.00
	Social Competence 1	33.71	4	0.00
	Social Competence 2	35.39	4	0.00
	Social Competence 3	45.93	4	0.00
Child Behavior 1	Child Behavior 2	2.82	4	0.59
	Child Behavior 3	1.75	4	0.78
Child Behavior 2	Child Behavior 3	1.37	4	0.85
Social Competence 1	Social Competence 2	10.05	4	0.04
	Social Competence 3	34.33	4	0.00
Social Competence 2	Social Competence 3	36.99	4	0.00

APPENDIX D: Testing of Multivariate Normality

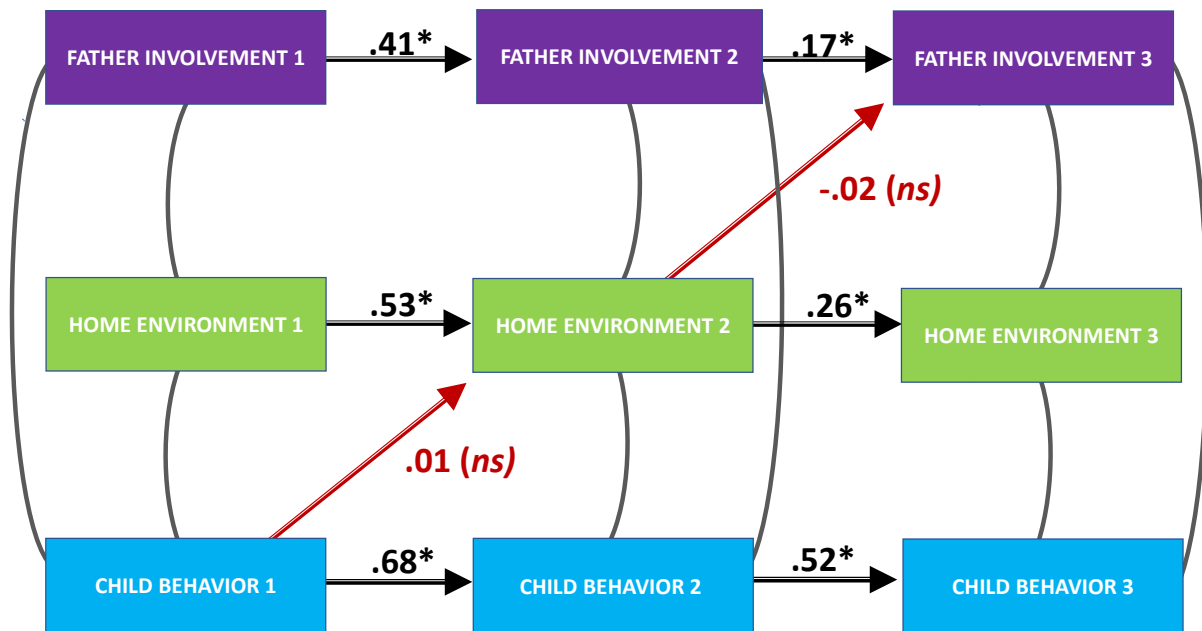| Test	Value	X^2	df	p
Mardia Skewness	15.37	779.80	364	0.00
Mardia Kurtosis	187.44	84.61	1	0.00
Henze-Zirkler	1.05	101.87	1	0.00
DoornikHansen	n/a	358.68	24	0.00

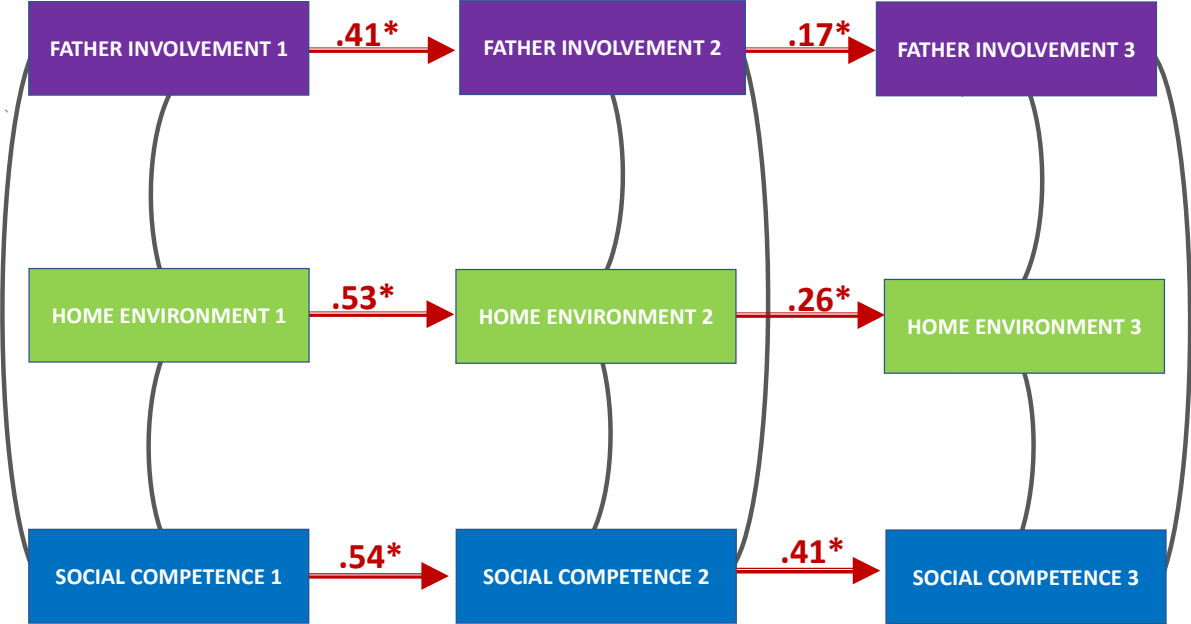# APPENDIX E: Stability Model- Child Behavior (*CB1*)
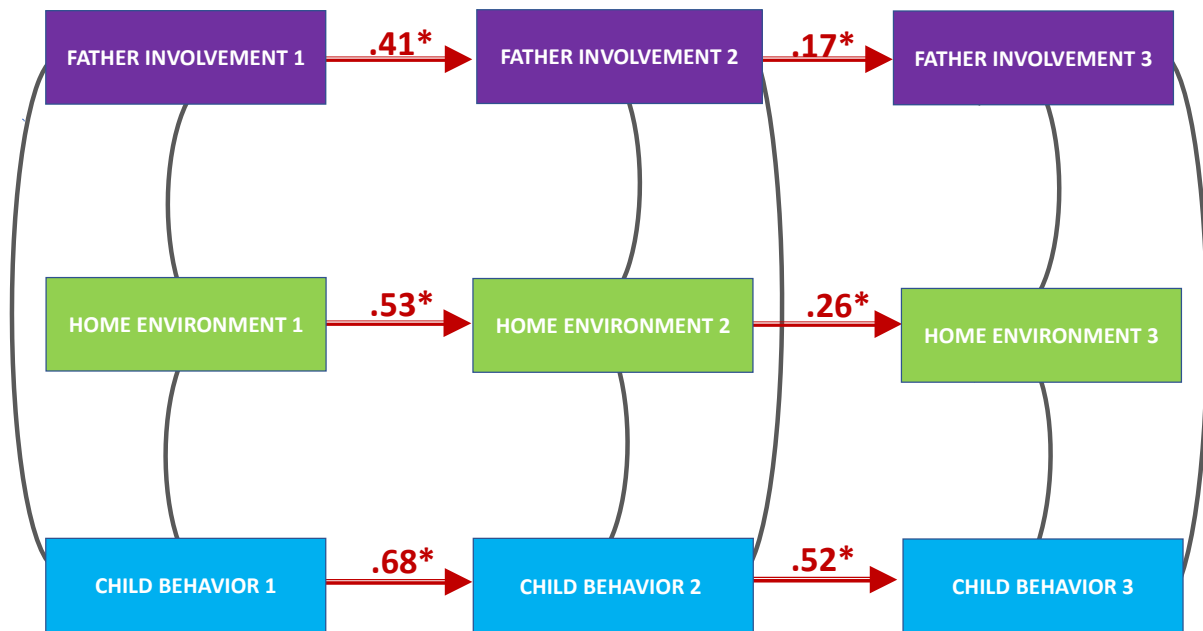
APPENDIX F: Direct Effects Model- Child Behavior *(CB2)*
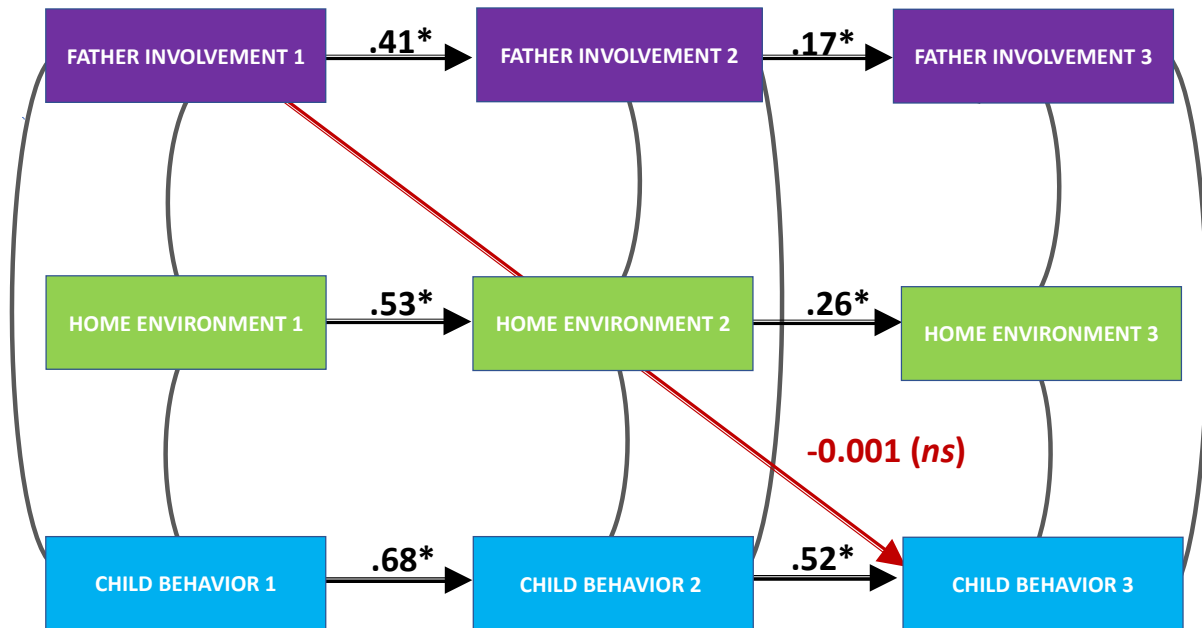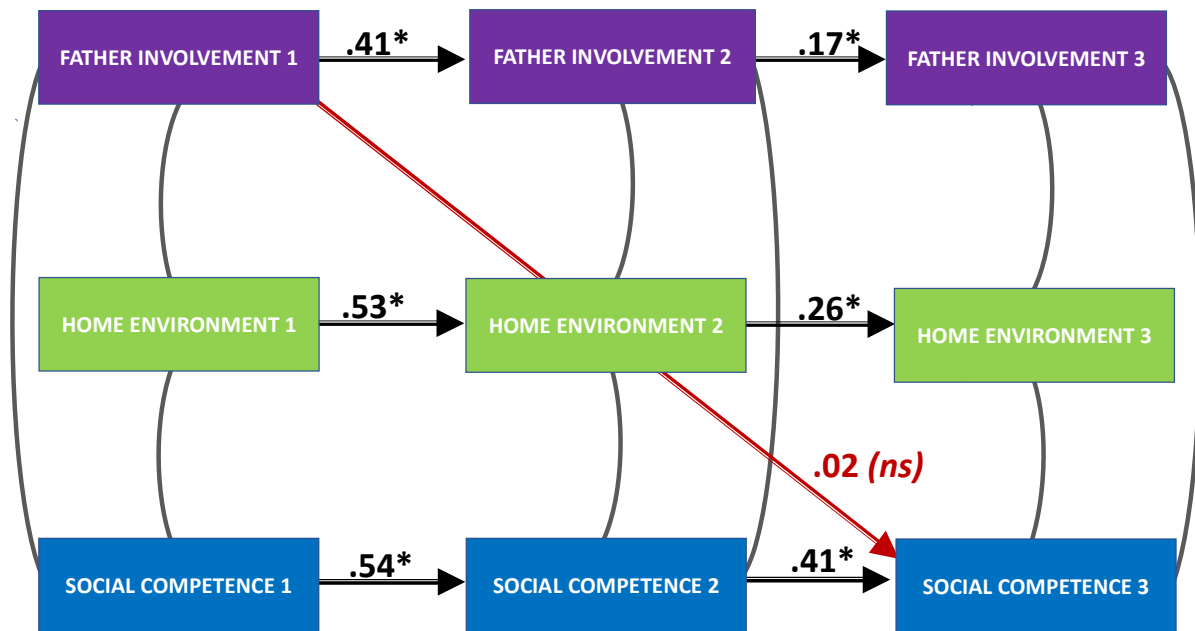
APPENDIX G: Reverse Model- Child Behavior (*CB4*)

APPENDIX H: Stability Model- Social Competence *(SC1)*

APPENDIX I: Direct Effects Model- Social Competence *(SC2)*

APPENDIX J: Indirect Effects Model- Social Competence *(SC3)*