The Dissertation Committee for Kierra Marie Pettit Sattler Certifies that this is the approved version of the following Dissertation:

Preventing Neglect and Promoting Child Well-being among Children in High-Risk Environments

Committee:

Elizabeth T. Gershoff, Supervisor

Aprile D. Benner

Robert Crosnoe

Sarah Font

Stephen Russell

Preventing Neglect and Promoting Child Well-being among Children in High-Risk Environments

by

Kierra Marie Pettit Sattler

Dissertation

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

May 2019

Dedication

For Jacob and Thatcher. Jacob, thank you for your unwavering support and for making sure I laughed along the way. Thatcher, thank you for pushing me to maintain work-life balance and for motivating me to do better work.

Acknowledgements

To Elizabeth Gershoff and Robert Crosnoe, thank you for the incredible amount of time and effort you put into my mentoring. Thank you for teaching me to care about the fine details and the larger picture when pursing research. You both have made me a better scholar and I am forever grateful to have had the opportunity to work with both of you. To Sarah Font, thank you for the endless conversations on research questions, theory, methods, and work in general. Thank you for guiding me through administrative data and strengthening my passion for child welfare research. I am so grateful to have you as a collaborator and friend. To Aprile Benner and Stephen Russell, thank you for your support over the past five years and for your support with my dissertation. You have generously answered any and all of my questions, so thank you.

To my village, thank you. To Courtney, thank you for your love, support, and friendship as we went through graduate school together. To my parents, Dani, Tom, and MB, thank you for supporting me and believing in me. Your encouragement has helped me through many challenges. To Becky, your love and support was essential to my success in graduate school. To Jacob, my life partner, thank you for the endless support, love, and laughter. I could not have done this without you.

Abstract

Preventing Neglect and Promoting Child Well-being among Children in High-Risk Environments

Kierra Marie Pettit Sattler, Ph.D.

The University of Texas at Austin, 2019

Supervisor: Elizabeth Gershoff

Many children come into contact with child protective services (CPS) each year, with the majority of these cases due to neglect. Poverty is consistently one of the strongest predictors of neglect, but the majority of families in poverty do not neglect their children. Therefore, a family's poverty status is not a sufficient predictor of whether neglect will occur. While there exists some evidence about the intersecting environments of poverty and neglect, there remain several important unanswered questions within the child welfare literature. First, it is important to know which families in poverty are most vulnerable to engaging in neglect given the heterogeneity of families living below or near the poverty line. Second, we need to understand how different resources can decrease neglect among the general population and which resources are particularly beneficial for different depths of poverty. Third, it is essential to explore how exposure to different environments, namely early care and education, might compensate for contact with CPS and for different types of neglect. Each study of this dissertation addresses one of these gaps in the literature using data from The Fragile Families and Child Wellbeing Study and from the National Survey of Child and Adolescent Well-Being II. Study 1 illustrates the fact that risk factors co-occur

to create four different risk profiles across early childhood, and that these risk profiles differentially relate to later neglect and involvement in CPS. Study 2 demonstrates that social support and maternal employment are related to less neglect, but that the associations between different protective factors and neglect vary across different levels of poverty. Study 3 provides evidence that ECE is beneficial for children involved in CPS but who remain in their homes, and that ECE is particularly helpful for children who experience different types of neglect. Overall, the three studies of this dissertation together provide a nuanced understanding of the intersection between poverty and neglect and offer new evidence about which families are most vulnerable to engaging in neglect, about what ways are promising for preventing neglect, and about which potential resources promote child well-being among children involved in CPS.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

In 2016, approximately 3.5 million children were the subject of investigations by child protective services (CPS) (U.S. Department of Health and Human Services (USDHHS), 2018). Children who are involved in CPS are at an increased risk of maladaptive outcomes, regardless of whether their maltreatment cases were substantiated (found to have occurred) (Hussey et al., 2005). Indeed, compared to the general population, children involved in CPS are more likely to have poor health, behavior problems, poor social skills, and lower academic achievement (Casanueva, Ringeisen, Wilson, Smith & Dolan, 2011). The U.S. federal government recognizes the importance of child welfare services and dedicates substantial funds to preventing maltreatment, funding foster care, and promoting child-well-being. In the 2016 fiscal year, over $8.6 billion in federal dollars was dedicated to child welfare funding (Stoltzfus, 2017). Given the significant risks to children's well-being and the significant resources dedicated to child welfare services, child maltreatment prevention is a top public health priority among researchers, government agencies, and advocacy groups (Zimmerman & Mercy, 2010).

Neglect is the most common type of child maltreatment, involving 74.8% of substantiated reports in 2016 (USDHHS, 2018; Sedlak et al., 2010). Yet, neglect is often understudied in comparison to other forms of maltreatment (Proctor & Dubowitz, 2014). Neglect is based on the caregivers' inability to provide food, clothing, shelter, and other basic necessities that do or could result in harm (Child Welfare Information Gateway, 2016). Young children are at a greater risk of maltreatment, with children from birth to 5 years old representing for 41% of victims (USDHHS, 2018) and neglect is the most prevalent type of maltreatment among young children (ChildStats, 2017). This is especially important because early childhood is an important developmental period that sets the stage for later skills (Cunha et al., 2006). Child neglect is

associated with a range of short- and long-term detrimental outcomes, including behavior problems, cognitive deficits, and health issues (Widom, 2014).

One of the most important risk factors for neglect is poverty, with children in low socioeconomic status households having a seven times higher risk of experiencing neglect than children in higher socioeconomic status households (Sedlak et al., 2010). One potential reason for this higher risk for neglect is that poverty places constraints on families' time and resources compared to more affluent families, which undermines their ability to provide for their children. Another potential explanation is that families in poverty often come into contact with institutions that have mandated reporters, such as welfare agencies or emergency rooms (McDaniel, 2006).

Yet, most families in poverty do not neglect their children, which indicates that poverty is not a sufficient cause of neglect; there must be something within the environment of poverty that undermines parenting behaviors. Thus, one way to prevent neglect is to focus on families in poverty with young children and to identify what risk factors are naturally co-occurring and related to neglect. Given that the majority of families in poverty do not neglect their children, there must also be factors in families' proximal environments that support positive parenting. In order to prevent neglect, it is important to identify these resources, or protective factors, among families in poverty. In cases where neglect has already occurred, it is essential for practitioners and researchers to try to promote child well-being. The aims of this dissertation were to examine how risk for neglectful parenting co-occur among families in poverty, to identify factors that decrease the likelihood of neglect among families in poverty, and to determine whether child care experiences outside the home can promote social-emotional and cognitive well-being among children who experienced neglect.

DEFINING NEGLECT

Researchers, practitioners, and policymakers have struggled to come to a consensus on the definition of neglect. In contrast to other forms of maltreatment, which involve the commission of harmful acts, neglect usually results from the omission of behaviors and includes potential harm in addition to actual harm (Proctor & Dubowitz, 2014). It thus can be difficult to assess the threshold at which substandard parenting or a risky situation will turn into neglect (Proctor & Dubowitz, 2014). Furthermore, the definition of neglect can vary based on whether the focus is child-centered or parent-centered. Child-centered definitions of neglect focus on whether or not children's basic needs are met and the resulting potential or actual harm (Proctor & Dubowitz, 2014). For example, a child-centered focus would define neglect as an instance in which the child went hungry because they did not have food. On the other hand, parent-centered definitions focus on parental omissions in care, such as the parent's inability or failure to provide basic necessities that result in potential or actual harm (Proctor & Dubowitz, 2014). For example, neglect based on a parent-centered definition would include an instance in which the parent could not provide food for their children. Typically, state and federal laws and regulations focus on parent-centered definitions of neglect which guide CPS definitions, but a child-centered definition of neglect can illuminate other sources contributing to a neglectful household (Procter & Dubowitz, 2014). These two approaches are not necessarily contradictory but rather provide researchers with ways to focus their attention when defining neglect. I will draw upon both approaches when defining neglect by including observed measures of circumstances in which the child's needs are not met and multiple informant reports on parents' omissions in care in order to capture a diverse set of neglectful environments.

Neglect can be broken into different subtypes, such as physical, medical, emotional, or educational (Proctor & Dubowitz, 2014), but there is a lack of agreement in the literature about

exactly how many subtypes of neglect there are (Jonson-Reid, Drake, & Zhou, 2012). For example, the Fourth National Incidence Study of Child Abuse and Neglect focused on physical, emotional, and educational neglect (Sedlak et al., 2010), whereas another study included physical, psychological, and environmental neglect (Dubowitz, Pitt, & Black, 2004). The Maltreatment Classification Scheme was created to collect information from CPS records on maltreatment chronicity, frequency, and types (Barnett et al., 1993). The Longitudinal Studies of Child Abuse and Neglect created a modified version of the Maltreatment Classification Scheme (MMCS) to distinguish two types of neglect, namely "failure to provide" and "lack of supervision" (English, Bangdiwala, Runyan, 2005). Failure to provide includes omissions by the caregiver such as lack of food, clothing, shelter (English et al., 2005), and I will call this physical neglect (similar to Dubowitz, Pitts, Litrownik, Cox, Runyan, & Black, 2005, and Font & Berger, 2015). Lack of supervision encompasses neglect related to monitoring (i.e., failing to ensure the child is supervised), the environment (i.e., failing to ensure the situation is safe), and substitute care (i.e., failing to ensure adequate care when the caregiver is unavailable) (Dubowitz et al., 2005), and I will call this supervisory neglect (similar to Font & Berger, 2015). The MMCS's definition of supervisory neglect allows for the inclusion of parental behaviors involving criminal behaviors, domestic violence, and substance abuse. For example, domestic violence or substance abuse create an environment in which the child is exposed to unsafe situations (i.e., environment) or the parent is unable to safely supervise the child (i.e., supervision). Exposure to criminality is often included in many states' child protection laws (Child Welfare Information Gateway, 2016) and places children in an unsafe environment. In this dissertation, I will focus on both physical neglect and supervisory neglect.

NEGLECT AND CHILDREN'S DEVELOPMENT

Children are at risk for poor developmental outcomes following experiences of neglect, such as poor cognitive and social-emotional outcomes compared to non-maltreated children (Hilyard & Wolfe, 2002; Widom, 2014). However, the ways in which different types of neglect influence children's outcomes is understudied. Physical neglect might be more strongly related to cognitive outcomes because it involves the deprivation of material resources. Previous research has provided some evidence for this association (Font & Berger, 2015; Manly, Lynch, Oshri, Herzog, & Wortel, 2013), but there is also evidence that physical neglect is associated with poor social-emotional outcomes for children compared to non-maltreated children (English et al., 2005; Font & Berger, 2015; Hilyard & Wolfe, 2005). Supervisory neglect, on the other hand, might be more strongly tied to social-emotional development because the caregiver is not emotionally or physically accessible. If infants are not able to consistently depend on their caregiver following situations of distress, then they are more likely to develop insecure and disorganized attachments (Hildyard & Wolfe, 2002). Both insecure and disorganized attachment styles are related to worse emotional regulation and worse behavior problems (Sroufe, 2005). Previous research has provided preliminary evidence that supervisory neglect is associated with social-emotional development, such as anxious or depressed symptoms, whereas it is unrelated to cognitive development compared to children who do not experience maltreatment (Font & Berger, 2015). For this dissertation, I hypothesize that physical neglect will be strongly related to cognitive outcomes and weakly associated with social-emotional outcomes, and that supervisory neglect will be associated only with social-emotional outcomes.

THEORETICAL FRAMEWORKS

Several important theories provided the foundation for the current studies, namely the Family Stress Model (Conger, Conger, & Martin, 2010), Ecological Systems Theory (Bronfenbrenner, 1994), Life Course Theory (Elder, 1998), and Human and Social Capital Theories (Becker, 2009; Coleman, 1988). According to the Family Stress Model, family economic hardship increases parents' feelings of stress, which in turn increase parents' harsh and uninvolved parenting behaviors as well as conflict with one another (Conger et al., 2010). Uninvolved parenting practices are then related to worse child developmental outcomes (Conger et al., 2010). Thus, the family stress model identifies processes to explain why families in poverty might be more vulnerable to engaging in neglectful parenting behaviors.

According to ecological systems theory, individuals are situated within nested environments and interactions between individual characteristics and these environments shape development over time (Bronfenbrenner, 1994). Among families in poverty, risk factors across different ecological levels might undermine parenting practices to increase neglect. On the other hand, resources in parents' proximal environments might provide support to overcome the obstacles of poverty and decrease the likelihood of neglectful parenting. Consequently, ecological systems theory provides the foundation for exploring contextual factors that support or undermine parenting behaviors among families in poverty. Given that environments shape development, changing the environments a child is exposed to can alter their developmental outcomes. Among children who experience a neglectful home environment, it is important to understand if placing them in a more responsive and stimulating environment can improve their developmental outcomes. The last study of this dissertation examines how child care might be beneficial among children who are involved in CPS for neglect.

Life course theory posits that the impact of any given event depends on its timing in the life course (Elder, 1998). As such, the effect of any given risk or protective factor on neglectful parenting might vary across early childhood, especially given that the demands of parenting likely change as children move from infancy to late toddlerhood. Therefore, the current studies use a longitudinal framework to understand how risk and protective factors are associated with neglectful parenting across developmental stages.

Human capital theory focuses on how job or educational training benefits individual's life circumstances (Becker, 2009), whereas social capital theory emphasizes how different social relations generate resources for individuals (Coleman, 1988). These theoretical frameworks provided guidance on the resources that might be helpful among families experiencing poverty. As such, the second study in this dissertation focuses on human and social capital (e.g. maternal employment or father involvement) as ways to prevent neglect among families in poverty.

THE CURRENT STUDIES

One in five American of children live in poverty. Most parents who live in poverty are able to navigate the stressors associated with living in poverty and not neglect their children. Given the volatile nature of poverty, it is important to situate any investigation in a longitudinal framework as the associations between poverty and neglectful parenting might change across early childhood. Currently, there has been limited success in identifying which families in poverty are the most likely to experience neglect. Therefore, the first study of this proposal will examine how different configurations of risk factors (i.e., maternal depressive symptoms, low maternal education, parenting stress, caregiver health issues, residential instability, and material hardship) among families in poverty relate to neglectful parenting across early childhood.

In addition to identifying the families in poverty most at risk for neglect, it is important to understand how different resources might offset the risk of poverty to decrease the likelihood of neglect. Yet, there is little research on what factors might be protective against poverty in preventing neglectful parenting. The second study of this proposal will address this gap in the literature by investigating how different protective factors (i.e., maternal employment, additional schooling or training, father involvement, participation in a parenting class, social support, and child care) reduce neglectful parenting across early childhood and whether these associations vary across different levels of poverty.

Given the large number of children who are involved in CPS for neglect, it is crucial to understand how different contexts might compensate for the prior neglectful environment. One potential resource could be child care because it removes children from neglectful households and places them into environments that are likely to be more stimulating and attentive. There is limited research on the benefits of child care among children who experience any maltreatment and even less among children who specifically experience neglect. Thus, the third study will examine how different dimensions of child care relate to social-emotional and cognitive development among children who experience different types of neglect.

Chapter 2: Risk Factors for Neglect among Families in Poverty

BACKGROUND

In 2016, 14 million children or about 19% of all American children under 18 years old lived in poverty (Koball & Jiang, 2018). This is particularly concerning because children living in poverty are more likely to have worse behavioral, cognitive, and health outcomes compared to their more affluent peers (Berger et al., 2009; Yoshikawa, Aber, & Beardslee, 2012). Children living in poverty are also more likely to experience harsh parenting (Berger, 2007; Conger, Conger, & Martin, 2010; Gershoff, Aber, Raver, & Lennon, 2007). According to the Family Stress Model, as economic hardship increases, parents are more likely to engage in harsh, inconsistent, and uninvolved parenting behaviors (Conger et al., 2010). Therefore, in order to promote child well-being among families in poverty, it is essential to further explore the mechanisms by which poverty influences parenting behaviors.

Children in low socioeconomic status households are nearly seven times more likely to be neglected than children who live in more affluent households (Sedlak et al., 2010). Poverty is more strongly associated with neglect than with other forms of maltreatment and poverty is one of the strongest predictors of neglect (Proctor & Dubowitz, 2014). This could be in part be due to poverty restricting parents' time and resources. On the other hand, parents in poverty might come into contact with different institutions, such as public assistance or social services, which allow for more monitoring of parenting behaviors (McDaniel, 2006). Although caseworkers are instructed to exclude poverty as a sole reason for neglect, many factors associated with poverty also increase the risk of neglect, such as unemployment, single parent status, or residential instability (Dubowitz, Kim, Black, Weisbart, Sematin & Magder, 2011; Koball & Jiang, 2018; Slack et al., 2011). For example, many families in poverty experience material hardship; it is only when these hardships reach the level of deprivation that they would be considered neglect.

Yet, most children who live in poverty are not neglected, which indicates that most parents are able to provide suitable care despite limited resources (Slack, Holl, McDaniel, Yoo, & Bolger, 2004). Thus, identifying which families in poverty are the most vulnerable for engaging in neglectful behavior may be an important step in preventing neglect from occurring if these families can be provided extra supports and intervention.

Neglectful Parenting

Neglect is difficult to detect because it is based on the omission of behaviors and incorporates both potential harm and actual harm (Proctor & Dubowitz, 2014). Further, neglect is also difficult to measure because it can include different subtypes and there is currently disagreement about which subtypes to include (Jonson-Reid, Drake, & Zhou, 2012; Proctor & Dubowitz, 2014). Barnett and colleagues (1993) developed the Maltreatment Classification Scheme to identify maltreatment type, frequency, and chronicity based on child protective services (CPS) records. The Longitudinal Studies of Child Abuse and Neglect modified the Maltreatment Classification Scheme to discriminate between subtypes of neglect, such as "failure to provide" and "lack of supervision" (English, Bangdiwala, & Runyan, 2005). Failure to provide, or what is often referred to as physical neglect (Dubowitz, Pitts, Litrownik, Cox, Runyan, & Black, 2005; Font & Berger, 2015), includes the caregiver failing to provide adequate food, hygiene, clothing, shelter, or medical care (English et al., 2005). Lack of supervision, known as supervisory neglect (Font & Berger, 2015), includes failing to ensure the child is supervised, failing to ensure the child is in a safe situation, and failing to ensure adequate care when the caregiver is unavailable (Dubowitz et al., 2005). Supervisory neglect includes exposing children to domestic violence, substance abuse, and criminality. The current study focuses on both physical neglect, supervisory neglect, and any self-reported involvement with CPS. Given

that self-report is likely to be an underrepresentation of families involved in CPS, the behavioral approximations of physical and supervisory neglect provide further information on how risk factors may relate to parenting behaviors.

Risk Factors for Neglect

According to ecological systems theory, individuals are situated within a set of nested environments and these nested ecological levels influence development directly and through interactions between ecological levels (Bronfenbrenner, 1994). Therefore, risk factors situated within different ecological levels might influence parenting behaviors. Several studies have demonstrated that specific risk factors increase the likelihood of neglect, including caregivers' depressive symptoms and parenting stress (Stith et al., 2009; Slack et al., 2011). Neglect, as with other adverse experiences, is unlikely to be the product of a single risk factor; rather, previous research has shown that the accumulation of multiple risks is most predictive of negative outcomes generally (Sameroff, 2006). Whether it is the number of risks (Sameroff, 2006), type of risks (Slack et al., 2011), or specific combinations of risks (Roy & Raver, 2014) that is most important in predicting maladaptive outcomes has been a matter for debate. This study focuses on the configuration of six risk factors that occur at different ecological levels: maternal depressive symptoms, low maternal education, parenting stress, caregiver health issues, residential instability, and material hardship. Each of these risk factors has been shown to be predictive of maltreatment generally, but an exploration of the configuration of risk factors provides insight into how these risk factors are likely to occur together and how these configurations matter for neglectful parenting. It is important to understand how these risk factors relate to neglectful parenting among families in poverty because it is likely that these risks are even more stressful for families in poverty. More affluent families are able to use

monetary resources to evade these risks directly or get resources to then circumvent the effects of these risk factors.

There are different reasons why each of these six risk factors might be important predictors of neglectful parenting. Maternal depressive symptoms can prevent mothers from being emotionally available to their children and have been shown to be predictive of maltreatment generally (Dubowitz et al., 2011; Stith et al., 2009) and neglect specifically (Clément, Bérubé, & Chamerbland, 2016; Slack et al., 2011). Mothers with low education are also more likely to be involved in CPS (Mayer, Lavergne, Tourigny, & Wright, 2007), which may be because mothers with low education may not have access to resources that promote positive parenting, which in turn might be why they have a higher risk for CPS involvement (Dubowitz et al., 2011). Parenting stress could cause mothers to feel overwhelmed and disengage as a coping mechanism or cause mothers to resent their child and purposefully ignore their requests (Barnett, 2008). Parenting stress has been linked to both maltreatment (Stith et al., 2009) and neglect specifically (Clément et al., 2016). Caregivers with health issues might be unable to maintain a child's basic needs due to physical limitations or due to focusing on their own health concerns and has been linked to child neglect (Mayer et al., 2007; Slack et al., 2011). Residential instability inhibits parents' ability to provide safe and stable shelter. Residential instability has been linked with neglect directly (Slack et al., 2011; Slack, Font, Maguire-Jack & Berger, 2017) and indirectly through maternal stress (Warren & Font, 2015). Material hardship increases parents' stress while also decreasing their positive parenting and investment behaviors (Gershoff et al., 2007), but parenting stress and parenting behaviors do not fully explain the association between material hardship and CPS involvement or neglect (Slack et al., 2004; Yang, 2015). Although each of these studies has established the importance of these risk factors for predicting

neglect, few focus specifically on child neglect (cf. Clément et al., 2016) and even fewer focus on neglect among families in poverty (cf. Slack et al., 2004; 2011). The current study builds upon the existing research by incorporating a person-centered approach and longitudinal framework.

Certain risks may frequently co-occur and these combinations of risk factors, which in this study will be referred to as "risk profiles", may be more predictive of neglectful parenting. Examining the combinations of risk factors is considered a person-centered approach, which groups families according to whether they share risk factors. Two commonly used person-centered methods are Latent Class Analysis (LCA), which uses dichotomous indicators, and Latent Profile Analysis (LPA), which uses both dichotomous and continuous risk indicators (Collins & Lanza, 2010). One of the advantages of a person-centered approach for the current study is that it illustrates how risk factors naturally co-occur among families in poverty to increase the likelihood of neglect. Previous research has demonstrated that poverty-related risk factors, such as life stressors, residential crowding, caregiver depression, and single-parent household, differentially co-occur to create risk profiles (Roy & Raver, 2014; Jobe-Shields, Andrews, Parra, & Williams, 2015). These risk profiles then differentially predict children's academic functioning, behavioral problems, and self-regulation skills (Roy & Raver, 2014) both immediately and longitudinally (Jobe-Shields et al., 2015). Although these studies illustrated which poverty-related risks co-occur to create risk profiles and how these profiles relate to child functioning, they did not reveal how risk factors tend to co-occur among families in poverty to predict neglectful parenting. The ways in which these risk factors co-occur likely differentially predict different types of neglect. For example, if maternal depression and parenting stress form a risk profile, these two risks likely undermine parent's mental capacity and ability to engage

with their children and this could increase supervisory neglect. Another example could be that residential instability and material hardship might form a risk profile, which would likely undermine a parents' ability to provide shelter and basic necessities and could increase physical neglect. The current study provides an important step in understanding how risk factors co-occur to predict different types of neglect.

There is also a lack of research about how risk profiles at different time points across early childhood might predict neglectful parenting. According to life course theory (Elder, 1998), the association between an event and its impact varies based on the timing in the life course. For example, the associations between risk factors at age 1 and neglectful parenting at age 3 might be different from the associations between risk factors at age 3 and neglectful parenting at age 5. Previous research has illustrated that the timing of risks among low-income families is important for predicting school readiness: risks in the first year are particularly impactful on children's school readiness through parenting behaviors, whereas risks during toddlerhood tend to have minimal effects on school readiness (Mistry, Benner, Biesanz, Clark, & Howes, 2010). Though this study demonstrated that the timing of risks is important to children's development, there are no known studies of how the timing of risks might predict neglect among families in poverty. Therefore, this study focuses on how risk profiles change across early childhood and how risk profiles are associated with neglectful parenting.

Families might also move between different configurations of risk across time. Although some families may maintain either high or low risk across time, there are some families that will likely move into higher or lower risk situations across time. Moving into a higher risk profile is likely to negatively influence parenting behaviors, whereas moving to a lower risk profile might

decrease the likelihood of neglectful parenting. Thus, this study investigates how families transition between risk profiles across early childhood.

The Current Study

Poverty is an important predictor of neglectful parenting, yet it is likely that families in poverty do not share the same level of risk for maltreatment. Therefore, it is important to understand how risk factors tend to co-occur among families in poverty and how families' risk profiles change across time in order to identify families most likely to engage in neglectful parenting in order to deliver extra supports and preventive interventions. Additionally, prior research has rarely focused on predictors of neglect, as opposed to maltreatment generally, and even fewer studies have explored different types of neglect. This study aims to move the field forward by investigating three research questions (see Figure 2.1): 1) How do risks for neglect co-occur among families in poverty at two different time points during early childhood?; and 2) How are risk profiles across early childhood among families in poverty related to neglectful parenting behaviors and CPS involvement for neglect?

METHOD

Data and Sample

The Fragile Families and Child Wellbeing Study (Fragile Families) is a longitudinal, national survey of children born between 1998 and 2000 in twenty U.S. cities with over 200,000 residents. The study oversampled for non-marital births, which resulted in a large proportion of participants being economically disadvantaged. Of the sample, the majority were Black (69%), followed by Hispanic (19%), White (8%), and an other race (4%) (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Mothers ranged in age at child's birth from younger than 18 to over 40 and 59% had at least graduated from high school. The majority of mothers were U.S. born (87%)

and most already had another child (64%) (Reichman et al., 2001). Almost 5,000 families were interviewed at birth and when children turned 1, 3, 5, 9, and 15. Data were collected from surveys completed by mothers, fathers, primary caregivers, child care providers, teachers, and children. Direct observational assessments of the family members were also conducted. Poverty is typically measured as below 100% of the federal poverty threshold whereas near poor is between 100% and 200% of the federal poverty threshold (Jiang et al., 2016). Given all children under 200% of the poverty threshold are at risk for worse school readiness compared to families above 200% of the poverty threshold (Isaacs, 2012), the current sample included families that lived within 200% of the poverty threshold at baseline (n = 3,033). The sample was also limited to families that participated in the 5-year in-home assessments (n = 1,883). To ensure CPS contact did not precede the observed risk factors the sample was further limited to families that did not report contact between birth and year 1 (n = 1,846).

Descriptive statistics can be found in Table 2.1. There were some differences between participants who were and were not included in the sample. Compared to families who were lost due to attrition, families in the sample tended to have younger, unmarried mothers, to have more children and less adults in the household. Additionally, families in the sample were more likely to be Black and less likely to be White or of an other racial group compared to families lost due to attrition. Compared to families excluded from analyses, families in the sample tended to include younger children and younger mothers, to include less married mothers and more cohabiting or single mothers, and to include more children in the household. Families in the sample were also less likely to be White and more likely to be Black or of an other racial group compared to families excluded from analyses. Among families included in the sample, children were 15 months on average at the year 1 assessment, about half were male (52%), and few were

low birth weight (11%). Mothers were about 24 years old, most were single (51%) and mothers were racially diverse (11% White, 59% Black, and 30% an other racial group).

Measures

Maternal depressive symptoms. Maternal depressive symptoms were measured using the Composite International Diagnostic Interview-Short Form (Kessler et al., 1998) at years 1 and 3. If mothers endorsed having two weeks of either dysphoric mood (dissatisfaction with life) or anhedonia (inability to feel pleasure) for at least half a day and almost every day, they were asked seven more questions. If mothers reported no dysphoric mood or anhedonia, they received a score of zero. Depressive symptoms were coded as the sum of the eight items and higher scores will indicate more depressive symptoms.

Parenting stress. At years 1 and 3, mothers rated their parenting stress using the Parent Stress Inventory (e.g., "Being a parent is harder than I thought it would be") using a 4-point scale, from (1) strongly agree to (4) strongly disagree (Abidin, 1995). Four items were the same across waves ("Being a parent is harder than I thought it would be", "I feel trapped by my responsibilities as a parent", "I find that taking care of my child (ren) is much more work than pleasure", and "I often feel tired, worn out, or exhausted from raising a family"). These four items were averaged at each wave, with higher scores indicating more parenting stress.

Residential instability. Mothers reported how many times they had moved since the child's birth (year 1 survey) or first birthday (year 3 survey). The responses were rescaled from 0 "No moves" to 10 "10 moves." More moves indicated more residential instability.

Material hardship. Mothers answered five questions about issues related to not having enough money in the past year; they were: "Did you receive free food or meals?;" "Did you not pay the full amount of rent or mortgage payments?;" "Did you not pay the full amount of a gas,

oil or electricity bill?;" "Did you borrow money from friends or family to help pay bills?;" and "Did you move in with other people even for a little while because of financial problems?." Responses were coded No (0) and Yes (1) and were averaged to create a score of material hardship with higher score indicating more hardship at years 1 and 3.

Maternal health problems. At years 1 and 3, mothers were asked "Do you have a serious health problem that limits the amount or kind of work you can do?" Responses were coded as No (0) and Yes (1).

Low maternal education. At baseline mothers reported on their highest completed education and at years 1 and 3 mothers reported on whether they had completed additional schooling. Low education was coded as (1) high school diploma/ GED or lower and (0) more than a high school diploma at years 1 and 3.

Neglectful behaviors. Using a strategy similar to that employed by Font and Berger (2015), neglectful behaviors were separated into physical neglect and supervisory neglect based on mothers' responses to a questionnaire, interviewers' observations, and mothers' responses to items on the Parent-Child Conflict Tactics Scale (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998) at year 3 and 5 (see Appendix 1). *Physical neglect* included measures of whether the child received necessary food, whether the utilities were shut off, whether the family was evicted, whether the child could not get necessary medical care, and interviewer observations of housing interior or safety issues and the child's hygiene. *Supervisory neglect* included if the parent was too intoxicated to care for the child, if the caregiver left the child alone when they should not have, if the parents had a physical dispute in front of the child, if the parent used any hard drugs or non-prescribed drugs, or if the parent earns any income from illegal activities. For both

physical neglect and supervisory neglect, each indicator was dichotomized and averaged to create these two scales with higher levels indicating higher neglect.

Child protective services (CPS) involvement. In the year 5 in-home assessment, each mother reported if she had ever been contacted by CPS since the child was born, the date of the most recent contact, and the reason for contact. Based on the reported dates of contact, CPS contact corresponded to involvement from age 1 until age 3 or between age 3 until age 5. Parent responses about the reason for CPS involvement were not mutually exclusive and included physical abuse, sexual abuse, neglect, or other. Given the low response rate CPS involvement was coded as one dichotomous variable: No contact (0) or contact by CPS (1).

Covariates. All covariates were drawn from baseline or, if unavailable, from the year 1 interview. Child-level covariates will include child's age (in months from year 1), gender (0 = female, 1 = male), and low birthweight (0 = no, 1 = yes). Family-level covariates included mother's age (years), mother's race (White, Black, other), marital status (married to father, cohabiting with father, not with father), number of additional children in the household, and the number of adults in the household.

Analytic Approach

All analyses were conducted in Mplus 7.4 (Muthén, & Muthén, 2015) within a structural equation modeling (SEM) framework. Full information maximum likelihood estimation (FIML) accounted for missing data. Appendix 2 displays all correlations among predictors and outcomes.

RQ 1. How do risks for neglect co-occur among families in poverty at two different time points during early childhood? Latent Profile Analysis (LPA) was used to model how risks for neglect occur among families in poverty. LPA uses indicators to cluster risk factors into different profiles that make up a categorical latent variable. Each model was compared to

successively more complex models using the Bayesian Information Criterion (BIC), adjusted BIC (ABIC), and the Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMRT) to determine the number of classes that best fit of the model to the data (Nylund, Asparouhov, & Muthén, 2007). A better fitting model would result in a decreased BIC and ABIC and an LMRT *p*-value below 0.05 when comparing K classes versus K-1 classes (i.e., the second model would be a significant improvement from the first model). Additionally, classes need to contain a minimum of 1% as recommended by Jung & Wickrama (2008). In conjunction with comparing these fit statistics, model fit was also based on examination of a line graph of the BIC and ABIC values to determine where the values leveled off. LPA was conducted separately for risk factors at year 1 and year 3. Given that risk factors were on different scales, for ease of interpretation, continuous measures (maternal depression, parenting stress, residential instability, and material hardship) were standardized within the sample and plotted in Figures 2.2 and 2.3.

Latent Transition Analysis (LTA) was used to examine how families move between risk profiles across early childhood. LTA estimates latent transition probabilities, in which the probability of latent profile membership at the next time point is conditional on the profile membership at the previous time point (Bray, Lanza, & Collins, 2010). LTA uses the same fit statistics as LPA, in which a decreased BIC and ABIC and an LMR-LRT p-value below 0.05 indicate a better fitting successive model.

RQ 2. How are risk profiles across early childhood among families in poverty related to neglectful parenting behaviors (physical and supervisory neglect) and CPS involvement for neglect? A regression auxiliary model estimated how risk profiles across early childhood relate to neglectful parenting and CPS involvement. The regression auxiliary model uses the manual 3-step approach (Asparouhov & Muthén, 2014). In step one, profiles are

identified using the class enumeration process described above. Step two involves reordering the latent profiles so that the final class is the largest occurring using generated start values. The third step estimates an auxiliary model in which neglect (physical neglect, supervisory neglect, or CPS involvement) is regressed on the latent profiles controlling for covariates. Continuous and categorical outcomes needed to be estimated separately. Therefore, physical neglect and supervisory neglect were estimated in the same model, whereas CPS involvement was estimated separately because it was dichotomous. Neglect indicators at year 3 (physical neglect, supervisory neglect, and CPS involvement) were regressed on risk profiles at year 1. In a separate model, neglect at year 5 was regressed on risk profiles at year 3 (see Figure 1). These regressions provide intercepts and probabilities of the continuous and categorical outcomes, respectively, which can then be compared using a Wald test.

RESULTS

Latent Profile Enumeration

Profile models were compared based on relative fit indices. Fit indices supported more complex models at both years (see Table 2.3), but at year 1 a five-profile model resulted in an identification error and at year 3 a six-profile model also had an identification error. Typically, the BIC and ABIC are the standard used for determining fit indices, however these values continued to decrease across both time points. Given that these fit indices did not provide a clear solution, classes were based on a more conceptual approach. After examining fit indices, plotted graphs of BIC and ABIC, and plotted profile solutions, a four-profile model was selected at both time points.

Description of Risk Profiles

The final risk profiles are displayed in Figures 2.2 and 2.3. Means are plotted for continuous risk factors (depressive symptoms, parenting stress, residential instability, and material hardship) and probabilities of risk are plotted for categorical risk factors (maternal health problems and low maternal education). The means are standardized for ease of interpretation.

At year 1, one profile was labeled “Depressed with Material Hardship” because families in this profile had high scores on maternal depressive symptoms (about 1.59 standard deviations) and material hardship (.48 of a standard deviation). This profile included a little over six percent of the sample. The next profile was termed “High Risk” because this group had the highest levels of almost all risk factors, such as maternal depressive symptoms, residential instability, material hardship, and health problems. The “High Risk” profile included a little over 9% of the sample. Another profile was labeled “Stressed with Health Problems” because this group had the highest levels of parenting stress and higher levels of maternal health problems. Around 3% of the sample were in the “Stressed with Health Problems” group. The last profile was termed “Low Risk” because it had the lowest level of all risk factors except low maternal education and included the majority of the sample (80.72%).

At year 3, many of these profiles were replicated, including “Stressed with Health Problems”, “High Risk”, and “Low Risk”. Almost 4%, 13%, and 75% of the sample were in each profile respectively. One profile did change and was labeled “Depressed with Residential Instability and Material Hardship” because this group still exhibited high maternal depressive symptoms (1.32 standard deviations) and material hardship (.50 of a standard deviation), but now also had the highest level of residential instability (.24 of a standard deviation). The Depressed with Residential Instability and Material Hardship profile included over 7% of the sample.

LTA models would not converge to examine how families moved between risk profiles across early childhood. Therefore, cross tabulations were used to examine whether parents stayed in the same profile across time or moved to another profile (see Table 2.3). Among mothers who were in the Depressed with Material Hardship profile at year 1, the majority transitioned to the Low Risk profile at year 3 (53%), followed by High Risk (24%), Depressed with Residential Instability and Material Hardship (16%), and Stressed with Health Problems (7%). Among mothers who were in the High Risk profile at year 1, most remained in High Risk at year 3 (46%), followed by Low Risk (37%), Depressed with Residential Instability and Material Hardship (12%), and Stressed with Health Problems (5%). Mothers in the Stressed with Health Problems profile at year 1 most often moved to the Low Risk profile at year 3 (55%), which was followed by Depressed with Residential Instability and Material Hardship (18%), and then evenly between Stressed with Health Problems and High Risk (both 13%). For mothers that were in the Low Risk profile at year 1 the majority remained in Low Risk at year 3 (83%), followed by High Risk (9%), Depressed with Residential Instability and Material Hardship (6%), and Stressed with Health Problems (4%). In general, mothers in almost all profiles at year 1 were more likely to move to the Low Risk profile at year 3.

Auxiliary Regression Model Results

Linear auxiliary regression models were used to estimate the association of latent profile membership with later physical neglect and supervisory neglect parenting behaviors controlling for covariates. For the categorical outcome of CPS involvement, logistic auxiliary regression models estimated the association between CPS involvement and latent profile membership controlling for covariates. Wald tests were used to compare coefficients of physical neglect, supervisory neglect, or involvement in CPS across latent profiles using the Model Constraint

command in Mplus. For CPS involvement, the comparison between groups was based on differences in unstandardized thresholds. The unstandardized thresholds were converted to probabilities, odds, and odds ratios for ease of interpretation.

Year 1 Profiles Predicting Year 3 Neglectful Parenting and CPS Involvement. Tables 2.5 and 2.6 shows the associations between year 1 latent profiles and year 3 neglectful parenting and CPS involvement. The following reported coefficients are the standardized intercept within latent profiles and the *p*-values are the comparison of intercepts between latent profiles. For physical neglect behaviors, there were several significant findings based on profile membership. Compared to the Depressed with Material Hardship profile (β = .28), both the High Risk (β = .72, $p < .001$) and Stressed with Health Problems (β = .62, $p < .05$) profiles had mothers that engaged in significantly more physical neglect. Similarly, compared to the Low Risk profile (β = .28), the High Risk (β = .72, $p < .001$) and Stressed with Health Problems (β = .62, $p < .05$) profiles included mothers who were more physically neglectful. For supervisory neglect, there was one statistically significant finding and one marginal effect. Compared to the Low Risk profile (β = .10), the High Risk profile (β = .57, $p <.001$) included mothers that engaged in more supervisory neglect behaviors. Mothers in the Low Risk profile (β = .10), displayed marginally fewer supervisory neglect behaviors than mothers in the Depressed with Material Hardship profile (β = .34, $p = .074$).

With the logistic regression results, the reported odds ratios are based on comparison between two profiles and reported *p*-value is from the Wald tests comparing unstandardized thresholds between latent profiles. For predicting later involvement in CPS between years 1 and 3, mothers in the Low Risk profile had lower odds than the High Risk profile (OR = .88, $p <$ .001) of being involved in CPS. Mothers in the Stressed with Health Problems profile had

marginally lower odds of reporting involvement with CPS compared to the High Risk profile (OR= .86, p = .087).

Year 3 Profiles Predicting Year 5 Neglectful Parenting and CPS Involvement. As seen in Tables 2.7 and 2.8, there were significant differences in physical neglect parenting behaviors at year 5 based on profile membership at year 3. Compared to the High Risk profile (β = .77), mothers in the Stressed with Health Problems (β = .44, p < .05) and Low Risk (β = .39, p < .001) profiles engaged in significantly less physical neglect. Compared to mothers in the Low Risk profile (β = .39), mothers in the Depressed with Residential Instability and Material Hardship profile engaged in marginally more physical neglect (β = .57, p = .079). For predicting supervisory neglect, mothers in the Depressed with Residential Instability and Material Hardship (β = .30, p < .05) and Low Risk (β = .22, p < .001) profiles demonstrated significantly less supervisory neglect than mothers in the High Risk profile (β = .55).

There were several significant differences in predicting the likelihood of CPS involvement between years 3 and 5 based on profile membership at year 3. Compared to the Depressed with Residential Instability and Material Hardship profile, mothers in the Low Risk profile (OR = 0.91, p < .001) and the Stressed with Health Problems (P = 0.90, p < .005) profiles had lower odds of reporting involvement in CPS. Compared to the High Risk profile, mothers in the Low Risk profile (OR = 0.93, p < .001) were significantly less likely to be involved in CPS. Compared to the Stressed with Health Problems Profile, mothers in the High Risk profile (P = 1.08, p = .070) were marginally more likely to report CPS involvement.

DISCUSSION

This study examined how risk factors co-occur across time and how these profiles of risk factors were associated with neglectful parenting and CPS involvement. Prior research has

demonstrated that each of the chosen risk factors (i.e., maternal depressive symptoms, low maternal education, parenting stress, caregiver health issues, residential instability, and material hardship) are individually associated with either neglect or CPS involvement, but not all of these have been investigated within the context of poverty or explored longitudinally. This study sought to fill this gap in the literature by using a person-centered approach to studying the associations between risk factors and neglect among families in poverty.

In reviewing the results, risk profiles were fairly stable across time. At both year 1 and year 3, there were High Risk, Low Risk, and Stressed with Health Problems profiles. The only noticeable change was the Depressed with Material Hardship profile at year 1 gained the additional risk of residential instability and was therefore renamed to Depressed with Residential Instability and Material Hardship at year 3. Interestingly, most mothers moved to the Low Risk profile at year 3 regardless of their profile membership at year 1, with the exception that mothers in the High Risk profile at year 1 were likely to remain High Risk at year 3. These results provide evidence that the way in which risk factors co-occur might be consistent across early childhood, but mothers might experience fewer risks as children age. Some prior work has also found that risk profiles are relatively stable across early childhood (e.g. Dunn et al., 2011; Yan, Ansari, Sattler, & Zhou, 2018). This study expanded upon prior literature by investigating risks specifically for neglect and CPS involvement.

Another finding was that High Risk profile membership compared to Low Risk profile membership at years 1 or 3 was related to more physical neglect and supervisory neglect and with a higher odds of CPS involvement. These results illustrate that experiencing many risk factors at once undermines parent's ability to provide or supervise their child, thereby increasing neglectful parenting behaviors and CPS involvement. Mothers in the High Risk profile at year 3

also engaged in more physical at year 5 than mothers in the Stressed with Health Problems profile, whereas these profiles at year 1 were not significantly different in estimating neglectful parenting at year 3. This might suggest that experiencing parenting stress and health problems or experiencing many risks are similarly distressing environments during very early parenthood (i.e., year 1), but as children age (i.e., year 3) experiencing multiple risk is increasingly difficult for parents. Future research should continue to use a person-centered and longitudinal approach to further elucidate the processes through which risk factors challenge parenting in the context of poverty. Overall, there were more differences in physical neglect parenting behaviors based on latent profile membership, compared to supervisory neglect or CPS involvement, at either wave of assessment. It could be that the selected risk factors are more predictive of physical neglect rather than supervisory neglect or CPS involvement. Future research should incorporate multiple types of neglect and maltreatment to further understand the unique associations between different risk factors and types of maltreatment.

Several limitations of this study need to be considered. First, although this study is longitudinal and controls for many covariates, these results cannot establish causality and it would be unethical to assign risks to families in order to explore causality. Alternatively, causal statistical methods such as propensity score matching could be used in future research to understand the casual association between risk profiles and neglectful parenting. Second, the current assessments may not be fully reflective of families' risk experiences or neglectful parenting behaviors; however, this study used the best available measures to assess the risks of interest. There could be additional risk factors that families experience, such as neighborhood crime or substance abuse, however these were either not measured at all or not measured consistently across early childhood. Future studies could consider how other risk factors might

increase neglectful behaviors. This study also assessed both CPS involvement generally and behavioral approximations of neglect as two ways of assessing high risk parenting behaviors. Additional caution should be taken into account when evaluating results predicting CPS involvement at year 3 because this measure is drawn from the year 5 interview of parents' recall of their most recent involvement in CPS. Therefore, reported CPS involvement at year 3 means that parents did not have contact between ages 3 to 5 years and therefore, does not account for re-abusers. This means that results predicting CPS at year 3 are biased towards zero and that these analyses excluded the highest risk families that had repeated CPS involvement during the 3 to 5 year assessment. Thus, the results predicting CPS involvement by year 3 represent families that have a single, early exposure to CPS, but the results predicting involvement in CPS between 3 to 5 years represent families with either only later contact with CPS or repeated and recent involvement in CPS. Third, the ways in which risks influence neglect may occur on a more proximal timeline than what was measured in the given dataset. Future research could explore how families' experiences of risk influence their parenting behaviors in a more immediate way. Lastly, this sample is not be representative of all families in poverty. The Fragile Families study was not designed to be nationally representative; rather, it oversampled for children married to non-marital births between 1998 and 2000 and this resulted in an oversampling of Black families. The 1998 U.S. Census Bureau reported that about 46% of people in poverty are White and about 26% are Black (U.S. Census Bureau, 1998), whereas the current sample is 11% White and 59% Black. Thus these results overestimate Black families in poverty and underestimate White families in poverty. Future research should include nationally representative of families in poverty and explore if the current results are replicable.

Nonetheless, the current study has several strengths and important implications for academic and nonacademic audiences. This study was one of the first to use a person-centered approach to model risk factors for neglect among families in poverty. These results can provide policymakers and practitioners information on which families are most vulnerable for engaging in different types of neglectful parenting behaviors and which families are at the highest risk for involvement in CPS in order to target resources and interventions. The current study was also one of the first to examine how the risks for neglect vary across time. This information can help inform interventions and programs on how families' needs and vulnerabilities change across early childhood, and more effectively target resources to at risk families. For academic audiences, these results demonstrate that risk factors differentially co-occur among families in poverty, but only the high risk profile seemed to be the most vulnerable for later neglect. Therefore, other approaches might be more useful to identifying families most at risk for neglectful parenting.

Families in poverty are particularly vulnerable for engaging in neglect and becoming involved in CPS, both of which can result in serious maladaptive outcomes among children. Currently, there is limited evidence about which families in poverty are the most at risk for neglect, which is troubling given the heterogeneity of families in poverty. The results from this study provide evidence of how risks co-occur among families in poverty and which profiles of risk place families at risk for neglect across early childhood. Given the often constrained social services in the U.S., these results could be useful for policymakers and practitioners to identify the families most at need in order to efficiently direct resources and interventions. On the other hand, the current results might be more helpful for other researchers, compared to practitioners, in exploring heterogeneity among families in poverty, either for replication or extension in future

studies. These findings illustrate that it is not just poverty, but rather the experience of many risks in the context of poverty that increase neglectful parenting behaviors and increases the likelihood of involvement in CPS.

Table 2.1. Descriptive statistics of FFCW participants excluded and included in the analyses.

	Attrition		Excluded from Sample		In Sample				Significance of Difference	
	(*n* = 1,874)		(*n* = 1,177)		(*n* = 1,846)				Attrition vs. Sample	Excluded vs. Sample
	Mean	*SD*	Mean	*SD*	Mean	*SD*	Min	Max	*p*-value	*p*-value
Child age (months at year 1)	15.00	3.49	14.70	3.29	15.24	3.55	9	30		***
Child male	0.53		0.52		0.52		0	1		
Child low birth weight	0.10		0.10		0.11		0	1		
Mother's age (years at birth)	25.56	6.07	26.87	6.29	23.97	5.54	15	43	***	***
Married	0.26		0.43		0.11		0	1	***	***
Cohabiting	0.37		0.32		0.38		0	1		***
Single	0.37		0.25		0.51		0	1	***	***
Number of additional children in household	1.23	1.30	0.82	0.98	1.57	1.42	0	8	***	***
Number of adults in household	2.37	1.07	2.32	0.86	2.27	1.07	1	9	*	
White	0.21		0.36		0.11		0	1	***	***
Black	0.42		0.39		0.59		0	1	***	***
Other	0.37		0.25		0.3		0	1	***	**

Note. *** $p < .001$; ** $p < .01$; * $p < .05$. FFCW is Fragile Families and Child Wellbeing Study.

Table 2.2 Descriptive statistics of predictors and outcomes among the sample (n = 1,846).

	Mean	SD	Min	Max
Year 1				
Maternal depression	1.09	2.19	0	8
Maternal low education	0.75	0.44	0	1
Parenting stress	2.18	0.73	1	4
Residential instability	0.69	0.87	0	8
Material hardship	0.18	0.22	0	1
Maternal health problems	0.09	0.29	0	1
Year 3				
Maternal depression	1.41	2.45	0	8
Maternal low education	0.71	0.45	0	1
Parenting stress	2.29	0.69	1	4
Residential instability	0.73	0.98	0	10
Material hardship	0.18	0.23	0	1
Maternal health problems	0.10	0.30	0	1
Supervisory neglect	0.02	0.07	0	0.83
Physical neglect	0.09	0.14	0	1
Any CPS involvement	0.03	0.17	0	1
Year 5				
Supervisory neglect	0.02	0.07	0	0.67
Physical neglect	0.08	0.13	0	0.75
Any CPS involvement	0.08	0.28	0	1

Note. Min is minimum and max is maximum. CPS is child protective services.

Table 2.3. Fit statistics for latent profiles of risk factors at year 1 and year 3.

	Log likelihood ratio	Parameters	BIC	ABIC	Entropy	LMRT	Distribution (%)
Year 1 Risk							
1 class	-11584.82	10	23244.84	23213.07			
2 class	-10208.45	17	20544.76	20490.75	0.99	0.00	84-16
3 class	-9832.24	24	19844.99	19768.74	1.00	0.00	83-7-10
4 class	**-9560.17**	**31**	**19353.48**	**19254.99**	**1.00**	**0.00**	**80-10-4-6**
5 class	-9143.23	38	18572.26	18451.53	1.00	0.00	11-72-8-4-5
Year 3 Risk							
1 class	-11705.53	10	23486.26	23454.49			
2 class	-10304.89	17	20737.64	20683.63	0.99	0.00	79-21
3 class	-9966.77	24	20114.05	20037.80	0.99	0.00	78-8-13
4 class	**-9706.68**	**31**	**19646.51**	**19548.03**	**1.00**	**0.00**	**75-4-13-7**
5 class	-9507.59	38	19300.98	19180.25	0.99	0.00	7-4-8-75-6
6 class	-9471.57	45	19281.58	19138.62	0.97	0.00	3-4-7-.2-72-13

Note. For the 5 class solution at year 1 and 6 class solution at year 3, there were non-ignorable errors and the parameter estimates may not be trustworthy. Abbreviations include Bayesian Information Criterion (BIC), Adjusted BIC (ABIC), and Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMRT).

Table 2.4. Cross tabulations of latent profiles at year 1 and year 3.

		Year 3 Profiles				
		Depressed with Residential Instability and Material Hardship	Stressed with Health Problems	High Risk	Low Risk	Total
Year 1 Profiles	Depressed with Material Hardship	16%	7%	24%	53%	100%
	High Risk	12%	5%	46%	37%	100%
	Stressed with Health Problems	18%	13%	13%	55%	100%
	Low Risk	6%	3%	9%	83%	100%

Note. Percentages are based on profile membership at year 1.

Table 2.5. Standardized intercepts of physical and supervisory neglect at year 3 across latent profiles from year 1 and Wald test comparisons.

	Physical Neglect at Year 3					Supervisory Neglect at Year 3				
	Intercept		Wald Test			Intercept		Wald Test		
Risk Profiles at Year 1	*β*	SE	Compared to Class 1	Compared to Class 2	Compared to Class 3	*β*	SE	Compared to Class 1	Compared to Class 2	Compared to Class 3
1. Depressed with Material Hardship	0.28	0.19		***	*	0.34	0.20			
2. High Risk	0.72	0.21	***			0.52	0.20			
3. Stressed with Health Problems	0.62	0.23	*			0.33	0.25			
4. Low Risk	0.28	0.17		***	*	0.10	0.16	0.074	***	

Note. *** $p < .001$; ** $p < .01$; * $p < .05$. All models controlled for child age, child sex, child low birth weight status, mother's age, mother's race, mother's marital status, number of additional children in household, and number of adults in household.

Table 2.6. Unstandardized thresholds, probabilities, odds, and odds ratios of CPS involvement by year 3 based on latent profiles at year 1.

Risk Profiles at Year 1	Threshold	Probability	Odds	Odds Ratio (v. Class 1)	Odds Ratio (v. Class 2)	Odds Ratio (v. Class 3)
1. Depressed with Material Hardship	2.22	0.10	0.11			
2. High Risk	1.60	0.17	0.12	1.08		
3. Stressed with Health Problems	3.40	0.03	0.10	0.93	.86†	
4. Low Risk	2.88	0.05	0.10	0.95	.88***	1.02

Note. *** $p < .001$; ** $p < .01$; * $p < .05$. † $p < .10$. All models controlled for child age, child sex, child low birth weight status, mother's age, mother's race, mother's marital status, number of additional children in household, and number of adults in household. CPS is child protective services.

Table 2.7. Standardized intercepts of physical and supervisory neglect at year 5 across latent profiles from year 3 and Wald test comparisons.

	Physical Neglect at Year 5					Supervisory Neglect at Year 5				
	Intercept		Wald Test			Intercept		Wald Test		
Risk Profiles at Year 3	*β*	SE	Compared to Class 1	Compared to Class 2	Compared to Class 3	*β*	SE	Compared to Class 1	Compared to Class 2	Compared to Class 3
1. Depressed with Residential Instability and Material Hardship	0.57	0.18				0.30	0.20			
2. Stressed with Health Problems	0.44	0.20			*	0.33	0.24			
3. High Risk	0.77	0.19		*		0.55	0.19	*		
4. Low Risk	0.39	0.16	0.08		***	0.22	0.18			***

Note. *** $p < .001$; ** $p < .01$; * $p < .05$. All models controlled for child age, child sex, child low birth weight status, mother's age, mother's race, mother's marital status, number of additional children in household, and number of adults in household.

Table 2.8. Unstandardized thresholds, probabilities, odds, and odds ratios of CPS involvement for neglect at year 5 based on latent profiles at year 3.

Risk Profiles at Year 3	Threshold	Probability	Odds	Odds Ratio (v. Class 1)	Odds Ratio (v. Class 2)	Odds Ratio (v. Class 3)
1. Depressed with Residential Instability and Material Hardship	1.82	0.14	0.162			
2. Stressed with Health Problems	3.00	0.05	0.146	0.90*		
3. High Risk	2.01	0.12	0.158	0.98	1.08†	
4. Low Risk	2.83	0.06	0.147	0.91***	1.01	0.93***

Note. *** $p < .001$; ** $p < .01$; * $p < .05$. All models controlled for child age, child sex, child low birth weight status, mother's age, mother's race, mother's marital status, number of additional children in household, and number of adults in household. CPS is child protective services.

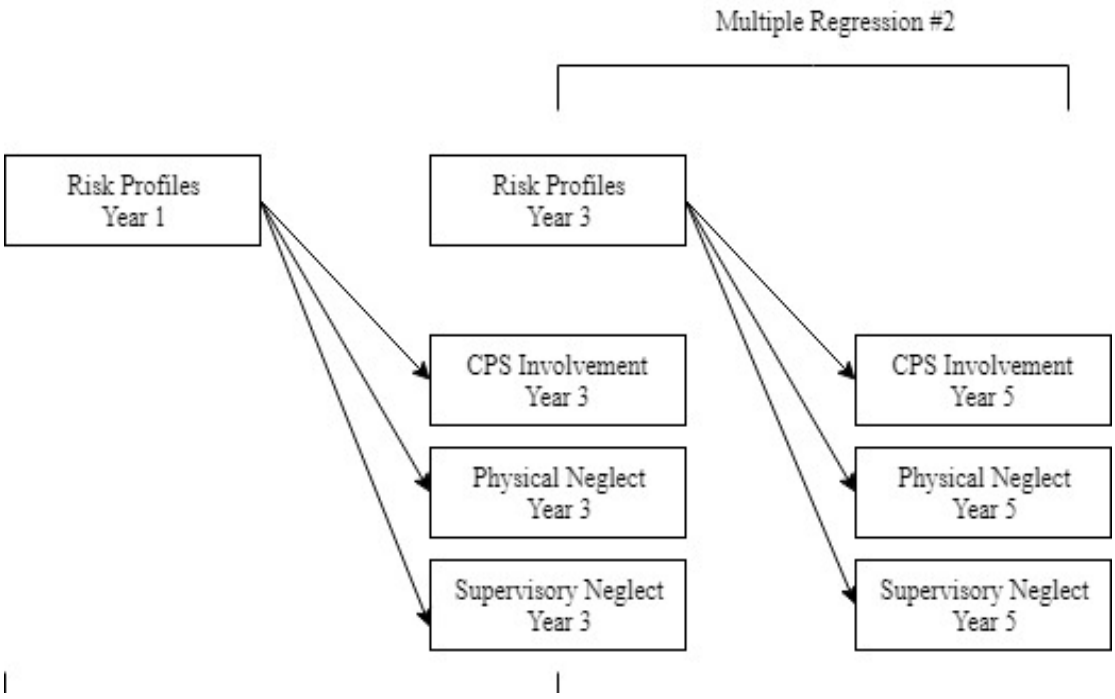

Figure 2.1. Model of the Associations between Risk Profiles and Neglect. This figure includes two separate multiple regressions and risk profiles will be derived from analyses from latent profile analysis of risk factors at years 1 and 3.

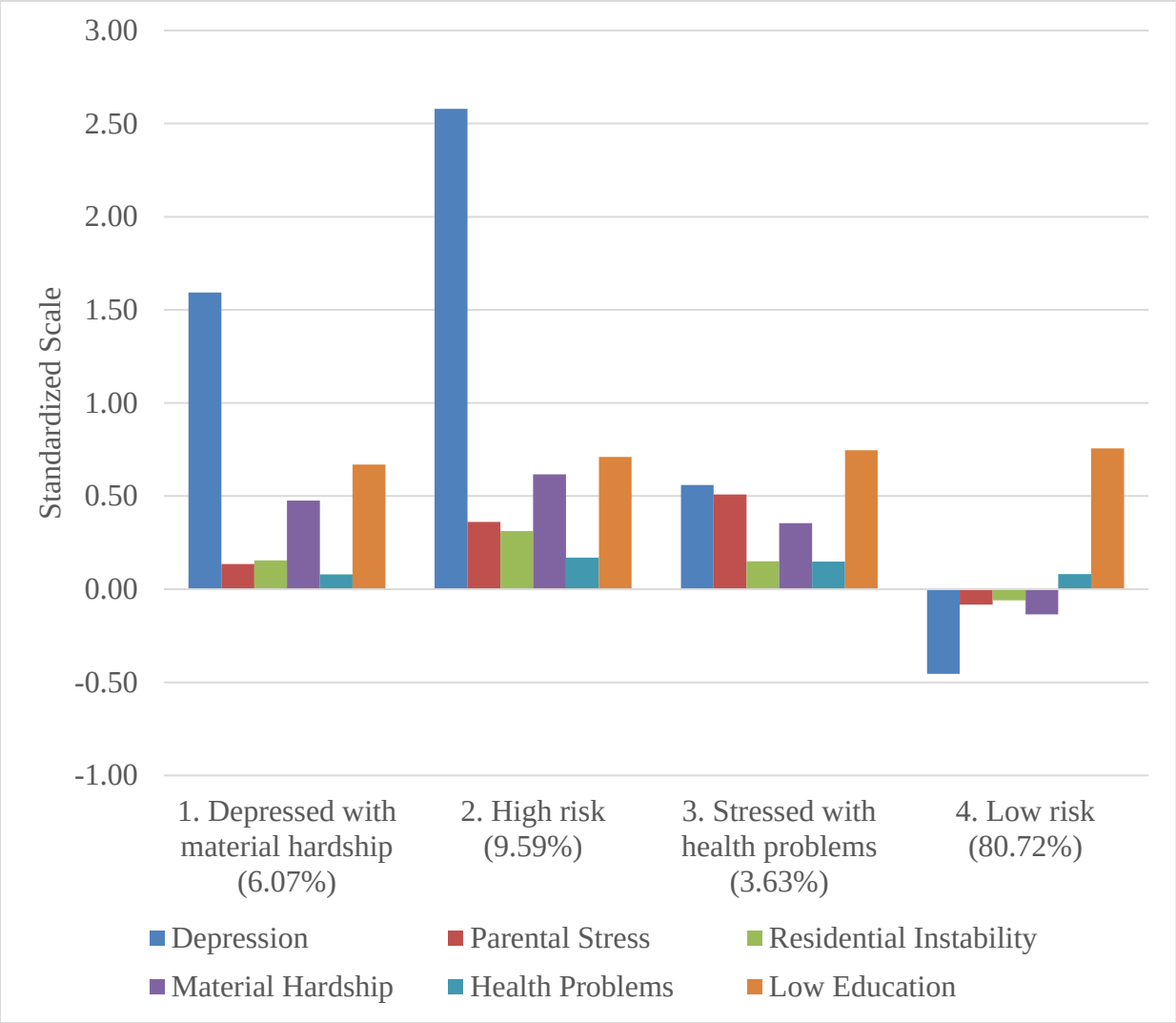

Figure 2.2. Latent profiles based on year 1 risk factors.

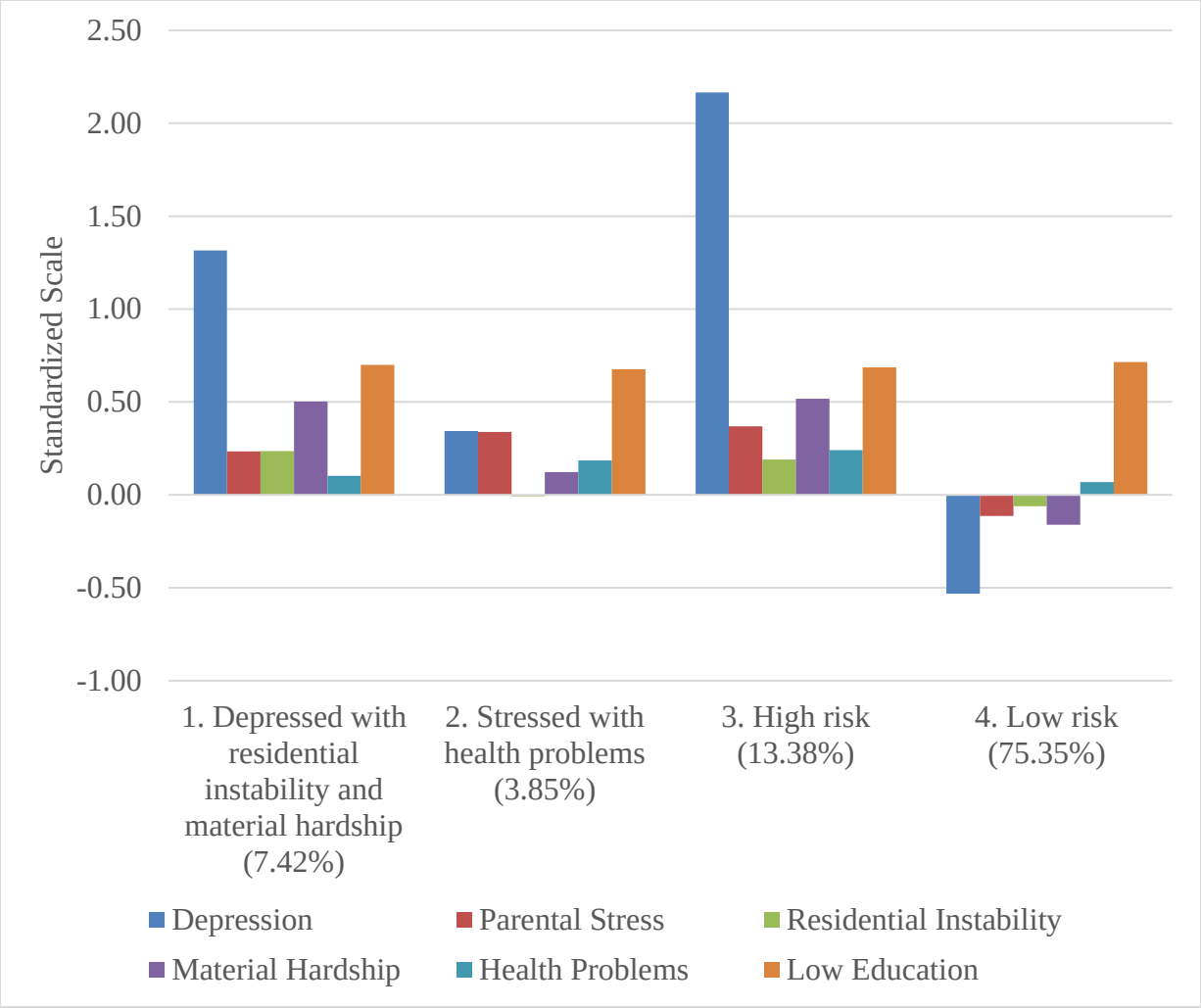

Figure 2.3. Latent profiles based on year 3 risk factors.

Chapter 3: Protective Factors for Neglectful Parenting

BACKGROUND

In 2016, about 3.5 million children were reported to child protective services (CPS) as possible victims of maltreatment (U.S. Department of Health and Human Services (USDHHS), 2018). Of those investigations, over 675,000 children had substantiated or indicated reports of maltreatment, in which there was enough evidence to determine maltreatment (USDHHS, 2018). Young children are the most likely victims of maltreatment, with children aged 5 years or younger accounting for 41% of victims of maltreatment (USDHHS, 2018). Among types of maltreatment, neglect is the most common and accounted for 74.8% of substantiated reports in 2016 (USDHHS, 2018; Sedlak et al., 2010). Neglect is generally defined as the failure of a caregiver to provide a child with basic necessities, such as clothing, food, medical care, or supervision, when such failure can result in harm to the child (Child Welfare Information Gateway, 2016). This is particularly worrisome because early childhood is a critical time for developing foundational skills for later success (Cunha et al., 2006). Child neglect is associated with behavior problems, cognitive delays, and mental and physical health issues in both the short- and long-terms (Widom, 2014). Despite its prevalence, neglect is often understudied compared to other forms of maltreatment (Proctor & Dubowitz, 2014). Thus, the current study focuses on predicting neglectful parenting behaviors, specifically examining how to prevent neglectful parenting.

One of the strongest risk factors for neglect is poverty (Sedlak et al., 2010). Children in low socioeconomic status households are seven times more likely to be neglected than children in higher socioeconomic status households (Sedlak et al., 2010). This does not mean all parents in poverty engage in neglect, and the majority do not neglect their children, but rather families in poverty are more vulnerable. In a practical sense, poverty constrains families' time and

resources, which limits parents' ability to provide for their children. Yet families in poverty may also have their parenting behaviors monitored more frequently by social institutions, such as at public assistance offices and be more likely to come into contact with mandated reporters (McDaniel, 2006). An important strategy for preventing neglect is to identify which protective factors decrease the likelihood of neglect among the general population, as well as, specific to families in poverty.

One way to examine prevention of neglect is to explore protective factors; however, there is some disagreement about the specific definition of protective factors. Prior literature has defined protective factors both based on direct effects, in which the protective factor separates positive outcomes compared to maladaptive outcomes, and based on interactive effects, in which the protective factor is beneficial only in a certain risk condition (for further discussion see Luthar et al., 2000). The current study focuses on both of these conceptualizations of protective factors by first examining how different protective factors relate to neglectful parenting among the general populations (i.e., direct effects), and then investigating how these associations vary based on families experience of poverty (i.e., interactive effects). Drawing upon theories of human and social capital (Becker, 2009; Coleman, 1988) and ecological systems (Bronfenbrenner, 1994), the current study examines how different protective factors (i.e., father involvement, maternal employment, additional school or training, perceived social support, participation in formal child care, participation in a parenting class) decrease neglectful parenting.

Types of Neglect

There are different subtypes of neglect, such as physical, medical, emotional, or educational (Proctor & Dubowitz, 2014), but there is no consensus in the field of child welfare

about the exact number of subtypes of neglect (Dubowitz, Pitt, & Black, 2004; Jonson-Reid, Drake, & Zhou, 2012; Sedlak et al., 2010). The Maltreatment Classification Scheme was originally developed by Barnett and colleagues (1993) as a way to collect information on the maltreatment type, frequency, and chronicity from CPS records. This was then adapted by the Longitudinal Studies of Child Abuse and Neglect to further separate subtypes of neglect (English, Bangdiwala, Runyan, 2005). "Failure to provide," or physical neglect (similar to Dubowitz, Pitts, Litrownik, Cox, Runyan, & Black, 2005; Font & Berger, 2015), encompasses the caregiver's inability to provide adequate food, hygiene, clothing, shelter, or medical care (English et al., 2005). "Lack of supervision," or supervisory neglect (similar to Font & Berger, 2015), includes omissions such as caregivers' not confirming the child is always supervised or the situation is safe (Dubowitz et al., 2005). Additionally, supervisory neglect includes parental behaviors involving domestic violence, substance abuse, and criminality. For example, substance abuse creates an environment in which the child is not adequately supervised and exposure to criminality places the child in an unsafe environment and is often included in many states' child protection laws (Child Welfare Information Gateway, 2016). In this study, the focus is on both physical neglect and supervisory neglect.

Protective Factors and Neglect

Previous research on protective factors among poor children has focused on promoting positive child development, whereas little attention has been paid to preventing neglect (Proctor & Dubowitz, 2014; Luthar, Crossman, & Small, 2015). One exception is Slack and colleagues (2011), who examined which protective factors are linked with a lower risk of neglect among families in poverty. In that study, multivariate analyses predicted neglect among families below 200% of the poverty threshold based on economic resources, economic hardships, parent and

child wellbeing factors, and parenting factors across three datasets. Results demonstrated that using a food pantry and living in a residence for under a year were significantly related to a CPS investigation for neglect, whereas depression and a caregiver health problem were marginally related to an investigation. Parents' self-efficacy was related to significant reductions in neglectful behaviors, but parenting stress predicted increases in neglectful behaviors. This study builds upon this prior work by Slack and colleagues (2011) in several important ways by: (1) investigating previously not included protective factors based on human and social capital and ecological systems theories; (2) assessing neglect at multiple points during early childhood; and (3) investigating whether the benefits of protective factors differs by families' poverty status.

Drawing on the theories of human and social capital and ecological systems, several protective factors might be beneficial in preventing neglect. Human capital includes schooling and job training (Becker, 2009), whereas social capital encompasses social relations (Coleman, 1988), both of which are resources that can benefit parents. Therefore, human and social capital protective factors would include maternal employment, additional schooling or training, father involvement, and participation in a parenting class. Ecological systems theory argues that individual development is shaped through interactions between an individual's characteristics and their surrounding environments, as well as, interactions between those environments (Bronfenbrenner, 1994). Ecological protective factors would include social support and child care. There might be different mechanisms through which each of these protective factors decrease neglectful parenting and prior research is summarized below.

Maternal Employment. The majority of women with young children are now working for pay in the U.S. (U.S. Bureau of Labor Statistics, 2015). There is mixed evidence regarding whether maternal employment decreases the risk of neglect (Paxson & Waldfogel, 2002; Slack,

Holl, Lee, McDaniel, Altenbernd, & Stevens, 2003; Slack et al., 2011; Slack et al., 2017), but there is some evidence that maternal employment might be beneficial for families in poverty. Among mothers in poverty, maternal employment could have positive effects on mental health and self-esteem, which would likely have a positive influence on parenting behaviors (Slack et al., 2003). Among lower educated women, part-time and high status work is related to increased parenting quality (Augustine, 2014) and poor mothers' family- friendly work conditions in particular can promote positive parenting across early childhood (Sattler & Crosnoe, under review). It is expected that both part-time and full-time employment, compared to no employment, will be related to less neglect.

Additional Schooling/Training. A considerable proportion of mothers are returning to school following the transition to parenthood, especially mothers with low education (Augustine, 2016). More highly educated mothers have more resources, both social and cognitive, to regulate their children's educational experiences than mothers with lower levels of education (Augustine, Cavanagh, & Crosnoe, 2009; Augustine, 2014) and mothers with higher levels of education are more likely to engage in cognitively stimulating activities (Davis-Kean, 2005). Thus, mothers in poverty who participate in additional schooling or training may be less likely to engage in neglectful parenting.

Father Involvement. Father involvement includes behaviors or activities that fathers engage in with their children. Fathers who are highly involved would provide mothers with someone to share caregiving responsibilities and could potentially offset some of the stressors associated with poverty by providing support. Households with fathers who have been involved for a longer period of time are less likely to be reported to CPS for neglect (Dubowitz, Black,

Kerr, Starr, & Harrington, 2000). It is anticipated that higher father involvement will be related to less neglect.

Parenting Classes. Parenting classes can include any instructional classes focused on parenting behaviors or resources to assist parents. Parenting classes, including home visits, provide parents with information on appropriate expectations of children, positive parenting behaviors, and available resources to parents (Howard & Brooks-Gunn, 2009). There is some evidence that parenting classes and home visitation programs are related to a lower likelihood of maltreatment or neglect (Lundahl, Nimer, & Parsons, 2006; Olds et al., 1997; Reynolds, Mathieson, & Topitzes, 2009). It's expected that parenting classes will decrease neglectful behaviors.

Social Support. Perceived social support can be conceptualized as the degree to which parents believe they are able to depend on others. Social support would provide parents with someone to assist with economic hardship or child care (Li, Godinet, & Arnsberger, 2011), which could reduce the likelihood of neglect. Additionally, social support has been shown to increase mothers' sense of control, which in turn predicts a lower likelihood of neglect (Kang, 2013). Higher levels of social support are anticipated to be associated with less neglect.

Child Care. Child care includes any caregiving in which the child is supervised by a non-parental caregiver. Formal child care focuses on center-based arrangements. Participation in formal child care, such as center-based care or Head Start, could reduce the likelihood of neglect by delivering parents essential resources of supervision for their child, relief from the stress of caring for a child, and parenting education (Waldfogel, 2009; Klein, 2016). Compared to no child care, it is expected that formal child care, but not informal child care will be related to less neglect.

Summary. Each of the studies cited above provides support for the particular protective factors, yet none examined all of the proposed protective factors jointly or at multiple time points. Thus, the current study expands upon existing research by investigating novel protective factors for families in poverty across early childhood.

The Benefits of Protective Factors: Variations by Poverty and Development

One potential moderator of the associations between protective factors and neglectful parenting is poverty. There is evidence that level of income is related to parenting behaviors, with lower incomes increasing the risk of uninvolved parenting (Berger, 2007; Yoshikawa, Aber, & Beardslee, 2012). Therefore, the ability of protective factors to decrease neglectful parenting may vary based on exposure to different levels of poverty. On the other hand, the strength of the association between a given protective factor and parenting might not vary based on level of poverty and instead protective factors may produce similar main effects regardless of the depth of poverty. Protective factors have been based on both direct effects and interactive effects (Masten, 2001; Luthar et al., 2000), but each provides different information. If a protective factor interacts with depth of poverty, this could inform targeted interventions that could focus on protective factors that are most beneficial for different populations, whereas main effects could be used for universal programs. Given the lack of information on how protective factors vary in their ability to offset risks based on the depth of poverty, moderation analyses will examine how the associations between multiple protective factors and neglectful parenting vary across poverty thresholds (e.g. 0-49% of the Federal Poverty Level, 50-99%, 100-200%, and over 200%).

Many studies on protective factors fail to incorporate a longitudinal perspective on how risk and protective factors might change across time. The impact of a given event is dependent upon its timing in the life course according to life course theory (Elder, 1998). There is evidence

that poverty is highly volatile (Hill, Morris, Gennetian, Wolf & Tubbs, 2013) and that income instability is likely to undermine parenting across early childhood (Votruba-Drzal, 2003). In addition, parents adapt their parenting behaviors to accommodate their children's changing needs and vulnerabilities across early childhood (Gutman & Feinstein, 2010). Therefore, it is likely that the association between poverty and neglectful parenting changes across time and it is important to understand how the associations between protective factors preventing neglect might also vary as level of poverty changes. Currently, there is limited research on how the effect of protective factors varies across different levels of poverty or how the effect of protective factors changes across time. Thus, the current study expands upon existing research by incorporating moderation analyses and a developmental perspective to investigate how poverty and protective factors when children are aged 1 and 3 years are associated with neglectful parenting when children are 3 and 5 years old.

The Current Study

To inform the prevention of neglect, this study investigates the protective factors for physical neglect, supervisory neglect, and general involvement in CPS. Both theory and previous research has provided guidance on protective factors against maltreatment generally, but there is a lack of information on protective factors specifically related to decreasing the likelihood of neglect. Poverty can also vary across time and in level of severity. Therefore, it is likely that the associations between protective factors and neglectful parenting vary based on exposure to poverty. Yet, there are no known existing studies on how protective factors reduce the likelihood of neglect for different levels of poverty across early childhood. The current study makes two important contributions to the fields of poverty and child welfare. First, it investigates how protective factors across early childhood relate to different dimensions of neglect, specifically

neglectful parenting behaviors (physical neglect and supervisory neglect) and CPS involvement for neglect. It is hypothesized that each protective factor will be related to lower levels of neglectful parenting behaviors and involvement in CPS. Second, it estimates how different levels of poverty moderate the associations between protective factors and neglectful parenting across early childhood. It is hypothesized that the associations between protective factors and neglect will differ based on parent's poverty status.

METHOD

Data and Sample

The Fragile Families and Child Wellbeing Study (Fragile Families) is a national and longitudinal sample of almost 5,000 children born between 1998 and 2000 in 20 large U.S. cities (i.e., over 200,000 residents). Fragile Families oversampled children born to unmarried parents, with about two-thirds of parents cohabiting. The sample was racially diverse (mother's race was 69% Black, 19% Hispanic, 8% White, and 4% other race) and largely economically disadvantaged (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Mothers were between 18 to 40 years old at baseline, and 41% had less than a high school degree. Most mothers had another child (64%) and most mothers were born in the U.S. (87%) (Reichman et al., 2001). Data were collected at birth and at years 1, 3, 5, 9, and 15 through the use of observational data and surveys completed by mothers, fathers, primary caregivers, child care providers, teachers, and children. The sample was limited to families that participated in the 5-year in-home assessments and participants who did not report CPS involvement prior to year 1 (n = 2,980).

Table 3.1 compares descriptive statistics between participants included and excluded from the analyses. Compared to participants not in the sample, the sample included younger mothers and fathers and parents were more likely to be Black and less likely to report an other

race category. The sample also had fewer adults in the household and mothers with more depressive symptoms and more parenting stress compared to participants not in the sample. Among children included in the sample, the average age at year 1 was 15 months, about half were male, and 10% were low birth weight.

Measures

Poverty categories. The Fragile Families dataset includes constructed poverty categories at year 1 and 3. The poverty categories are based on the total household income and the federal poverty line (FPL), which varied by family composition and year. The poverty threshold preceding the year of the interview was used to create the poverty categories of 0-49% of the FPL, 50-99% of the FPL, 100-199% of the FPL, 200-299% of the FPL, and 300%+ of the FPL. For the multiple group analysis, poverty level was coded as a categorical variable: (1) 0-49% of the FPL, (2) 50-99% of the FPL, (3) 100-199% of the FPL, and (4) 200% or more of the FPL.

Father involvement. At year 1, fathers were asked to report how many days in a typical week they engage in 8 different behaviors, such as reading stories to the target child or showing physical affection. At year 3, fathers reported how often in a typical week they engaged in 13 behaviors. At both years, responses were coded on a scale from 0 to 7 days per week. Father involvement at each wave was measured by averaging all items and higher scores indicate more involvement.

Additional schooling/training. Mothers answered if they were "currently attending any school or participating in any training programs or taking any classes?" and if they have "completed any training programs or any years of schooling" either since the child was born at year 1 or since the last interview at year 3. Mothers responded yes or no. Additional schooling

was coded at years 1 and 3 as separate dichotomous indicators of (0) No additional schooling/training, or (1) Completed and/or attending additional schooling/training.

Perceived social support. At year 1 and year 3, mothers answered six items related to whether there was someone who could provide support ("Loan you $200?", "What about $1,000?", "Provide you with a place to live?", "Help you with emergency child care?", "Co-sign for a bank loan with you for $1,000?", "What about co-signing for $5,000") over the next year. Responses were coded as (0) No and (1) Yes. These six items were averaged to create a score of perceived social support with higher scores representing more support.

Participation in formal child care. At year 1 and year 3, mothers were asked whether their children participated in child care on a regular basis and their primary care arrangement. Mothers could choose multiple primary care arrangements. Formal child care was considered positive responses that the child's primary arrangement is either day care center or Head Start/Early Head Start. Participation in formal child care was coded as separate dichotomous indicators of: No child care, informal child care (i.e. not in formal child care), and any formal child care. The reference group was children not in child care.

Parenting class. At year 1 and year 3, mothers reported whether, in the time since the child was born or since the last interview, they had received help from a list of six agencies or programs at year 1 and a list of 7 agencies at year 3 (e.g., collect child support, W.I.C.). At year 1, mothers answered whether they had received help from "a visiting nurse, Healthy Start, or other parenting classes" and at year 3, mothers answered if they received help from "a parenting class". Only the variable related to parenting classes was used and responses were coded as (0) No and (1) Yes.

Maternal employment. At year 1 and year 3, mothers were asked about their employment and the number of hours they work at their current job. Maternal employment was coded as dichotomous indicators of not employed, employed part-time (up to 35 hours per week), and employed full-time (35 hours or more per week). The reference group was mothers not employed.

Neglectful behaviors. Using a strategy similar to that employed by Font and Berger (2015), neglectful behaviors were separated into physical neglect and supervisory neglect based on mothers' responses to a questionnaire, interviewers' observations, and mothers' responses to items on the Parent-Child Conflict Tactics Scale (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998) at year 3 and 5 (see Appendix 1). *Physical neglect* included measures of whether the child received necessary food, whether the utilities were shut off, whether the family was evicted, whether the child could not get necessary medical care, and interview observations of housing interior or safety issues and the child's hygiene. *Supervisory neglect* included if the parent was too intoxicated to care for the child, if the caregiver left the child alone when they should not have, if the parents had a physical dispute in front of the child, if the parent used any hard drugs or non-prescribed drugs, or if the parent earns any income from illegal activities. For both physical neglect and supervisory neglect, each indicator was dichotomized and averaged to create these two scales with higher levels indicating higher neglect.

CPS involvement. In the year 5 in-home assessment, each mother reported if she had ever been contacted by CPS since the child was born, the date of the most recent contact, and the reason for contact. Based on the reported dates of contact, CPS contact corresponded to time spans between the 1 year and 3 year interviews (i.e., CPS involvement from age 1 until age 3) or between the 3 and 5 year interviews (i.e., CPS involvement from age 3 until age 5). Responses

about the reason for CPS involvement were not mutually exclusive and included physical abuse, sexual abuse, neglect, or other. Given the low response rate CPS involvement was coded as one dichotomous variable: No contact (0) or contact by CPS (1). Given that self-reported CPS involvement is likely to be an under-report of families previously investigated by CPS, it is important to model both the behavioral approximations of CPS involvement and the self-reported measure.

Covariates. All covariates were drawn from the baseline interview or, if unavailable, from year 1. Child-level covariates include child's age, sex (0 = female, 1 = male), and low birthweight (0 = not low birthweight, 1 = low birthweight). Family-level covariates include mother's age, race (White, Black, Other race), marital status (married, cohabiting, single), nativity status (0 = not born in U.S., 1 = born in U.S.), mother's education level, father's age, father's race (White, Black, Other race), father ever in jail by year 1, number of additional kids, and number of adults. Models also controlled for poverty-related risk factors, such as maternal depressive symptoms, parenting stress, residential instability, material hardship, and maternal health problems at year 1.

Analytic Approach

All analyses were modeled using an SEM framework in Mplus 7.4 (Muthén, & Muthén, 2015) and full information maximum likelihood estimation (FIML) was used to account for missing data. Appendix 3 includes correlations between all predictors and outcomes.

RQ 1. How do protective factors across early childhood relate to neglectful parenting behaviors (physical and supervisory neglect) and CPS involvement for neglect? Multiple regressions were used to explore how protective factors relate to neglect (physical neglect, supervisory neglect, and CPS involvement) (see Figure 3.1). Multiple regressions

provided information on the unique association between each protective factor on the different assessments of neglect, net of the associations between other protective factors and neglect. This was estimated in two separate models; first, neglect at year 3 was regressed on protective factors at year 1 and second, neglect at year 5 was regressed on protective factors at year 3.

RQ 2. How do the associations between protective factors and different dimensions of neglect vary across different levels of poverty? To model whether the associations between protective factors and neglect vary by poverty level (0-49% FPL, 50-99% FPL, 100-199% FPL, and 200%+ FPL), multiple group analyses were estimated (see Figure 3.1). First, a fully unconstrained model was estimated in which all paths between protective factors and neglect are allowed to vary by poverty level. Second, a fully constrained model was estimated in which all paths between protective factors and neglect are set to be equal across poverty levels. Then, a chi-square difference test compared whether the constrained model is a poorer fit than an unconstrained model. In other words, a significant chi-square difference test would provide evidence that an unconstrained model (i.e., variation by poverty level) is a better fit than a constrained model. If the fully constrained model is a worse fit, multiple group analyses were estimated for protective factors and poverty status at year 1 and neglect at year 3. In a separate set of analyses, multiple group analyses were used for protective factors and poverty status at year 3 and neglect at year 5.

RESULTS

Protective Factors among the Full Sample

In the first set of analyses, linear regression models predicted physical neglect and supervisory neglect at year 3 from protective factors at year 1 (see Table 3.2). Social support was significantly related to less physical neglect (β = -.11, p < .001). Compared to mother who were

not employed, both part-time (β = -.04, p < .05) and full-time (β = -.06, p < .05) employment at year 1 was associated with less physical neglect at year 3. For supervisory neglect at year 3, participation in a parenting class was related to more neglectful behaviors (β = .045, p < .05). In separate analyses, logistic regressions were used estimate the association between protective factors at year 1 and mother's reports of CPS involvement between years 1 and 3. Social support was the only protective factor significantly related to a lower likelihood of involvement in CPS by year 3 (OR = .46, p < .01).

In a second set of analyses, year 3 protective factors predicted year 5 physical and supervisory neglect (see Table 3.3). Similar to year 1, social support (β = -.08, p < .001), part-time employment (β = -.06, p < .01), and full-time employment (β = -.07, p < .01) at year 3 were all associated with less physical neglect at year 5. In contrast, father involvement at year 3 was related to more physical neglect (β = .07, p < .01). For supervisory neglect at year 5, participation in a parenting class at year 3 was related to more supervisory neglect (β = .08, p < .01). Social support at year 3 was significantly related to less supervisory neglect behaviors at year 5 (β = -.06, p < .05). In separate analyses, protective factors at year 3 predicted mother's reports of involvement in CPS between years 3 and 5. As with the prior wave, social support was again related to a lower likelihood of involvement with CPS (OR = .55, p < .01). In contrast, additional schooling and training was significantly related to a higher likelihood of reported involvement with CPS (OR = 1.86, p < .01).

Protective Factors Moderated by Poverty Level

A fully constrained model, in which paths between protective factors and physical neglect and the paths between protective factors and supervisory neglect were constrained to be equal across poverty levels at year 1 (0-49%, 50-99%, 100-200%, and 200%+ of FPL), was

compared to a fully free multiple group model, in which all paths between protective factors and neglect were allowed to vary across poverty levels. Given that the linear models were estimated using MLR, a Satorra-Bentler chi-square test was used to compare fit statistics. This chi-square test indicated that the constrained model was a poorer fit (χ^2 = 68.081, df = 48, p < .05), providing support to use the fully free model. Among the 0-49% of the FPL group, social support (β = -.10, p < .05) and full-time work (β = -.08, p < .05) at year 1 were associated with less physical neglect at year 3 (see Table 3.4). For the 50-99% of the FPL group, social support was the only protective factor that significantly related to less physical neglect (β = -.10, p < .05). In the 100-199% of the FPL group, participation in a parenting class was related to less physical neglect (β = -.08, p < .05). For the 200% or above the FPL group, full-time employment was related to less physical neglect (β = -.10, p < .05) and participation in informal child care, compared to no child care, was related to more physical neglect (β = .11, p < .01). For supervisory neglect, the only protective factor that reached statistical significance was father involvement, which was associated with more supervisory neglect among families above 200% of the FPL. Next, each individual pathway was constrained one a time and compared to a fully free model to examine which pathway varied across poverty level. None of the Satorra-Bentler chi-square comparisons reached statistical significance, which means no single individual pathway accounted for the variation across poverty level. Given these results, the pathways between protective factors and one outcome a time were compared to a fully free model in order to identify if the variation was occurring when predicting physical or supervisory neglect. The model constraining protective factors and supervisory neglect was not a significantly worse fitting model than a fully free model. In contrast, a model constraining paths between protective factors and physical neglect provided a significantly worse fit than a fully free model (χ^2 = 46.39,

df = 24, $p < .01$). Therefore, the association between protective factors and physical neglect varied by poverty level, but it is undetermined which specific paths differed.

A similar fully constrained model, in which paths between protective factors at year 1 and the dichotomous outcome of reported involvement in CPS between years 1 and 3 were constrained across poverty levels at year 1, was compared to a fully free model. Using the WLSMV estimator, the chi-square test of model fit of the constrained model was not significant. In other words, a fully free model was not a better fit than a fully constrained model. This provides evidence that the effect of protective factors on involvement in CPS did not differ by poverty level.

In the next set of analyses, a fully constrained linear regression model was compared to a fully free multiple group linear regression model, in which the associations between protective factors at year 3 and neglect at year 5 were allowed to vary across poverty levels at year 3. Again, the MLR estimator was used to model the linear regressions, which required a Satorra-Bentler chi-square comparison test. This chi-square test provided support that a fully constrained model was a worse fit than a fully free multiple group model ($\chi^2 = 82.33$, df = 48, $p < .001$). Among the 0-49% of the FPL group, part-time employment compared to no employment at year 3 was related to lower physical neglect ($\beta = -.09$, $p < .05$; see Table 3.5). No protective factors were significantly related to supervisory neglect. For the 50-99% of the FPL group, part-time work was again related to less physical neglect ($\beta = -.11$, $p < .01$), but father involvement was related to more physical neglect ($\beta = .21$, $p < .001$). Social support was related to significantly less supervisory neglect ($\beta = -.10$, $p < .05$), whereas participation in a parenting class was associated with more supervisory neglect ($\beta = -.11$, $p < .05$). In the 100-199% of the FPL group, social support was significantly related to less physical neglect ($\beta = -.13$, $p < .001$), whereas

participation in a parenting class was associated with more supervisory neglect (β = .23, p < .001). Among the 200% or above the FPL group, father involvement was related to more physical neglect (β = -.12, p < .01), but social support was related to less physical neglect (β = -.10, p < .05). No protective factors significantly predicted supervisory neglect for this group. To investigate which paths varied across poverty level, each individual pathway between protective factors and neglect was constrained one at a time and compared to a fully free model. Two pathways reached statistical significance, suggesting these pathways differed across poverty level. First, a model which constrained the pathway between father involvement at year 3 and physical neglect at year 5 fit the data significantly worse that a fully free model (χ^2 = 15.352, df = 3, p < .01). As mentioned above, father involvement was associated with more physical neglect among the 50-99% of the FPL and 200% or above FPL groups, whereas father involvement was not significantly related to physical neglect among the 0-49% of the FPL and 100-199% of the FPL groups. Second, a model that constrained the pathway between parenting classes at year 3 and supervisory neglect at year 5 fit the data significantly worse than a fully free model (χ^2 = 18.80, df = 3, p < .001). As cited earlier, parenting classes were related to more supervisory neglect among the 50-99% of the FPL group, but parenting classes were not significantly associated with supervisory neglect among the other poverty groups.

Similar to prior analyses, a fully constrained model was compared to a fully free multiple group model for estimating the associations between protective factors at year 3 and CPS involvement at year 5 across poverty levels at year 3. A chi-square test of model fit, using a WLSMV estimator, was not significant. Thus, a fully free multiple group model was not reported.

DISCUSSION

This study examined how protective factors were associated with neglectful parenting behaviors and involvement with CPS. Prior research has provided some evidence for how different protective factors decrease the risk of maltreatment generally, however, neglect as an outcome is understudied. This study addressed this gap in the literature by investigating previously unexamined protective factors for decreasing neglectful parenting, by incorporating a longitudinal perspective, and by investigating whether the associations between protective factors and neglect varied by families' level of poverty.

For the first set of analyses, which estimated the association between protective factors and neglectful parenting or CPS involvement across time, the findings were fairly consistent. Social support, part-time, and full-time employment at years 1 and 3 were all associated with less physical neglectful parenting behaviors at the next wave of assessment. Social support at year 3 was also related to less supervisory neglect at year 5, and social support at years 1 and 3 were related to a lower likelihood of involvement in CPS. Taken together, it seems that maternal employment is protective against physical neglect specifically, whereas social support can decrease multiple types of neglect and general involvement with CPS. These findings provide evidence that employment enables families to provide resources and this in turn might decrease physical neglect. Previous research has demonstrated mixed findings on the roles of maternal employment in decreasing neglect (Paxson & Waldfogel, 2002; Slack, Holl, Lee, McDaniel, Altenbernd, & Stevens, 2003; Slack et al., 2017). Social support could be operating through several different mechanisms for decreasing physical neglect, supervisory neglect, or involvement in CPS. On one hand, social support might help families make ends meet and decrease physical neglect, while at the same time social support could provide families with other caregivers which would decrease supervisory neglect. With regard to social support, prior

research demonstrated that social support provides indirect benefits of decreasing neglect (Kang, 2013). Future work could examine how different dimensions of social support, such as monetary or caregiving support, related to different subtypes of neglect. These findings can provide useful information to policymakers and practitioners. For example, policies that enable mothers to find and retain employment, especially employment that offers a livable wage or family-friendly work policies, could decrease overall physical neglect. Programs that provide families with support, such as providing connections to other families, professionals, or resources nearby, could also be effective at decreasing multiple types of neglect and general involvement with CPS.

The multiple group tests of moderation revealed that the associations between protective factors and neglect differed across level of poverty and across time. For example, among families below the poverty line at year 1, social support was related to less physical neglect, whereas social support at year 3 was only protective among families above the poverty line. For families below the poverty line at year 3, part-time employment was the only protective factor against physical neglect. This study was one of the first to explore how the effect of a given protective factor varied based on level of risk and the timing of risk. Given that the effect of protective factors varied across poverty thresholds, it is important for future studies to consider how much risk families are experiencing when modeling the effect of protective factors. In some cases, the results illustrated that protective factors had significant effects among families in poverty, but not for families above the poverty threshold. In these instances, it might be that certain protective factors are particularly beneficial while experiencing poverty whereas families above the poverty line have more resources and the same factors might not confer additional benefits. This does not mean that families should be in poverty in order for protective factors to matter, rather it is likely

that as families gain more monetary resources, other sources of support might become redundant when preventing neglect. Therefore, the focus should be on which protective factors are still beneficial when experiencing extreme levels of poverty, such as 50% of the federal poverty level, in order to gain insight on what resources are most helpful to families in need. These results also provide important information for policies and intervention programs, such that the timing of poverty in a family's life course likely affects the whether or not resources are able to help decrease neglectful parenting behaviors.

There were several surprising findings in the current study. First, there was some evidence that father involvement was related to more physical neglectful parenting behaviors, which was contrary to the stated hypothesis. Prior research has found that male presence in the household is related to higher risk of involvement in CPS, but this is limited to social fathers (Berger, Paxson, & Waldfogel, 2009). Yet, the current study assessed biological father's involvement behaviors, such as reading to the child or putting them to bed. One study examining different father behaviors found that fathers' parenting efficacy and participation in household tasks was related to less neglect, whereas fathers' participation in child care was related to more neglect (Dubowitz, Black, Kerr, Starr, & Harrington, 2000). Further research is needed to understand why fathers' caregiving would increase physical neglect, especially if fathers might be contributing to household resources.

Another contrary finding was parenting classes was related to more supervisory neglect. One possible explanation is this finding could be in part due to selection, in which mothers that need parenting classes the most are the ones that receive them. It could also be that these parenting classes were mandated by courts or welfare agencies. Additional schooling or training was also related to a higher likelihood of reported involvement in CPS. One possibility could be

the grouping of “schooling”, such as getting a high school diploma or college degree, with “training”, such as trade skills. These two different measures may not confer the same benefits for parenting behaviors and the quality of training or schooling might matter for decreasing neglectful parenting. Additional research is needed to explore the association between additional schooling and involvement in CPS.

Several limitations should be taken into account when considering findings from the current study. First, this study examined behavioral approximations of neglect and mother’s self-reported involvement in CPS, which may not have accurately captured neglect or every family involved in CPS. Yet, the current study used the best measures of neglectful behaviors available in this dataset. It is also likely the current study estimates an under-report of involvement in CPS, which would skew results towards null findings. Caution should be taken when evaluating the results predicting CPS involvement between years 1 and 3 because this is based on parent recall of their most recent CPS involvement from the year 5 interview. In other words, parents who report CPS involvement between years 1 and 3 were not involved in CPS between years 3 and 5, which inherently excludes re-abusers. The current results are likely an underestimate of CPS involvement and particularly for a very high risk set of families that would have been repeated involvement in CPS during the 3 to 5 year timeframe. Therefore, the results predicting CPS involvement between years 1 and 3 only capture families that are involved early and for a single time, whereas the results predicting CPS involvement between years 3 to 5 capture families with late or repeated CPS involvement. Future research should incorporate additional measures of neglectful behaviors as well as records of involvement in CPS at multiple time points when possible. Second, the data were collected at intervals in which there is a 2-year lag between the timing of protective factors and neglect or CPS involvement. Future research should consider

how protective factors might have a more immediate impact on parenting behaviors and CPS involvement. Third, this study cannot establish causality between protective factors and neglectful parenting or CPS involvement despite the many covariates and longitudinal modeling. Future work could incorporate different causal modeling strategies, such as propensity score matching, to understand the role of protective factors for decreasing neglect.

Child neglect is the most prevalent form of maltreatment and can lead to short-term and long-term maladaptive outcomes. Protective factors in families' proximal environments can help parents navigate the challenges of poverty and avoid neglectful behaviors. This study provides evidence that maternal employment and social support are two protective factors that could potentially decrease neglect, especially for families below the poverty line. Taken together, these results provide important information for practitioners and policymakers on the ways to support families and to mitigate child neglect.

Table 3.1. Descriptive statistics of those included and excluded from sample.

	Not in Sample (n = 3,051)		In Sample (n = 1,846).				Difference
	Mean	*SD*	Mean	*SD*	Min	Max	
Child age (months at year 1)	15.01	(3.50)	15.03	(3.45)	9	30	
Child male	0.53		0.52		0	1	
Child low birth weight	0.10		0.10		0	1	
Mother's age (years at birth)	25.54	(6.07)	25.10	(6.01)	15	43	*
Mother's marital status							
Married	0.25		0.23		0	1	
Cohabiting	0.37		0.36		0	1	
Single	0.37		0.41		0	1	*
Number of additional children in household	1.24	(1.31)	1.27	(1.32)	0	8	
Number of adults in household	2.37	(1.07)	2.29	(1.00)	1	9	**
Mother's race							
White	0.21		0.21	(0.41)		1	
Black	0.42		0.51	(0.50)		1	***
Other	0.37		0.28	(0.45)		1	***
Mother's education at birth	4.57	(1.87)	4.67	(1.79)	1	9	
Maternal depressive symptoms	0.75	(1.81)	0.95	(2.05)	0	8	***
Mother's parenting stress	1.92	(0.74)	2.13	(0.70)	1	4	***
Mother health problem	0.06		0.07		0	1	
Father's education at birth	4.69	(1.91)	4.67	(1.85)	1	9	
Father ever in jail by year 1	0.33		0.34		0	1	
Father's age	28.29	(7.06)	27.71	(7.21)	15	53	*
Father's race							
White	0.18		0.19	(0.39)		1	
Black	0.44		0.53	(0.50)		1	***
Other	0.39		0.28	(0.45)		1	***
Residential instability	0.65	(0.88)	0.63	(0.87)	0	10	
Material hardship	0.15	(0.22)	0.16	(0.22)	0	1	
Poverty level at year 1							
0-49%	0.24		0.26		0	1	
50-99%	0.19		0.19		0	1	
100-199%	0.26		0.24		0	1	
200%	0.31		0.32		0	1	
Poverty level at year 3							
0-49%	0.21		0.23		0	1	
50-99%	0.20		0.19		0	1	
100-199%	0.24		0.25		0	1	
200%	0.35		0.32		0	1	

Note. *** $p < .001$; ** $p < .01$; * $p < .05$.

Table 3.2. Standardized coefficients or odds ratios of neglect and CPS involvement at year 3 regressed on protective factors at year 1.

	Physical neglect			Supervisory neglect			Involvement with CPS	
Year 1 protective factors	*β*	SE	*p*-value	*β*	SE	*p*-value	Odds Ratio	*p*-value
Father involvement	-0.03	0.03		0.01	0.03		1.11	
Additional schooling/training	0.03	0.02		-0.01	0.02		1.29	
Social support	-0.11	0.02	***	-0.03	0.02		0.46	**
Informal care	0.02	0.02		0.03	0.02		0.84	
Formal care	-0.01	0.02		-0.01	0.02		1.32	
Parenting class	-0.02	0.02		0.05	0.02	*	1.1	
Part-time work	-0.04	0.02	*	-0.02	0.02		0.8	
Full-time work	-0.06	0.03	*	-0.04	0.02		1.54	

Note. *** $p < .001$; ** $p < .01$; * $p < .05$. Physical and supervisory neglect were estimated in the same model. CPS involvement was estimated separately. Referent for work is mothers not in paid work. Referent for child care is not in child care. All models control for child age, child sex, child low birth weight status, mother's age, mother's marital status, number of additional children in household, number of adults in household, mother's race, mother's education, mother's depressive symptoms, mother's parenting stress, mother health problem, father's education, father jail status, father's age, father's race, residential instability, material hardship, poverty status.

Table 3.3. Standardized coefficients or odds ratios of neglect and CPS involvement at year 5 regressed on protective factors at year 3.

	Physical neglect			Supervisory neglect			Involvement with CPS	
Year 3 protective factors	*β*	SE	*p*-value	*β*	SE	*p*-value	Odds Ratio	*p*-value
Father involvement	0.07	0.02	**	0.01	0.02		1.05	
Additional schooling/training	0.02	0.02		-0.02	0.02		1.86	*
Social support	-0.08	0.02	***	-0.05	0.02	*	0.55	**
Informal care	0.03	0.02		0.00	0.02		0.94	
Formal care	0.00	0.02		0.02	0.02		0.88	
Parenting class	0.04	0.02		0.08	0.03	**	1.65	
Part-time work	-0.06	0.02	**	0.00	0.02		0.74	
Full-time work	-0.07	0.02	**	0.00	0.02		0.73	

Note. *** $p < .001$; ** $p < .01$; * $p < .05$. Physical and supervisory neglect were estimated in the same model. CPS involvement was estimated separately. Referent for work is mothers not in paid work. Referent for child care is not in child care. All models control for child age, child sex, child low birth weight status, mother's age, mother's marital status, number of additional children in household, number of adults in household, mother's race, mother's education, mother's depressive symptoms, mother's parenting stress, mother health problem, father's education, father jail status, father's age, father's race, residential instability, material hardship, poverty status.

Table 3.4. Standardized coefficients for neglect at year 3 regressed on protective factors at year 1 in a multiple group model by poverty level at year 1.

	Physical neglect			Supervisory neglect		
	β	SE	p-value	β	SE	p-value
0-49% of federal poverty level (FPL)						
Father involvement	-0.09	0.05		-0.02	0.05	
Additional schooling/training	0.07	0.04		-0.06	0.04	
Social support	-0.10	0.04	*	-0.03	0.03	
Informal care	-0.07	0.04		0.03	0.04	
Formal care	-0.01	0.04		0.03	0.04	
Parenting class	-0.04	0.03		0.06	0.05	
Part-time work	-0.01	0.04		-0.02	0.03	
Full-time work	-0.08	0.04	*	-0.01	0.04	
50-99% of FPL						
Father involvement	0.08	0.05		0.05	0.07	
Additional schooling/training	0.07	0.05		0.01	0.05	
Social support	-0.10	0.05	*	0.03	0.05	
Informal care	0.01	0.05		0.04	0.05	
Formal care	-0.08	0.04		-0.04	0.04	
Parenting class	0.00	0.04		0.06	0.05	
Part-time work	-0.03	0.05		-0.06	0.04	
Full-time work	-0.10	0.06		-0.07	0.05	
100-199% of FPL						
Father involvement	-0.03	0.05		-0.03	0.05	
Additional schooling/training	-0.01	0.04		0.03	0.04	
Social support	-0.06	0.04		-0.04	0.05	
Informal care	0.04	0.05		0.03	0.05	
Formal care	-0.02	0.05		0.01	0.04	
Parenting class	-0.07	0.03	*	-0.01	0.04	
Part-time work	-0.06	0.03		0.01	0.05	
Full-time work	0.05	0.05		-0.09	0.05	
200% or above FPL						
Father involvement	0.00	0.04		0.07	0.03	*
Additional schooling/training	0.00	0.04		0.01	0.03	
Social support	-0.07	0.05		-0.02	0.03	
Informal care	0.11	0.04	**	0.00	0.04	
Formal care	0.06	0.04		-0.05	0.04	
Parenting class	0.03	0.04		0.05	0.04	
Part-time work	-0.05	0.03		-0.01	0.03	
Full-time work	-0.10	0.05	*	0.02	0.04	

Note. *** $p < .001$; ** $p < .01$; * $p < .05$. Physical and supervisory neglect were estimated in the same model. Referent for work is mothers not in paid work. Referent for child care is not in child care. All models control for child age, child sex, child low birth weight status, mother's age, mother's marital status, number of additional children in household, number of adults in household, mother's race, mother's education, mother's depressive symptoms, mother's parenting stress, mother health problem, father's education, father jail status, father's age, father's race, residential instability, and material hardship.

Table 3.5. Standardized coefficients for neglect at year 5 regressed on protective factors at year 3 in a multiple group model by poverty level at year 3.

	Physical neglect			Supervisory neglect		
	β	SE	p-value	β	SE	p-value
0-49% of federal poverty level (FPL)						
Father involvement	-0.03	0.05		0.06	0.04	
Additional schooling/training	0.03	0.04		-0.02	0.04	
Social support	-0.05	0.04		-0.03	0.04	
Informal care	0.03	0.04		0.03	0.04	
Formal care	0.02	0.04		0.06	0.05	
Parenting class	0.06	0.04		0.02	0.04	
Part-time work	-0.09	0.04	*	-0.02	0.04	
Full-time work	-0.04	0.04		-0.02	0.04	
50-99% of FPL						
Father involvement	0.21	0.05	***	0.00	0.04	
Additional schooling/training	-0.01	0.04		0.02	0.04	
Social support	-0.04	0.04		-0.10	0.05	*
Informal care	0.00	0.04		-0.05	0.04	
Formal care	-0.06	0.05		-0.02	0.05	
Parenting class	0.05	0.05		0.11	0.06	*
Part-time work	-0.11	0.04	**	-0.05	0.04	
Full-time work	-0.08	0.05		0.03	0.05	
100-199% of FPL						
Father involvement	0.01	0.05		-0.01	0.04	
Additional schooling/training	0.00	0.04		-0.07	0.04	
Social support	-0.13	0.04	***	0.01	0.04	
Informal care	0.02	0.04		-0.01	0.04	
Formal care	-0.05	0.05		0.06	0.05	
Parenting class	-0.02	0.04		0.23	0.06	***
Part-time work	0.00	0.04		0.02	0.05	
Full-time work	-0.04	0.04		-0.02	0.05	
200% or above FPL						
Father involvement	0.12	0.04	**	-0.01	0.04	
Additional schooling/training	0.07	0.04		-0.01	0.04	
Social support	-0.10	0.04	*	-0.06	0.05	
Informal care	0.07	0.04		0.03	0.04	
Formal care	0.05	0.04		-0.01	0.04	
Parenting class	-0.01	0.03		-0.02	0.02	
Part-time work	-0.02	0.04		0.04	0.04	
Full-time work	-0.03	0.05		0.02	0.04	

Note. *** $p < .001$; ** $p < .01$; * $p < .05$. Physical and supervisory neglect were estimated in the same model. Referent for work is mothers not in paid work. Referent for child care is not in child care. All models control for child age, child sex, child low birth weight status, mother's age, mother's marital status, number of additional children in household, number of adults in household, mother's race, mother's education, mother's depressive symptoms, mother's parenting stress, mother health problem, father's education, father jail status, father's age, father's race, residential instability, and material hardship.

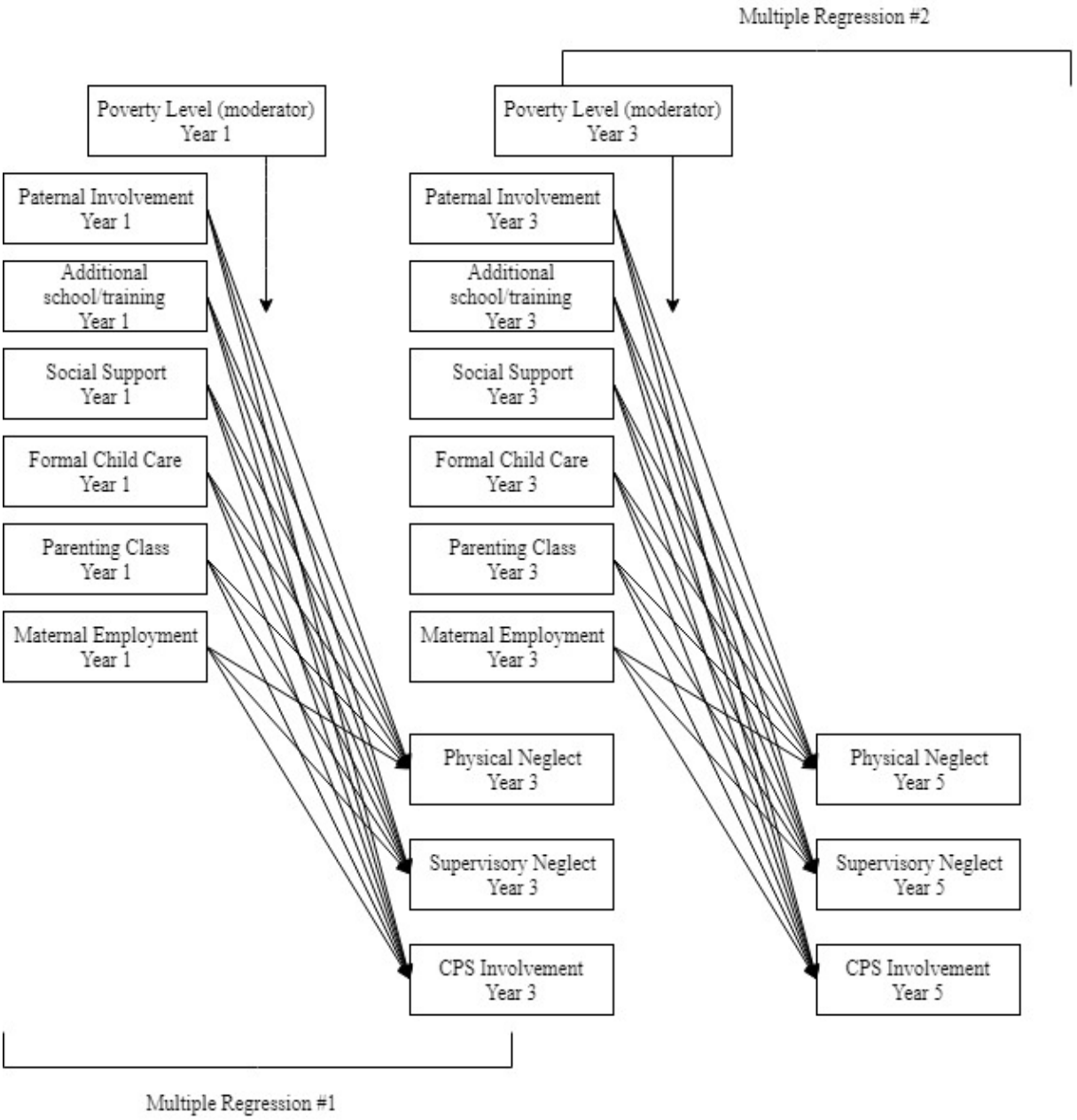

Figure 3.1. Moderation of Associations between Protective Factors and Neglect.
This figure represents two separate multiple regressions.

Chapter 4: Benefits of Child Care after Contact with CPS

BACKGROUND

Approximately 3.5 million children were the subject of an investigation by child protective services (CPS) in 2016 (U.S. Department of Health and Human Services (USDHHS), 2018). Children involved in CPS experience poor academic outcomes and poor physical and social-emotional health compared to the general population (Casanueva, Ringeisen, Wilson, Smith & Dolan, 2011). After a CPS investigation, cases are considered "substantiated" if there was sufficient evidence to indicate maltreatment and "unsubstantiated" if there was insufficient evidence. Despite experiencing maltreatment, many children with substantiated cases remain in their homes. In 2016, over 78% of substantiated victims of maltreatment remained at home (see exceptions in USDHHS, 2018).

Among children who experience maltreatment, neglect is the most common type. Indeed, neglect accounted for over 74% of substantiated reports of maltreatment in 2016 (USDHHS, 2018; Sedlak et al., 2010). Thus, it is likely that many children who remain in their homes have experienced neglectful parenting. Neglect is generally defined as the caregiver failing to provide adequate clothing, food, medical care, or supervision to a child (Child Welfare Information Gateway, 2016). Neglect is also the most common type of maltreatment among young children (ChildStats, 2017). Given that early childhood is an important time for skill development, this is particularly troubling (Cunha et al., 2006). Prior research has illustrated that neglect is related to immediate and long-term maladaptive outcomes (Widom, 2014). Child neglect victims are generally understudied (Proctor & Dubowitz, 2014) and there is particularly little research on protective factors that promote well-being among young children who have experienced neglect. Therefore, it is important to understand resources that might promote child well-being among children who remain in home following neglectful parenting. According to ecological systems

theory (Bronfenbrenner, 1994), children are situated within different ecological contexts, such as families and schools, which shapes their development. The current study sought to understand whether a school-like environment could compensate for a home environment that warranted investigation by CPS. Given that substantiation does not differentiate children's outcomes (Hussey et al., 2005), children whose parents were suspected of neglect may be as at risk as children whose parents were confirmed to have neglected them. Thus, this study considers children involved in both substantiated and unsubstantiated cases of maltreatment and it examined whether early childhood education (ECE) can promote positive developmental outcomes among young children who remain in-home after any type of CPS investigation and if ECE is particularly beneficial after experiencing of neglect.

Neglect and Child Outcomes

Currently, there is some discrepancy in the definition of neglect and the number of subtypes of neglect (Jonson-Reid, Drake, & Zhou, 2012). Barnett and colleagues (1993) created the Maltreatment Classification Scheme based on CPS records and this measure details the frequency, chronicity, and type of maltreatment. This scheme was then modified by the Longitudinal Studies of Child Abuse and Neglect to distinguish subtypes of neglect (English, Bangdiwala, & Runyan, 2005). Physical neglect, which is based on failure to provide (English et al., 2005), encompasses when the caregiver cannot or will not provide sufficient basic necessities, such as food, clothing, or shelter (similar to Dubowitz, Pitts, Litrownik, Cox, Runyan, & Black, 2005; Font & Berger, 2015). Supervisory neglect, based on lack of supervision (English et al., 2005), is when the caregiver does not ensure the child is adequately supervised at all times or when the environment is unsafe (similar to Font & Berger, 2015). Supervisory neglect includes instances of domestic violence, substance abuse, and criminality

because each of these represent the child being exposed to an unsafe environment. The current study focused on both physical neglect and supervisory neglect.

Children who have experienced neglect tend to have worse behavioral, cognitive, and social-emotional development compared to non-maltreated children (Hilyard & Wolfe, 2002; Widom, 2014). However, there is little research on whether the two main types of neglect are differentially associated with children's development. Because it is linked with a lack of material resources and with deprived environments, physical neglect may manifest in more cognitive deficits, as parents are not able to provide a nutritionally rich or stimulating environment. Compared to non-maltreated children, prior research has demonstrated that physical neglect seems to be more strongly associated with poor cognitive development (Font & Berger, 2015; Manly, Lynch, Oshri, Herzog, & Wortel, 2013), however it has also been associated with worse social-emotional outcomes for children (English et al., 2005; Font & Berger, 2015; Hilyard & Wolfe, 2005).

In contrast, supervisory neglect typically refers to situations in which the caregiver is not physically or emotionally available. This emotional and physical unavailability has been linked to insecure and disorganized attachments in infants because children are not able to reliably depend on their caregiver in situations of distress (Hildyard & Wolfe, 2002). Insecure and disorganized attachment styles have been linked to poor social-emotional outcomes, such as poor emotion regulation or more behavior problems (Sroufe, 2005). Prior research has found supervisory neglect to be associated with aggressive, anxious, depressed, and withdrawn behaviors, and unrelated to cognitive development compared to non-maltreated children (Font & Berger, 2015). In the present study, physical neglect is expected to be associated with cognitive

development and, to a lesser extent, social-emotional outcomes and that supervisory neglect will be related to social-emotional outcomes only.

Neglect and Early Care and Education

One potential resource for promoting positive child development among children who have experienced neglect could be early care and education (ECE). ECE encompasses any arrangement in which the child is supervised by a non-parental caregiver. This can include formal care, such as Head Start or other center-based care, and informal care, such as caregiving from a relative. Prior research has documented the positive effects of high quality ECE in the general population (e.g., Li, Farkas, Duncan, Burchinal, & Vandell, 2013; Vandell, Belsky, Burchinal, Steinberg, Vandergrift, & NICHD Early Child Care Research Network, 2010) and among higher risk populations (Votruba-Drzal, Coley, Koury, & Miller, 2013; Watamura, Phillips, Morrissey, McCartney, & Bub, 2011).

Although it is likely that the benefits of ECE would extend to children who experience maltreatment, there is very little research on the topic. Of the existing research on ECE among children involved in CPS, the focus has been on maltreatment generally and few studies have considered differences by neglect. One study found that enrollment in Head Start lead to some improvements in pre-academic skills and marginal improvements in behavior problems for children in non-parental care, such as caregivers who were not a biological, adoptive, or step-parent (Lipscomb, Pratt, Schmitt, Pears, & Kim, 2013). Another study on children from low-income households in Florida demonstrated that both CPS- and non-CPS-involved children who attended an accredited ECE had higher language, cognition, and fine motor skills than children in non-accredited centers (Dinehart, Mandra, Katz, & Hartman, 2012). A study on children involved in CPS in Minnesota found that children enrolled in a high quality ECE center showed

improvements in language and social competence, but enrollment did not reduce disparities on academic or social-emotional outcomes between CPS and non-CPS involved children (Kovan, Mishra, Susman-Stillman, Piescher, & LaLiberte, 2014). In a nationally representative sample of children involved in CPS, children enrolled in ECE had higher language development than children not enrolled in ECE and ECE was particularly beneficial among children who experienced supervisory neglect for language development (Merrit & Klein, 2015). Although this prior work is important for understanding the potential benefits of ECE for children involved in CPS, many relied on samples from only one state or indirect assessments of out-of-home care. Overall, there is a growing literature on the benefits of ECE for children involved in CPS, but there remains a limited understanding of how ECE may influence multiple development outcomes and for children with a history of neglect.

One key feature of ECE is the type of care. Among the general population of children, center-based care, or formal care, is typically associated with better cognitive development than home-based care, or informal care (NICHD Early Child Care Research Network, 2002; NICHD Early Child Care Research Network & Duncan, 2003). ECE might have a compensatory effect among children who experience "lower quality home-environments" (Watamura et al., 2011, p.1). Among children involved in CPS for both abuse and neglect, any involvement in ECE has been linked to improved language development; regardless of whether it was center- or home-based care (Merrit & Klein, 2015). For children who experience neglect, it might be that any ECE, rather than the specific type of care, is related to more positive development because the children are exposed to an environment that is likely more cognitively stimulating and that likely provides enriched supervision. Therefore, the current study focused on how enrollment in informal or formal center based care was related to children's cognitive and social-emotional

outcomes compared to children not in care among children involved in CPS and whether these associations varied based on type of neglect.

The Current Study

The negative effects of neglect on children's development have been documented, and there is evidence that early childhood is a particularly vulnerable period for children's later development. Thus, it is important to explore resources that might compensate for the effects of experiencing a neglectful household at a young age. One potential resource for children who experience maltreatment is ECE, but there is a lack of evidence of the protective benefits among children who are involved in CPS and children who may have experienced neglect. ECE could potentially be compensatory as it places children in stimulating environments with other young children and with caregivers experienced in caring for young children. Yet, the associations between ECE and children's social-emotional and cognitive development might differ based whether the child experiences physical or supervisory neglect given the prior evidence that each affects outcomes differently. To address these gaps in the literature, the current study investigated two research questions: 1) How do different types of care (e.g., informal or formal) relate to cognitive and social-emotional well-being among children involved in CPS who remain in home?; and 2) How do these associations vary based on the type of neglect (e.g., physical neglect or supervisory neglect)? The first hypothesis was that children who experience formal care would demonstrate significant increases in cognitive and social skills and decreases in behavior problems compared to children not in care, whereas children who are in informal care would not be significantly different from children not in care. The second hypothesis that there would be a significant interaction between ECE and physical neglect when predicting cognitive outcomes, such that the participation in ECE would result in more gains in cognitive skills if

children experience physical neglect compared to children who do not experience physical neglect. Also, it is expected that there would be a significant interaction between ECE and supervisory neglect, namely that children would experience a greater increase in social skills and a greater decrease in behavior problems when enrolled in care if they experience supervisory neglect compared to children who do not experience supervisory neglect.

METHOD

Data and Sample

The National Survey of Child and Adolescent Well-being II (NSCAW II) is a longitudinal and nationally representative sample of 5,872 children aged 0 to 17.5 years, who had CPS investigations closed between February 2008 and April 2009. NSCAW II oversampled infants and children in out-of-home care and under-sampled cases not receiving services to allow for further analysis of subgroups. Three waves of interviews are available, with the second and third waves of data collection at 18 months and 36 months after wave 1, respectively. NSCAW II collected information from the children, parents, non-biological caregivers, and caseworkers. The sample was limited to children who have a longitudinal sample weight (N = 4,232). The sample was also limited to children who were 4 years or younger at wave 1 to capture the children most likely to experience ECE (N = 2,491). The sample is also limited to children who remained home regardless of substantiation status (N = 1,405) because the aim of the current study is to explore the compensatory benefits of ECE among children who experience a neglectful household, not in addition to experiencing foster care. Only families who were deemed “permanent” caregivers were asked questions about ECE; this is a limitation but necessary sample restriction. The final sample was 1,385 children. The sample was not limited to

substantiated cases because children who have been the subject of a CPS case are at risk for less optimal development regardless of substantiation status (Hussey et al., 2005).

Table 4.1 includes weighted descriptive characteristics of the sample and comparisons based on sample exclusion. Compared to participants not in the sample, the sample included fewer White children, more Black children, younger children, and more male children. The sample was less likely to have experienced sexual or physical abuse, but more supervisory neglect compared to participants not in the sample. Caregivers in the sample tended to be younger and less educated and were less likely to married or employed. Caregivers in the sample were more likely to be in poverty and there tended to be fewer children in the house compared to participants excluded from the sample. The differences in caregiver characteristics likely results from the limitation to in-home observations because this reflect differences between biological parents involved in CPS and foster caregivers.

Measures

Type of care. Type of ECE was assessed using one question from parent reports at wave 1. First, parents were asked, "In the last 12 months, have you received child care on a regular basis?" If parents responded affirmatively, they then reported on the type of care, such as Head Start or care provided by a relative, and parents could select multiple types of care. These responses were coded as a categorical variable: no care, informal care (i.e., care provided by a relative, friend, or family), and any exposure to formal care (i.e., Head Start or center-based care). This categorical variable was then dummy coded with no care as the reference category.

Cognitive development. Cognitive development was assessed at waves 1, 2, and 3 using several age-specific measures (see Table 4.2). For children under 4 years old at wave 1 (n = 1,244), the Battelle Developmental Inventory 2nd edition was used to assess cognitive

development (BDI; Newborg, 2005). In NSCAW, three cognitive domains were assessed, namely attention and memory, perception and concepts, and reasoning and academic skills. The total cognitive scale score for cognitive development was used for children under 4 years. For the full sample, the Preschool Language Scales-3 (PLS-3, Zimmerman, Steiner, & Pond, 1992) was another measure of cognitive outcomes. The PLS-3 assesses language development and is composed of an auditory comprehension subscale and expressive communication subscale. The combined Total Language score was used to measure children's language skills. The PLS-3 had good internal consistency ($\alpha = .87$) and high test-retest reliabilities (.91 to .94).

Social skills. Social skills were assessed at waves 1, 2, and 3 (see Table 4.2). For children 3 years or older at wave 1 ($n = 281$), social skills were assessed by the Social Skills Rating System ($\alpha = .73$-95; SSRS; Gresham & Elliot, 1990), which measures cooperation, assertion, responsibility, and self-control. In the SSRS, parents reported on how often children engaged in certain behaviors (e.g. follow instructions). The SSRS has high internal consistency for NSCAW participants ($\alpha = .87$-.90). In addition, the Vineland Adaptive Behavior Scale screener was used to assess social skills for all ages (Vineland Screener; Sparrow, Carter, & Cicchetti, 1993). The Vineland Screener measures daily living skills and included 45-items which created two scales: Daily Living Skills and Socialization. The socialization scale included items on play, coping skills, and interpersonal relationships, and was used as a second measure of social skills ($\alpha = 0.96$).

Behavior problems. Behavior problems were assessed at waves 1, 2, and 3 (see Table 4.2). The Child Behavior Checklist (CBCL; Achenbach, 1991) was used to assess overall behavior problems for children 1.5 years and older at wave 1 ($n = 500$). Parents reported on whether children engaged in certain behaviors using a 3-point Likert scale (0= not true, 1=

somewhat or sometimes true, 2= very true or often true). For children 1.5 to 5 years of age, there are 100 items, and for children 6 to 18 years, there are 113 items. The total behavior problems scale was used for both age groups and the CBCL has high internal reliability (α = .80-96).

Neglect subtypes. The maltreatment allegations and risk assessment from the caseworker report and the Parent-Child Conflict Tactics Scales (α = .66-.95; Straus et al., 1998) from the parent report were used to assess different types of child neglect at wave 1 (see Table 4.3). Physical neglect included measures of whether the alleged abuse was physical neglect or educational neglect, if the family had trouble paying for basic necessities, and if the child was unable to get food or medical attention. Supervisory neglect included if the maltreatment allegation was lack of supervision, if the primary or secondary caregiver engaged in substance abuse, if the primary caregiver had serious mental health issues, if the primary caregiver had a recent history of arrests in the past year, and if the primary caregiver reported any instances of domestic violence in the home (either at the risk assessment or parent-report as the victim) (see Font & Berger, 2015 for a similar operationalization). Two dichotomous variables were created, physical neglect (0 = no, 1 = yes) and supervisory neglect (0 = no, 1 = yes). About 42% of the sample experienced physical neglect and about 80% experienced supervisory neglect.

Covariates. Child-level covariates included child race/ethnicity (White, Black, Other race), age in months, sex (0 = female, 1 = male), and other types of abuse (dichotomous indicators of sexual abuse and physical abuse). Family level covariates included caregiver's age, caregiver's mental health, caregiver's marital status (0 = not married, 1 = married), number of children in household, caregiver's employment status (0 = not employed, 1 = employed) and family poverty status (0 = not in poverty, 1 = in poverty). All covariates were from wave 1.

Analytic Approach

All analyses were modeled in Mplus 7.4 (Muthén, & Muthén, 2015) using SEM and full information maximum likelihood estimation (FIML) was used to address missing data. All correlations between predictors and outcomes are in Appendix 4. All analyses were weighted using the longitudinal sample weights provided in the data.

RQ 1. How do different types of care relate to children's cognitive and social-emotional well-being among children involved in CPS for any type of maltreatment? To examine how different dimensions of ECE at wave 1 relate to children's outcomes after contact with CPS, linear regression models were estimated. All models controlled for the prior wave of the outcome of interest and each developmental outcome was estimated separately. Outcomes modeled at wave 2 control for assessments at wave 1, and will be termed "earlier" (e.g., "earlier social skills"). Outcomes modeled at wave 3 control for wave 2 assessments and will be termed "later" (e.g., "later social skills").

RQ 2. How do these associations vary based on the type of neglect (e.g., physical and supervisory neglect)? To assess if the associations between type of care and children's outcomes varied based on type of neglect, interactions were created between type of care and type of neglect. For example, one model regressed social skills on type of care and an interaction between type of care and physical neglect and a separate model included an interaction between type of care and supervisory neglect. If an interaction term was significant, simple slopes analyses were conducted using the Model Constraint command in Mplus.

RESULTS

ECE and Children's Outcomes

The first set of analyses estimated links between informal and formal care and the developmental outcomes of all of the children among all children who remained in home following a CPS investigation (see Tables 4.4 and 4.5). For cognitive development among children 4 years or younger at wave 1, participation in informal care at wave 1 was associated with higher earlier cognitive scores on the BDI compared to children who did not participate in any ECE (β = .16, p < .05). Participation in formal care did not predict children's earlier cognitive scores. For estimating language development among the full sample, participation in any type of care (informal or formal) did not have a significant association with children's earlier or later language skills.

In turning to children's social skills among children 3 years or older at wave 1, participation in formal or informal care did not predict children's earlier social skills as measured by the SSRS. In contrast, children who were in formal care at wave 1 had significantly higher later social skills than children who were not in care (β = .13, p < .05). For the analyses with the entire sample, participation in formal care at wave 1 was associated with higher earlier social skills based on the Vineland Adaptive Socialization Scale compared to children who were not in care (β = .15, p < .05). For the full sample, ECE at wave 1 was not related to children's later social skills.

For behavior problems among children 18 months or older at wave 1, participation in informal care at wave 1 was related to significantly lower earlier problems compared to no care (β = -.10, p < .05). Similarly, children who were enrolled in formal care at wave 1 also demonstrated significantly fewer earlier behavior problems compared to children not in care (β =

-.14, $p < .01$). Participation in ECE at wave 1 did not have a significant effect on later behavior problems.

Moderation by Physical or Supervisory Neglect

For all reported interactions, it should be noted that the comparison group is still other children involved in CPS. For example, when a comparison is made between children who experience physical neglect and children who do not experience physical neglect, the latter group still likely experienced some type of maltreatment even if their case was not substantiated (for discussion see Hussey et al., 2005, Kohl, Jonson-Reid, & Drake, 2009; Font & Maguire-Jack, 2019), just not physical neglect specifically. For physical neglect, there were several significant interactions when predicting children's developmental outcomes. For children's cognitive outcomes among children 4 years or younger at wave 1, there was a significant and positive interaction between formal care and physical neglect when predicting children's earlier cognitive score on the BDI ($\beta = .38$, $p < .001$). Among children who did not experience physical neglect, participation in formal care was related to declines in earlier cognitive scores compared to children not in formal care (see Figure 4.1). For children who did experience physical neglect, participation in formal care was related to higher earlier cognitive scores compared to children who did not participate in formal care. For language development among the full sample, there was a significant and positive interaction between ECE and physical neglect when predicting earlier language skills ($\beta = .21$, $p < .01$). Based on simple slopes analysis this effect was only significant for children who experienced physical neglect. Figure 4.2 illustrates that children who participated in formal care had higher earlier language skills than children who did not participate in formal care among children who experienced physical neglect. Turning to the Vineland Adaptive Socialization Scale which included the full sample, there was a significant

interaction between informal care at wave 1 and physical neglect when estimating later social skills (β = .13, p < .01). Among children who did not experience physical neglect, participation in informal care was associated with lower later social skills compared to children who were not in care (see Figure 4.3). For children who experienced physical neglect, participation in informal care was related to higher later social skills compared to children who were not in care.

When estimating supervisory neglect, only two significant interactions emerged. First, formal care interacted significantly with supervisory neglect when predicting children's later language skills (β = -.31, p < .01). Simple slopes analyses revealed that this effect was only significant for children who did not experience supervisory neglect (see Figure 4.4). Children enrolled in formal care demonstrated higher later language skills than children who were not in care among children who did not experience supervisory neglect. Second, the interaction between informal care and supervisory neglect was significant and positive when predicting children's later social skills based on the SSRS (β = .19, p < .01). Among children who did not experience supervisory neglect, participation in informal care was associated with lower social skills compared to not participating in informal care. In contrast, participation in informal care was related to higher social skills among children who did experience supervisory neglect compared to children who were not in informal care. Yet, simple slopes analyses revealed these associations were only marginally significant (see Figure 4.5).

DISCUSSION

This study examined the association between ECE and developmental outcomes among children who remained home after a CPS investigation. Currently, there is only limited evidence that ECE might be beneficial for academic and social-emotional development among children who are involved in CPS. This study extended prior work in several important ways. First, this

study used a large sample of children involved in CPS who remain in-home, which constitutes the majority of cases for both substantiated and unsubstantiated reports of maltreatment. Further, this study modeled multiple domains of development and investigated variability in benefits of ECE by type of neglect.

Results demonstrated that participation in ECE was related to increases in cognitive outcomes and social skills as well as decreases in behavior problems, depending on the type of care and the timing of the outcome. Compared to children who were not in care, children in informal care demonstrated short-term decreases in behavior problems and immediate and long-lasting gains in social skills. Participation in formal care was related to immediate gains in cognitive outcomes and decreases in behavior problems compared to children not enrolled in ECE. These findings are partially supported by prior research that has linked ECE to gains in academic skills and social competence and marginal decreases in behavior problems among different samples of children who have had contact with CPS (Dinehart et al., 2012; Lipscomb et al., 2013). Thus, the current study provides additional evidence that participation in ECE can be beneficial among children involved in CPS and extends prior work by focusing on children who remained in home following an investigation as well as focusing on two waves of outcomes. Interestingly, there were differences in the benefits in ECE depending on whether children were enrolled in informal or formal care. One prior study found that participation in ECE was related to better language development but found no differences between home-based or center-based care (Merrit & Klein, 2015). Thus, it seems that among children who remain in home following a CPS investigation, the type of care is an important factor for later development. These results provide essential information for practitioners and policymakers, such that providing vouchers

for or support to find formal care will likely promote positive outcomes for children among families who come into contact with CPS.

Another take-away from the current study is that the effect of ECE varied based on children's experience of neglect. Among children who experienced physical neglect, participation in formal care was related to higher cognitive and language skills, whereas participation in informal care was associated with higher social skills compared to children not in care. For children who experienced supervisory neglect, there were no significant effects of informal or formal care on children's outcomes compared to no care. These results partially support hypotheses, that physical neglect would be more strongly linked to cognitive outcomes and supervisory neglect would be more strongly linked to social-emotional outcomes. One other study explored the effect of ECE based on maltreatment type and found that ECE was particularly beneficial for language skills among children that experienced supervisory neglect (Merrit & Klein, 2015). Thus, the current study expanded upon this literature by illustrating that ECE supports multiple domains of development following experiences of physical or supervisory neglect.

One somewhat surprising finding was that the majority of benefits from participation in ECE at wave 1 were found at outcomes at the second wave of assessment (which is 18 months on average after initial assessment) compared to outcomes at the third wave (which is 36 months on average after initial assessment). This is in line with prior research that has found a "fadeout" effect of ECE on children's developmental outcomes, in which ECE interventions result in an immediate positive effect on children's outcomes but this effect fades over time (Bailey, Duncan, Odgers, & Yu, 2016). The current study is one of the first to examine the effect of ECE on developmental outcomes over time among children who remain home after a CPS investigation.

Future research should continue to explore the mechanisms underlying the benefits of ECE among children involved in CPS and could examine how the benefits of ECE vary based on in-home or out-of-home placement.

Several limitations need to be taken into consideration when evaluating these findings. First, this study was limited to children who remained in home following a CPS investigation and had to be limited to "permanent" homes. Although the majority of children remain in home following a CPS investigation, the effects of ECE might be different for children placed in kinship or foster care. The current study was focused on in-home families because the aim was to understand if ECE could compensate in any way for a likely experience of maltreatment generally and subtypes of neglect, rather than if ECE could compensate for the experience of removal. The limitation to permanent homes was necessary due to the nature of the data, and few cases were lost after limiting to in-home placements. Ideally, future research would be able to explore the effects of ECE among a nationally representative sample of children who remained in-home following a CPS investigation. Second, although analyses were longitudinal and controlled for a wide range of covariates, this study cannot make claims of causality. Future research could consider either an intervention approach or causal modeling techniques to try to assess the effect of ECE on developmental outcomes among children involved in CPS. Third, this study evaluated the type of care children received, but this might not be representative of the quality of care. It is generally accepted that formal or center-based care is often higher quality than informal care arrangements, but there could be variation within each of these settings. Future work should consider different indicators when assessing ECE experiences among children involved in CPS. Fourth, moderation analyses made comparisons between children who experienced different types of neglect to those who did not, however this sample was exclusively

children who were involved in CPS. In other words, the comparison group that did not experience neglect may still experience another type of maltreatment, even if their case was not substantiated. These results cannot speak to the benefits of ECE when comparing children who experienced neglect to children who experienced no maltreatment of any kind and had no involvement in CPS. Future studies should include samples of children involved in CPS and children not involved in CPS in order to explore the benefits of ECE among these two populations.

Many children come into contact with CPS each year and remain in-home regardless of whether the reports were substantiated. These children are at risk for poor developmental outcomes and deserve attention aimed at promoting positive development. This study provides evidence that both informal and formal care may foster benefits for children's cognitive and social-emotional development when they remain home following a CPS investigation. Further, ECE seems particularly beneficial after exposure to neglectful environments. These results should encourage practitioners to provide ECE vouchers or provide support in obtaining ECE to families who come into contact with CPS. Additionally, these findings should motivate policymakers to generate policies to provide affordable and high-quality ECE to vulnerable families for the aim of promoting positive child outcomes.

Table 4.1. Weighted sample statistics comparing participants included and excluded from analyses.

	Not in sample (n = 2,847)		In sample (n=1,385)				Significance of difference
	Mean	*SD*	Mean	*SD*	Min	Max	
White	0.44		0.38		0	1	***
Black	0.21		0.25		0	1	**
Other race	0.35		0.37		0	1	
Child age (months)	121.23	48.93	30.61	16.60	1	215	***
Child male	0.49		0.55		0	1	***
Sexual abuse	0.11		0.04		0	1	***
Physical abuse	0.35		0.19		0	1	***
Physical neglect	0.39		0.42		0	1	
Supervisory neglect	0.72		0.80		0	1	***
Caregiver age (years)	39.77	6.75	34.78	2.14	34	55	***
Caregiver mental health	2.53	1.21	2.53	1.21	1	6	
Caregiver married	0.37		0.22		0	1	***
Number of kids	2.55	1.35	2.33	1.27	1	5	***
Caregiver in poverty	0.80		0.92		0	1	***
Caregiver education	2.04	0.75	1.96	0.70	1	3	**
Caregiver employed	0.49		0.40		0	1	***

*** $p < .001$; ** $p < .01$; * $p < .05$.

Table 4.2. Number of Child-Waves Included for Key Measures by Child Age at Baseline (Wave 1) Interview

Indicator	Measures	Years of Age at Baseline Interview (*N*)				
		<1Y (615)	1Y (350)	2Y (139)	3Y (140)	4Y (141)
Social-Emotional Health						
Social skills	Social Skills Rating System (Gresham & Elliot, 1990; 3 years or older)	-	-	-	1, 2, 3	1, 2, 3
	Vineland Adaptive Behavior Scale (Sparrow, Carter, & Cicchetti, 1993)	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3
Behavior problems	Child Behavior Checklist (CBCL; Achenbach & Rescorta, 2000; 18 months or older)	-	1, 2, 3*	1, 2, 3	1, 2, 3	1, 2, 3
Academic development						
Cognitive Development	Battelle Developmental Inventory (BDI; Newborg, 2005; under 4 years old)	1,2	1, 2	1, 2	1, 2	-
Language Development	Preschool Language Scales-3 (Zimmerman, Steiner, & Pond, 1992; 6 years and younger)	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3

Table 4.3. Items used for Physical Neglect and Supervisory Neglect Scales.

Scale	Concept	Item	Source
Physical Neglect	Physical neglect	Failure to provide reported	Alleged abuse
	Educational neglect	Educational maltreatment reported	
	Inadequate basic necessities	Have trouble paying for basic necessities	Risk Assessment
	Food insecurity	Unable to ensure child get food	Conflict Tactic Scale - Neglect Subscale. (Parent-reported)
	Medical neglect	Unable to get child to doctor	
Supervision Neglect	Supervisory Neglect	Lack of supervision provided	Alleged abuse
	Substance abuse	"Was there active alcohol abuse by the primary caregiver?"	Risk assessment
	Substance abuse	"Was there active alcohol abuse by the secondary caregiver?"	
	Substance abuse	"Was there active drug abuse by the primary caregiver?"	
	Substance abuse	"Was there active drug abuse by the secondary caregiver?"	
	Mental health	"Primary caregiver have any serious mental health or emotional problems?"	
	Criminality	"Primary caregiver have recent history of arrests?"	
	Lack of supervision	"Have unrealistic expectations of child?"	
	Domestic violence	"Was there active domestic violence?"	
	Drug abuse	Total drug abuse score	Parent Report
	Alcohol abuse	Total alcohol abuse score	
	Domestic violence	Total domestic violence score	
	Criminality	Any arrests in past year	
	Substance abuse	Too high/drunk to care for child	Conflict Tactic Scale - Neglect Subscale. (Parent-reported)
	Supervision	Left child alone when child should not be left alone	

Table 4.4. Standardized coefficients of cognitive outcomes regressed on type of care at wave 1.

	Battelle Developmental Inventory (n = 1,244; Under 4 years old at wave 1) Wave 2			Preschool Language Scales (n = 1,385; full sample) Wave 2		Wave 3	
	β	SE		β	SE	β	SE
Type of care (Referent = no care)							
Formal care	0.05	0.07		0.05	0.05	0.02	0.07
Informal care	0.16	0.07	*	0.04	0.06	-0.03	0.05

*** $p < .001$; ** $p < .01$; * $p < .05$. *Note.* All models controlled for the outcome at the prior wave of assessment. All models controlled for child race, child age, child sex, sexual abuse, physical abuse, physical neglect, supervisory neglect, caregiver age, caregiver mental health, caregiver marital status, number of children in the home, caregiver poverty status, caregiver education level, and caregiver employment status.

Table 4.5. Standardized coefficients of social skills and behavior outcomes regressed on type of care at wave 1.

	Social Skills (n = 281; 3 years or older at wave 1)					Social Skills (n = 1,385; full sample)					Behavior Problems (n = 500; 18 months or older at wave 1)				
	Wave 2		Wave 3			Wave 2			Wave 3		Wave 2			Wave 3	
	β	SE	β	SE		β	SE		β	SE	β	SE		β	SE
Type of care (Referent = no care)															
Formal care	0.06	0.07	0.13	0.06	*	0.15	0.07	*	0.02	0.05	-0.14	0.05	**	-0.03	0.05
Informal care	0.08	0.08	0.05	0.05		0.08	0.05		-0.04	0.05	-0.10	0.05	*	-0.02	0.05

*** $p < .001$; ** $p < .01$; * $p < .05$. *Note.* All models controlled for the outcome at the prior wave of assessment. All outcomes were modeled separately. All models controlled for child race, child age, child sex, sexual abuse, physical abuse, physical neglect, supervisory neglect, caregiver age, caregiver mental health, caregiver marital status, number of kids, caregiver poverty status, caregiver education level, and caregiver employment status. First social skills assessment based on Social Skills Rating Scale, second assessment from Vineland Adaptive Socialization Scale. Behavior problems from CBCL.

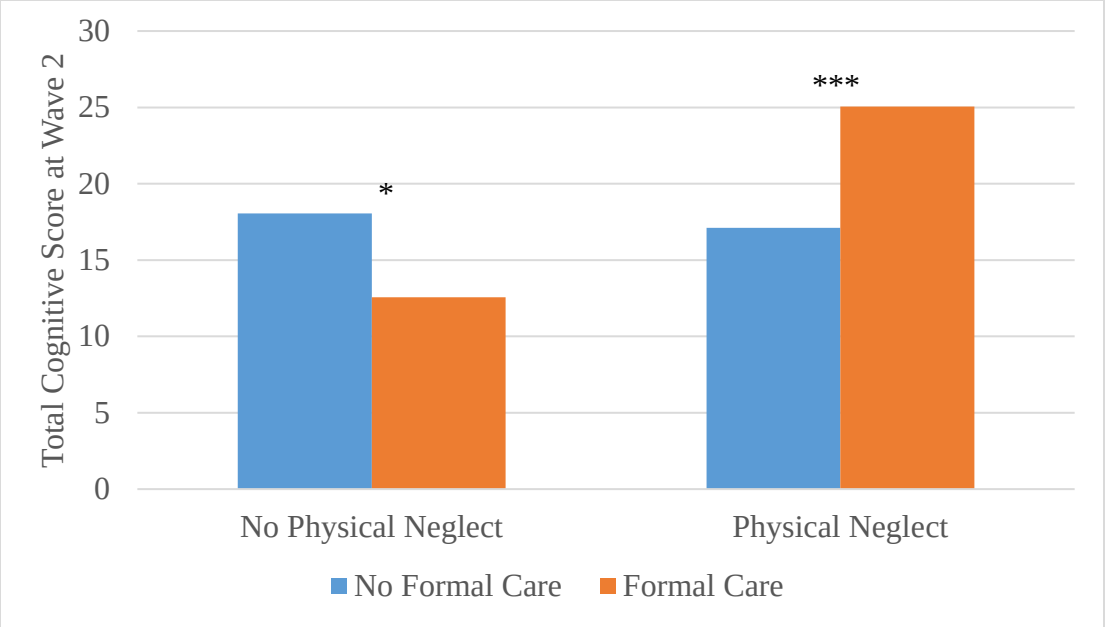

Figure 4.1. Plotted interaction between type of care at wave 1 and physical neglect predicting Battelle developmental total cognitive score at wave 2.

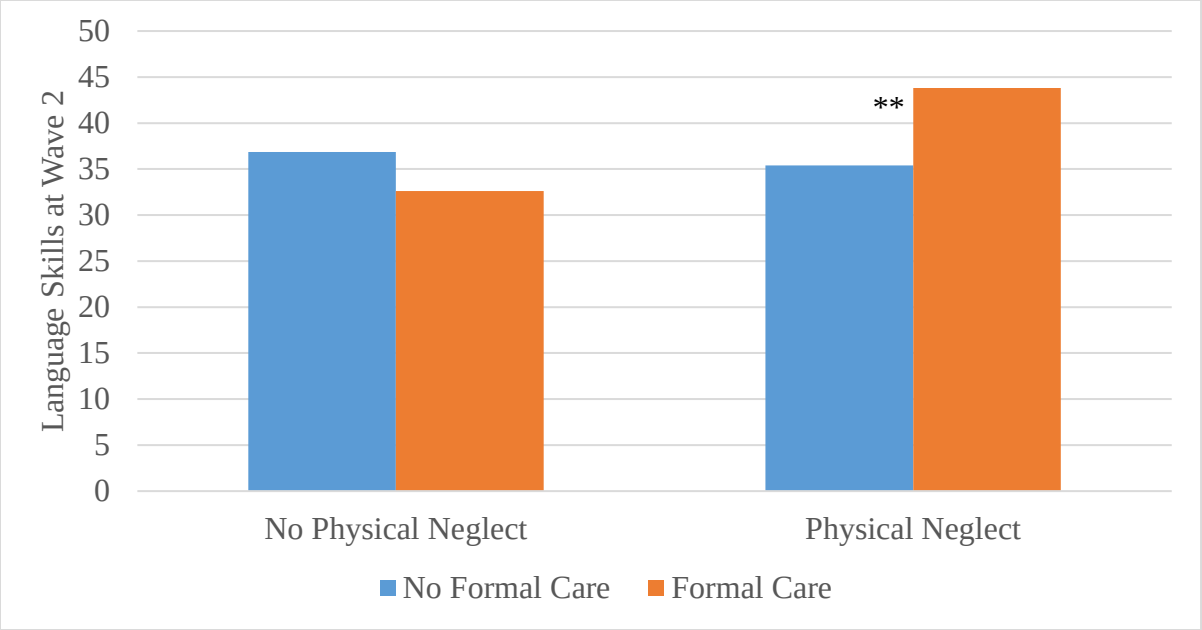

Figure 4.2. Plotted interaction between type of care at wave 1 and physical neglect predicting language skills at wave 2.

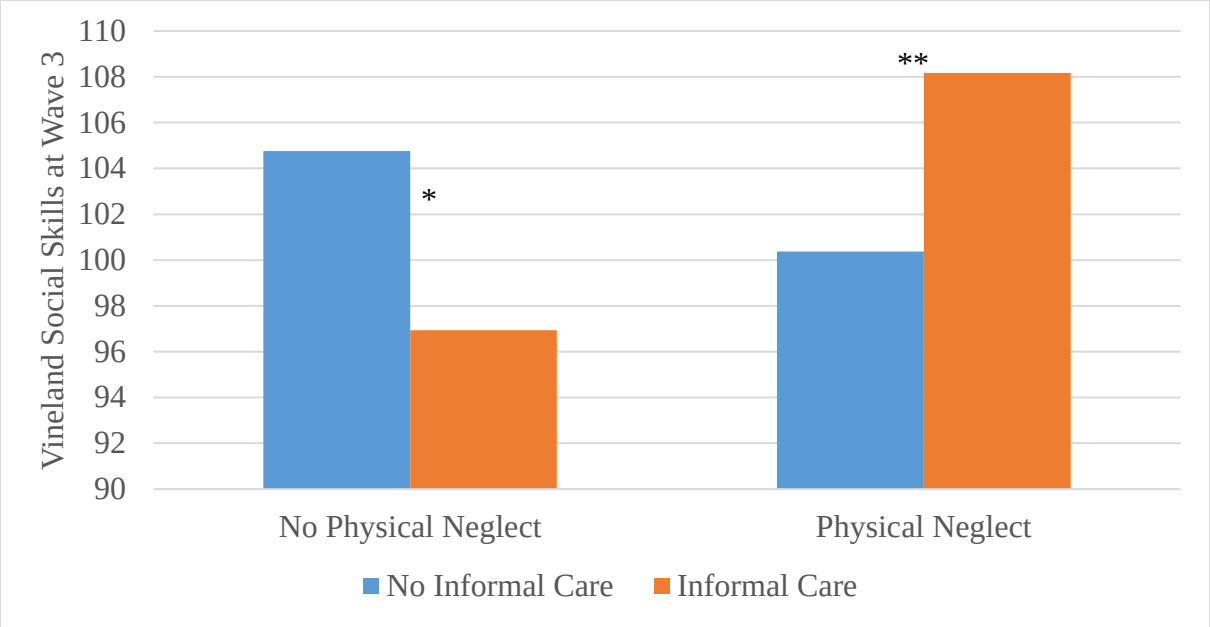

Figure 4.3. Plotted interaction between type of care at wave 1 and physical neglect predicting Vineland social skills at wave 3.

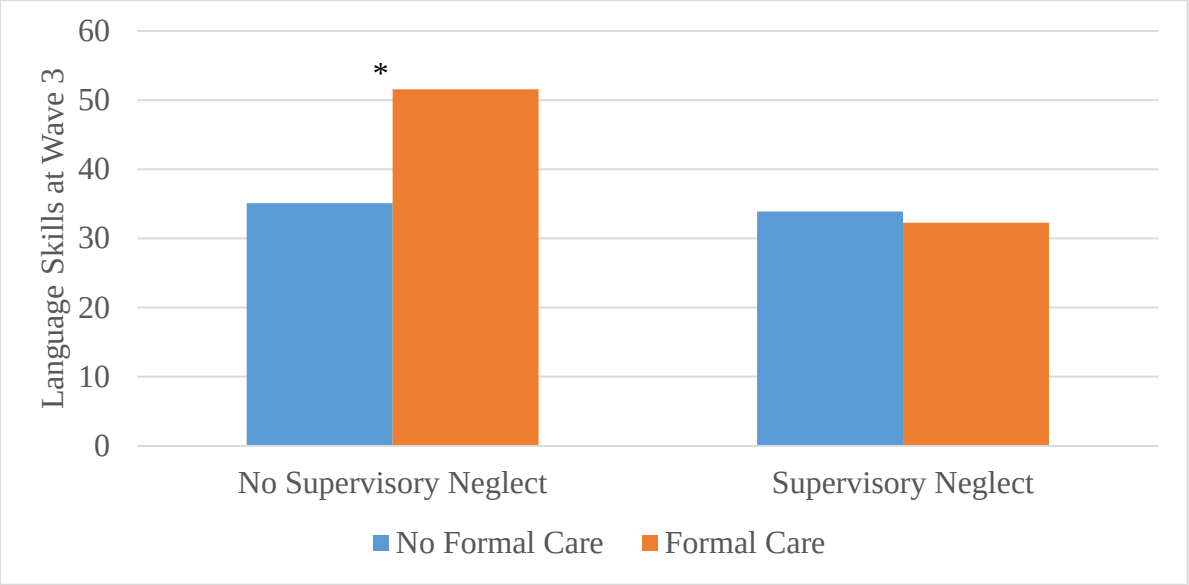

Figure 4.4. Plotted interaction between type of care at wave 1 and supervisory neglect predicting language skills at wave 3.

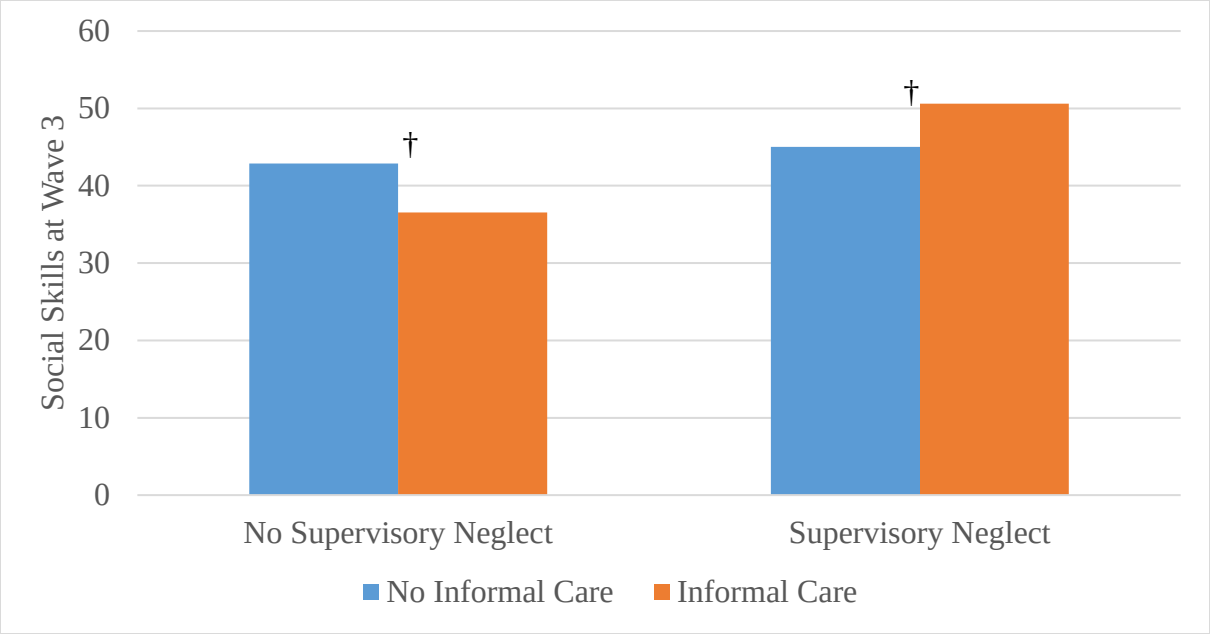

Figure 4.5. Plotted interaction between type of care at wave 1 and supervisory neglect predicting SSRS social skills at wave 3.

Chapter 5: Conclusion

Currently, there is limited evidence about how risk factors co-occur among families in poverty and how these profiles of risk predict neglectful parenting. There is also a limited understanding of how different protective factors might reduce neglectful parenting among families in poverty. When children come into contact with CPS they are at-risk for poor developmental outcomes, but there is a limited understand of whether different environments can compensate for likely experiences of maltreatment.

In order to address these gaps in the literature, this dissertation focused on the intersection between poverty and neglect to elucidate why certain families in poverty are more vulnerable to engaging in neglectful parenting, how different resources might prevent neglect, and if child care provides benefits among children who already experience neglect. The first study identified four risk profiles based on six risk factors (i.e., maternal depressive symptoms, low maternal education, parenting stress, caregiver health issues, residential instability, and material hardship) when children are aged 1 and 3 years old and estimating the relationship between profile membership and later neglectful parenting behaviors. These results can provide important information to practitioners in order to identify the families most vulnerable for engaging in neglect in order to target resources and interventions. Study 2 illustrated that social support and maternal employment (both part-time and full-time compared to unemployed) were related to less neglectful parenting behavior across early childhood, but the associations between protective factors and neglect varied by the family's level of poverty. These findings can be useful for practitioners and policymakers in constructing interventions and policies aimed at supporting vulnerable families. The third study demonstrated that child care provides benefits for

cognitive and social-emotional outcomes among children involved in CPS, but these associations vary based on the type of neglect. These results provide support for providing formal child care to families who come into contact with CPS.

There were several limitations within each study that should be considered for future research. In study 1, latent transition analyses would not converge due to sample size constraints. Ideally, there would be a large enough sample in order to estimate the probabilities that families move through different risk profiles across early childhood. Further, risks were selected from assessments when children were 1 and 3 years old. The Fragile Families dataset does include a baseline assessment, but many risk factors of interest were not collected at baseline. The transition to parenthood is an important life stage event and as such, future research should consider how risks very early in parenthood relate to parenting behaviors. Across studies 1 and 2, the only measure of CPS involvement was based on parent self-report. This is very likely to be an underestimate of how many families actually were investigated by CPS. It would be ideal for future studies to connect administrative records to survey data, or at least collect information about CPS involvement from multiple respondents. Study 3 had a data limitation in which only "permanent" caregivers were asked questions about child care. This permanent status was based on interviewer report, changed across time, and did not overlap with whether children were placed in home or in kinship/foster care. Future research on children involved in CPS should include more questions about children's experiences in child care.

Although these studies were an important first step in examining the intersection of poverty and neglect, each study provides the foundation for additional research questions.

Following study 1, there are many lingering questions about other risk factors that might increase the likelihood of neglectful parenting among families in poverty. Most of risk factors studied are at the individual or family-level, but larger structural factors likely shape parenting behaviors. Future research should consider how changes in policy, limitations on welfare services, rurality, and involvement in other social systems might undermine parenting behaviors among families in poverty. Similarly, it would interesting to investigate how risk factors cluster across different depths of poverty and how this relates to neglectful parenting across time.

Study 2 illustrated previously unstudied protective factors for families in poverty decrease neglectful parenting, but there remains many lingering questions on the ways to prevent neglect among vulnerable families. Future research should consider how protective factors might exist outside the home environment, such as whether different locations have more resources (e.g., number of child care facilities, number of health care facilities, and availability of affordable housing) and if clustering of resources helps prevent neglect. Study 2 provided foundational evidence that the protective effect of different factors varied based on depth of poverty. Future work could investigate how exposure to different levels of other risk factors influence the association between protective factors and less neglect.

The third study provided further evidence of the benefits of child care among children involved in CPS. Surprisingly few data sources exist that have information on contact with CPS and children's experiences in child care. Future studies should collect information on both of these experiences, as well as more detailed information on children's child care experiences in order to understand why child care is beneficial for children involved in CPS. The current study

only investigated child care at one wave of assessment, but future work should consider how exposure to different lengths and types of child care across early childhood relates to different developmental domains among children involved in CPS. There might be certain barriers that prevent families involved in CPS from participating in child care. Future work should explore different factors, both internal and external, that deter families investigated by CPS from placing their children in child care.

Overall, the results from this dissertation advance our understanding of the contextual factors that enhance or prevent neglectful parenting behaviors, and how child care might be a potential mechanism to compensate for experiencing maltreatment. These results provide foundational evidence for future studies to deepen our knowledge of the mechanisms that make families in poverty more vulnerable to engaging in neglectful parenting, the resources that are particularly beneficial for families in poverty, and interventions to compensate for neglect. The findings from the current study and future work can help prevent experiences of neglect among vulnerable families, while also helping children that are already involved in CPS.

Appendices

Appendix 1. Items used for Physical Neglect and Supervisory Neglect Scales.

Scale	Concept	Item	Source
Physical Neglect	Child food insecurity	Unable to make sure child got food needed	Conflict Tactic Scale - Neglect Subscale. (Parent-reported)
	Medical Neglect	Could not get child to doctor/hospital when needed	
	Inadequate housing	Electricity/heat shut off for non-payment	Mother interview
	Inadequate housing	Experiencing homelessness	
	Inadequate housing	Doubling up for housing	
	Inadequate housing	Observed housing interior issues (9 items)	Interviewer observations HOME scales
	Inadequate housing	Observed housing safety issue (1 item)	
	Child hygiene	Series of 10 items related to child's appearance/clothing	
Supervisory Neglect	Domestic violence	Physical fight with bio dad or current partner in the presence of child	Mother interview
	Substance abuse	Use of any hard drug (heroin, cocaine, amphetamines, etc.)	
	Substance abuse	Use of non-prescribed drug several days per week or more	
	Criminality	Earned income from illegal activity, such as drug sales or prostitution	
	Substance abuse	Too high/drunk to care for child	Conflict Tactic Scale - Neglect Subscale. (Parent-reported)
	Supervision	Left child alone when child should not be left alone	

Note. Scale based off of Font & Berger, 2015.

Appendix 2. Correlations Between Risk Factors and Neglect for Study 1 (n = 1,846)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year 1														
1. Depressive symptoms	1													
2. Low maternal education	-0.04	1												
3. Parenting stress	**0.16**	0.04	1											
4. Residential instability	**0.12**	**0.07**	**0.06**	1										
5. Material hardship	**0.27**	-0.02	**0.14**	**0.24**	1									
6. Maternal health issues	**0.09**	0.02	0.00	**0.08**	**0.06**	1								
Year 3														
7. Supervisory neglect	**0.15**	0.03	**0.07**	**0.10**	**0.16**	0.01	1							
8. Physical neglect	**0.12**	**0.07**	**0.06**	**0.14**	**0.23**	**0.05**	**0.16**	1						
9. CPS involvement from years 1 to 3	**0.10**	0.00	0.04	0.02	**0.08**	-0.02	**0.11**	**0.07**	1					
10. Depressive symptoms	**0.38**	-0.01	**0.11**	**0.07**	**0.20**	**0.11**	**0.19**	**0.16**	**0.05**	1				
11. Low maternal education	**-0.05**	**0.91**	0.03	**0.07**	-0.02	0.03	0.01	**0.06**	0.00	-0.02	1			
12. Parenting stress	**0.12**	**0.08**	**0.47**	0.04	**0.12**	-0.02	**0.10**	**0.11**	**0.05**	**0.20**	**0.06**	1		
13. Residential instability	**0.05**	0.04	0.01	**0.29**	**0.19**	0.03	**0.07**	**0.21**	0.00	**0.11**	0.03	**0.07**	1	
14. Material hardship	**0.20**	**-0.09**	**0.08**	**0.19**	**0.45**	0.03	**0.17**	**0.41**	**0.09**	**0.28**	**-0.08**	**0.13**	**0.23**	1
15. Maternal health issues	**0.12**	0.00	0.03	**0.06**	**0.09**	**0.43**	0.03	**0.05**	0.02	**0.19**	0.02	0.04	0.04	**0.11**
Year 5														
16. Supervisory neglect	**0.13**	0.02	**0.11**	**0.06**	**0.17**	**0.05**	**0.30**	**0.10**	0.04	**0.11**	0.02	**0.08**	**0.09**	**0.14**
17. Physical neglect	**0.13**	**0.05**	**0.10**	**0.12**	**0.20**	**0.07**	**0.12**	**0.28**	**0.08**	**0.14**	0.05	**0.09**	**0.07**	**0.22**
18. CPS involvement from years 3 to 5	**0.12**	-0.02	0.04	**0.06**	**0.12**	0.04	**0.06**	**0.13**	0.04	**0.13**	-0.01	0.04	**0.07**	**0.11**

Note. Appendix 2 continued on next page. Bolded values are significant for $p < .05$.

Appendix 2 continued.

	14	15	16	17	18
14. Material hardship	1				
15. Maternal health issues	**0.11**	1			
Year 5					
16. Supervisory neglect	**0.14**	**0.06**	1		
17. Physical neglect	**0.22**	**0.07**	**0.14**	1	
18. CPS involvement from years 3 to 5	**0.11**	0.03	**0.13**	**0.09**	1

Note. Bolded values are significant for $p < .05$.

Appendix 3. Correlations Between Protective Factors and Neglect for Study 2 (n = 2,980)

		1	2	3	4	5	6	7	8	9	10	11	12	13
Year 1	1. Father involvement	1												
	2. Additional schooling	0.02	1											
	3. Social support	**0.1**	0	1										
	4. No child care	-0.01	**-0.1**	**-0.11**	1									
	5. Informal child care	0.02	**0.05**	**0.08**	**-0.73**	1								
	6. Formal child care	-0.01	**0.08**	**0.04**	**-0.46**	**-0.27**	1							
	7. Parenting class	-0.01	**0.08**	-0.01	0.01	**-0.05**	**0.04**	1						
	8. No employment	**-0.05**	0.01	**-0.15**	**0.5**	**-0.36**	**-0.23**	0.02	1					
	9. Part-time employment	-0.01	**0.04**	**0.06**	**-0.07**	**0.07**	0.01	0.02	**-0.4**	1				
	10. Full-time employment	**0.06**	**-0.04**	**0.11**	**-0.45**	**0.31**	**0.23**	-0.03	**-0.73**	**-0.34**	1			
Year 3	11. Supervisory neglect	-0.03	0	**-0.1**	0.01	0.02	-0.03	**0.07**	**0.06**	-0.02	**-0.04**	1		
	12. Physical neglect	**-0.08**	**0.05**	**-0.23**	0.04	-0.01	**-0.04**	0.02	**0.11**	**-0.06**	**-0.07**	**0.18**	1	
	13. Contact with CPS	0.01	0.02	**-0.07**	-0.01	-0.01	0.03	0.03	0	-0.03	0.02	**0.12**	**0.08**	1
	14. Father involvement	**0.43**	-0.01	0.04	0.03	-0.02	-0.02	-0.02	0.02	0.02	-0.04	-0.03	-0.02	0.01
	15. Additional schooling	-0.01	**0.34**	0.02	**-0.08**	0.02	**0.08**	**0.07**	**-0.04**	**0.04**	0.01	0.03	0.02	0.02
	16. Social support	**0.08**	0.02	**0.58**	**-0.09**	**0.06**	**0.06**	-0.03	**-0.12**	**0.06**	**0.08**	**-0.11**	**-0.26**	**-0.07**
	17. No child care	0.01	**-0.07**	**-0.08**	**0.32**	**-0.19**	**-0.2**	-0.02	**0.27**	-0.03	**-0.25**	-0.03	**0.07**	-0.01
	18. Informal child care	0.01	-0.01	**0.07**	**-0.17**	**0.28**	**-0.12**	0	**-0.13**	-0.01	**0.14**	0.03	-0.03	0.02
	19. Formal child care	-0.02	**0.09**	0.02	**-0.19**	**-0.05**	**0.33**	0.02	**-0.17**	**0.04**	**0.14**	0	**-0.05**	0
	20. Parenting class	-0.02	**0.09**	**-0.05**	0.01	-0.02	0.01	**0.11**	0.02	0.01	-0.03	**0.09**	**0.05**	**0.04**
	21. No employment	-0.03	**-0.05**	**-0.15**	**0.27**	**-0.18**	**-0.15**	0.03	**0.39**	**-0.1**	**-0.32**	**0.07**	**0.13**	0
	22. Part-time employment	0	0.02	**0.06**	0.02	-0.02	0.01	0.03	**-0.05**	**0.23**	**-0.13**	-0.03	-0.02	-0.01
	23. Full-time employment	0.03	0.04	**0.11**	**-0.29**	**0.2**	**0.15**	**-0.05**	**-0.36**	**-0.06**	**0.42**	**-0.05**	**-0.12**	0.01
Year 5	24. Supervisory neglect	**-0.05**	-0.03	**-0.1**	0.02	0	**-0.04**	**0.08**	**0.06**	0	**-0.06**	**0.29**	**0.11**	**0.06**
	25. Physical neglect	-0.04	0.02	**-0.21**	**0.04**	-0.02	-0.03	0.03	**0.08**	**-0.05**	**-0.04**	**0.15**	**0.3**	**0.09**
	26. Contact with CPS	-0.03	**0.04**	**-0.11**	0.01	0	-0.01	0.03	0.03	-0.02	-0.02	**0.08**	**0.14**	0.03

Appendix 3 continued on next page

Appendix 3 continued

		14	15	16	17	18	19	20	21	22	23	24	25	26
Year 3	14. Father involvement	1												
	15. Additional schooling	-0.02	1											
	16. Social support	0.03	0.04	1										
	17. No child care	0.04	**-0.15**	**-0.11**	1									
	18. Informal child care	-0.01	0.01	**0.08**	**-0.51**	1								
	19. Formal child care	-0.03	**0.15**	**0.04**	**-0.61**	**-0.37**	1							
	20. Parenting class	-0.01	**0.11**	-0.02	0.01	-0.04	0.03	1						
	21. No employment	0.01	**-0.05**	**-0.16**	**0.46**	**-0.27**	**-0.25**	**0.05**	1					
	22. Part-time employment	0.02	**0.04**	**0.07**	**-0.07**	**0.04**	**0.04**	0.01	**-0.37**	1				
	23. Full-time employment	-0.03	0.02	**0.11**	**-0.42**	**0.25**	**0.22**	**-0.06**	**-0.74**	**-0.35**	1			
Year 5	24. Supervisory neglect	0	0	**-0.1**	0	-0.03	0.02	**0.1**	**0.04**	-0.01	-0.03	1		
	25. Physical neglect	0.04	0.03	**-0.19**	**0.05**	-0.01	**-0.04**	**0.07**	**0.13**	**-0.05**	**-0.09**	**0.17**	1	
	26. Contact with CPS	0.01	**0.07**	**-0.1**	0.04	-0.02	-0.02	**0.08**	**0.07**	-0.02	**-0.05**	**0.14**	**0.12**	1

Note. Bolded values are significant at $p < .05$.

Appendix 4. Correlations between ECE, developmental outcomes, and neglect (n = 1,385).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Formal care w1	1													
2. Informal care w1	**-0.16**	1												
3. No care w1	**-0.78**	**-0.49**	1											
4. BDI w1	0.04	0.05	**-0.07**	1										
5. BDI w2	**0.10**	**0.16**	**-0.19**	**0.38**	1									
6. Language w1	0.04	**0.09**	**-0.10**	**0.59**	**0.26**	1								
7. Language w2	**0.15**	**0.06**	**-0.17**	**0.41**	**0.54**	**0.46**	1							
8. Language w3	0.06	-0.02	-0.04	**0.23**	**0.48**	**0.12**	**0.47**	1						
9. SSRS w1	**0.18**	-0.07	**-0.13**	**0.35**	.	**0.35**	**0.30**	-0.57	1					
10. SSRS w2	**0.12**	0.03	**-0.13**	**0.43**	**0.58**	**0.34**	**0.39**	0.07	**0.65**	1				
11. SSRS w3	**0.18**	0.05	**-0.19**	**0.26**	**0.34**	**0.22**	**0.22**	**0.29**	**0.56**	**0.64**	1			
12. Vineland w1	**0.13**	**0.10**	**-0.18**	**0.44**	**0.33**	**0.40**	**0.34**	**0.12**	**0.57**	**0.48**	**0.32**	1		
13. Vineland w2	**0.20**	**0.07**	**-0.22**	**0.12**	**0.36**	**0.13**	**0.32**	**0.24**	**0.22**	**0.48**	**0.44**	**0.27**	1	
14. Vineland w3	0.02	0.02	-0.03	**0.31**	**0.27**	**0.26**	**0.10**	**0.19**	**0.32**	**0.47**	**0.58**	**0.31**	**0.31**	1
15. CBCL w1	**0.15**	0.04	**-0.16**	**-0.20**	**-0.20**	**-0.12**	-0.09	**-0.16**	**-0.28**	**-0.18**	**-0.26**	**-0.14**	**-0.12**	**-0.28**
16. CBCL w2	-0.04	-0.04	**0.06**	**-0.20**	**-0.18**	**-0.13**	**-0.10**	**-0.19**	**-0.26**	**-0.31**	**-0.33**	**-0.06**	**-0.31**	**-0.31**
17. CBCL w3	-0.04	-0.04	**0.06**	**-0.13**	**-0.24**	**-0.07**	**-0.10**	**-0.20**	**-0.16**	**-0.23**	**-0.50**	**-0.13**	**-0.31**	**-0.46**
18. Physical neglect w1	**0.15**	**-0.09**	**-0.07**	**-0.11**	0.06	**-0.08**	-0.03	**0.13**	-0.02	**-0.14**	0.02	0.00	0.04	0.02
19. Supervisory neglect w1	**0.10**	0.01	**-0.09**	0.02	0.03	0.01	0.03	-0.06	0.04	-0.04	-0.05	0.01	0.02	-0.01

Note. Appendix 4 continued on next page. Bolded values are significant at $p < .05$. W1 = wave 1. W2 = wave 2. W3 = wave3.

Appendix 4 continued

	15	16	17	18	19
15. CBCL w1	1				
16. CBCL w2	0.65	1			
17. CBCL w3	0.53	0.67	1		
18. Physical neglect w1	**0.11**	0.05	-0.05	1	
19. Supervisory neglect w1	0.01	**0.07**	**0.08**	**0.06**	1

Note. Bolded values are significant at $p < .05$. W1 = wave 1. W2 = wave 2. W3 = wave3.

References

Abidin, R. R. (1995). *Manual for the parenting stress index*. Odessa, FL: Psychological Assessment Resources.

Achenbach, T. M. (1991). Integrative guide for the 1991 CBCL/4-18, YSR, and TRF profiles. Department of Psychiatry, University of Vermont.

Augustine, J. M. (2014). Mothers' employment, education, and parenting. *Work and Occupations, 41,* 237-270. https://doi.org/10.1177/0730888413501342

Augustine, J. M. (2016). Exploring new life course patterns of mother's continuing secondary and college education. *Population Research and Policy Review, 35*, 727-755. https://doi.org/10.1007/s11113-016-9401-5

Augustine, J. M., Cavanagh, S. E., & Crosnoe, R. (2009). Maternal education, early child care and the reproduction of advantage. *Social Forces, 88*, 1-29. https://doi.org/10.1353/sof.0.0233

Barnett, D., Manly, J. T., & Cicchetti, D. (1993). Defining child maltreatment: The interface between policy and research. In D. Cicchetti & S. L. Toth (Eds.), *Child Abuse, Child Development, and Social Policy* (pp. 7-74). Norwood, NJ: Ablex.

Becker, G. S. (Ed). (2009). Human capital revisited. In *Human capital. A theoretical and empirical analysis with special references to education* (3rd ed.). Chicago, IL: University of Chicago Press.

Berger, L. M. (2007). Socioeconomic factors and substandard parenting. *Social Service Review, 81,* 485-522. https://doi.org/10.1086/520963

Berger, L. M., Paxson, C., & Waldfogel, J. (2009). Income and child development. *Children and Youth Services Review, 31,* 978–989. http://doi.org/10.1016/j.childyouth.2009.04.013

Bronfenbrenner, U. (1994). Ecological models of human development. *Readings on the Development of Children, 2*, 37-43.

Casanueva, C., Ringeisen, H., Wilson, E., Smith, K., & Dolan, M. (2011). NSCAW II baseline report: Child well-being. Washington, DC: US Department of Health and Human Services. Retrieved from https://www.acf.hhs.gov/opre/resource/nscaw-ii-baseline-report-child-well-being-final-report

ChildStats (2017). Child Maltreatment. Retrieved from: https://www.childstats.gov/americaschildren/family7.asp

Child Information Gateway (2016). Definitions of child abuse and neglect. Retrieved from: https://www.childwelfare.gov/pubPDFs/define.pdf

Clément, M. È., Bérubé, A., & Chamberland, C. (2016). Prevalence and risk factors of child neglect in the general population. *Public Health, 138*, 86-92. https://doi.org/10.1016/j.puhe.2016.03.018

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*, 95-120. https://doi.org/10.1086/228943

Collins, L. M., & Lanza, S. T. (2010). *Latent class and latent transition analysis*. Hoboken, NJ: Wiley. https://doi.org/10.1002/9780470567333.ch7

Conger, R. D., Conger, K. J., & Martin, M. J. (2010). Socioeconomic status, family processes, and individual development. *Journal of Marriage and Family, 72*, 685-704. https://doi.org/10.1111/j.1741-3737.2010.00725.x

Cunha, F., Heckman, J. J., Lochner, L., & Masterov, D. V. (2006). Interpreting the evidence on life cycle skill formation. *Handbook of the Economics of Education,* 697–812. https://doi.org/10.1016/S1574-0692(06)01012-9

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: the indirect role of parental expectations and the home environment. *Journal of Family Psychology, 19,* 294. https://doi.org/10.1037/0893-3200.19.2.294

Dinehart, L. H., Manfra, L., Katz, L. F., & Hartman, S. C. (2012). Associations between center-based care accreditation status and the early educational outcomes of children in the child welfare system. *Children and Youth Services Review, 34,* 1072-1080. https://doi.org/10.1016/j.childyouth.2012.02.012

Dubowitz, H., Black, M. M., Kerr, M. A., Starr, R. H., & Harrington, D. (2000). Fathers and child neglect. *Archives of Pediatrics & Adolescent Medicine, 154,* 135-141. https://doi.org/10.1001/archpedi.154.2.135

Dubowitz, H., Pitts, S.C., & Black, M.M. (2004). Measurement of three major subtypes of child neglect. *Child Maltreatment, 9,* 344-356. https://doi.org/10.1177/1077559504269191

Dubowitz, H., Pitts, S. C., Litrownik, A. J., Cox, C. E., Runyan, D., & Black, M. M. (2005). Defining child neglect based on child protective services data. *Child Abuse & Neglect, 29,* 493-511. https://doi.org/10.1016/j.chiabu.2003.09.024

Dubowitz, H., Kim, J., Black, M. M., Weisbart, C., Semiatin, J., & Magder, L. S. (2011). Identifying children at high risk for a child maltreatment report. *Child Abuse & Neglect, 35,* 96-104. https://doi.org/10.1016/j.chiabu.2010.09.003

Elder Jr, G. H. (1998). The life course as developmental theory. *Child Development, 69,* 1-12. https://doi.org/10.1111/j.1467-8624.1998.tb06128.x

English, D. J., Bangdiwala, S. I., & Runyan, D. K. (2005). The dimensions of maltreatment: Introduction. *Child Abuse & Neglect, 29,* 441-460. https://doi.org/10.1016/j.chiabu.2003.09.023

Font, S. A., & Berger, L. M. (2015). Child maltreatment and children's developmental trajectories in early to middle childhood. *Child Development, 86,* 536-556. https://doi.org/10.1111/cdev.12322

Font, S., & Maguire-Jack, K. (2019). The organizational context of substantiation in child protective services cases. *Journal of Interpersonal Violence,* 1-22. https://doi.org/10.1177/0886260519834996

Gershoff, E. T., Aber, J. L., Raver, C. C., & Lennon, M. C. (2007). Income is not enough: Incorporating material hardship into models of income associations with parenting and child development. *Child Development, 78*, 70-95. https://doi.org/10.1111/j.1467-8624.2007.00986.x

Gresham, F. M., & Elliott, S. N. (1990). *Social skills rating system: Manual*. American Guidance Service.

Gutman, L. M., & Feinstein, L. (2010). Parenting behaviours and children’s development from infancy to early childhood: Changes, continuities and contributions. *Early Child Development and Care, 180,* 535-556. https://doi.org/10.1080/03004430802113042

Hildyard, K. L., & Wolfe, D. A. (2002). Child neglect: Developmental issues and outcomes. *Child Abuse & Neglect, 26,* 679-695. https://doi.org/10.1016/S0145-2134(02)00341-1

Hill, H. D., Morris, P., Gennetian, L. A., Wolf, S., & Tubbs, C. (2013). The consequences of income instability for children's well‐being. *Child Development Perspectives, 7,* 85-90. https://doi.org/10.1111/cdep.12018

Howard, K. S., & Brooks-Gunn, J. (2009). The role of home-visiting programs in preventing child abuse and neglect. *The Future of Children, 19,* 119-146. https://doi.org/10.1353/foc.0.0032

Hussey, J. M., Marshall, J. M., English, D. J., Knight, E. D., Lau, A. S., Dubowitz, H., & Kotch, J. B. (2005). Defining maltreatment according to substantiation: distinction without a difference? *Child Abuse & Neglect, 29*, 479–492. https://doi.org/10.1016/j.chiabu.2003.12.005

Jobe-Shields, L., Andrews, A. R., Parra, G. R., & Williams, N. A. (2015). Person‐centered approaches to understanding early family risk. *Journal of Family Theory & Review, 7*, 432-451. https://doi.org/10.1111/jftr.12118

Jonson-Reid, M., Drake, B., & Zhou, P. (2013). Neglect subtypes, race, and poverty: Individual, family, and service characteristics. *Child Maltreatment, 18*, 30-41. https://doi.org/10.1177/1077559512462452

Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass, 2*, 302-317. https://doi.org/10.1111/j.1751-9004.2007.00054.x

Kang, J. (2013). Instrumental social support, material hardship, personal control and neglectful parenting. *Children and Youth Services Review, 35*, 1366-1373. https://doi.org/10.1016/j.childyouth.2013.05.009

Kaufman, A. S., & Kaufman, N. L. (1990). K-BIT: Kaufman brief intelligence test. American Guidance Service.

Kessler, R. C., Andrews, G., Mroczek, D., Ustun, B., & Wittchen, H. U. (1998). The world health organization composite international diagnostic interview short-form. *International Journal of Methods in Psychiatric Research, 7*, 171-185. https://doi.org/10.1002/mpr.47

Klein, S. (2016). Promising Evidence Regarding the Benefits of Early Care and Education for Children in the Child Welfare System: A Research-to-Practice Brief. Washington, DC: U. S. Department of Health & Human Services, Administration for Children, Youth, & Families, Office of Planning, Research & Evaluation 2016. Retrieved from https://www.acf.hhs.gov/sites/default/files/opre/opre_2016_benefitschildwelfaresystem_v16_508.pdf

Koball, H., & Jiang, Y. (2018). Basic Facts about Low-Income Children: Children under 9 Years, 2016. New York: National Center for Children in Poverty, Columbia University Mailman School of Public Health.

Kohl, P. L., Jonson-Reid, M., & Drake, B. (2009). Time to leave substantiation behind: Findings from a national probability study. *Child Maltreatment, 14,* 17-26. https://doi.org/10.1177/1077559508326030

Kovan, N., Mishra, S., Susman-Stillman, A., Piescher, K. N., & LaLiberte, T. (2014). Differences in the early care and education needs of young children involved in child protection. *Children and Youth Services Review, 46,* 139-145. https://doi.org/10.1016/j.childyouth.2014.07.017

Li, F., Godinet, M. T., & Arnsberger, P. (2011). Protective factors among families with children at risk of maltreatment: Follow up to early school years. *Children and Youth Services Review, 33,* 139-148. https://doi.org/10.1016/j.childyouth.2010.08.026

Li, W., Farkas, G., Duncan, G. J., Burchinal, M. R., & Vandell, D. L. (2013). Timing of high-quality child care and cognitive, language, and preacademic development. *Developmental Psychology, 49,* 1440-1451. https://doi.org/10.1037/a0030613

Lipscomb, S. T., Pratt, M. E., Schmitt, S. A., Pears, K. C., & Kim, H. K. (2013). School readiness in children living in non-parental care: Impacts of Head Start. *Journal of Applied Developmental Psychology, 34*, 28-37. https://doi.org/10.1016/j.appdev.2012.09.001

Lundahl, B. W., Nimer, J., & Parsons, B. (2006). Preventing child abuse: A meta-analysis of parent training programs. *Research on Social Work Practice, 1*6, 251-262. https://doi.org/10.1177/1049731505284391

Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71*, 543–562. https://doi.org/10.1111/1467-8624.00164

Luthar, S. S., Crossman, E. J., & Small, P. J. (2015). Resilience in the face of adversities. In M. Lamb & C. Garcia Coll (Eds.), *Handbook of child psychology and developmental science* (7th ed.). Hoboken, NJ: Wiley.

Manly, J. T., Oshri, A., Lynch, M., Herzog, M., & Wortel, S. (2013). Child neglect and the development of externalizing behavior problems: Associations with maternal drug dependence and neighborhood crime. *Child Maltreatment, 18*, 17-29. https://doi.org/10.1177/1077559512464119

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56*, 227-238. https://doi.org/10.1037/0003-066X.56.3.227

Mayer, M., Lavergne, C., Tourigny, M., & Wright, J. (2007). Characteristics differentiating neglected children from other reported children. *Journal of Family Violence, 22*, 721-732. https://doi.org/10.1007/s10896-007-9120-0

Merritt, D. H., & Klein, S. (2015). Do early care and education services improve language development for maltreated children? Evidence from a national child welfare sample. *Child Abuse & Neglect, 39*, 185-196. https://doi.org/10.1016/j.chiabu.2014.10.011

Mistry, R. S., Benner, A. D., Biesanz, J. C., Clark, S. L., & Howes, C. (2010). Family and social risk, and parental investments during the early childhood years as predictors of low-income children's school readiness outcomes. *Early Childhood Research Quarterly, 25*, 432-449. https://doi.org/10.1016/j.ecresq.2010.01.002

Muthén, L. K., & Muthén, B. (2015). Mplus. The Comprehensive Modelling Program for Applied Researchers: User's Guide.

Newborg, J. (2005). *Battelle developmental inventory*. Itasca, IL: Riverside Publishing.

NICHD Early Child Care Research Network. (2002). Early child care and children's development prior to school entry: Results from the NICHD Study of Early Child Care. *American Educational Research Journal, 39*, 133-164. https://doi.org/10.3102/00028312039001133

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling, 14*, 535-569. https://doi.org/10.1080/10705510701575396

Paxson, C., & Waldfogel, J. (2002). Work, welfare, and child maltreatment. *Journal of Labor Economics, 20*, 435-474. https://doi.org/10.1086/339609

Proctor, L. J., & Dubowitz, H. (2014). Child neglect: Challenges and controversies. In J.E. Korbin & R.D. Krugman (Eds.), *Handbook of child maltreatment* (pp. 27-61). Netherlands: Springer.

Reynolds, A. J., Mathieson, L. C., & Topitzes, J. W. (2009). Do early childhood interventions prevent child maltreatment? A review of research. *Child Maltreatment, 14*, 182-206. https://doi.org/10.1177/1077559508326223

Roy, A. L., & Raver, C. C. (2014). Are all risks equal? Early experiences of poverty-related risk and children's functioning. *Journal of Family Psychology, 28*, 391-400. https://doi.org/10.1037/a0036683

Sameroff, A. (2006). Identifying risk and protective factors for healthy child development. In A. Clark-Stewart & J. Dunn (Eds.), *Families count: Effects on child and adolescent development* (pp. 53–76). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511616259.004

Sedlak, A.J., Mettenburg, J., Basena, M., Petta, I., McPherson, K., Greene, A., and Li, S. (2010). Fourth National Incidence Study of Child Abuse and Neglect (NIS–4): Report to Congress, Executive Summary. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families.

Slack, K. S., Holl, J. L., Lee, B. J., McDaniel, M., Altenbernd, L., & Stevens, A. B. (2003). Child protective intervention in the context of welfare reform: The effects of work and welfare on maltreatment reports. *Journal of Policy Analysis and Management, 22*, 517-536. https://doi.org/10.1002/pam.10152

Slack, K. S., Holl, J. L., McDaniel, M., Yoo, J., & Bolger, K. (2004). Understanding the risks of child neglect: An exploration of poverty and parenting characteristics. *Child Maltreatment, 9*, 395-408. https://doi.org/10.1177/1077559504269193

Slack, K. S., Berger, L. M., DuMont, K., Yang, M. Y., Kim, B., Ehrhard-Dietzel, S., & Holl, J. L. (2011). Risk and protective factors for child neglect during early childhood: A cross-

study comparison. *Children and Youth Services Review, 33,* 1354-1363. https://doi.org/10.1016/j.childyouth.2011.04.024

Slack, K. S., Font, S., Maguire-Jack, K., & Berger, L. M. (2017). Predicting child protective services (CPS) involvement among low-income US families with young children receiving nutritional assistance. *International Journal of Environmental Research and Public Health, 14,* 1197. https://doi.org/10.3390/ijerph14101197

Sparrow SS, Carter AS, Cicchetti DV. (1993). Vineland Screener. Available at: http://www.unc.edu/depts/sph/longscan/pages/measures/Ages12to14/writeups/Age%2012%20and%2014%20Vineland%20Screener%20FINAL%20(Public%20Site).pdf

Sroufe, L. A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment & Human Development, 7,* 349–367. https://doi.org/10.1080/14616730500365928

Stith, S. M., Liu, T., Davies, L. C., Boykin, E. L., Alder, M. C., Harris, J. M., ... & Dees, J. E. M. E. G. (2009). Risk factors in child maltreatment: A meta-analytic review of the literature. *Aggression and Violent Behavior, 14,* 13-29. https://doi.org/10.1016/j.avb.2006.03.006

Stoltzfus, E. (2012). Child welfare: An overview of federal programs and their current funding. Congressional Research Service. Retrieved from https://fas.org/sgp/crs/misc/R43458.pdf

Straus, M. A., Hamby, S. L., Finkelhor, D., Moore, D. W., & Runyan, D. (1998). Identification of child maltreatment with the Parent-Child Conflict Tactics Scales: Development and psychometric data for a national sample of American parents. *Child Abuse & Neglect, 22,* 249-270. https://doi.org/10.1016/S0145-2134(97)00174-9

U.S. Bureau of Labor Statistics, U.S. Department of Labor. (2015). Labor force participation rate of mothers by age of youngest child. Retrieved from https://www.dol.gov/wb/stats/facts_over_time.htm#wilf

U.S. Department of Health & Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2017). Child Maltreatment 2016. Available from https://www.acf.hhs.gov/cb/resource/child-maltreatment-2016

Vandell, D. L., Belsky, J., Burchinal, M., Steinberg, L., & Vandergrift, N. (2010). Do effects of early child care extend to age 15 years? Results from the NICHD study of early child care and youth development. *Child Development, 81,* 737-756. https://doi.org/10.1111/j.1467-8624.2010.01431.x

Votruba‐Drzal, E. (2003). Income changes and cognitive stimulation in young children's home learning environments. *Journal of Marriage and Family, 65,* 341-355. https://doi.org/10.1111/j.1741-3737.2003.00341.x

Votruba-Drzal, E., Coley, R. L., Koury, A. S., & Miller, P. (2013). Center-based child care and cognitive skills development: Importance of timing and household resources. *Journal of Educational Psychology, 105,* 821. https://doi.org/10.1037/a0032951

Waldfogel, J. (2009). Prevention and the child protection system. *The Future of Children, 19,* 195-210. https://doi.org/10.1353/foc.0.0037

Warren, E. J., & Font, S. A. (2015). Housing insecurity, maternal stress, and child maltreatment: An application of the family stress model. *Social Service Review, 89,* 9-39. https://doi.org/10.1086/680043

Watamura, S. E., Phillips, D. A., Morrissey, T. W., McCartney, K., & Bub, K. (2011). Double jeopardy: Poorer social‐ emotional outcomes for children in the NICHD SECCYD experiencing home and child‐ care environments that confer risk. *Child Development, 82*, 48-65. https://doi.org/10.1111/j.1467-8624.2010.01540.x

Widom, C. S. (2014). Long-term consequences of child maltreatment. In J. E. Korbin, & R. D. Krugman (Eds.), *Handbook of child maltreatment* (pp. 225–247). Netherlands: Springer.

Yang, M. Y. (2015). The effect of material hardship on child protective service involvement. *Child Abuse & Neglect, 41*, 113-125. https://doi.org/10.1016/j.chiabu.2014.05.009

Yoshikawa, H., Aber, J. L., & Beardslee, W. R. (2012). The effects of poverty on the mental, emotional, and behavioral health of children and youth: implications for prevention. *American Psychologist, 67*, 272. https://doi.org/10.1037/a0028015

Zimmerman, F., & Mercy, J. A. (2010). A better start: Child maltreatment prevention as a public health priority. Retrieved from https://vetoviolence.cdc.gov/apps/phl/docs/A_Better_Start.pdf