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Subtypes of Neglect in Relation to Reporting Practices, Safety Outcomes among Known Cases, and Risk and Protective Factors

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by
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<u>**Acknowledgments**</u>

Dedicated to my family.

ABSTRACT OF THE DISSERTATION

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Professor Melissa Jonson-Reid, Chair

by

Objectives: The overall objective of this dissertation is to build knowledge about the

phenomena of neglect subtypes to better guide prevention and child welfare intervention efforts

in the future. The first aim focuses on how we come to officially identify cases of child neglect

and its relationship to policies that set definitions for what is reportable in a given state. The

second aim highlights whether or not there appear to be differences in safety and permanency

outcomes for children known to CPS for different forms of neglect. The third aim focuses on

why families may develop specific neglecting behaviors that may require differing approaches to

intervention. This will be a three-paper dissertation and thus the significance section for this

proposal is divided by research aim, followed by an overall methods section that describes the

data sources and planned analyses.

Methods: Data for the present study will be drawn from five sources. Because of the

differences in coverage and ability to track subtypes of neglect, three child level data sources are

used in varying combinations to attempt to answer the research questions. This provides a means of triangulating results to help overcome some of the weaknesses in the individual datasets to be used. The fourth source will be a combination of state statute information readily available from the Child Welfare Information Gateway supplemented by a Lexus/Nexus search. The final source will be Social Explorer to get state-level child poverty measures.

Results: In paper one, I found that there is great variability across state statute regarding the definitions of child neglect. For example, the emotional neglect was identified specifically in 11 states, and approximately 26 states specified that failure to educate the child is an element of neglect in the law. Moreover, the analyses showed that educational neglect was significantly associated with the percentage of reported neglect. States that include "educational neglect" in their state statutes are more likely to have significantly higher percentage (%) of child neglect reports. For example, the average neglect reported rates are 69.46% (n=21) for the states include educational neglect in their statue and 60.32% (n=21) for states that did not in 2014. In paper 2, I didn't find that cases reported for different types of neglect show significant differences in predicting the recurrence outcome. In NSCAW, families reported for domestic violence related neglect were 4.89 time (OR=4.89, p<.05), 3.89 times (OR=3.89, p<.05), and 5.69 times (OR=5.69, p<.05) less likely to enter the foster care than families reported for physical neglect, supervisory neglect, and prenatal substance abuse. In addition, families reported for substance exposure were 2.14 times (OR=2.14, p<.05) more likely to enter the foster care than families reported for physical abuse. In regional data, families reported for physical neglect were 1.40 times (HR=1.40, p<.05), 1.31 times (HR=1.31, p<.05), and 1.20 times (HR=1.20, p<.05) times more likely to enter foster care than families reported for medical neglect, educational neglect, and supervisory neglect. In paper three, I found that family characteristics differed for physical

neglect compared to lack of supervision neglect across a number of dimensions in both datasets in bivariate analyses though this was greatly attenuated in multinomial models for NSCAW data. Also, both bivariate and multivariate models using both data sets indicated a number of practically important (effect size) differences between cases reported for multiple types of neglect and supervisory neglect. On the other hand, the results the LCA showed that a 5-class and 6-class were the best models for NSCAW-II and the regional data. With classes contained families with different subtypes of neglect in the NSCAW data, most of the risk factors didn't show much variation across the 5 classes. For the regional data, while there were variations between risk factors, most of all subtypes of neglect hung together across the 6 classes.

Conclusions: While studies argued that state-level administrative data are often the most accessible data source for child maltreatment research, it is important to better understand how cases that come to the attention of child protection may vary according to the policy gatekeeping mechanisms. In addition, we found that states identified "educational neglect" in their state statute had a higher percentage (%) of child neglect reports. Not only should we need to examine the effectiveness of the intervention programs in child protective service for this population for these states, but we need to examine whether children with unmet education needs to be ignored in the states that did not identify education neglect in their state statute. Also, in paper two, the results showed that significant variation between types of neglect and foster care entry. While the greater risk of entry associated with physical neglect, it was surprising that the risk was greater than that for supervisory or medical neglect cases. On the other hand, while there is debate whether exposure to domestic violence as a reportable form of maltreatment, we found children who were reported for domestic violence were less likely to enter foster care than other subtypes of neglect. This study highlights the need to examine the trajectory of children as a function of

different forms of neglect to child welfare outcomes, suggesting necessity of addressing the high-risk population in child welfare policy and practice. In paper three, the study did find variation in risk and demographic factors using two different datasets with different forms of data. This was only true, however, for the variable based approaches. The person-oriented analytic models were less informative in regard to subtypes but were consistent with the idea of CPS families facing multiple risk factors- most classes had high probabilities for multiple risk factors in both datasets. It is possible that the "iceberg theory" best captures the dynamics between the risk factors and children reported for different subtypes of neglect. If this is true, then the intervention programs for child neglect may need to focus on the cumulative risk of the family.

Chapter 1: Introduction

1.1 Prevalence and Problem Statement

Child neglect is the most prevalent form of child maltreatment. In 2017, there were over 3.5 million children with screened in reports of alleged maltreatment, with nearly 675,000 being substantiated. Of these, roughly 75% of the children were reported for neglect (US DHHS, 2019). While the proportion of neglect cases among unsubstantiated reports is not known, the NIS-4 estimated that 61% of children in their sample were neglected (Sedlak et al., 2010). A recent study using the Add Health data set reported 50.7% of the sample self-reported neglect prior to 6th grade (Beatriz, Salhi, Griffith, & Molnar, 2018). There has long been concern that the prevalence and therefore the impact of neglect is underestimated (Dominic McSherry, 2007; Mennen, Kim, Sang, & Trickett, 2010a). Less severe incidents of neglect may not reach the level of concern needed to warrant a report and the types of behaviors or omissions reportable as neglect vary by state (US Child Welfare Information Gateway, 2016). Neglect may also be hidden among reports of other forms of maltreatment. Mennen and colleagues (2010) found neglect was present in 71.0% of their research sample according to case file review compared to 41.0% originally classified as neglected by CPS records. Neglect cases may also receive less attention once reported. For example, in differential/alternative response states, neglect referrals are often assigned to assessment tracks that may result in receiving fewer services (Fluke, Shusterman, Hollinshead, & Yuan, 2008; Hughes, Rycus, Saunders-Adams, Hughes, & Hughes, 2013; Merkel-Holguin, Kaplan, & Kwak, 2006).

Neglect is not only the most common form of maltreatment but it also results in poor long-term outcomes. Research shows that children who suffer from neglect have negative

outcomes similar to other forms of maltreatment, including poor physical health (Gilbert et al., 2009), mental health problems or risky behaviors (Kessler, Chiu, Demler, & Walters, 2005; Norman et al., 2012; Snyder & Merritt, 2014; Widom, Czaja, Bentley, & Johnson, 2012; Williams, Van Dorn, Bright, Jonson-Reid, & Nebbitt, 2010), and lower cognitive functioning or developmental delay (Block, Krebs, American Academy of Pediatrics Committee on Child Abuse and Neglect, & American Academy of Pediatrics Committee on Nutrition, 2005; Jonson-Reid, Drake, Kim, Porterfield, & Han, 2004; Mills, Alati, Najman, & Williams, 2011; Newland, Crnic, Cox, & Mills-Koonce, 2013). Children initially reported for neglect may also experience more repeated child maltreatment over time (Bae, Solomon, & Gelles, 2009; Mennen et al., 2010a). In 2017, an estimated 1,720 children died due to maltreatment; 75.4% of these cases involved neglect (US DHHS, 2019).

While there is significant evidence linking neglect to negative outcomes overall, the relationships to particular outcomes with varying controls are less clear. Studies of outcomes following child neglect have varied in terms of outcomes measured as well as controls for risk factors and characteristics of children and caregivers (Burke, Chandy, Dannerbeck, Welfare, & 1998, n.d.; Clément, Bérubé, & Chamberland, 2016; Shahar, 2001; Slack, 2004), family and community context (Coulton, Korbin, & Su, 1999; Korbin, Research, practice, & 1999, n.d.; Polansky, Chalmers, & 1978, n.d.), and poverty (Drake & Pandey, 1996; Melissa Jonson-Reid, Drake, & Kohl, 2009a; D. McSherry, 2004; Andrea J. Sedlak, 1997; Kristen Shook Slack, Holl, McDaniel, Yoo, & Bolger, 2004; Zuravin & Taylor, 1987). The variability, while understandable in an area where research is still developing, makes it difficult to draw conclusions across studies about which factors are the most important in modeling outcomes for children experiencing neglect.

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Generally, child neglect has received much less attention compared to other forms of maltreatment. Wolock and Horowitz (1984) identified this paradox as the "neglect of neglect" in the early 1980s. One barrier to advancing knowledge is the lack of a consistent, agreed upon definition of child neglect (Goldman, Salus, Wolcott, & Kennedy, 2003; Stowman & Donohue, 2005; Tanner & Turney, 2003; Wilson & Horner, 2005; Zuravin 1999). Across state policies and across research studies there is substantial variation in how specific the definition is of neglect and whether or not it is divided into subcategories (i.e. supervisory, basic needs, medical, etc.). As a result, building a conceptual or theoretical model of child neglect to guide appropriate assessment is a significant challenge (Allin, Wathen, & MacMillan, 2005; Hearn, 2011). Three decades after Wolock & Horowitz (1984) called attention to the issue, the same challenges continue to leave substantial gaps in knowledge to guide practice and policy (Dubowitz, 2007; Slack et al., 2011). The goal of the present dissertation was to attempt to further explore definitions of child neglect and whether or not these were associated with differing modifiable risk factors or child welfare system outcomes.

1.2 Why Does Neglect Occur and What Causes Poor Outcomes?

Some theory development exists relative to understanding child maltreatment generally, but very little work has been done specifically for neglect. Ideally, theories serve as the framework for developing intervention programs in the field. This makes the lack of effort in this area problematic. In many cases, the risk factors posited to cause neglect may also impact outcomes following maltreatment and so only one theoretical summary is provided. This section summarizes four theoretical approaches that appear to have the most relevance to the study of

neglect: 1) The Developmental-Ecological Perspective, 2) Social Disorganization Theory, 3) Attachment Theory and 4) Social Capital Theory.

1.2.1   Developmental-Ecological perspective

The developmental-ecological perspective, which was based on Bronfenbrenner's seminal work nearly 40 years ago (1979), provided a framework that has been broadly applied to a number of developmental outcomes. This was later adapted to child maltreatment specifically by Belsky (1980, 1993). It conceptualizes developmental outcomes as the shared responsibility of various factors at the individual, family, community, and societal levels. Research does, in fact, support the importance of factors at these varied levels. Further, many of the risk factors in a child's ecology are also implicated in the influence of longer-term outcomes.

Individual level. Studies have found that children's age (younger), gender, disability, disruptive behavior, and temperament are associated with child neglect (Jaudes & Mackey-Bilaver, 2008; Jones & McCurdy, 1992; Sedlak, 1997; Sullivan & Knutson, 2000). Developmental traumatology studies view child neglect as a chronic stressor that may impact the development of biological stress system responses and lead to adverse cognitive and psychological and brain development (Heim, Shugart, Craighead, & Nemeroff, 2010; Nemeroff, 2016; Nikulina, Widom, & Czaja, 2011). In addition, studies have also found that omission of appropriate stimulation and care in early childhood might bring negative impact to early neurobiological development for those young children at significantly higher risk (Shonkoff, 2017; Teicher & Samson, 2016). Some of these factors may also contribute to other later untoward outcomes. For example, children with behavioral difficulties or disabilities may also be at greater risk of other forms of victimization that in turn enhance the risk of poor outcomes (Sullivan, 2009).

Family level. The characteristics of neglectful caregivers include substance abuse, lack of parenting and stress management skills, unemployment, maternal depression, and difficult living conditions, as well as stress from work and family (Burke et al., n.d.; Clément et al., 2016; Coohey, 1998; Reid, Macchetto, & Foster, 1999; Shahar, 2001; Slack et al., 2004). Some of these factors, such as parental substance abuse is also considered adverse childhood experiences that have additional effects on outcomes following initial onset of maltreatment like recurrence or even behavioral health (Jonson-Reid et al., 2019; Finkelhor, Shattuck, Turner & Hamby, 2015). Other studies have found that family characteristics such as single-parent households (Sedlak et al., 2010), less family closeness, and less expression of positive affection (Gaudin, Polansky, Kilpatrick, & Shilton, 1993) contribute to the risk of child neglect.

Effects external to the family have also been found. For example, families' lack of strong social networks has been found to increase the risk of child neglect (Gaudin, Wodarski, Arkinson, & Avery, 1990). Several studies have found that poverty is the strongest and consistent predictor of child neglect (Pelton, 1978; Sedlak & Broadhurst, 1996; Slack, Holl, McDaniel, Yoo, & Bolger, 2004; Sedlak et al., 2010, Jonson-Reid, Drake, & Kohl, 2009). Community-level poverty has also been found to be related to child neglect (Drake & Pandey, 1996) as well as system outcomes for children reported for child neglect (Jonson-Reid, Drake & Zhou, 2013).

Dubowitz and his colleagues (1993) suggested that child neglect was a particularly good example of how factors at various levels of the ecology come together to influence parenting--highlighting the role of poverty. Later on, Slack (Slack, Holl, Altenbernd, McDaniel, & Stevens, 2003) argued that more work needed to go beyond the general category to explore specific types of neglect and contributing factors. In other words, simply saying there are multiple causal

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effects for a general category of maltreatment may not adequately inform are understanding for prevention or intervention. Further, while the ecological framework may provide a good organizing tool for risk and protective factor research it is not a causal theory.

1.2.2 Attachment Theory

Introduced in the 1960s, attachment theory postulates that forming an attachment to the primary caregiver or mother is the key developmental task of an infant. Bowlby (1969, 1973, 1982) argued that this early life experience becomes the "internal working model," which serves as the initial mental representation of self, others, and relationship. Caregivers' consistent behavior, including affectionate touch, positive verbal communication, and structuring activities can build up routine interactions between the child and caregivers that may have a large impact on children's emotional and social development. Attachment theory is also used as an explanation for poor longer-term outcomes for maltreated children. Studies have found considerable evidence that maltreated children are more likely to have insecure attachments to their caregivers than non-maltreated children (Cicchetti, Rogosch, & Toth, 2006; Crittenden & Ainsworth, 1989). For example, Cicchetti and colleagues (2006) found 90% of maltreated one-year-old infants were classified as having disorganized attachment compared to 42% in the control group.

Mennen and O'Keefe (2005) suggested that the assessment of attachment theory between child and caregivers could help the decision making for interventions in the child welfare system. However, mixed findings were found with regard to the relationship between types of attachment and types of maltreatment. Crittenden (1988) found 79% of neglected children were more likely to show anxious-ambivalent (secure, insecure/avoidant, and insecure/ambivalent) than 29% of physically abused children. Crittenden (1988) and Valenzuela (1990) both found physically

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abused children showed more disorganized behavior than neglected children. However, Barnett and colleagues (1999) found neglected children are equally as likely as abused children to show disorganized attachment patterns.

1.2.3   Social Disorganization Theory

Social disorganization was originally developed to help explain the relationship between neighborhood structure, social capital, and crime (Shaw & McKay, 1942). This theory suggested that lack of a community structure and resources ultimately leads to weak or no social controls which, in turn, leads to lack of forces that deter social problems like criminal behavior (Sampson & Groves, 1989; Sampson et al., 1997). Social disorganization is often measured by poverty, residential instability, and immigrant concentration (Sampson, Raudenbush, & Earls, 1997). Poverty at the family level has been identified as the strongest predictor of child neglect (Drake & Jonson-Reid, 2014; Slack, Holl, McDaniel, Yoo, & Bolger, 2004), but research suggests community-level poverty may also play a role. Garbarino and his colleagues found that child maltreatment rates in neighborhoods were highly correlated with socioeconomic status, family structure, and residential satisfaction (Garbarino & Crouter, 1978; Garbarino & Sherman, 1980). Zuravin (1989) found income below 200% of the poverty line, single-family structure, and vacant housing in the neighborhood was significantly associated with the child maltreatment rates. More recently, this theory has been applied to understand how neighborhoods can impact parenting (Ben-Arieh, 2010; Maguire-Jack and Klein, 2015). Parents in disorganized neighborhoods tend to have lower social support (Sampson, 2012) and fewer resources to support positive parenting practices (Bowen et al., 2002 and Elliott et al., 1996). Community poverty may also impact the flow of cases through CPS after a report of neglect (Jonson-Reid et al., 2013).

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Obviously as this theory was developed in regard to crime, community level dysfunction may have additional impacts on child development beyond predicting the onset of maltreatment. Additionally, it is not clear that community-level effects alone are of sufficient impact to endorse social disorganization as a standalone explanation for child neglect. While community-level approaches to child abuse prevention have been endorsed (Fortson, Klevens, Merrick, Gilbert & Alexander, 2016), there is in sufficient research to suggest whether changes at the community level will have practically large effects on neglect.

1.2.4   Social Capital Theory

The social capital theory provides a framework for studying the interactions between people and places. Coleman (1988) used the term "social capital" to refer to norms, networks, and interpersonal relationships which exist in informal interactions. It is also a resource that relies on social support, reciprocity, trust, and cooperation between people to obtain positive outcomes (Coleman, 1988). Neighborhoods, where residents participate and cooperate together, should be better equipped to prevent child abuse and neglect. On the other hand, in some poor neighborhoods where formal and informal resources are limited, trust and reciprocal relationships between residents are often scarce. Even in conditions of poverty, social capital theory (Coleman, 1989) suggests that family resources and community networks could serve as key protective factors for social problems like maltreatment. Gaudin (1993) found that a lack of social networks increased the likelihood of child neglect. DePanfilis (1996) found that families who are socially isolated, experienced loneliness and lacked social support were more frequently involved in child neglect, compared to comparison groups. Runyan et al. (1998) found that some indicators of social capital (e.g., organizational involvement, personal support, and community support) had positive relationships with child outcomes, especially for children during their

preschool years. Zolotor and Runyan (2006) found that the odds of neglectful parenting, psychologically harsh parenting and domestic violence dropped with an increase of the social capital. The combination of having a family that cannot provide for the developmental needs of a child and living in low resource neighborhoods with few external resources may increase the likelihood of poor long-term developmental outcomes.

Conclusion. Overall there is insufficient theoretical development in regard to child neglect. Despite the reliance on an ecological framework for maltreatment research generally, none of the known risk measures designed to assess neglect in prior studies capture community level information (Carpenter & Donohue, 2006; English & Pecora, 1994; Hansen & MacMillan, 1990; Stewart & Mezzich, 2007; Skinner, Steinhauer & Santa-Barbara, 2009). Research on child neglect onset is relatively sparse and a recent review of recurrent reporting following neglect found that there was too much variability in samples, outcome measures and model specification to draw conclusions other than child age and gender (Jonson-Reid et al., 2019).

1.3 Definition of Child Neglect

One of the dilemmas for research attempting to understand the causes and sequelae of neglect is that there is considerable debate as to what should be included in a definition of neglect. The Child Abuse Prevention and Treatment Acts (CAPTA) in 1974, and further amended by the Keeping Children and Families Safe Act in 2003 and CAPTA Reauthorization Act of 2010 set broad standards for an understanding of child maltreatment overall and types of maltreatment. Child neglect is one of the major types of maltreatment resulting from action or inaction of persons with care, custody, and control of a child. The other categories are physical abuse, emotional abuse, and sexual abuse. Child neglect is defined as "any recent act or failure to act on the part of a parent or caregiver which results in death, serious physical or emotional

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harm, sexual abuse or exploitation or an act or failure to act which presents an imminent risk of serious harm. (42 U.S.C.A. § 5106g)"

1.3.1 Difficulties in Defining Child Neglect

Despite the existence of a broad definition in federal law that guides maltreatment reporting policies, there remains a lot of disagreement regarding what constitutes child neglect (Allin et al., 2005; Combs-Orme, Wilson, Cain, Page, & Kirby, 2003; Friedman & Billick, 2015; Stowman & Donohue, 2005; Wilson & Horner, 2005; Zuravin, 1999). McSherry (2007) argued that it may be impossible to define child neglect specifically enough to include all types of child neglect and broadly enough to apply across different child ages and cultures. On the other hand, Dubowitz and his colleagues (2005) argued that imprecise definitions of neglect not only create more confusion for practitioners and policymakers but also hampers researchers' ability to make inferences about the nature and consequences of neglect. Early on Rose and Meezan (1996) pointed out that operational definitions of child neglect differ in three ways: 1) between professionals that use them; 2) between professionals and the lay community, and 3) between different cultural groups. Others pointed out that child neglect is a heterogeneous phenomenon that varies by subtype, severity, and chronicity (Dubowitz et al., 1993). It is possible that such heterogeneity means that the experiences and outcomes for children are similarly varied (Mennen, Kim, San, & Trickett, 2010). The issues related to barriers to progress in this area are briefly explored.

1.3.1.1 Cultural differences. Cultural expectations play an important role in determining which parenting behaviors are appropriate in caregiving (Elliott & Urquiza, 2006). Dubowitz and his colleagues (1993) and argued there are no clear guidelines of adequate parenting in the US. Studies. Indeed, research has shown that people with different culture background often have

different opinions on what is "adequate" childcare (Gaudin et al., 1993; Nadan, Spilsbury, & Korbin, 2015). For example, Rose and Meezan (1996) assessed perceptions of neglect among Latino, African-American, and non-Latino White parents, and found that African-American and Latino parents held similar perceptions regarding neglect as exploitation of children, inadequate supervision of children, and raising children in unwholesome circumstances. Non-Latino White parents were more likely to focus on the inadequate provision of food and education. It is unclear how cultural differences impact medical neglect per se. There are certain religious groups that reject medical care completely- even in live threatening situations (Sinal, Cabinum-Foeller, & Socolar, 2008). This continues to generate controversy regarding harm to the child compared to parent's rights and freedom of religion (Antommaria et al, 2013). It is also unclear whether or not cultural perceptions of parenting are necessarily stable over time.

　　1.3.1.2 Parent-behavior versus child-outcomes. There has been conceptual disagreement about whether the definition of child neglect should be based on caregivers' behavior or children's outcomes. Polansky and colleagues (1981) suggested the definition should focus on the parental omission of care, which is consistent with most state laws. Similarly, Zuravin (1991) argued that the definition of neglect should be based on specific actions of the parents and ignore both the consequences of their behavior and intentionality. On the other hand, some researchers have argued that child neglect should be based on a child's basic needs not being met not specific parent behaviors (Dubowitz, Black, Starr, & Zuravin, 1993). This emphasizes the child's health and well-being rather than on the caregiver's responsibility and also recognizes multiple factors that might contribute to child neglect, such as contextual and environmental risk (Belsky, 1993; Zuravin, 1988). This latter approach also offers interesting dilemmas related to certain characteristics of the child. For example, the same lack of supervision of a two-year-old versus a

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10-year-old may present a risk of very different outcomes related to harm (Jonson-Reid & Drake, 2018). It is also less clear how chronic conditions as compared to singular circumstances should be assessed (Jones & Logan-Greene, 2016). The same lack of care occurring once might result in a very different risk of harm if it is repeated over time (Hildyard & Wolfe, 2002; Lanier et al., 2010).

1.3.2   Impact of Discrepancies in Defining Child Neglect

Discrepancies in the definition of child neglect have a substantial impact on child welfare research and practice. Of course, lack of consistency in definitions of neglect may also make it difficult to determine if neglect is associated with other outcomes, such as problems with brain development or mortality (DeBellis, 2010). While research generally finds outcomes are as poor for neglect as other types of maltreatment, that is different than understanding if neglect has unique effects. As children often experience multiple forms of maltreatment over time (Drake et al., 2003; Jonson-Reid et al., 2010) this may also be impacted by the timing at which maltreatment is measured.

One of the most common means of understanding neglect prevalence is to examine official report data. Dubowitz and his colleagues (2005) argued that imprecise definitions of neglect in administrative data not only create more confusion for practitioners and policymakers but also hampers researchers' ability to make inferences about the nature and consequences of neglect. In other words, they view official reports with some suspicion. On the other hand, definitions may be equally vague in self-report studies (e.g., Beatriz et al., 2018). Relatively few studies have compared self-report with administrative data and most suggest that there are weaknesses in both requiring both be used for a complete picture (e.g., Brown, Cohen, Johnson

& Salzinger, 1998). Of course, the differences may diminish when you are looking at measurement over time versus cross-sectional approaches (Kim et al., 2017).

It may be that there is meaningful variation in official reports based on policy definitions. It is also possible that children officially reported for various forms of neglect have unique trajectories in response to child welfare contact. Relying on the state level as compared to national summary reports may help shed light on differences.

Slack and colleagues (2004) and Jonson-Reid & Drake (2008) argued that state-level administrative data are often the most accessible data source for child maltreatment research. Looking across states, one can find very significant differences in state statutes that define child neglect. By examining onset and outcomes in different policy environments we may develop a better general understanding of the practically important factors that impact a child coming to the attention of CPS for neglect and outcomes following. For example, some states might identify emotional neglect, medical neglect, and exposure to substance abuse but do not include educational neglect in their state statute. In addition, some states separate out "abandonment" or "medical neglect" as separate categories of maltreatment from general neglect (Child Welfare Information Gateway, 2016). Importantly, these definitions guide what can be accepted (or screened in) as official reports in a given state. Reports of maltreatment are made by both mandated and permissive reporters who may or may not be well versed in the guidelines of their state (Krase & DeLong-Hamilton, 2015; Palusci, Vandervort, & Lewis, 2016). It is not clear if these definitional differences impact agency and practitioner reporting behavior. Hotline screeners do use the state's guidelines to determine if a report can be accepted for a CPS response or not (Jonson-Reid et al., 2017). Thus, even if the statutes do not directly impact a report of a

specific concern regarding a child, they will most certainly impact the acceptance of that report by the agency which in turn may impact intervention.

Shifts in what is accepted or screen in as maltreatment also may alter prevalence estimates. For example, the Minnesota state legislature decided to include children exposed to domestic violence as a form of reportable neglect in 1999. This change then impacted both the number of referrals overall but also specifically impacted the prevalence of neglect for that state in the NCANDS data for those years (Edleson, Gassman-Pines, & Hill, 2006). Without overlaying the policy definition guiding reporting, it is not possible to chart the occurrence of different kinds of maltreatment over time.

Further, discrepancies regarding the definition of child neglect may pose a challenge to understanding the trajectory of neglected children who are involved with the child protective services (CPS) system. The CPS system is charged with responding to alleged cases of maltreatment to focus on issues of child safety, preservation of the family, permanency, reunification and most recently child well-being (Jonson-Reid & Drake, 2016). Re-reports of maltreatment over time is one of the primary mechanisms to assess child safety following a non-fatal report of maltreatment. Studies have consistently found that neglect cases are more likely to return to the attention of CPS than children reported for other reasons (Drake, Jonson-Reid, Way, & Chung, 2003; Fluke, Yuan, & Edwards, 1999; Jonson-Reid, Drake, Chung, & Way, 2003; White, Hindley, & Jones, 2015). Drake and colleagues and Jonson-Reid and colleagues (2003) found that more than 40% of the families who were referred to Child Protective Services (CPS) for child neglect incidents had a subsequent neglect re-report within 4.5 years. Other studies, while re-report rate was not available by neglect compared to other types, suggest that the risk of

recurrence continues for much longer (M. Jonson-Reid, Emery, Drake, & Stahlschmidt, 2010; Proctor et al., 2012).

1.4 Conceptual Framework of the Risk Factors and Child Neglect Subtypes

Very little investigation of the etiology of neglect subtypes neglect has been done. Not only may subtypes of neglect have differing risk and protective factors, but these may also change according to developmental stage. While studies of neglect according to subtype are still very rare, there is some indication that the patterns of risk or protective factors vary within neglect. Jonson-Reid, Drake & Zhou (2013) found variation between seven subtypes of neglect by racial/ethnic category. Yang & Maguire-Jack (2016) found that family and community characteristics differed for basic needs compared to supervisory neglect. While reducing risk factors for child maltreatment is a common target for prevention, we know little about which contributing factors may influence which types of neglect. Identifying key contributing risk factors by subtype could help us to identify children at risk of potential harm and further develop effective intervention programs for this population.

Understanding how policies may impact the involvement of neglect cases with CPS and the child welfare outcome trajectory of neglected children by subtypes is helpful in identifying key differences within the officially reported population. Targeting services specific to subtypes requires we have a better understanding of how or if risk and protective factors vary by maltreatment type. A few studies exist that have examined outcomes by subtype of neglect and have found mixed results, but also tend to explore different and limited numbers of subtypes in the analyses (Carter & Myers, 2007; Sedlak, 1997; Slack, 2004).

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1.5 Safety and Permanency Outcomes of Child Neglect Subtypes

Child safety and permanency are key tenets of US child welfare policy and are part of the standards reviewed in the federal Child and Family Services Reviews (Child Welfare Information Gateway, 2017). Generally, studies agree that neglect cases have a higher risk of poor child welfare outcomes like recurrent reports (White et al., 2015) while few studies have examined whether there are differences for entry into foster care. Potential differences in who is reported and for what subtypes may also be confounding our understanding of the trajectory of neglected children who are involved with CPS. Relatively few studies of recurrence break out findings by maltreatment type (Jonson-Reid et al., 2019). Even fewer inform how recurrence may vary within neglect cases as compared to other types of maltreatment. Studies of neglected children (Drake, Jonson-Reid, Way, & Chung, 2003; Jonson-Reid, Drake, Chung, & Way, 2003) showed that more than 40% of the families have a second neglect report within 4.5 years but subtypes were not explored. Maguire-Jack and Font (2014) found that families without mental health or substance abuse problems, who were served by agencies that required a higher standard of training or were less centralized, and/or lived in counties with higher proportions of Hispanic residents were less likely to have subsequent reports of neglect. However, the baseline type of maltreatment was not controlled. Studies of chronic neglect families (e.g., those who already have multiple reports) indicate that these families have more stressors such as extreme poverty, lived in a more chaotic environment, had more children, and were more likely to lack of social support (Nelson, Saunders, & Landsman, 1993; Wilson & Horner, 2005). Jonson-Reid and colleagues (2013) found that substantiation and service disposition following a report of neglect

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varied by both race/ethnic category and subtype (basic needs, lack of supervision, medical, abandonment, hygiene, exposure to substances, any severe neglect and neglect mixed with abuse). Kang, Bae, and Fuller (2015) found some bivariate differences in re-report by subtype of neglect (medical, lack of supervision, failure to provide, neglect and other neglect, mixed type neglect, and neglect mixed with abuse) identified through latent class analyses, but multivariate models were only done within rather than between types.

Another commonly used metric for gauging the success of CPS intervention is whether a child enters foster care. Despite the large proportion of child welfare funding devoted to foster care or adoption (about 7 out of 9.7 billion in 2015) (Sciamanna, 2013), surprisingly few empirical studies of entry into foster care exist. Two studies found a higher risk of neglect compared to all other types (Needell, Brookhart, & Lee, 2003; Rivaux et al., 2008), one study found a lower risk of neglect alone compared to mixed type (Zuravin & DePanfilis, 1997) and another study found a lower risk of neglect compared to emotional maltreatment (English, Thompson, White, & Wilson, 2015). Two studies broke out neglect by subtypes of failure to supervise or failure to provide but both found no association of maltreatment type to placement (Barth, Wildfire, & Green, 2006; Carter, 2010). One study looked at placement among neglect reports and found a stronger association for younger age at the initial report, substantiation status and income and foster care placement compared to subsequent placement for sexual or physical abuse cases (Drake et al., 2003). This latter study did not look at subtypes of maltreatment.

1.6 Study Aims

Clearly much remains unknown in regard to child neglect and there is even less literature that seeks to identify and understand subtypes. This dissertation aimed to improve our understanding of the phenomena of neglect subtypes to better guide prevention and intervention

efforts. Because of concerns regarding under-reporting and state policy variability in regard to

neglect, the first aim was exploratory, testing the relationship between state statutes and reported

child neglect subtypes. The second aim was to understand the trajectory of children experiencing

different forms of neglect for safety (as measured by repeated reports) and permanency outcomes

(as measured by entry into foster care). Given the scant literature and significant variation in how

subtypes of neglect are categorized it was not clear how or if repeated reports or entry into foster

care might vary by subtype of neglect. The third aim was to better understand if risk and

protective factors are different for different subtypes for neglect. If such differences were found,

this might help tailor different prevention and intervention efforts. The ecological model is used

as a theoretical framework, meaning attempts were made to account for effects at the individual,

family, community and policy levels. Because of concern that over time maltreatment type

becomes increasingly mixed, the focus of this dissertation was on first reports for child neglect.

Aim 1: To examine how state policy defining what is reportable as maltreatment may

relate to trends in the prevalence of official reports of neglect

Aim 2: To understand whether subtypes of neglect are associated with particular types of

child welfare policy-relevant outcomes (recurrent reporting and foster care entry)

Aim 3: To explore risk and protective factors that discriminate between neglect and other

forms of abuse with an eye toward understanding specific subtypes of neglect.

1.7 Data Sources

There was no existing single data source which could be used to address all the aims in

this study. Even within aims, the various weaknesses of specific data sets made it impossible to

rely on one source. Therefore, data for the present study are drawn from five sources. Because of

the differences in coverage and ability to track subtypes of neglect, three child level data sources

(one using official reports at a national level, a second relying on a national probability sample and including survey information with official reports, and a third using a multi-agency linked data archive at a regional level) are compared in varying combinations. This provides some means of triangulating results to help overcome some of the weaknesses in the individual datasets. While not a common approach in child maltreatment research there is a limited precedent for using multiple data sources to understand aspects of maltreatment or neglect (Dolan, Casanueva, Smith, Day & Dowd, 2014; Slack et al., 2011). The fourth source is a combination of state statute information readily available from the Child Welfare Information Gateway supplemented by a Lexus/Nexus search which is used for AIM 1. The final source is Social Explorer to get state-level child poverty measures to link to the national data which is used for AIMs 1 and 2. The data sources are further described below.

1.7.1   National Child Abuse and Neglect Data System (NCANDS)

The first data source was the National Child Abuse and Neglect Data System child files (NCANDS) from 2002-2015. NCANDS is the federal data system that gathers information from official records from all 50 states, the District of Columbia and Commonwealth of Puerto Rico. It was established under the Child Abuse Prevention and Treatment Act (CAPTA) in 1974. Each year, states voluntarily submit case-level data, including information about the characteristics of the reports of maltreatment, the children involved, the types of maltreatment, and the risk factors of the child and the caregivers, the services provided, and the perpetrators. These official records are coded and provided daily by the child protective intake, screening, investigation, and alternative response workers in the United States. Four states, including Pennsylvania, Vermont, Hawaii, and Missouri were excluded because of their extremely low values of reported neglect rates which in part is associated with the implementation of differential response to neglect

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which prevents these cases from being substantiated (Cameron & Freymond, 2015; Shusterman, Hollinshead, Fluke, Yuan, & McDonald, 2005). Additionally, Oregon is missing data on substantiated cases for 2011 (US DHHS, 2013). The remaining data could be linked over time to study recurrence with confidence from 2003 on as unique individual (within the state) IDs are available. A baseline of 2011 is used with prior years of data used to look backward and help assure the 2011 reports are first reports. While national in scope, NCANDS are limited in the ability to capture subtypes of neglect (general, medical or mixed with other types). NCANDS also has a relatively limited number of variables on child and family characteristics and the lowest level of the geographic area is the county. NCANDS data were used for AIM 1 and AIM 2 only given the limited number of predictor variables available.

1.7.2 National Surveys of Child and Adolescent Well-Being (NSCAW II)

The second data source used was the National Surveys of Child and Adolescent Well-Being, NSCAW-II (NSCAW). NSCAW is a national probability sample of children and families reported to Child Protective Services with follow-up panel interviews that provide a means to track recurrence and entry into care. NSCAW offers two advantages. The first is that type of maltreatment is not limited to substantiated cases and second, that finer grained subtypes are available offering an additional check on the impact of the policy. Although NSCAW does not sample rural areas, reports from urban areas tend to drive the prevalence trends. Data on report types are drawn from the caseworker report in order to be able to break neglect into subcategories. This is based on a combination of allegation type and the most serious type of maltreatment categories to optimize non-missing data. Neglect subtypes included physical neglect, lack of supervision, domestic violence, substance abuse, abandonment or mixed type of allegations. The most serious type category is examined for educational neglect and substance

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exposure to see if additional forms of neglect are detected for those where allegations of "other" or "unknown" are found. These additional categories were used to fine tune alleged types. While technically a national probability study, in reality the sampling strategy focused on the states with the largest child welfare populations. Only seven states are sampled at a sufficient level to allow for between state comparison. An additional stratum combines small samples from the remaining participating states.

NSCAW is used in three ways. (A) For AIM 1, only the states with the largest child welfare populations were sampled at a level sufficient to be policy relevant. Data on maltreatment types are more varied and not limited to substantiated cases as is the case for NCANDS. (B) For AIM 2, NSCAW data is used to examine the recurrence of neglect subtypes controlling for demographic and risk variables within 36 months to compare to both other data sets. NSCAW, however, is a panel design study that measures recurrence primarily by caseworker report at follow-up which results in a lower than typical rate of re-report. (C) For AIM 3, NSCAW data is used to examine child and caregiver risk and protective factors at baseline that may predict subtypes of neglect compared to other forms of maltreatment while controlling for race/ethnic categories. Because the original study was sampled cross-sectionally, children with prior reports are included in the sample. This limited the sample size available for analysis as the focus was on first reports. Because subsetting the data precludes the use of sampling weights, no attempt was made to generalize back to the national level. Also, the data were sampled in 2008- 2009 as compared to the 2011 baseline data for NCANDS. Because the regional data (described below) has an earlier sample frame, the use of NSCAW I, in addition, was considered. However, a study now under review suggests very little variation between the two versions so the most recent one was chosen (Kim et al., Under Review).

1.7.3 Regional data.

The third data source includes linked administrative data from a large study of low income and maltreated children from the St Louis metropolitan region (e.g., Jonson-Reid, Drake & Kohl, 2009). Data were provided by multiple agencies including birth and death records, child protective services, state department of mental health records, Medicaid record, emergency room, income maintenance programs, shelters, juvenile court petitions, highway patrol arrest data, and state level corrections data. This sample included children age 11 or younger with official reports for maltreatment in 1993-1994 with a history of family poverty (Aid to Families with Dependent Children at baseline (AFDC); now called Temporary Aid to Needy Families (TANF), and comparison children with a history of family poverty but no maltreatment reports. This study limited analyses to children with maltreatment reports (n=7,303). The Missouri data provided the most detailed ability to look at maltreatment subtypes across all the data sources. This allows for looking at recurrence and foster care entry by baseline subtypes. Like NCANDS the data includes exact dates of CPS contact allowing for the control of time elapsed. The regional data included data from multiple service systems allowing for a much wider range of predictor variables for AIM 2 and 3 than NCANDS. Unlike NSCAW II, however, this data set lacks detailed psychological measures and perceptions of neighborhoods because these types of variables are rarely recorded in administrative data. Data were available at the census tract level however and linked census information was included in the data set. The baseline sample years 1993-1994 are earlier than the other two datasets but the follow-up period was much longer.

1.7.4 Child Welfare Information Gateway (CWIG) and Lexus/Nexus.

For AIM 1, it is necessary to capture the official definitions of maltreatment specific to the included states. The State Statutes online search engine housed by the Child Welfare

Information Gateway (CWIG) provides the most recent state definitions of maltreatment types

reportable. There are however earlier years available through the CWIG library. This resource in

addition to state legislative searches using Lexus/Nexus for is used to check policies for the

baseline NCANDS in 2011 and seven large NSCAW II states in 2006. The CWIG library is used

to gain information about the level of evidence required for substantiation, screen in rates and

presence or absence of differential response as each may impact which cases make it into the

Child File of substantiated maltreatment reports for NCANDS.

1.7.5   Social Explorer.

The final source is Social Explorer (Social Explorer, n.d.) used to get state-level child

poverty measures as additional controls for AIM 1 given the close relationship of neglect to

poverty. It should be noted that the regional data set also included census information for census

tracts, but this was already included in the data. No regional identifiers are available for

NSCAW.

1.8   Overview of the Dissertation & Three Paper Model

The first chapter of this dissertation provided an overview of the significance of child

neglect and how it shaped the aims and design of the study. In accordance with the three-paper

model format, three manuscripts stemming from this project follow. Specific sample sizes and

detailed methods are included within the individual paper chapters. The second chapter

(manuscript 1), titled *The Association of State Policy Definitions of Neglect and Prevalence of*

Known Cases, explores the relationship between the definition of child neglect in state statutes

and reported neglect cases at a state level. Specifically, the paper reviews the definition of child

neglect and examines whether the number of reported neglect cases reflect the definition of child

neglect in state statues using NCANDS and NSCAW data. The third chapter (manuscript 2),

titled *Safety and Permanency Outcomes for Children Known to CPS with Different Forms of Neglect*, seeks to examine the trajectory of recurrence for children reported for different types of neglect. meaningful groups. This chapter utilized all three data sets, although entry into foster care could only be modeled in two of the three datasets due to sample size issues. The fourth chapter (manuscript 3), entitled *Risk and Protective Factors Associated with Subtypes of Child Neglect*, examines the relationships of meaningful risk factors for children who reported for different types of neglect. This chapter relies primarily on NSCAW and regional data sources. The fifth chapter describes the overall findings addressing the outcomes and risk factors among children reported for different types of neglect. Additionally, the policy and practical implications of this dissertation, as well as the strengths and limitations, are discussed in the final chapter.

Chapter 2: The Association of State Policy Definitions of Neglect and Prevalence of Known Cases

2.1 Significance

While child neglect is the most common type of reported maltreatment and comprises up to 75% of all maltreatment children (Sedlak et al., 2010; US DHHS, 2019), the definition of child neglect has long been the subject of controversy (Allin, Wathen, & MacMillan, 2005; Combs-Orme, Wilson, Cain, Page, & Kirby, 2003; Friedman & Billick, 2015; Stowman & Donohue, 2005; Goldman et al., 2003; Tanner & Turney, 2003; Zuravin, 1999). While some studies have found little variation in outcomes according to maltreatment type, this may largely depend upon the age of the child and the type of outcome measured. For example, when measuring downstream adolescent and adult behavioral outcomes differences may be small or non-existent, while proximal studies of brain development or child fatality may reveal significant variation by maltreatment type (Jonson-Reid, Kohl, & Drake, 2012; Maynard et al., 2017; Nelson, 2017; Putnam-Hornstein, Cleves, Licht, & Needell, 2013). Adding to this is the problem of understanding the impact of discrete adverse experiences separate from the often-chronic nature of neglect and frequent overlap of maltreatment types over time (Drake et al., 2003; Logan-Greene & Semanchin Jones, 2015).

Even if one accepts that neglect is different from other forms of maltreatment, there is a debate about what types of behaviors constitute neglect and how neglect might be grouped into

subtypes with differing etiology. Twenty-five years ago, the National Research Council (1993) stated that child neglect "covers a range of behaviors including educational, supervisory, medical, physical and emotional neglect, and abandonment, often complicated by cultural and contextual factors (p60). Rose and Meezan (1996) argued that operational definitions of child neglect are different between professionals who use them, between professionals and the lay community, and between different cultural groups. Decades later, researchers continue to worry that definitions are too broad, too narrow, or even impossible to define. Complicating the matter further is the need for any definition to apply to children of different ages and cultural context (Friedman & Billick, 2015a; Dominic McSherry, 2007).

Debate continues regarding the differing ways in which states define what can be reported for neglect (Child Welfare Gateway, 2016) which in turn influences what we record and track in child welfare. While certainly cases of child neglect go unreported (Mennen et al., 2010; Sedlak et al., 2010), known cases offer the most feasible means of attempting to understand both prior cause and later outcomes. Dubowitz and his colleagues (2005) argued that imprecise definitions of neglect in administrative data not only create more confusion for practitioners and policymakers but also hamper researchers' ability to make inferences about the nature and consequences of neglect. In recognition of this variation, Slack and colleagues (2004) and Jonson-Reid & Drake (2008) argued that state administrative data indicators are often the most accessible and accurate as a source of data for researchers interested in studying the policy context of child maltreatment.

This debate raises an interesting empirical question. Do policy variations in how neglect is defined have a practically large impact on prevalence as measured by known or reported cases of maltreatment? While there is clearly variation in policy and research definitions, that does not

necessarily mean that it has a substantial impact on what people report on as neglect. Hypothetically, policy definitions impact the likelihood of a given report of neglect being accepted by child protective services (CPS) for assessment or investigation. On the other hand, if there is sufficient commonality in the behaviors that are generally reported as neglectful, variations in what is officially considered neglect might have less impact. Second, within neglect reports there may be variations in what is captured according to the details of behaviors included in state definitions. Only one known study has attempted to address this question, but this study relied on the Fourth National Incidence Study which captures a limited range of locations and is limited to a combination of child protective services reports and reports of "sentinels" (mandated reporters) (Rebbe, 2018; Sedlak et al., 2010).

2.1.1 A Heterogeneous and Serious Threat to Child Development

Child neglect has long been recognized as a heterogeneous phenomenon that varies by type, severity, and chronicity (Dubowitz, Black, Starr, & Zuravin, 1993; Mennen et al., 2010). This diversity may mean that the experiences of and potential outcomes for children are varied (Mennen et al., 2010a). For example, while the lack of supervision may not always be seen as serious when compared to something like physical abuse, failure to supervise a very young child can lead to fatal circumstances (e.g., drowning in a bath) (Jonson-Reid, Chance, & Drake, 2007; Putnam-Hornstein et al., 2013). Further, critical periods in early neurobiological development may place younger children at significantly higher risk from the omission of appropriate stimulation and care (Shonkoff, 2017; Teicher & Samson, 2016). Moreover, adequate attention to a child's needs is not a static process (Dubowitz, 2004). Several studies indicate that chronic exposure to inadequate parenting and/or mixed forms of maltreatment often result in worse long-term outcomes (Jonson-Reid et al., 2012; Warmingham, Handley, Rogosch, Manly, & Cicchetti,

2018). This argues for the earliest possible intervention to reduce poor downstream

consequences. Early preventive intervention requires that we have adequate surveillance to

detect child neglect. Therefore, understanding if policies inhibit or aid in our detection and

monitoring of this form of maltreatment is critical.

2.1.2   Discrepancies in the definitions of child neglect

The Centers for Disease Control and Prevention (CDC) defined child neglect as acts of

omission or the failure to provide for a child's basic needs or to protect a child from harm or

potential harm (2008). Federal legislation (CAPTA; 42 U.S.C.A. §5106g), as amended by the

CAPTA Reauthorization Act of 2010 (PL 111-320), provides guidance to states by identifying a

minimum set of acts or behaviors regarding child neglect, but the final adopted state definitions

reflect diverse ideas as to what constitutes neglect (Dominic McSherry, 2007; Renninger, Veach,

& Bagdade, 2002). Discrepancies in what is considered neglect are also apparent across large

epidemiological data sets. The Fourth National Incidence Study of Child Abuse and Neglect

(NIS-4) only identified three major types of neglect: physical, emotional, and educational

(Sedlak, et al., 2010). Within these types, however, are categories that other studies identify as

separate subtypes. For example, the NIS-4 counts medical neglect, supervisory neglect, and

basic needs neglect all within the broad category of physical neglect. Since 2012 the National

Child Abuse and Neglect Data System (NCANDS) has only reported: "Medical Neglect"

separate from the "Neglect" along with other forms of maltreatment (e.g. physical abuse,

psychological/emotional maltreatment, and sexual abuse) in the annual Child Maltreatment

reports (US DHHS, 2012-2019). Compared to NCANDS, the National Survey of Child and

Adolescent Well-being (NSCAW) allowed for more in-depth detail regarding the subtypes of

maltreatment. NSCAW I included failure to provide, lack of supervision and abandonment; but

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NSCAW II added other forms of maltreatment that some states consider under the category of neglect, including educational maltreatment, substance exposure, and domestic violence exposure (Casanueva, Ringeisen, Wilson, Smith, & Dolan, 2011).

2.1.3   Impact of the Discrepancies

Researchers have argued that more specificity is important to further understanding of both prevalence and outcomes, but relatively little research has explored this specifically. For example, Shpiegel and colleagues (2013) found that states with broad definition of emotional maltreatment in their state statutes had higher rates of both alleged and substantiated cases in National Child Abuse and Neglect Data System (NCANDS). Another commonly cited piece of evidence for this impact is the case in which the Minnesota state legislature decided to include children exposed to domestic violence as a type of neglect based on their alleged failure to protect their children from exposure to the violence in 1999. This change impacted both the overall number of referrals and neglect reports specifically in the immediate years following (Edleson et al., 2006). Rebbe (2018) argues that states can be grouped into typologies regarding neglect but bases the analysis on the NIS-4 which developed its own definitions of neglect that guided data collection from mandated reporters apart from the state statutes. Additionally, the NIS did not sample to be representative of states (see Drake et al, 2011).

Eldred and Gifford (2016) found there is little research that examined the impact of the child maltreatment laws on child welfare outcomes. State definition discrepancies may impact our understanding of the trajectory of child neglect within and outside the child welfare system (Jonson-Reid et al., 2017). State policies regarding what is considered maltreatment, along with the quality and completeness of the information provided, impact whether or not a report is "screened in" for further assessment or investigation. There is substantial variation in the

proportion of cases that are "screened in" across states (US DHHS, 2019). Additionally, data sources like the federal annual Child Maltreatment reports limit understanding of maltreatment type to cases that are also substantiated, a case disposition which is determined by state standards of evidence (Jonson-Reid et al., 2017). Studies indicate that unsubstantiated screened in cases have equally poor long-term outcomes (Drake et al., 2003; Hussey, Chang, & Kotch, 2006; Jonson-Reid, Drake, Kim, Porterfield, & Han, 2004; Kohl, Jonson-Reid, & Drake, 2009). On the other hand, some studies of outcomes like recurrent maltreatment reporting or behavioral outcomes following maltreatment relying on data from specific states have similar findings to those based on self-report or states with varying policy definitions (Drake et al., 2003; Jonson-Reid, Emery, Drake, & Stahlschmidt, 2010; Jonson-Reid et al., 2012; Putnam-Hornstein, Simon, Eastman, & Magruder, 2015). This makes it less clear how much impact state legislated definitions have on the actual detection and response to maltreatment.

2.2 Present Study

While much discussion of the problems inherent in defining neglect exists, it is not clear how much impact this has on the number and types of cases that come to the attention of child protection- particularly in regard to policy gatekeeping mechanisms. Hypothetically, the number of reported children should reflect the types of neglect identified in national representative data sets of officially reported maltreatment such as NCANDS and NSCAW There are, however, reasons this may not be true. For example, reports of maltreatment are made by both mandated and permissive reporters who may or may not be well versed in the guidelines of their state (Krase & DeLong-Hamilton, 2015; Palusci et al., 2016). Given the discussion of how maltreatment types often co-exist, it is possible that in a given call enough information exists about some form of neglect or abuse that the call is still screened in.

As reviewed earlier, the major national sources of data report different categories of child neglect. Further, while the NIS-4 is technically a national probability sample, there are insufficient numbers of cases drawn from a given state to allow for state-level policy comparison and that study was limited to mandated reporters. This paper uses two data sources capturing official reports that are sampled sufficiently at the state level to attempt between state comparison across some states: The National Child Abuse and Neglect Data System and the seven large states from the National Study of Child and Adolescent Well-being II. Both data sets are supplemented by policy information drawn from a number of sources to try to better understand the impact of policy variation on neglect prevalence. The following research questions guided the present investigation:

2.2.1 Question 1: Is the mention of subtypes of neglect in state policy associated with the percentage of reported neglect cases across states in the national reporting data, controlling for level of evidence required for substantiation and child poverty rates? Because policies may shift over time, this analysis draws on multiple years of reporting and policy information.

2.2.2 Question 2: Do states with different definitions of neglect produce different proportions of neglect subtypes?

2.3 Methods

The present study includes a longitudinal analysis of the prevalence of child neglect across states using national reporting data across multiple years as well as a cross-sectional analysis of the association of subtypes of neglect with state policy variance using NSCAW II.

2.3.1 Data sources

Data access. All data individual-level data sources (NCANDS, NSCAW, and the regional data) for the present study were secondary data sources currently available at

Washington University through prior studies and/or data licenses. Therefore human subjects

approval to access the data was accomplished by being added onto the data agreements in place

by faculty. Dr. Patricia Kohl holds the license for use of NSCAW which is available through the

National Data Archive for Child Abuse and Neglect and I was added to that license for this

study. Dr. Brett Drake holds the data approval for NDCANDS which is also available through

the National Data Archive for Child Abuse and Neglect and allows student users to be added to

the data agreement. The regional data set has been de-identified and no longer under IRB review

and was used by permission of Drs. Brett Drake and Melissa Jonson-Reid. Because the state

department of health continues to monitor any use of their data I was added to use agreement as

required.

2.3.1.1 Child Welfare Information Gateway & LexisNexis database.

In order to answer the first research question, the definition of child neglect in state

statutes across states from 2002 to 2015 was reviewed. The Child Welfare Information Gateway

does collect the definition of child maltreatment every other year, but there was some

inconsistency in how sections of policy were reviewed over time. Therefore, the LexisNexis

database was used to review and extract the definitions of child neglect in state statutes across

states from 2002 to 2015. The plan was to control for variability between states as well as over

time.

2.3.1.2 Community poverty controls.

The data source for county poverty was the U.S. Census Bureau. American Community

Survey (ACS) 5-year estimate data (2010-2014) was linked to the national reporting data.

Because of the strong relationship between child neglect and poverty (Drake & Jonson-Reid,

2011; Jonson-Reid, Drake, & Kohl, 2009; Jonson-Reid, Drake, & Zhou, 2013), poverty rates

might have a relationship to the likelihood of a neglect report. While there are some indicators of family-level poverty in the national data, these are inconsistent across states. Further, there is some evidence that the broader economic environment impacts the response of the child welfare system (McLaughlin & Jonson-Reid, 2017).

2.3.1.3 National Child Abuse and Neglect Data System (NCANDS)

Data on children reported for alleged maltreatment were drawn from the National Child Abuse and Neglect Data System (NCANDS) limited to the years 2002 to 2014. The NCANDS is the federal data system that gathers information from official records from all 50 states, the District of Columbia and Commonwealth of Puerto Rico and it was established under the Child Abuse Prevention and Treatment Act (CAPTA) in 1974 (CAPTA, P.L. 93-247). Each year, states voluntarily submitted case-level data, including information about the characteristics of reports of maltreatment, the children involved, the types of maltreatment, and the risk factors of the child and the caregivers, the screening and dispositions, services provided, and perpetrators. The annual reports also provide information on the screening practices and legal standards for substantiation in the state appendices. While NCANDS extends back in time for several more years, the number of states reporting consistently over time is more limited. It was necessary to use some prior years to assure that only first-time reports are considered because of the lack of an accurate indicator of prior reports in annual data. Therefore, the sample had to be limited to states that could be linked across sufficient numbers of years.

2.3.1.4 National Survey of Child and Adolescent Well-being (NSCAW)

NSCAW is a national probability sample of children and families reported to Child Protective Services with follow-up panel interviews that provide a means to tract recurrence and entry into care. NSCAW offers finer-grained subtypes offering an additional check on the impact

of the policy. Data on report types are drawn from the caseworker report in order to be able to

break neglect into subcategories. This is based on a combination of allegation type and the most

serious type of maltreatment categories to optimize non-missing data. Unfortunately, only seven

states were sufficiently sampled to allow for state-level comparison with the remainder having

small samples from a variety of states inextricably lumped into a single stratum. Six states were

available for analyses (flagged with permission for the present study) because of the difficulty in

tracking neglect in Pennsylvania. Pennsylvania uses a hybrid differential response system that

sends most neglect cases to a county level response that did not report to the state during this

study time period. This left the following six states: California, Florida, Illinois, Ohio, New

York, and Texas sampled in 2008-09.

2.3.2   Sample

Data were drawn from the National Child Abuse and Neglect Data System (NCANDS)

2002-2014. Because these data come from annual reports, children with prior reports are

included. Studies have found that over time, report type is more likely to be mixed (e.g., (Jonson-

Reid, Drake, Chung, & Way, 2003) making it important to exclude those with prior reports.

While a flag exists for prior substantiated reports, no such flag exists for prior unsubstantiated

reports. For NCANDS, this is be done by linking data across years and checking for prior reports

in 2002-2010. Prior to excluding cases with prior reports, the combined sample size from 2011-

2014 was 19,383,820. Even after reducing the sample for those with prior cases, and

unduplicating counts, the sample was still very large n=16,177,170. Due to the extremely low

numbers of percentage of neglect reports, four states which included Oregon, Pennsylvania,

Vermont, and Hawaii were excluded from further data analysis. For example, compared to

national 75.3% neglect victims of all maltreatment reports, Pennsylvania and Vermont state only

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reported 2.4% and 3.6%. Prior research found that in some states neglect cases are handled by a special form of differential response and are therefore rarely reported to the state level data systems (Cameron, & Freymond, 2015; Jonson-Reid et al., 2018; Shusterman, Hollinshead, Fluke, Yuan, & McDonald, 2005). Additionally, Oregon is missing data on substantiated cases for 2011 (US DHHS, 2013). Data on US territories is more limited by year and it was not how similar the CPS system would be there so those were also excluded. After accounting for missing data on policy variables used as controls (see below) a final sample of 40 states remained. Remaining data could be linked over time to study recurrence with confidence from 2002 on as unique individual ids within states were available. A baseline of 2011 was used with prior years of data used to look backward and help assure the 2011 reports were first reports.

While there are two iterations of NSCAW, the present paper focused on NSCAW II, which provided the closest baseline to the 2011 NCANDS baseline. Further prior work suggests relatively little difference between the two iterations (Kim et al., Under review). Similar to NCANDS, NSCAW II uses cross-sectional sampling, meaning children with prior reports are included. Because it is not possible to know if children with prior reports had reports of neglect or how many reports they had, analyses for NSCAW II was also limited to children with first-time reports. At baseline, all children in the sample are under age 15 years. Baseline report types were collected by asking case managers to report any and most severe type of maltreatment. By removing children with prior reports, the baseline sample was reduced from 5,869 to 2,976.

2.3.3 Measures

2.3.3.1 Dependent variable.

NCANDS. The dependent variable is measured in two ways. A continuous variable was constructed that referred to the proportion of children reported for neglect compared to the larger

total of all other children reported for any maltreatment type by the state from 2010-2014 (in other words, the proportion of the total child maltreatment "pie" which is the neglect "slice").

The second variable is also continuous and represents the rate of children with neglect reports per 1,000 children in the state. Also calculated is a similar number (rate of children per 1,000 children in the state) who received any report of maltreatment.

NSCAW II. The dependent variable is the percentage (%) of neglect subtypes at baseline (again, the size of "slices" for each neglect type out of the whole child maltreatment "pie", with each subtype expressed as a percent). Subtypes were identified according to the data field indicating the allegation as well as the most severe type as prior work (Dolan, Smith, Casanueva, Ringeisen, & Webb, 2011) suggests that this provides the most robust categories with the least missing information. Categories included: "Physical Neglect (failure to provide)" was coded as 1 if the allegations included lack of basic needs and 0 otherwise. "Neglect (lack of supervision)" was coded as 1 if the allegations referred to lack of supervision and 0 otherwise. "Abandonment" was coded as 1 if the allegations referred to the abandonment of children and 0 otherwise. "Educational Maltreatment" was coded as 1 if the allegation related to neglect children's educational needs and 0 otherwise. "Substance Exposure" and "Substance Abuse" was coded as 1 if the allegations included issues related to prenatal substance exposure or manufacture of a controlled substance in the presence of a child as a form of neglect or physical abuse in their state laws and 0 otherwise.

2.3.3.2 Independent and control variables.

State Statutes. All subtypes of neglect were coded corresponding to state statute based on the same year. "Physical neglect" was coded as 1 if a state includes it in their state statutes and 0 otherwise. "Emotional neglect" was coded as 1 if a state includes it in their state statutes and 0

otherwise. "Medical" was coded as 1 if a state includes it in their state statutes and 0 otherwise. "Educational Neglect" was coded as 1 if a state identified failure to provide education or ensure compliance with school attendance in their state statutes and 0 otherwise. "Lack of Supervision" was coded as 1 if a state includes it in their state statute and 0 otherwise. "Domestic Violence" was coded as 1 if a state identified it in their state statute and 0 otherwise. "Abandonment" was coded as 1 if a state identified it separately as a form of maltreatment it in their state statutes and 0 otherwise. "Substance Abusing Parents" was coded as 1 if a state reference prenatal exposure to drugs due to the mother's use of an illegal drug or other substance in their state statutes and 0 otherwise. "Substance Abuse Exposure" was coded as 1 if a state specified that exposure of a child to harm due to the mother's use of an illegal drug or other substance as a form of neglect in their state statutes and 0 otherwise.

Note that this coding scheme reflects the variation in child neglect across states but also includes values available in NSCAW II. In some cases, the codes reflect types of maltreatment that are considered separate from neglect by some states such as "Abandonment." Similarly, while some states may not consider "Domestic Violence" as neglect, exposure to domestic violence is often described as a "failure to protect" (Alaggia, Gadalla, Shlonsky, Jenney, & Daciuk, 2015). Failure to protect from harm was part of the definition of physical neglect used in the NIS-4 (Sedlak et al., 2010).

2.3.3.3 Control variables

NCANDS. Four variables serve as the control variables ones in the regression model for NCANDS. "Child poverty rate" is a continuous variable that referred to the percentage of children living in poverty within states. This variable was appended from the American Community Survey from 2010 to 2014. Other controls were available within the annual Child

Maltreatment reports or information available through the Child Welfare Gateway (Child Welfare Information Gateway, 2016). "Level of evidence" for substantiation was coded as 1 to 4 if a state identified "Beyond a reasonable doubt," "Clear and convincing evidence," "Preponderance of Evidence," or "Probable Cause" in their state child welfare manual. "Differential Response" was coded as 1 if a state had adopted by the year in question. The rates of screened-out cases by the state were also considered as a control variable (US DHHS 2012-2016).

NSCAW. Because there are no county indicators in the NSCAW data, child poverty indicators at the family level were used for controls.

2.3.4 Analysis

SAS 9.4 was used for data management and analyses. NCANDS reporting data were aggregated to the county level for each year from 2010-2014. The fiscal year was used instead of the calendar year, and cases with duplicate counts were excluded for population-based child neglect report outcomes. Also, child poverty in the American Community Survey was aggregated to the county level for each year from 2010-2014 and later combined with NCANDS data at the county level. NCANDS blinds some county indicators if the population is too small. In those cases, census data were averaged across the missing regions to use as a control.

2.3.4.1 Descriptive

Descriptive data on reports of neglect and subtypes was generated from the NCANDS and NSCAW dataset. Descriptive information regarding state statutes was drawn from the Child Welfare Information Gateway (Child Welfare Information Gateway, 2016) and the LexisNexis database.

Data were extracted regarding policy definitions of child maltreatment through content analysis of both sources of information. Statutes were searched for the word "neglect" and then keywords extracted from the definition. These keywords were collapsed into categories. For example, the definition of child neglect is documented under:

Louisiana annotated statutes>Louisiana Children's code>Title 6. Child in need of care>Chapter 1 preliminary provisions, and it means "the refusal or unreasonable failure of a parent or caretaker to supply the child with necessary food, clothing, shelter, care, treatment, or counseling for any injury, illness, or condition of the child, as a result of which the child's physical, mental, or emotional health and safety is substantially threatened or impaired. Neglect includes prenatal neglect. Consistent with Article 606(B), the inability of a parent or caretaker to provide for a child due to inadequate financial resources shall not, for that reason alone, be considered neglect." Therefore, "failure of a parent or caretaker to supply the child with necessary food, clothing, shelter, care, treatment, or counseling for any injury, illness" was identified as "Physical Neglect" and "Medical Neglect." Moreover, while "as a result of which the child's physical, mental, or emotional health and safety is substantially threatened or impaired" is identified as "Emotional Neglect", "Neglect includes prenatal neglect" was identified as "Exposure to Substance."

This process was repeated for each state and a table is provided in Appendix A summarizing results.

2.3.4.2 Multivariate analyses

Multilevel Modeling (Allison, 2012) is applied to test the association policy definitions and reported child neglect controlling for other state-level variables for NCANDS. While

multilevel modeling provides the ability to analyze longitudinal data, it also provides the most detailed ability to look at clustering by counties that nested in states.

A multinomial logistic regression model was planned for NSCAW II given the cross-sectional nature of the data, to predict the reported subtype by state policy indicator and child poverty. Once the sample size was reduced to first time reports, however, the sample size for subtypes of maltreatment became quite small and once broken out by the state did not lend themselves to a multivariate model so only descriptive results are reported.

2.4 Results

2.4.1 Descriptive Analyses

In addition to the expectation of significant variation between states in how neglect was defined, it was assumed that there might also be changes over time that would have to be controlled. This, however, did not turn out to be evident in the data sources consulted.

2.4.1.1 Change over time. A review of state statutes over time (2002-2014) revealed few changes in definitions of child neglect. Only three states added the "substance abuse" and one state added "educational neglect" in their definitions of child neglect during this period. Table 1 illustrates the original and new definitions of child neglect in their state statutes. For example, Arizona state add "a newborn infant was exposed prenatally to a drug or substance" to the state statute in 2009, Delaware state added "…chronically and severely abuses alcohol or a controlled substance, is not active in treatment for such abuse, and the abuse threatens the child's ability to receive care necessary for that child's safety and general well-being in 2007, and Maine state added "failure to ensure compliance with school attendance" in 2007. Virginia added "…unlawful sale of such substance by that child's parents or another person responsible for his care, where such

manufacture, or attempted manufacture…" in 2004. Therefore, no changes in policy were

controlled in analyses.

Table 1: Changes of Definitions of Child Neglect in State statute from 2002-2015

State, year changed	State Statute	Original Contents	New Contents
Arizona, 2009	ARIZONA REVISED STATUTES > TITLE 8. CHILDREN > CHAPTER 2. JUVENILE COURT > ARTICLE 1. GENERAL PROVISIONS	§ 8-201.Definitions Text of section effective until January 1, 2009. For section effective January 1, 2009, see the following version. 21. "Neglect" or "neglected" means the inability or unwillingness of a parent, guardian or custodian of a child to provide that child with supervision, food, clothing, shelter or medical care if that inability or unwillingness causes substantial risk of harm to the child's health or welfare, except if the inability of a parent or guardian to provide services to meet the needs of a child with a disability or chronic illness is solely the result of the unavailability of reasonable services.	§ 8-201. Definitions 22. "Neglect" or "neglected" means: (a) The inability or unwillingness of a parent, guardian or custodian of a child to provide that child with supervision, food, clothing, shelter or medical care if that inability or unwillingness causes unreasonable risk of harm to the child's health or welfare, except if the inability of a arent, guardian or custodian to provide services to meet the needs of a child with a disability or chronic illness is solely the result of the unavailability of reasonable services. (b) Permitting a child to enter or remain in any structure or vehicle in which volatile, toxic or flammable chemicals are found or equipment is possessed by any person for the purposes of manufacturing a dangerous drug as defined in section 13-3401. (c) A determination by a health professional that a newborn infant was exposed prenatally to a drug or substance listed in section 13-3401 and that this exposure was not the result of a medical treatment administered to the mother or the newborn infant by a health professional. This subdivision does not expand a health professional's duty to report neglect based on prenatal exposure to a drug or substance listed in section 13-3401 beyond the requirements prescribed pursuant to section 13-3620, subsection E. The determination by the health professional shall be based on one or more of the following: (i) Clinical indicators in the prenatal period including maternal and newborn presentation. (ii) History of substance use or abuse. (iii) Medical history. (iv) Results of a toxicology or other laboratory test on the mother or the newborn infant. (d) Diagnosis by a health professional of an infant under one year of age with clinical findings consistent with fetal alcohol syndrome or fetal alcohol effects. (e) Deliberate exposure of a child by a parent, guardian or custodian to sexual conduct as defined in section 13-3551 or to sexual contact, oral sexual contact or sexual intercourse as defined in section 13-1401, bestiality as prescribed in section 13-1411 or explicit sexual materials as defined in section 13-3507. (f) Any of the following acts committed by the child's parent, guardian or custodian with reckless disregard as to whether the child is physically present: (i) Sexual contact as defined in section 13-1401. (ii) Oral sexual contact as defined in section 13-1401. (iii) Sexual intercourse as defined in section 13-1401. (iv) Bestiality as prescribed in section 13-1411.
Delaware, 2007	DELAWARE CODE ANNOTATED > TITLE 16. HEALTH AND SAFETY > PART II. REGULATORY PROVISIONS	§ 902. Definitions (13) "Neglect" shall mean the failure to provide, by those responsible for the care, custody and control of the child, the proper or necessary: Education as required by law; nutrition; or medical, surgical or any other care necessary for the child's well-being.	§ 902. Definitions (13) "Neglect" or "neglected child" is as defined in § 901 of Title 10. "Neglect" or "neglected child" means that a person: a. Is responsible for the care, custody, and/or control of the child; and b. Has the ability and financial means to provide for the care of the child; and

	CONCERNING PUBLIC HEALTH > CHAPTER 9. ABUSE OF CHILDREN > SUBCHAPTER I. REPORTS AND INVESTIGATIONS OF ABUSE AND NEGLECT; CHILD PROTECTION ACCOUNTABILITY COMMISSION		1. Fails to provide necessary care with regard to: food, clothing, shelter, education, health, medical or other care necessary for the child's emotional, physical, or mental health, or safety and general well-being; or 2. Chronically and severely abuses alcohol or a controlled substance, is not active in treatment for such abuse, and the abuse threatens the child's ability to receive care necessary for that child's safety and general well-being; or 3. Fails to provide necessary supervision appropriate for a child when the child is unable to care for that child's own basic needs or safety, after considering such factors as the child's age, mental ability, physical condition, the length of the caretaker's absence, and the context of the child's environment. In making a finding of neglect under this section, consideration may be given to dependency, neglect, or abuse history of any party.
Maine, 2007	2007 Maine Revised Statutes Annotated by LexisNexis(R) > TITLE 22. HEALTH AND WELFARE > SUBTITLE 3. INCOME SUPPLEMENTATION > PART 3. CHILDREN > CHAPTER 1071. CHILD AND FAMILY SERVICES AND CHILD PROTECTION ACT > SUBCHAPTER 1. GENERAL PROVISIONS	§ 4002. Definitions 1. ABUSE OR NEGLECT. "Abuse or neglect" means a threat to a child's health or welfare by physical, mental or emotional injury or impairment, sexual abuse or exploitation, deprivation of essential needs or lack of protection from these, by a person responsible for the child.	§ 4002. Definitions 1. ABUSE OR NEGLECT. "Abuse or neglect" means a threat to a child's health or welfare by physical, mental or emotional injury or impairment, sexual abuse or exploitation, deprivation of essential needs or lack of protection from these or failure to ensure compliance with school attendance requirements under Title 20-A, section 3272, subsection 2, paragraph B or action 5051-A, subsection 1, paragraph C, by a person responsible for the child.
Virginia, 2004	CODE OF VIRGINIA > TITLE 63.2. WELFARE (SOCIAL SERVICES) > SUBTITLE I. GENERAL PROVISIONS RELATING TO SOCIAL SERVICES> CHAPTER 1. GENERAL PROVISIONS	§ 63.2-100. Definitions As used in this title, unless the context requires a different meaning: "Abused or neglected child" means any child less than 18 years of age: 1. Whose parents or other person responsible for his care creates or inflicts, threatens to create or inflict, or allows to be created or inflicted upon such child a physical or mental injury by other than accidental means, or creates a substantial risk of death, disfigurement, or impairment of bodily or mental functions;	§ 63.2-100. Definitions As used in this title, unless the context requires a different meaning: "Abused or neglected child" means any child less than 18 years of age: 1. Whose parents or other person responsible for his care creates or inflicts, threatens to create or inflict, or allows to be created or inflicted upon such child a physical or mental injury by other than accidental means, or creates a substantial risk of death, disfigurement, or impairment of bodily or mental functions, including but not limited to, a child who is with his parent or other person responsible for his care either (i) during the manufacture or attempted manufacture of a Schedule I or II controlled substance, or (ii) during the unlawful sale of such substance by that child's parents or other person responsible for his care, where such manufacture, or attempted manufacture or unlawful sale would constitute a felony violation of § 18.2-248;

2.4.1.2 Definitions of child neglect across states. While there were few changes over time, there were significant variations between states. A review of statutes as of 2014 can be seen in Appendix A. This was the most recent year to be used in analyses. Only West Virginia specifically included the term "domestic violence" in its statutory definition of physical child abuse and neglect and Montana included "commission of acts of violence against another person residing in the child's home" in its definition of psychological abuse or neglect (Child Information Gateway, 2016). Moreover, though most states identified emotional or psychological abuse as a form of child maltreatment, only 14 states[1] and District of Columbia identified failure to fulfill mental health, psychological or emotional needs as a form as child neglect. For the educational neglect, approximately 26 states[2] specify that failure to educate the child is an element of neglect in the statute, and about half of the states do not include educational neglect in their statute. For the abandonment, some states[3] included abandonment in the definition of child neglect, but 15 states[4] listed it as a separate form of maltreatment. In addition, some states[5] do not address abandonment in their maltreatment definition at all.

There were eight states[6] that identified substance abuse as a form of child neglect when it harms the caregiver's ability to take care of their children adequately. There were another 14

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[1] Arkansas, Connecticut, Delaware, Florida, Hawaii, Louisiana, Maryland, Massachusetts, Montana, New Hampshire, New Jersey, New York, North Dakoda, Oklahoma, and District of Columbia.
[2] Arkansas, Colorado, Connecticut, Delaware, Idaho, Indiana, Kentucky, Maine, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, West Virginia, and Wyoming.
[3] California, Colorado, Connecticut, Illinois, Kentucky, Louisiana, Minnesota, Nevada, New Jersey, North Carolina, Rhoda Island, South Dakota, Utah, Vermont, Virginia, West Virginia, and Wyoming.
[4] Arizona, Arkansas, Florida, Indiana, Kansas, Maine, Montana, Nebraska, New Hampshire, New Mexico, New York, North Dakota, Ohio, Oklahoma, and Texas.
[5] Alabama, Alaska, Destatuteare, Georgia, Hawaii, Idaho, Iowa, Maryland, Michigan, Mississippi, Missouri, Oregon, Pennsylvania, South Carolina, Tennessee, Washington, and Wisconsin.
[6] California, Delaware, Kentucky, Minnesota, New York, Oklahoma, Rhode Island, and Texas

states[7] that reference prenatal exposure to the illegal substance. Some states[8] specified manufacturing and three other states (Arizona, Arkansas, and Washington) included allowing children to be present with the illegal substance as maltreatment. Seven states (Arkansas, Florida, Hawaii, Illinois, Minnesota, Ohio, and Texas) identified selling or giving substance to a child as a type of child neglect. Eleven states identified more than one type of substance abuse situation in their definition, 17 states only identified one, and 22 states did not mention substance abuse in their child neglect definitions.

   2.4.1.3 Type of Neglect Reported at Baseline: NSCAW. Once neglect types at baseline were broken down by subtype and cross-referenced by state statute, it became clear that the cell sizes in the cross-tabulations were insufficient to support multivariate analyses. Table 2 does illustrate an inconsistency between the child neglect definitions in state statutes and how cases were identified in the NSCAW data. For example, although Texas, Florida, and Ohio do not include substance abuse in their state statutes, case workers reported the allegation reason as substance abuse for several cases. On the other hand, abandonment cases were rare in NSCAW but were identified as a form of maltreatment in most of the seven NSCAW states.

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[7] Arizona, Arkansas, Colorado, Illinois, Indiana, Iowa, Louisiana, Massachusetts, Minnesota, North Dakota, Oklahoma, Oregon, South Dakota, and Wisconsin
[8] Colorado, Indiana, Iowa, Montana, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Virginia, and Washington

Table 2: State statutes in NSCAWs

State	Policy (State Statute)	Physical Neglect	Super. Neglect	Abandon ment*	Education Neglect	Substance Abuse	Domestic Violence
		Identified in State Statute (Y=yes, N=no), Number of Cases					
TX	Caregiver placed a child in or failed to remove from, a situation that reasonably could result in bodily injury or substantial harm. Fail to provide necessary medical care. Fail to provide adequate food, clothing, or shelter-excludes financial inability unless relief was refused. Exposes or fails to protect a child from sexual conduct. Fails to allow child home or arrange for alternative care.	Y, 11	Y, 47	Y, 3	N, 0	N, 22	N, 0
FL	Failure to Provide: necessary food, clothing, shelter, or medical treatment; Child's environment causes the child's physical, mental, or emotional health to be significantly impaired or at risk of significant impairment.	Y, 3	Y, 20	Y, 1	N, 1	N, 26	N, 27
OH	Due to fault/habits legal caregivers fail to provide necessary subsistence, education, medical care, or other care necessary for the child's health, morals, or well-being; Caregiver refuses to provide care for the child's mental condition; Caregiver places the child in violation of statutes; Failure to supervise resulting in or threatening physical or mental injury.	Y, 3	Y, 6	Y, 0	Y, 0	N, 9	N, 1
NY	Impair or endanger physical, mental, or emotional condition due to caregiver failure to provide food, clothing, shelter, education, or medical care, although financially able or offered means; Fail to provide proper supervision. Unreasonably inflict or allow harm, include excessive corporal punishment; Caregiver impaired due to misuse of drugs or alcohol; Similar serious acts requiring court aid.	Y, 2	Y, 11	Y, 0	Y, 3	Y, 8	N, 2
CA	Suffer or is at risk of serious physical harm or illness due to: Failure to supervise and protect; Failure to provide adequate food, clothing, shelter, or medical treatment; Inability of the caregiver to provide due to caregiver mental illness, developmental disability, or substance abuse;	Y, 12	Y	Y	N	Y	N
IL	"Neglected child" means any child who is not receiving the proper or necessary nourishment or medically indicated treatment including food or care not provided solely on the basis of the present or anticipated mental or physical impairment as determined by a physician acting alone or in consultation with other physicians or otherwise is not receiving the proper or necessary support or medical or other remedial care recognized under State law as necessary for a child's well-being, or other care necessary for his or her well-being, including adequate food, clothing and shelter; or who is subjected to an environment which is injurious insofar as (i) the child's environment creates a likelihood of harm to the child's health, physical well-being, or welfare and (ii) the likely harm to the child is the result of a blatant disregard of parent or caretaker responsibilities; or who is abandoned by his or her parents or other person responsible for the child's welfare without a proper plan of care; or who is a newborn infant whose blood, urine, or meconium contains any	Y, 2	Y, 13	Y, 0	N, 0	Y, 8	N, 7

amount of a controlled substance as defined in subsection (f) of Section 102 of the
Illinois Controlled Substances Act or a metabolite thereof, with the exception of a
controlled substance or metabolite thereof whose presence in the newborn infant is
the result of medical treatment administered to the mother or the newborn infant.

*Five states, including Texas, Florida, Ohio, New York, and California provide definitions for abandonment that are separate from the definition of neglect

2.4.2   Multilevel Modeling

2.4.2.1 NCANDS. Table 3 illustrates the results of multilevel modeling using NCANDS data. It showed that the presence of educational neglect in state policies was significantly associated with an increased prevalence of child neglect across all years but 2012 no matter whether the dependent variable was measured as population rate or proportion of reports. The inclusion of other subtypes did not have a significant impact. Screen–out rates were significantly associated with decreased prevalence but only for 2014 and only measured as the percentage of neglect reports.

Table 3: Results of Multilevel Modeling (Random Intercept Model)

Year	Report-based					Population-based				
	2010	**2011**	**2012**	**2013**	**2014**	**Pop 2010**	**2011**	**2012**	**2013**	**2014**
Effect	Estimate (SD)	Estimate (SD)	Estimate (SD)	Estimate (SD)	Estimate (SD)	Estimate (SD)	Estimate (SD)	Estimate (SD)	Estimate (SD)	Estimate (SD)
Physical Neglect	0.19 (0.15)	0.08 (0.12)	0.03 (0.14)	0.07 (0.14)	0.14 (0.17)	0.18 (1.19)	0.15 (0.16)	0.03 (0.14)	0.07 (0.140)	0.16 (1.35)
Emotional Neglect	-0.06 (0.06)	-0.09 (0.07)	-0.07 (0.08)	-0.12 (0.07)	-0.06 (0.07)	-0.11 (0.02)	-0.05 (0.76)	-0.07 (0.07)	-0.12 (0.07)	-0.04 (0.93)
Educational Neglect	**0.12 (0.05)**	**0.16 (0.06)**	0.12 (0.08)	**0.13 (0.06)**	**0.14 (0.07)**	**0.29 (0.55)**	**0.18 (0.07)**	0.132 (0.07)	**0.13 (0.64)**	**0.14 (0.08)**
Medical neglect	-0.09 (0.05)	-0.05 (0.05)	-0.04 (0.06)	-0.07 (0.06)	-0.07 (0.06)	-0.05 (0.05)	-0.04 (0.06)	-0.04 (0.06)	-0.07 (0.06)	-0.03 (0.70)
Abandon-ment	-0.07 (0.05)	-0.02 (0.06)	0.00 (0.07)	-0.01 (0.07)	-0.04 (0.07)	-0.03 (0.05)	-0.04 (0.07)	0.01 (0.08)	-0.01 (0.06)	-0.72 (0.91)
Substance Abuse	-0.01 (0.05)	-0.00 (0.06)	0.02 (0.07)	0.01 (0.07)	-0.09 (0.07)	-0.04 (0.05)	0.02 (0.06)	0.02 (0.07)	0.01 (0.07)	-0.04 (0.07)
Substance Exposure	0.02 (0.06)	-0.01 (0.06)	-0.09 (0.06)	-0.11 (0.06)	-0.07 (0.07)	0.04 (0.06)	-0.02 (0.07)	-0.09 (0.06)	-0.11 (0.06)	-0.10 (0.07)
Lack of Supervision	0.01 (0.05)	-0.00 (0.06)	0.02 (0.06)	0.01 (0.06)	-0.04 (0.06)	0.06 (0.06)	0.02 (0.07)	0.02 (0.06)	0.01 (0.06)	0.04 (0.09)
Level of Evidence	0.01 (0.03)	0.001 (0.03)	0.01 (0.04)	-0.02 (0.03)	0.01 (0.03)	0.06 (0.03)	0.04 (0.04)	0.02 (0.03)	-0.02 (0.03)	-0.02 (0.40)
Domestic Violence	0.07 (0.05)	0.05 (0.05)	0.03 (0.06)	0.06 (0.06)	0.06 (0.06)	0.05(0.05)	0.08 (0.06)	0.02 (0.07)	0.06 (0.06)	-0.07 (0.07)
Screen-out Rates	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	**-0.004 (0.00)**	0.16 (0.01)	-0.27 (0.02)	-0.00 (0.00)	-0.00 (0.00)	-0.04 (0.02)
Child Poverty	-1.07 (0.59)	-1.02 (0.68)	-0.58 (0.64)	-0.87 (0.60)	-0.607 (0.673)	-0.20 (0.61)	-1.15 (0.91)	-0.43 (0.57)	-0.87 (0.66)	-2.72 (7.63)
Differential Response	-0.02 (0.02)	-0.01 (0.03)	0.00 (0.29)	0.00 (0.02)	0.022 (0.029)	0.00 (0.01)	-0.07 (0.54)	0.005 (0.03)	0.005 (0.02)	-1.65 (0.74)

Table 4 illustrates the effect sizes which are the differences in the reported neglect rates among states include educational neglect in their state statutes. In 2014, states include "educational neglect" in their statute are more likely to have a significantly higher percentage of child neglect reports. The average neglect reported rates are 65% (report-based) and 68% (population-based) for the states did not include educational neglect in their statue and 70% (report-based) and 73% (population-based) for states that include it in their state statutes.

Table 4: Percentage of Neglect Report (Population-based and Report-based)

	Without Educational Neglect		With Educational Neglect	
Report-based Neglect Percentage	Mean	Std	Mean	Std
2011	0.66	0.17	0.73	0.14
2012	0.66	0.17	0.73	0.14
2013	0.66	0.17	0.72	0.15
2014	0.67	0.17	0.72	0.17
2015	0.65	0.16	0.70	0.17
Population-based Neglect Percentage				
2011	0.72	0.21	0.76	0.19
2012	0.72	0.22	0.76	0.19
2013	0.72	0.21	0.76	0.19
2014	0.73	0.22	0.76	0.19
2015	0.75	0.20	0.77	0.19

2.5 Discussion

As expected, based on prior literature, the content analyses revealed significant differences between state variability in definitions of child neglect. Some states even created different categories of maltreatment instead of listing behaviors like abandonment as a form of neglect. Despite significant concern about how variability would impact the identification of child neglect, the apparent impact on prevalence as measured in the present study was modest in NCANDS and no relation was apparent in NSCAW.

The only significant effect of policy variation found was that when states identified educational neglect in their child neglect definition in their state statutes, their neglect caseloads increased. What is less clear is whether the increase was in reports of educational neglect specifically or whether or not broader definitions simply encourage more reporting. This is somewhat in line with Rebbe's (2018) analysis of NIS-4 reports and state statutes finding that some states cluster around narrower definitions. On the other hand, Rebbe's analyses did not find a particular correspondence between educational neglect and definitional cluster.

Educational neglect generally reflects a caregiver's refusal to enroll a child in school when required or allowing a child to miss a significant amount or drop out of school (Runyan et al., 2005). Nationally, it is estimated that about 11% of elementary aged students are chronically absent-raising to nearly 20% by high school (Kena et al, 2016). Research suggests that attendance patterns as early as an elementary school have differentiated dropouts from graduates, and is predictive of a range of negative behavioral, educational, and economic outcomes (Maynard et al., 2017; Maynard, McCrea, Pigott, & Kelly, 2013; Ready, 2010; Sheldon, 2007). Although some research suggests that child welfare intervention with families of young children reported for educational neglect may be effective (Larson, Zuel, & Swanson, 2011; Maynard et al., 2017, 2013; Ready, 2010; Sheldon, 2007), little is known about the nature of services and few studies exist. If inclusion of educational neglect increases the child welfare caseload, the lack of information about what happens following a report and what evidence-based approaches are useful is concerning.

What was less expected was the lack of apparent correspondence between whether a given subtype was listed in a state statute and the reason for the report given by the caseworker in NSCAW II. Again, a similar lack of pattern for some forms of neglect in NIS-4 was reported

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by Rebbe (2015). There are a number of possible reasons for this. For example, while it is common that individuals who screen calls from reporters use the state's guidelines to determine if a report can be accepted for a CPS response (McLaughlin & Jonson-Reid, 2017), it is not clear if these definitional differences impact agency and practitioner to response those cases if those cases could be identified as a form of neglect in agency manuals or protocols. In addition, child maltreatment reporters may or may not be well versed in the guidelines of their state (Krase & DeLong-Hamilton, 2015; Palusci et al., 2016). Without having transcripts from the allegations, themselves, it is not possible to discern whether or not there may have been aspects of different types of neglect in the same case that allowed for that case to be among investigated cases in the present data. In other words, the caseworker report of maltreatment type may not be reflective of the full range of information provided in the initial call. Indeed, a copy of the structured decision-making training manual for hotline calls in Missouri obtained for a prior study (no author, 2004) has a section on domestic violence in which the screener prompts for information about additional concerns that might be child maltreatment even if exposure to domestic violence per se is not reportable.

2.6 Strengths and Limitations

While contributing to a better understanding of what the number of child neglect cases really means in nationally representative data sets, there were significant limitations to the present study. First, even though states aggregated their own neglect cases to fit into the NCANDS neglect coding system which is either neglect or medical neglect (US DHHS, 2019), detailed information regarding how each state maps out their coding is unknown. Without more information regarding the aggregation coding in each state, it is unknown what types of maltreatment cases were categorized under the label of child neglect as compared to other forms

of maltreatment prior to submission to the national archive. It may be that the recoding is largely done at the national level and only medical neglect was consistent enough across states to break out. Second, hypothetically the child neglect caseloads in state-level administrative data should reflect the range that child neglect definitions covered in each state, but unfortunately, this relationship could be confounded by the screening guideline or protocols in local CPS agencies. For example, how agencies interpret, implement, and enforce the law might vary across jurisdictions, and therefore incidents of child maltreatment may be screened-in or out, or served in different and disconnected systems (Eldred & Gifford, 2016). Similarly, the screening protocol in a given state may illicit information that does fit the standard even if that may not be the primary concern of the caller. It is hoped that future studies will both sample by the state to allow for better policy analyses and attend to the inclusion of both administrative data and caseworker information to allow for comparison. Third, though the multilevel modeling was applied to the clustered nature between states, county, and family levels, no family indicators were included due to the variability in how these data are reported across states. Finally, while NSCAW provides an opportunity to allow for greater depth in analyses of subtypes, the sample size once broken down by neglect was simply too small to allow for further exploration.

2.7 Implications

This study attempted to better understand the relationship between child neglect definitions in state statutes and neglect cases in the state level. However, the present analysis in some ways raises more questions than it answers. To further understand how definitions in policy impact prevalence data are needed that allows for the analysis of reports made by the report source while considering how screening decisions are made.

The inclusion of educational neglect was associated with increased caseloads. Intuitively, this may reflect the acknowledged importance of attendance and educational success for long term outcomes of children. While this seems positive, there is too little information available on what happens to these cases. More studies are needed to examine whether the children with unmet educational needs are identified and helped in other government systems (e.g. education) in these states. In addition, it is possible that educational neglect occurs with other forms of maltreatment, but it was not possible to tease this out in current data. For states that identified educational neglect in their state statute, more studies are needed to examine whether child welfare services provide effective intervention or resources for those children educational needs.

Finally, there is increasing attention to the use of administrative data in child welfare for a variety of policy and practice relevant issues(Jonson-Reid & Drake, 2008; Putnam-Hornstein, Needell, & Rhodes, 2013). In the recent Child Maltreatment 2017 (Department of Health and Human Services, 2019), each state provides guidelines and details for a variety of areas such as Report, Children, Fatalities, Services, Perpetrators with their reports in NCANDS data set. However, the information related to the operationalization of child neglect and whether certain subtypes of neglect are excluded or included is missing. Given that differences in definitions may impact who is in a given states CPS population, it may make sense to push for greater specificity in reporting how things like the subtypes of neglect are coded in state-level sources. While this does not solve the issue of consistency, it would enhance comparability between studies using administrative data as well as those using various forms of self-report.

Chapter 3: Safety and Permanency Outcomes for Children Known to CPS for Different Forms of Neglect

3.1 Significance

Children reported for neglect comprise the majority of cases encountering the Child Protective Services (CPS) system (US DHHS, 2019) and therefore comprise a significant portion of the system burden in regard to services and recurrence. The CPS system is charged with responding to alleged cases of maltreatment to focus on issues of child safety, preservation of the family, permanency and most recently child well-being (Jonson-Reid & Drake, 2016). Two of the most common means of measuring these goals are the prevention of recurrent maltreatment and maintaining a child in their family of origin. A number of studies have found that neglect cases are more likely to return to the attention of CPS than children reported for other reasons (Jonson-Reid, Chiang et al., In press; White, Hindley, & Jones, 2015). Compared to maltreatment recurrence, there are fewer studies of foster care entry that control for type of maltreatment but there is also a trend toward greater risk for children reported for neglect-at least when official report data are used (Needell, 2003; Fajardo, 2013; Rivaux et al., 2008).

Even if one accepts that neglect is unique from other forms of maltreatment, there is a debate about what types of behaviors constitute neglect and whether or not these reflect unique subtypes with differing etiologies. Twenty-five years ago, the National Research Council (1993) stated that child neglect "covers a range of behaviors including educational, supervisory, medical, physical and emotional neglect, and abandonment, often complicated by cultural and

contextual factors (p. 60). Rose and Meezan (1996) argued that operational definitions of child neglect are different between professionals who use them, between professionals and the lay community, and between different cultural groups. Decades later, researchers continue to worry that definitions are too broad, too narrow, or even impossible to define in such a way as to include appropriate attention to age and cultural context (Friedman & Billick, 2015; McSherry, 2007). While several researchers have commented on the "neglect of neglect" (Wolock & Horowitz, 1984), empirical work on subtypes of neglect lags even further behind.

There are some indications that subtypes identified by reports may have unique characteristics that may impact outcomes. Yang & Maguire-Jack (2016) found that family and community characteristics differed for basic needs compared to supervisory neglect. Jonson-Reid and colleagues (2013) found that substantiation and service disposition following a report of neglect varied by both race/ethnic category and subtype (basic needs, lack of supervision, medical, abandonment, hygiene, exposure to substances, any severe neglect and neglect mixed with abuse). Dubowitz, Pitts & Black (2004) found that specific subtypes at age five were more predictive of child behavior at age six than overall neglect. These service decisions may further impact re-reports of maltreatment that do or do not result in placement into foster care. On the other hand, over time it may be more difficult to assess the impact of maltreatment type given the increased likelihood of mixed forms of maltreatment when maltreatment recurs (Drake et al., 2003; Mennen et al., 2010a). This may make it more important and feasible to understand how subtypes of neglect may operate early in a child's life and/or system career before becoming confused with multiple forms of victimization.

Little work has been done to understand how recurrence with or without entry into foster care varies for children and families reported to CPS according to the subtype of neglect. Kang,

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Bae, and Fuller (2015) found some bivariate differences in re-report by subtype of neglect (medical, lack of supervision, failure to provide, neglect and other neglect, mixed type neglect, and neglect mixed with abuse), but multivariate models were only done within subtypes rather than comparing subtypes using latent class analysis.

Despite the large proportion of child welfare funding devoted to foster care or adoption (about 7 out of 9.7 billion in 2015) (Sciamanna, 2016), surprisingly few empirical studies of entry into foster care exist. Even fewer have controlled for maltreatment type prior to entry. Two studies found a higher risk of neglect compared to all other types (Needell et al., 2003; Rivaux et al., 2008), one study found a lower risk of neglect alone compared to mixed type (DePanfilis & Zuravin, 1998), and another study found lower risk of neglect compared to emotional maltreatment (English et al., 2015). Two studies broke out neglect by subtypes of failure to supervise or failure to provide but both found no association of maltreatment type to placement (Barth, Wildfire, & Green, 2006; Carter, 2010). The first study examined entry into care by urban compared to non-urban cases within the National Survey of Child and Adolescent Well-being I (NSCAW). One Canadian study (Black, Trocmé, Fallon, & MacLaurin, 2008) found that children involved in both substantiated investigations of domestic violence and another form of maltreatment were more likely to enter foster care than children only involved with domestic violence. Given the scant literature and significant variation in how subtypes of neglect are categorized, it is not clear whether recurrence at the report or placement levels varies by subtype of neglect.

If child welfare outcomes vary by the particular form of neglect, this may indicate a need for type specific interventions. Thus far, there has been too little study of this phenomenon to understand if this may be the case. This paper tries to help fill the gap in knowledge by

examining maltreatment report recurrence and entry into foster care according to the initial type of neglect. Because there are significant limitations to any one data set in regard to subtypes of neglect, the present article compares results from three different datasets with differing ways of categorizing subtypes. The field is not currently sufficiently advanced, either theoretically or empirically to offer hypotheses for these research questions.

3.2   Research Questions

1. Do subtypes of child neglect predict the second report following an initial report of maltreatment?

2. Do subtypes of child neglect predict foster care entry following an initial report of maltreatment?

3.3   Methodology

Three data sources were used for the present study because each has different strengths and weaknesses in regard to measuring subtypes of neglect and the sample frame. All data sources allowed for longitudinal analysis of recurrence and foster care entry following a first report.

3.3.1   Data source and samples

The first one is the National Surveys of Child and Adolescent Well-Being, NSCAW-II (NSCAW), the second one includes national reporting data from the National Child Abuse and Neglect Data System (NDCANS), and the third is a regional longitudinal study using linked administrative data records. Although it is possible to enter foster care without a prior report of maltreatment (e.g., parental death, voluntary relinquishment, etc.), the present study uses data limited at baseline to children with CPS contact, so no child enters care prior to the initial report. Because of the desire to examine subtypes and outcomes following a first report to CPS and the

desire to attempt to triangulate findings, the age range at baseline (birth through age 9) was limited according to the longest range possible for any data set.

3.3.1.1 NSCAW II

NSCAW II (n=5,872) is a panel design study using a national probability sample of children and families reported to Child Protective Services with follow-up panel interviews that provide a means to tract recurrence and entry into care. Children with investigated reports of maltreatment in 2008-2009 were included. NSCAW does not sample rural areas due to sample size concerns. NSCAW was also designed to focus on the states with the largest child welfare populations. Seven large states that consented to participate comprise the majority of the sample with very small samples drawn from remaining states and combined into a single stratum. Because the original study was sampled cross-sectionally, children with prior reports are included in the sample. Studies have found that over time, report type is more likely to be mixed (e.g., Drake et al., 2003) making it important to exclude those with prior reports. For the purpose of this study, children with prior maltreatment reports, prior foster care entry, and those over 9 years old were excluded (n=2,087). Subsetting NSCAW data precludes the ability to use the weights that allow for national generalizability. However, the goal of the present study was to examine relationships between constructs not to attempt to predict outcomes that could be generalized to the whole population of child welfare involved families. Three waves of the study were available for the present analysis allowing for a total time of 36 months for recurrence and/or entry into foster care. Although dates are available through matched administrative data, the match was not reliable and guidelines recommend the use of both caseworker report and administrative data records so controlling for exact time was not possible.

3.3.1.2 NCANDS

Data were also drawn from the National Child Abuse and Neglect Data System (NCANDS) from 2011 to 2015. Children with a first report in 2011 were selected and followed through 2015. Data are linked across years in NCANDS using a combination of the child and state ID codes. Due to the focus on recurrence, the sample was limited to those with the first report before age nine or lower as the risk of recurrence and placement into foster care declines dramatically after this age. The NCANDS is linked back to 2002, and therefore all children with prior reports before age nine are excluded. An indicator and date for foster care placement are available in the NCANDS data. The accuracy of the link to the foster care data system across years is uncertain as little work has been done linking the two sources. Therefore, the present study limited the foster care entry to the indicator present in NCANDS. These data represent an undercount of foster care entries because all foster care entry dates are tied to child maltreatment hotline reports using this approach. Some entries into foster care may not be associated with any particular child maltreatment report in the records (e.g. parental incarceration, foster care initiated long after the report, etc.…). On the other hand, this is not a limitation for the present study as the focus was on entry following a report of child neglect. All the fatality reports and duplicate reports were excluded. Due to discontinuity problems in year-to-year linking, some of the states in NCANDS (Kim, & Drake, 2018) were excluded and only 29 states were included in the end, including Arkansas, Arizona, California, Colorado, Connecticut, DC, Iowa, Idaho, Louisiana, Maine, Memphis, Minnesota, Mississippi, North Carolina, Nebraska, New Hampshire, New York, New Mexico, Ohio, Oklahoma, Rhode Island, South Carolina, South Dakota, Texas, Vermont, Virginia, Washington, and Wyoming. The final sample size was n=682,215.

3.3.1.3 Regional longitudinal study.

The final data source includes linked administrative data from a large study of low income and maltreated children from the St. Louis metropolitan region (n=7,303) (e.g., Jonson-Reid, Drake & Kohl, 2009). Data were provided by multiple agencies including birth and death records, child protective services, state department of mental health records, Medicaid record, emergency room, income maintenance programs, shelters, juvenile court petitions, highway patrol arrest data, and state level corrections data. This data includes children age 11 or younger with official reports for maltreatment in 1993-1994 with a history of family poverty (Aid to Families with Dependent Children at baseline (AFDC); now called Temporary Aid to Needy Families (TANF), and comparison children with a history of family poverty but no maltreatment reports. For the purpose of the present study, we only kept children who had a first neglect report (n=4,672). The advantage of this data set is greater granularity of subtypes, the ability to control for time using exact dates and sufficient sample size to allow for models of foster care entry with controls for services received. Baseline reports occurred in 1993-1994 with full follow-up of CPS reports available through September of 2009 allowing for a follow-up of approximately 14-15 years. Children were censored out of analyses for recurrence if they turned 18, if they entered foster care (out-of-home placement) or if they died. Because several reasons for each child maltreatment report can be documented in the state data used for this study, this regional longitudinal data provided the most detailed ability to look at neglect subtypes.

3.3.1 Measures

3.3.1.1 Dependent Variables.

NSCAW II. There are two dependent variables for this study: a re-report of maltreatment and entry into foster care. Although NSCAW II includes both administrative data as well as caseworker report, using one or the other tends to result in an undercount of events

compared to other studies. Re-report data are collected for NSCAW based primarily on caseworker report, recurrence is best captured as Yes or No (using either an administrative data record or caseworker report) rather than as an exact date (Smith, Biemer, Dowd & Chiflikyan, ND). Foster care placement is indicated by indicator of being in care at the time of the survey.

NCANDS. There are two dependent variables for this study: a re-report of maltreatment by type and an entry into foster care. Dates are altered for reasons of confidentiality by NCANDS to correspond to the beginning or midpoint of the month, but full dates are available, and all dates are synchronized to the report date, so lag times between dates are accurate in regard to time ordering even if they are impacted by the beginning/midpoint rounding in regard to exact days.

Regional data. There are also two dependent variables for this data, including a re-report of maltreatment by type and an entry into foster care. Later re-reports or foster care entry are coded as "1" based on the presence of exact dates from administrative records. Later foster care entry was coded as "1" and 0 otherwise based on the presence of exact removal dates from administrative records. The original study limited subsequent reports to those that occurred at least one week following a first report to reduce the likelihood that the second report was an "echo" or report of the same incident. Because the study intent was to follow children through systems over time, a child that entered care within a week of the original report but never exited was not included

3.3.1.2 Independent Variables.

NSCAW II. Data on report types are drawn from the caseworker report in order to be able to break neglect into subcategories and optimize non-missing data. Neglect subtypes included the following: "Physical Neglect" was coded as 1 if the allegations included failure to provide basic

needs and 0 otherwise. "Lack of supervision" was coded as 1 if the allegations referred to lack of supervision and 0 otherwise. "Abandonment" was coded as 1 if the allegations referred to the abandonment of children and 0 otherwise. "Educational Maltreatment" was coded as 1 if the allegation related to neglect children's educational needs and 0 otherwise. "Substance Exposure" was coded as 1 if the allegations included issues related to substance exposure and 0 otherwise. "Domestic Violence" was coded as 1 if the allegations included domestic violence and 0 otherwise. "Substance Abusing Parents" was coded as 1 if the allegations included substance abusing parents and 0 otherwise. For question 2 these subtypes were also compared to other forms of maltreatment (emotional, physical or sexual abuse).

The NCANDS independent variable of interest is neglect type but it is recoded from the original state values into categories developed by the archive. In NCANDS, domestic violence cases were categorized along with emotional maltreatment. Fetal alcohol syndrome, prenatal substance abuse exposure, abandonment, and educational neglect were all coded as neglect along with categories like lack of supervision or physical neglect. "Neglect" was coded as 1 if the allegations included neglect that was not coded as "Medical Neglect" and 0 otherwise. "Medical Neglect" was be coded as 1 if the allegations included medical neglect 0 otherwise. "Mixed Neglect" was be coded as 1 if the allegations included neglect or medical neglect and 0 otherwise. For question 2 these subtypes were compared to other forms of maltreatment (physical, sexual abuse, or emotional abuse).

Regional data. Although the sample was selected from a particular region, the child maltreatment data are categorized in accordance with statewide categories. Subtypes of child neglect were identified based on over 30 conditions, behaviors or injuries with up to five types listed per report. "Physical Neglect" was coded as 1 if the allegations included lack of food,

inappropriate clothing or shelter, lack of heat, malnutrition, poor hygiene and unsanitary living conditions that posed threat to children's health. "Neglect (Lack of Supervision)" was coded as 1 if the allegations referred to lack of supervision and 0 otherwise. "Educational neglect" was coded as 1 if the allegations referred to parents' indifferent to children's education needs and 0 otherwise. "Emotional Neglect" was coded as 1 if the allegations included any other types of neglect, including rejection through indifference or blaming, verbal abuse, threatening children. "Abandonment" was coded as 1 if the allegations referred to abandonment and 0 otherwise. "Other type of Neglect" was coded as 1 if the allegations referred to poor hygiene and unsanitary living conditions that posed a threat to children's health and 0 otherwise. "Mixed type of Neglect" was coded as 1 if the allegations included more than two types of neglect and 0 otherwise. For question 2 these subtypes were compared to physical and sexual abuse. Baseline first reports were limited to allegations of neglect, physical abuse, sexual abuse or mixed type so it is not possible to compare to emotional abuse for question 2.

3.3.1.3 Control Variables

As the studies of recurrence and foster care entry vary widely in regard to the inclusion of control variables (see Jonson-Reid et al., 2019), the present study attempted to include as many risk and demographic variables as possible to better compare to prior work. An attempt was also made to include variables that were comparable across data sets if possible.

NSCAW II. Demographic variables, as well as characteristics of the caregivers and children are control variables. Children are ages birth through 9 at baseline. Because of the 36-month follow-up period, censoring due to becoming too old for a subsequent report is not needed. NSCAW measured a wide range of risk and protective factors through survey instruments and caseworker interviews. "Caregiver Mental Health" was coded as 1 if the

caregiver had a history of mental health problems. "Caregivers' History of Child Maltreatment" was coded as 1 if the caregiver had a history of child maltreatment and 0 otherwise. "Caregivers' Parenting Skills" was coded as 1 if the caregiver had poor parenting skills and 0 otherwise. "Caregivers' Low Social Support" was coded as 1 if the caregiver had a low social support network and 0 otherwise. "Caregivers' High Stress" was coded as 1 if the caregiver experienced high stress and 0 otherwise. "Caregivers' History of Incarceration" was coded as 1 if the caregiver had a history of incarceration and 0 otherwise. "Caregivers' Disability" was coded as 1 if the caregiver identified as disabled and 0 otherwise. "Caregivers' Substance Abuse" was coded as 1 if the parent was having substance abuse problems and 0 otherwise. "Caregivers' Education" was coded as 1 if the caregiver had a high school diploma or higher and 0 otherwise. "WIC" was coded as 1 if the caregiver received WIC and 0 otherwise. "Food Stamps" was coded as 1 if the caregiver received food stamps and 0 otherwise. "TANF" was coded as a 1 if the caregiver received Temporary Aid to Needy Families and 0 otherwise. "Community Problems" was coded as 1 if the caregiver perceived the community problems and 0 otherwise. "Caregivers' Domestic violence history" was coded as 1 if the caregiver had a history of domestic violence and 0 otherwise.

NCANDS. Demographic variables, as well as characteristics of the caregivers and children, were identified as the independent and control variables. NCANDS provides for the greatest sample size in regard to racial/ethnic categories allowing for exploration of groups typically too rare in other samples such as Asian or American Indian/Alaskan Native populations. On the other hand, there is much less information on risk factors compared to NSCAW. Still the data set does allow for control of many of the key variables identified in the recurrence literature (White et al., 2015; Jonson-Reid et al., 2019). "Child emotional problems"

was coded as 1 if the child identified having emotional problems and 0 otherwise. "Child disability" was coded as 1 if the caregiver identified as disabled and 0 otherwise. "Caregiver disability" was coded as 1 if the children identified as intellectual, emotional, visually or hearing, or learning or physically disabled and 0 otherwise. "Domestic violence history" was coded as 1 if the caregiver had a history of domestic violence. An indicator of Caregiver Substance Abuse or MH issue was also coded as 1 or 0. A combined indicator for poverty was used based on reports of difficulties with finances, housing or other material needs and coded as 1 or 0. It is difficult to determine in NCANDS when a field is not indicated because a problem is absent as compared to simply not included in the data. Therefore a "1" was operationalized as an indication of a known/recognized problem – this field may contain false negatives.

Regional data. Demographic variables, as well as the characteristics of the caregivers and children, were identified as the independent and control variables as similar as possible to those available in NSCAW. "Child gender" was coded as 1 if the child is Male. "Child Black" was coded as 1 if the child is Black. Because of the demographics of the region at the time the study started, "Race/Ethnicity" was coded as 1 if the caregiver was African American and 0 otherwise. Also because of the way the data were sampled, all children are under the age of nine at the time of their first report of maltreatment. The availability of death data also allows for censoring out due to death. Because this study uses solely administrative data but from multiple sources, it has less detail than NSCAW but because child maltreatment reporting data are linked to other agency data it has much more detail than NCANDS. Child indicators of developmental delay or serious chronic health concern is available from health records and special education. Child Disability" was coded as 1 if a child had a developmental delay or serious chronic health concern is available from health records and special education and 0 otherwise. "Caregivers'

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Poor Social Support" was coded as 1 if the caregiver had social isolation, frequent relocation, or lack of community support and 0 otherwise. "Caregivers' Parenting Skills" was coded as 1 if the caregiver had poor parenting skills and 0 otherwise. "Single Parenthood" was coded as 1 if the caregiver was a single parent and 0 otherwise. "Overburden" was coded as 1 if the caregiver had a new baby in home/pregnancy or heavy continuous childcare responsibility and 0 otherwise. "Caregivers' Substance Abuse" was coded as 1 if the caregiver had alcohol-related or drug-related problems and 0 otherwise. "Caregivers' Education" was coded as 1 if the caregiver had a high school diploma or higher and 0 otherwise. "Caregivers' History of Incarceration" was coded as 1 if the caregiver had a history of criminal activity record and 0 otherwise. "Caregivers' history of foster care" (a proxy for childhood history of maltreatment) was coded 1 if the caregivers had ever been placed in foster care and 0 otherwise. "Caregivers' Mental Health" was coded as 1 if the caregiver had mental health or substance abuse history in Medicaid and the Department of Mental Health Service database. "Unemployment" was coded as 1 if the caregiver loss of employment and 0 otherwise. "TANF" was coded as a 1 if the family received Temporary Aid to Needy Families and 0 otherwise. The data set was geocoded and linked to census information at the tract level. "Community Poverty" was coded as a 1 if the family living in the areas that median income is below the average median income in Missouri in 1990 and 0 otherwise (US Department of Commerce).

3.3.2 Data Analysis Plans

3.3.3.1 Descriptive and Bivariate analyses.

Bivariate analysis, including chi-square and independent t-tests, and bivariate survival curves were used to examine the bivariate associations between individual and family characteristics, risk factors, subtypes of neglect and outcomes of interest. Because of the nature

of how the data were collected, it was difficult to control for elapsed time in NSCAW, but this was possible for both the other datasets. Typically, bivariate survival results are used for both assessing proportionality over time and inclusion of variables in the multivariate model. In this case, however, there was a desire to compare across data sets so variable selection was not entirely dependent on bivariate significance.

3.3.3.2 Logistic Regression and Competing Risk Models

NSCAW II. Logistic regression (no re-report vs. re-report, or foster care entry vs. no re-report or foster care entry) was used to assess outcome by subtype of neglect (Allison, 2012). Variables were selected according to bivariate significance. Multicollinearity issues were checked using PROC REG which although used for linear regression still produces accurate measures for Variance Inflation Factor for a dichotomous outcome. Model fit related to dispersion was assessed using the Hosmer-Lemeshow goodness of fit test because of the inclusion of continuous variables. Odds ratios are produced that reflect the magnitude of the relationship between the predictor variables and the outcome. A statistically significant value over 1 indicates an increased risk and a significant value between 0 and 1 indicates a decreased risk.

NCANDS. A competing risk model (no risk, re-report, and re-report to foster care) was used to assess the probability of neglect outcomes broken down by specific subtypes of neglect (Fine & Gray, 1999). Time at risk was based on the date of the first report and subsequent events (repeat report or foster care entry) or no further contact by the end of 2015. Censoring by age was not necessary as no one could turn 18 by the end of the follow-up period. Bivariate survival analyses were less informative as the sample size in this case is so large that it is difficult not to get a significant result. Therefore, variables were included that most closely matched those

available in the other data sets and prior research. Applying the competing risks model allowed

evaluation of the relationship of covariates to specific causes (Gichangi & Vach, 2005). It is also

possible to assess whether or not differences in the models, if apparent, are due to chance or

reflect actual need to model a given outcome separately (Allison, 2010). By comparing the

model fit values for an overall with the competing risk, we can understand whether or not a

similar set of variables could be effectively used to model both levels of the outcome. Finally,

similar in interpretation to a logistic regression, a Cox regression produces hazard ratios with

practical interpretation similar to odds ratios.

Regional longitudinal data. Similar to NCANDS a competing risk model (no risk, re-report,

and re-report to foster care) was used to assess the probability of neglect outcomes broken down

by specific subtypes of neglect (Fine & Gray, 1999). Time at risk was based on the date of the

first report and subsequent event, date of death, or turning age 18. For this dataset bivariate

survival analyses were conducted to assess significant associations as well as proportionality.

Use of a competing risks model allowed for the evaluation of the relationship of covariates to

specific causes (Gichangi & Vach, 2005). It was also possible to assess whether or not

differences in the model fit for outcomes, if apparent, are due to chance or reflect actual need to

model a given outcome separately (Allison, 2010). By comparing the model fit values for an

overall with the competing risk, we can understand whether or not a similar set of variables

could be effectively used to model both levels of the outcome. The Cox regression produces

hazard ratios with practical interpretation similar to odds ratios.

3.3 Results

3.3.1 Descriptive analysis

3.3.1.3 *Characteristics of NCANDS, NSCAW, and Regional Data.* Table 5 illustrates the

demographic and risk factors for the three datasets (NSCAW, NCANDS, and Regional).

Differences between the data sets in regard to available predictors as well as subtypes of neglect

are apparent.

Table 5: Characteristics of the NSCAW, NCANDS and Regional datasets samples.

	NSCAW II (n = 2,212)	NCANDS (n = 682,215)	Regional Data (n = 5,067)
Demographic factors			
Child's Gender (Male)	52.91 %	51.75 %	52.60 %
Caregiver's Unemployment	34.48 %	NA	56.54 %
Caregiver's Race (Black)	69.11 %	18.37 %	64.66 %
No High School Education	25.79 %	NA	33.08 %
Child wellbeing factors			
Emo/behavioral/learning problems	3.96 %	NA	NA
Disability	NA	0.64 %	3.57 %
Parenting factors			
Cognitive Impairment	4.39 %	0.78 %	1.01 %
Physical Impairment	1.89 %	1.89 %	0.49 %
Disability	6.00 %	2.68 %	1.50 %
Alcohol Abuse Problems	4.82 %	2.09 %	2.88 %
Drug Abuse Problems	20.02 %	NA	4.91 %
Substance Abuse Problems	21.92 %	2.11 %	7.60 %
Mental Health Problems	16.15 %	2.10 %	36.33 %
HX of Domestic Violence	17.67 %	NA	1.14 %
HX of Arrest	11.29 %	NA	1.54 %

	NSCAW II (n = 2,212)	NCANDS (n = 682,215)	Regional Data (n = 5,067)
HX of Child Maltreatment	17.86 %	NA	0.75 %
Poor Social Support	21.35 %	NA	8.92 %
Poor Parenting Skills	20.74 %	NA	25.56 %
High Stress	41.24 %	NA	NA
Over-burden	NA	NA	5.68 %
Economic factors			
WIC	63.63 %	NA	NA
Food stamp	47.43 %	NA	NA
TANF	14.31 %	NA	73.22 %
Housing subsidy	11.24 %	NA	NA
SSI (a disability check)	14.22 %	NA	NA
Financial Problems	NA	11.20%	NA
Problems in the community			
Problems overall	45.21 %	NA	NA
Neighborhood Poverty (Census Track)	NA	NA	73.75 %
Child Maltreatment outcomes			
Physical Neglect	(75) 7.16 %	NA	(447) 8.82 %
Neglect (lack of supervision)	(209) 19.96 %	NA	(1,695) 33.45 %
Emotional Neglect	NA	NA	(3) 0.06 %
Medical Neglect	NA	(7,099) 1.04 %	(321) 6.33 %
Abandonment	(15) 1.43 %	NA	(49) 1.13 %
Educational Neglect	(4) 0.38 %	NA	(290) 5.72 %
Substance Exposure Neglect	(99) 9.46 %	NA	NA
Domestic Violence	(75) 7.16 %	NA	NA
Substance Abuse Neglect	(77) 7.35 %	NA	NA
Mixed Neglect	(253) 24.32 %	NA	(665) 13.12 %
Neglect and Medical Neglect	NA	(9,489) 1.39 %	NA

	NSCAW II (n = 2,212)	NCANDS (n = 682,215)	Regional Data (n = 5,067)
Other Neglect	NA	NA	(273) 5.38 %
Neglect	NA	(360,928) 52.91 %	NA
Physical Abuse	(178) 17.32 %	(116,677) 17.10 %	(459) 10.55 %
Emotional Abuse	(45) 4.38 %	(24,990) 3.66 %	NA
Sexual Abuse	(17) 1.65 %	(76,713) 11.24 %	(149) 3.42 %
Multiple Types	NA	(66,995) 9.82 %	NA

NSCAW II. Gender was almost evenly distributed (coded as male or female in NSCAW) and about two-thirds of the caregivers were employed (63.98%). About 30% of caregivers were Black and 25.79% had no high school education. In terms of child wellbeing factors, about 4% of them had emotional, behavioral or learning problems. In regard to parenting factors, 6.0% of caregivers were identified as disabled and 21.92% of them had substance abuse problems. In addition, 16.15% of them had mental health problems and 17.67% of them had a history of domestic violence. About 11.29% of the caregivers had a history of arrest and 17.86% had a history of child maltreatment. In addition, 21.35% of them had poor social support and 20.74% of them had poor parenting skills. Most of all, about half of them (52.45%) had a high-stress level. In terms of economic factors, more than half of them (53.47%) received WIC and 45.33% of them received food stamps. Moreover, 14.31% of them received TANF, 11.24% of them received housing subsidies, and 14.22% of them received SSI. In terms of perceptions about the community, 45.21% of them felt there were problems in their community.

NCANDS. There were 682,215 subjects included after excluding cases (e.g. for priors). About 18.37% of the children were Black. In terms of child wellbeing factors, only 1.96% of children had a disability. In regard to parenting factors, 2.25% had substance abuse problems and

3.17% of them had mental health problems indicated. There were 2.79% parents with a

disability, and about 8.18% of them had a history of domestic violence. Socioeconomic data are

recorded differently across states making a sum of any material needs or economic status the best

measure. In terms of economic factors, about 71.37% of them had either material needs, housing,

or financial difficulties.

Regional Data. Gender was also evenly distributed, and 55.5% of the caregivers were

employed. About 64.15% of caregivers were Black and 1.33% had no high school education. In

terms of child wellbeing factors, only 3.94% of children had a disability. In regard to parenting

factors, while 2.80% of them had alcohol abuse problems, 4.91% of them had drug abuse

problems. More than one third (36.93%) of the caregivers had mental health problems. About

1.5% of caregivers had a history of domestic violence and 0.74% of them had a history of prior

substantiated child maltreatment (measured only from 1983 forward due to limitations in the

data). About 8.5% of them had low social support and 25.89% of them had poor parenting skills.

In terms of economic factors, about 71.37% of them received TANF. Bivariate analysis was also

conducted to examine the association between independent variables and recurrence/foster care

entry outcomes (see Appendix B). The table with all the independent variables and their results

in Log-Rank or Wilcoxon Chi-Square test are in the Appendix B.

Dependent variables. For the outcome variables, the re-report rates were 24.35% in

NSCAW II, 28.02% in NCANDS, and 34.87% in the regional data. In terms of foster care entry,

it was 18.99% in NSCAW II, 7.26% in NCANDS, and 21.47% in the regional data.

3.3.1.4 *Subtypes of Neglect in NCANDS, NSCAW and Regional Data.*

NSCAW II. In terms of the "pure" subtypes of neglect in NSCAW II (see Table 1), 7.16% of

all neglect cases were physical neglect (n=75) and 19.96% (n=209) of them was lack of

supervision. Only 1.43% (n=15) of the cases were pure abandonment, and only 4 of them were

educational neglect. While 9.46% (n=99) of the cases were pure substance exposure, and 7.35%

(n=77) of them were about substance abuse. In addition, only 7.16% (n=75) of the neglect cases

were due to domestic violence and 24.32% cases having more than one type of neglect report.

Due to the small sample size of the abandonment and educational cases and therefore they were

not included in our further analysis in this study.

It was common for neglect cases to co-occur with other types of maltreatment. For example,

more than two-thirds (69.12%) of physical neglect cases and more than three-fourths (76.12%)

of the substance abuse cases were also being reported for other types of maltreatment. For cases

reported for domestic violence, about two-thirds of these cases (67.75%) were reported for other

types of child maltreatment. For the purpose of the study, only cases with sole subtypes of

neglect allegations were chosen and those with more than two subtypes of neglect were

categorized in mixed-type of neglect.

NCANDS. About 52.91% of all maltreatment cases were pure physical neglect (n= 360.928),

1.04% (n=7,099) of them were reported for sole medical neglect, and 1.39% (n=9,489) had a

medical and neglect allegation (mixed neglect). About 17.10% of all maltreatment cases were

physical abuse, 11.24% of them were sexual abuse, and 3.66% had a medical and neglect

allegation (mixed neglect).

Regional dataset. About 8.82% of all maltreatment cases were solely physical neglect

(n=447) and 33.45% (n=1,695) of them was lack of supervision. Only three cases were sole

reports of emotional neglect, and 1.13% (n=49) of them was abandonment. There were 6.33%

(n=321) of the cases were medical neglect, and 5.72% (n=290) of them were about educational

neglect. About 13.12% (n=665) of the cases were reported for more than one type of neglect and 5.38% (n=273) of the cases were identified as other types of neglect.

3.3.2 Recurrence outcomes

3.3.3.3 Logistic Regression Analysis

NSCAW. The VIF and tolerance were explored before applying the logistic regression analysis, and there were no concerns with multicollinearity found. Also, a few variables were excluded in the final model that were not significant and also did not significantly influence model fit. Those included child gender, caregivers' mental health, WIC, housing subsidy, substance abuse, social support, parenting skills, history of incarceration, history of domestic violence, high stress, and community problems.

Final overall model fit for recurrence was significant (-2 LogLikelihood X^2=36.89, df=14, p=.0008). The Hosmer-Lemeshow goodness of fit test ($\alpha = 0.05$) is a measure of dispersion used when there are continuous covariates. The chi-squares were low (2.75) relative to the degrees of freedom, and the p-values were high (0.94) indicating no significant concerns. The max rescale r-square was quite low (.06) and the c statistic was .65 indicating poor predictive utility of the model.

Table 6-1 presented the key results of the logistic regression of neglect compared to other types of maltreatment for the recurrence outcomes controlling for other factors. For ease of presentation the control factors are not shown in the table. To compare the relative influence of each subtype of neglect in predicting the recurrence outcomes, we combined the results of the odds ratio and p-value from two regression models controlling for some child and caregiver factors (see Appendix C-1). The expanded table with all the control variables is in the Appendix C-1.

In terms of the recurrence outcome, lack of supervision was more likely to be re-reported compared to physical abuse. In other words, families reported for lack of supervision were 1.74 times (OR=1.74, p<.05) more likely being re-reported than cases reported for physical abuse.

Table 6-1: Recurrence Outcomes vs. No Re-report Compared to Other Subtypes of Maltreatment (Logistic Regression Model in NSCAW)

Comparison Group	Physical Neglect		Lack of Supervision		Substance Exposure		Domestic Violence		Substance Abuse		Mixed Neglect		Physical Abuse	
	B	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Physical Neglect			-0.53	0.59 (0.29, 1.21)	-0.43	0.65 (0.29, 1.46)	-0.35	0.71 (0.30, 1.68)	0.20	1.22 (0.47, 3.15)	-0.35	0.71 (0.35, 1.42)	0.03	1.03 (0.48, 2.22)
Lack of Supervision	0.53	1.69 (0.83, 3.47)			0.09	1.10 (0.59, 2.02)	0.18	1.19 (0.60, 2.35)	0.73	2.07 (0.95, 4.50)	0.18	1.19 (0.75, 1.89)	0.55	**1.74 (1.00, 3.04)**
Substance Exposure	0.43	1.54 (0.69, 3.48)	-0.09	0.91 (0.50, 1.68)			0.08	1.09 (0.50, 2.38)	0.64	1.89 (0.79, 4.50)	0.08	1.09 (0.60, 1.99)	0.46	1.59 (0.81, 3.12)
Domestic Violence	0.35	1.42 (0.60, 3.38)	-0.18	0.84 (0.43, 1.66)	-0.08	0.92 (0.42, 2.01)			0.55	1.74 (0.69, 4.34)	0.00	1.00 (0.51, 1.96)	0.38	1.46 (0.70, 3.06)
Substance Abuse	-0.20	0.82 (0.32, 2.11)	-0.73	0.48 (0.22, 1.05)	-0.64	0.53 (0.22, 1.26)	-0.55	0.58 (0.23, 1.44)			-0.55	0.58 (0.27, 1.24)	-0.17	0.84 (0.37, 1.93)
Mixed Neglect	0.35	1.42 (0.70, 2.87)	-0.18	0.84 (0.53, 1.33)	-0.08	0.92 (0.50, 1.68)	0.00	1.00 (0.51, 1.96)	0.55	1.74 (0.80, 3.74)			0.38	1.46 (0.85, 2.51)
Physical Abuse	-0.03	0.97 (0.45, 2.10)	-0.55	**0.57 (0.33, 0.99)**	-0.46	0.63 (0.32, 1.23)	-0.38	0.68 (0.33, 1.43)	0.17	1.19 (0.52, 2.72)	-0.38	0.68 (0.40, 1.18)		
Sexual Abuse	-0.10	0.91 (0.31, 2.66)	-0.62	0.54 (0.21, 1.36)	-0.53	0.59 (0.22, 1.61)	-0.45	0.64 (0.22, 1.83)	0.10	1.11 (0.36, 3.39)	-0.45	0.64 (0.25, 1.61)	-0.07	0.94 (0.36, 2.47)

Table 6-2: Foster Care Entry vs. No Re-report Outcomes Compared to Other Subtypes of Maltreatment (Logistic Regression Model in NSCAW)

Comparison Group	Physical Neglect		Lack of Supervision		Substance Exposure		Domestic Violence		Substance Abuse		Mixed Neglect		Physical Abuse	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Physical Neglect			0.23	1.26 (0.65, 2.46)	-0.15	0.86 (0.41, 1.81)	1.59	**4.89 (1.53, 15.62)**	0.23	1.26 (0.56, 2.85)	-0.59	0.55 (0.30, 1.03)	0.61	1.84 (0.90, 3.76)
Lack of Supervision	-0.23	0.80 (0.41, 1.55)			-0.38	0.68 (0.37, 1.26)	1.36	**3.89 (1.32, 11.49)**	0.00	0.99 (0.50, 2.01)	-0.82	**0.44 (0.28, 0.70)**	0.38	1.46 (0.82, 2.62)
Substance Exposure	0.15	1.16 (0.55, 2.44)	0.38	1.46 (0.79, 2.70)			1.74	**5.69 (1.83, 17.65)**	0.38	1.46 (0.68, 3.17)	-0.44	0.64 (0.37, 1.13)	0.76	**2.14 (1.10, 4.16)**
Domestic Violence	-1.59	**0.20 (0.06, 0.65)**	-1.36	**0.27 (0.09, 0.76)**	-1.74	**0.18 (0.06, 0.55)**			-1.36	**0.26 (0.08, 0.84)**	-2.18	**0.11 (0.04, 0.33)**	-0.98	0.37 (0.12, 1.15)
Substance Abuse	-0.23	0.80 (0.35, 1.80)	0.00	1.00 (0.50, 2.02)	-0.38	0.68 (0.32, 1.48)	1.36	**3.89 (1.20, 12.66)**			-0.82	**0.44 (0.23, 0.85)**	0.38	1.46 (0.69, 3.09)
Mixed Neglect	0.59	1.81 (0.97, 3.36)	0.82	**2.28 (1.44, 3.61)**	0.44	1.56 (0.89, 2.73)	2.18	**8.85 (3.08, 25.44)**	0.82	**2.28 (1.18, 4.39)**			1.20	**3.33 (1.97, 5.63)**
Physical Abuse	-0.61	0.54 (0.27, 1.11)	-0.38	0.68 (0.38, 1.23)	-0.76	**0.47 (0.24, 0.91)**	0.98	2.66 (0.87, 8.11)	-0.38	0.68 (0.32, 1.44)	-1.20	**0.30 (0.18, 0.51)**		
Sexual Abuse	-1.13	0.32 (0.10, 1.06)	-0.90	0.41 (0.13, 1.23)	-1.28	**0.28 (0.09, 0.88)**	0.46	1.58 (0.37, 6.80)	-0.90	0.41 (0.12, 1.35)	-1.72	0.18 (0.06, 0.53)	-0.52	0.60 (0.19, 1.85)

Table 6-2 illustrates the final model for foster care entry. The model fit statistic was

actually improved for this outcome (-2 LogLikelihood X^2=103.31, df=14, p<.0001). For the

foster care entry model, dispersion was again assessed by Hosmer-Lemeshow goodness of fit test

($\alpha = 0.05$), and the chi-squares value (6.36) is lower relative to critical value of the degrees of

freedom, and the p-values is high (0.61). It showed that the model provides adequate fit for the

data. The max rescaled r-square was quite modest at .15 but much higher than for the model of

recurrence. Likewise, the c statistic was .72 indicating at least average predictive though not

good predictive utility.

For the entry into foster care outcome, domestic violence-related neglect was least likely

to enter foster care, mixed neglect and substance exposure were more likely to enter foster care

compared to most of the other types of maltreatment. For example, Table 6-2 shows that cases

reported for more than two types of neglect and physical neglect were 8.85 times (OR=8.85,

p<.05) and 4.89 times (OR=4.89, p<.05) more likely to enter the foster care. On the other hand,

families reported for more than two types of neglect were 2.28 time (OR=2.28, p<.05) and 3.33

times (OR=4.89, p<.05) more likely to enter the foster care than families reported for substance

abuse and physical abuse. In addition, cases reported for substance exposure were 5.69 times

(OR=5.69, p<.05) and 2.14 times (OR=2.14, p<.05) more likely to enter the foster care then

families reported for domestic violence and physical abuse. The expanded table with all the

control variables is in the Appendix C-2.

3.3.4 Competing Risk Models

NCANDS. Because of the presence of exact dates in the multistate dataset drawn from

NCANDS, a competing hazards approach was used. Table 7 displays the key results of three

competing risk models (re-report vs. no risk, and foster care entry vs. no risk) controlling for

demographic variables. For ease of presentation, only the findings by maltreatment type are reported here and the full models can be found in Appendix D-1.

For the model of recurrence, the Wald (sandwich) X^2=892.10, df=16, p<.0001 indicated the model fit the data well overall. A measure of variance explained is not available for Cox regression. Sexual abuse and emotional abuse were less likely to be re-reported compared to neglect. For example, children who were reported for sexual abuse were 36% (HR=0.64, p<.05) and emotional abuse were 76% (HR=0.24, p<.001) less likely to be re-reported compared to children who reported for neglect. There was indication that those reported for mixed forms of neglect were less likely to recur.

For the model of foster care the Wald (sandwich) X^2=5837.62, df=16, p<.0001 indicated the model fit the data well overall with some indication that the model for foster care was more robust. Children who were originally reported for sexual abuse or emotional abuse were less likely to enter foster care than children reported for neglect. The expanded table with all the control variables is in the Appendix D-2.

Table 7: Results of Competing Risk Models in NCANDS Data *(Comparison Group, Neglect)*

	Re-report to No Risk			Foster Care Entry to No Risk		
	b	Pr.	HR	b	Pr.	HR
Medical Neglect	-0.50	0.17	0.61	-0.14	0.13	0.87
Physical Abuse	-0.05	0.74	0.95	0.05	0.35	1.05
Sexual Abuse	-0.44	**0.04**	**0.64**	-0.25	**<.0001**	**0.78**
Emotional Abuse	-1.43	**<.0001**	**0.24**	-0.46	**<.0001**	**0.63**
Other Types	-0.38	**0.03**	**0.69**	-0.04	0.56	0.96
Neglect & Mixed Neglect	-0.85	**0.01**	**0.43**	-0.18	0.47	0.84
Multiple Types	-0.33	0.07	0.72	-0.09	0.28	0.91

By applying Allison's (2010) approach to comparing model fit between an overall model and the sum of the two separate models to assess need for different models across types, we find

a chi-square difference of 3843.93 with *df*=16. This is greater than the critical value 26.296 indicated support for a separate model for each outcome.

     Regional data. While Table 8 showed results of the competing risk models (re-report vs. no risk, and foster care entry vs. no risk). The regional data provided more details in regard to the subtypes of neglect compared to NCANDS. For ease of presentation only the findings by maltreatment type are reported here and the full models can be found in Appendix E-1 and E-2. The missing value in the columns corresponds to the comparison.

     The model fit for recurrence indicate good overall fit (Wald (sandwich) X^2=260.22, *df*=24, *p*<.0001). Children who were reported for sexual abuse were more likely to be re-reported compared to medical and other neglect. For example, children who were reported for sexual abuse were 1.54 times (HR=1.54, p<.05) more likely to be re-reported compared to children who reported for medical neglect. Physical neglect, lack of supervision (LOS), sexual abuse and physical abuse cases were more likely to recur than those labeled as 'other neglect.'

Table 8: Results of Competing Risk Models in Regional Data

Comparison Group	Physical Neglect		Lack of Supervision		Educational Neglect		Medical Neglect		Other Neglect		Mixed Neglect		Physical Abuse	
	b	HR	b	HR	b	HR	b	HR	b	HR	b	HR	b	HR
Re-report to No Risk														
Physical Neg.			0.02	1.02	0.11	1.12	0.19	1.21	0.18	**1.19**	-0.02	0.98	-0.01	0.99
LOS	-0.02	0.98			0.10	1.10	0.17	1.19	0.16	**1.18**	-0.04	0.96	-0.02	0.98
Educational	-0.11	0.89	-0.10	0.91			0.08	1.08	0.07	1.07	-0.13	0.87	-0.12	0.89
Medical	-0.19	0.83	-0.17	0.84	-0.08	0.93			-0.01	0.99	-0.21	0.81	-0.19	0.82
Other	-0.18	**0.84**	-0.16	0.85	-0.07	0.94	0.01	1.01			-0.20	**0.82**	-0.18	**0.83**
Mixed	0.02	1.02	0.04	1.04	0.13	1.14	0.21	1.23	0.20	**1.22**			0.02	1.02
Physical Abu.	0.01	1.01	0.02	1.02	0.12	1.13	0.19	1.21	0.18	**1.20**	-0.02	0.99		
Sexual Abuse	0.24	1.28	0.26	1.30	0.35	1.43	0.43	**1.54**	0.42	**1.52**	0.22	1.25	0.24	1.27
Foster Care Entry to No Risk														
Physical Neg.			0.19	**1.21**	0.27	**1.31**	0.33	**1.40**	0.12	1.13	-0.09	0.91	0.05	1.05
LOS	-0.19	**0.82**			0.08	1.08	0.14	1.15	-0.07	0.93	-0.28	**0.75**	-0.15	0.86
Educational	-0.27	**0.76**	-0.08	0.93			0.06	1.06	-0.15	0.87	-0.36	**0.70**	-0.22	**0.80**
Medical	-0.33	**0.72**	-0.14	0.87	-0.06	0.94			-0.21	**0.81**	-0.42	**0.65**	-0.29	**0.75**
Other	-0.12	0.88	0.07	1.07	0.15	1.16	0.21	**1.23**			-0.21	**0.81**	-0.08	0.92
Mixed	0.09	1.09	0.28	**1.33**	0.36	**1.43**	0.42	**1.53**	0.21	**1.24**			0.14	1.15
Physical Abu.	-0.05	0.96	0.15	1.16	0.22	**1.25**	0.29	**1.33**	0.08	1.08	-0.14	0.87		
Sexual Abuse	0.19	1.21	0.38	**1.47**	0.46	**1.58**	0.52	**1.69**	0.31	**1.37**	0.10	1.11	0.24	1.27

Note: LOS=Lack of Supervision, Physical Abu=Physical Abuse

The model fit for recurrence indicate good overall fit (Wald (sandwich) X^2=130.36, df=24, p<.0001). In terms of foster care entry outcomes, while educational and medical neglect was less likely to enter foster care, physical neglect and sexual abuse were more likely to enter the foster care when they were compared to most of the types of maltreatment. For example, families reported for educational neglect was less likely to enter foster care than families reported for physical neglect (HR=0.63, p<.05). Children who were reported for sexual abuse were 1.47 times, 1.58 times, 1.69 times, and 1.37 times more likely to enter foster care than children reported for lack of supervision, educational neglect, medical neglect, and other neglect.

Again, by using the same approach (Allison, 2010) to comparing model fit between an overall model and the sum of the two separate models and we find a chi-square difference of 124.451 with df=22. The value is greater than the critical value 33.92 and it indicated support for a separate model for each outcome.

3.4 Discussion

While the present study did not find that the likelihood of re-report varied between subtypes of neglect, there were differences in predicting recurrence when comparing neglect to other types of maltreatment such as sexual or emotional abuse. In addition, the present study also found significant variation between types of maltreatment and foster care entry. Findings, however, were not entirely consistent across datasets.

For the recurrence outcome, families reported for lack of supervision showed an increased risk compared to families reported for physical abuse using the NSCAW data, but this result was not replicated in the regional data. While the follow-up periods varied, the use of survival analyses with the regional data should have accounted for time. It is also not clear if this variation was related to how subtypes were captured in the NSCAW data. As stated earlier, the

NSCAW data is primarily comprised of seven large child welfare population states. According to policy (Dolan, Smith, Casanueva, Ringeisen, & Webb, 2011), none of these states include domestic violence as a reason for reporting maltreatment. Therefore, the creation of this subtype likely reflects more of the worker interpretation than would the actual report type as coded in administrative data related to the report itself.

While some prior studies (Barth, Wildfire, & Green, 2006; Carter, 2010) found no association of maltreatment type to placement, we found significant variation between types of maltreatment and foster care entry outcomes. This is consistent with other prior studies finding that neglect had higher rates of placement (Needell et al., 2003; Rivaux et al., 2008). While one prior study found that children reported for neglect were at lower risk than children involved with emotional maltreatment (English et al., 2015), in the present study children who were originally reported for neglect had a higher risk of entering foster care than children reported for sexual abuse, emotional abuse, or mixed neglect. Also consistent with some of the scant prior work (DePanfilis & Zuravin, 1998), children who were reported for mixed types were more likely to enter foster care than children reported for other types of neglect in the NSCAW and regional datasets.

There were, however, variations in findings by data set. Using the NCANDS data, children reported for neglect were more likely to enter foster care compared to sexual and emotional abuse, but not physical abuse. Using the regional data, however, when neglect was broken into subtypes, cases reported for sexual abuse were more likely to enter foster care than children reported for lack of supervision, educational neglect, medical neglect and other but not more likely to enter care than physical neglect, mixed neglect or physical abuse cases. While the greater risk of entry associated with sexual abuse compared to lack of supervision or educational

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neglect did not seem surprising, it was somewhat surprising that the risk was greater than that for medical neglect cases. A mixed approach to measurement combining administrative data with the interview, survey or case file data for the same cases over time might help elucidate what differences are associated with coding and perception versus actual types of maltreatment.

Black and colleagues (2008) found that children involved in both domestic violence and another form of maltreatment were more likely to enter foster care than children only involved with domestic violence (OR=3.87, $p < .001$). In the present study, children who were reported for domestic violence were the least likely to enter foster care while we compared it to other subtypes of neglect. There is significant concern regarding exposure to domestic violence as a reportable form of maltreatment due to re-victimizing the victim by removing children (Jonson-Reid & Drake, 2018). On the other hand, in Canada where this is widely accepted as a form of reportable maltreatment, they also did not find an increased risk of placement (Black, Trocme, Fallon and MacLaurin, 2008). This relationship was only possible to explore in NSCAW and as aforementioned the majority of cases in NSCAW from states in which this cannot be the reason a report is accepted for initial investigation.

3.5 Strengths and Limitations

While this study adds to the scant literature on neglect subtypes there are a number of limitations. There is some precedent for exploring questions about neglect using multiple data sources (e.g., Slack et al., 2011), as there is no one dataset so far that allows for a comprehensive set of measures of maltreatment type and outcomes. While the use of multiple data sets helps to triangulate findings and offset some of the individual weaknesses, the data sets vary in regard to data collection periods and approaches. This makes it difficult to summarize findings. While ideally the national data can be improved to allow for additional predictors and subtypes, as more

datasets become available using different methods and from different regions, triangulation may become an increasingly viable means of finding relationships that are practically large enough to guide policy and practice. Second, while attempts were made to include control and independent variables that are as similar as possible across datasets, there are significant differences in measures. Model specification variation may have a significant impact on findings (Jonson-Reid et al., 2009). On the other hand, some of the findings in regard to recurrence were consistent with prior studies. Third, while having several thousand cases is on its surface a sufficient sample, sampling strategies need to consider important but rarer case characteristics, policies, and outcomes.

Despite the limitations, there are strengths worth mention. While data sets vary in regard to data collection periods, the two national administrative data sources and one regional longitudinal study provided a unique opportunity to triangulate the findings. To date, this is also the first known study to examine the trajectory of children as a function of different forms of neglect to recurrent and foster care entry outcomes. In particular, this study adds to the scant literature on foster care entry overall. Given the significant individual, system and societal costs of neglect, it is hoped that this study helps encourage more rigorous investigation of child neglect overall and the potential modifiable factors or targets of intervention that hold the most promise for intervening to prevent recurrence and out of home care.

Chapter 4: Risk and Protective Factors associated with Subtypes of Child Neglect

Child neglect is the most common form of reported maltreatment in the United States (US DHHS, 2019). Even though studies have shown that child abuse and neglect share many common risk factors (Stith et al., 2009), some research suggests that are certain factors that are specific to neglect (Slack, Holl, McDaniel, Yoo, & Bolger, 2004). Child neglect, however, is defined in different ways in different places. There are variations across policy and research in the inclusion of a range of issues such as lack of supervision, medical neglect, failure to provide for basic needs and others. For example, some states might identify emotional neglect, medical neglect, and exposure to substance abuse but do not include educational neglect in their state statutes. In addition, some states separate out "abandonment" or "medical neglect" as separate categories of maltreatment from general neglect (Child Welfare Information Gateway, 2016). McSherry (2006) argued that it may be impossible to simultaneously define child neglect both specifically enough to include all types of child neglect and broadly enough to accommodate different ages of children and culture. On the other hand, Dubowitz and his colleagues (2005) argued that imprecise definitions of neglect not only create more confusion for practitioners and policymakers but also hampers researchers' ability to make inferences about the nature and consequences of neglect. Knowing whether or not there is a need to alter services according to subtypes of child neglect requires we have a better understanding of how or if risk and protective factors vary by maltreatment type.

While studies of neglect according to subtype are still very rare, there is some indication that the patterns of risk or protective factors vary within neglect. Jonson-Reid and colleagues (2013) found that substantiation and service disposition following a report of neglect varied by

both race/ethnic category and subtype. Myers (2007) found that caregiver mental health and/or substance abuse predicted differing forms of neglect. Sedlak (1997) and Yang & Maguire-Jack (2016) found that community characteristics predicted reported subtype proportions. These studies varied, however, in how subtypes were measured, sample characteristics, and model specification. Clearly, more work is needed to understand when and for whom variation in neglecting behaviors may require different practice or policy approaches. The goal of the present analyses is to advance our understanding of the predictors of various subtypes of neglect.

4.1 Background

Very few studies have attempted to understand what may discriminate between various neglecting behaviors. Sedlak (1997) found that children living in very large urban counties are at higher risk for physical and educational neglect. Carter and Myers (2007) found that mental health and substance abuse of primary caregivers were the two strongest predictors of physical neglect. Coohey (2008) looked at four types of supervisory neglect and argued that children were more likely to be harmed if left with an inadequate caregiver. Yang & Maguire-Jack (2016) found that TANF receipt increased the possibility of physical neglect and poor health while childcare concerns, and unsafe neighborhoods predicted the lack of supervision neglect.

A few studies exist that have examined outcomes by subtype of neglect with mixed results, but these studies have explored limited numbers of subtypes in the analyses (Carter & Myers, 2007; Sedlak, 1997; Slack et al., 2004). Jonson-Reid and colleagues (2013) found that substantiation and service disposition following a report of neglect varied by both race/ethnic category and subtype (basic needs, lack of supervision, medical, abandonment, hygiene, exposure to substances, any severe neglect and neglect mixed with abuse). Kang, Bae, and Fuller (2015) found some bivariate differences in re-report by subtype of neglect (medical, lack of

supervision, failure to provide, neglect and other neglect, mixed type neglect, and neglect mixed with abuse) identified through latent class analyses, but multivariate models were only done within the type.

4.2 Conceptual Framework

One of the dilemmas in understanding subtypes of neglect is the fact that neglect occurs within a broad context of various modifiable and non-modifiable factors that may be important in understanding the phenomenon. Therefore, most etiological studies of maltreatment today rely on some form of an ecological model to organize risk and protective factors. The ecological model (Brofenbrenner, 1979) as amended by Belsky (Belsky, 1993), provided a framework viewing child maltreatment as stemming from a combination of factors at the individual, family, community, and societal levels. Therefore, the review of empirical findings regarding predictors of child neglect is organized using the ecological framework.

4.2.1 Individual/Micro Level: Characteristics of the Child

Many of the studies of child characteristics associated with neglect are quite dated and, in some cases, similar variables have not been examined in more contemporary studies making it difficult to draw strong conclusions. The one exception to this is age. Generally, young children (under age 4) have the highest rate of neglect (Jones & McCurdy, 1992; US DHHS, 2019). Two early studies found female children faced an increased risk of neglect (Jones & McCurdy, 1992; Sedlak, 1997), but the finding has not been reproduced in more recent studies. Sullivan & Knutson (Sullivan & Knutson, 2000) found children with disabilities had a higher risk of being neglected. In addition, Jaudes and Mackey-Bilaver (2008) suggested that children with behavioral and mental health problems, developmental delay, and chronic physical conditions

were more likely to be neglected by their caregivers. None of these studies focused on specific subtypes of neglect.

4.2.2 Family/Meso Level: Characteristics of the Caregiver

Similar to child level characteristics, the vast majority of studies have focused on neglect overall rather than subtypes. In most cases, studies of caregiver behavior look at associations with current neglect and often it is not clear whether both the parents risk behaviors and the neglect were simply comorbid or if the risk behaviors preceded the parenting behavior.

Some studies have found that neglectful parents exhibit less empathy toward their children (Coohey, 1998; Gaudin et al., 1993; Shahar, 2001), show poorer caretaking skills, demonstrate worse stress management, and know less about child development than non-neglectful parents (Burke et al., n.d.). Coohey (1998) also found that neglectful mothers perceived their own mothers more negatively and did not perceive their mothers as a source of emotional support, compared to non-neglectful mothers.

Other studies focus on parental characteristics related to demographics or mental health that may impact capacity. Overall, family poverty is strongly associated with maltreatment (Pelton, 2015) and even more strongly associated with child neglect (Drake & Jonson-Reid, 2014). One study found that low maternal education, being young at the age of the child's birth and poverty predicted self-report of neglect (Brown, Cohen, Johnson, & Salzinger, 1998). On the other hand, it is also difficult to disentangle whether child neglect is poverty or parenting driven (Slack et al., 2004). Connel-Carrick and Scannapieco (2006) found that income itself is not a predictor of child neglect, but low income is associated with poor parenting skills. Less work has explored material needs and neglect subtypes. Slack and colleagues (2004) found that perceived

material hardship, unemployment, low parental warmth, use of physical discipline, and allowing children to watch more TV were associated with physical neglect reports.

There is some research indicating variations in risk related to parental gender or family structure. Clement, Berube, and Chamberland (2016) found gender differences in the influence of contextual factors. For mothers, substance abuse, and maternal depression were associated with neglect. For fathers, neglect was highly associated with difficult living conditions and stress from work and family. Barnhart, & Maguire-Jack (2016) found that parenting stress was associated with neglect while maternal depression mediated the relationship between social cohesion and neglect for single, non-cohabitating mothers. Among neglecting families, Carter and Myers (2007) found that mental health and substance abuse of the primary caregivers were the two strongest predictors of physical neglect.

4.2.3 Family/Meso Level: Characteristics of the Family Structure and Family Support

Family structure, conflict, and a family's social support network have also been found to be associated with child neglect, but the variation in measurement and the lack of repeated of variables in multiple studies make it difficult to draw conclusions. The overwhelming predictor is single parent household (Maloney, Jiang, Putnam-Hornstein, Dalton, & Vaithianathan, 2017). Based on the NIS-4 (Sedlak et al., 2010), children living with a single parent who had a cohabiting partner in the household had about eight times the rate of being neglected, compared to children living with married biological parents. Schnitzer and Ewigman (2008) found children living with adults not related to them had a higher risk of being neglected. Lee (2013) found that positive father involvement with the child predicted less risk for child neglect. No studies could be found specific to subtype.

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4.2.4 Community Meso Level: Social Economic Status and Poverty

Research suggests that living within under-resourced neighborhoods confers additional risk of maltreatment – particularly neglect (Carter & Myers, 2007; Coulton et al., 2007; Drake & Pandey, 1996). Jonson-Reid and her colleagues (2013b) found that both the macro neighborhood context as well as family poverty impacted case flow following a report of child neglect. Sedlak (1997) argued that children living in very large urban counties are at higher risk for physical and educational neglect. It seems likely, however, that this broad community level variable is a proxy for more direct influences of poverty in an urban setting. In one study, researchers found that neighborhood social cohesion may be protective of neglecting behaviors like providing for basic needs (Maguire-Jack & Showalter, 2016). In a later study that did not look at subtypes, Maguire-Jack and Font (2017) found that neighborhood disadvantage was predictive of maltreatment among poor families whereas social aspects of neighborhoods were protective only for higher income families.

The macro context also includes various policies and institutional supports. As aforementioned, there is significant variation across states in how policy defines neglect in relation to what is reportable maltreatment in that state (Child Welfare Information Gateway, 2016). Very little work has been done to explain how the prevalence and ongoing maltreatment trajectories vary by the policy context (Jonson-Reid et al., 2017; Jonson-Reid et al., In Press; Klevens, Barnett, Florence, & Moore, 2015).

4.2.5 Methodological Issues in Addressing Risk Factors for Subtypes

There are a variety of methodological issues that also impact our understanding of the subtypes of child neglect. Not only do variations exist in state policy, but they exist among various data sources as well. For example, the National Child Abuse and Neglect Data System

(US DHHS, 2019) recodes data provided by states into medical neglect or other neglect only.

The National Incidence Study (NIS-4), is a probability sample of mandated reporters that

includes physical neglect, educational neglect, and emotional neglect (Sedlak et al., 2010). The

NSCAW II provided more details about the definition of child neglect by breaking it into

physical neglect, lack of supervision, abandonment, educational neglect, domestic violence,

substance exposure, and substance abuse related neglect (Dolan et al., 2011). Studies using

specific state-level data have captured a wider variety of types including lack of supervision,

failure to provide basic needs, educational neglect, medical neglect, abandonment or mixed type

(Jonson-Reid et al., 2013b; Kang et al., 2015). Thus, depending on the data source used, there are

limits to how subtypes may be explored.

While intervening to address risk factors for child maltreatment is a common target for

prevention as well as child welfare intervention, research on neglect lags behind other forms of

maltreatment. Even less work is available to inform decisions about the need for specific

preventive interventions for subtypes. Some research suggests, for example, that many families

in contact with child welfare have multiple co-occurring problems (Millett et al., 2016; Pölkki,

Vornanen, & Colliander, 2016; Prinz, 2016). Given this, it is unclear whether a more commonly

used variable-oriented approach to analyses may be more or less effective in helping us

understand how to target services. Person-oriented approaches assume a more holistic view and

can identify either individual trajectories or hidden groups of persons that may be useful in

regard to looking at whether or not there are particular patterns that may be useful to guide

intervention (Bámaca-Colbert & Gayles, 2010; Bergman & Trost, 2006). On the other hand,

variable based approaches can allow for building models based on particular theoretical

constructs and/or individual risks that may be easier to link directly to a given intervention

approach. Some studies have found that meaningful classifications of variables might serve as a better predictor than a given variable alone in terms of the child outcomes (Putnam-Hornstein & Needell, 2011; Roesch, Villodas, & Villodas, 2010). The use of class or individual trajectory approaches in child maltreatment research, however, is still rare (e.g., Chng, Li, Chu, Ong, & Lim, 2018; Eastman, Mitchell, & Putnam-Hornstein, 2016). It is not clear if one or the other approach might be useful in understanding the subpopulations of children and families reported for neglect.

4.3 Research Questions

The present study helps to build knowledge about predictors of subtypes of neglect while addressing some of the methodological challenges in this area. Two different data sets are used with large enough samples to attempt multivariate approaches to understanding differences between subtypes. Both studies focus on children and families that reported to CPS, one using a national probabilistic sample (National Surveys of Child and Adolescent Well-being (NSCAW)) and the other a regional longitudinal study relying on integrated administrative data sources. Second, the present study compares a multivariate variable-based approach (multinomial logistic regression) with a person-based approach (latent class analysis) to look at the relative utility for identifying meaningful differences between subtypes.

The research questions were as follows:

1. Are there unique risk/protective factors related to subtypes of neglect among children reported for the first time to CPS? Studies examining children with multiple reports over time find that children are increasingly likely to experience more than one type of maltreatment (Jonson-Reid, Drake, & Zhou, 2013; Mennen, Kim, Sang, & Trickett, 2010; Trickett, Mennen, Kim, & Sang, 2009).

2.   If there are differences, are these best captured in a person-oriented or variable-oriented approach? Although the use of two data sources for triangulation is a strength, analyses approaches are compared within a data source to assure that model utility was not unduly influenced by the type of data available.

Because of the dearth of research on subtypes of neglect, no hypotheses are offered.

4.4   Methodology

Although the data sources used for the present analyses are longitudinal, the research questions focus on the relationship of baseline characteristics to the subtype of neglect reported. Thus, the present study is cross-sectional in nature.

4.4.1   Data and Sample

Data for the present study is drawn from two sources.

4.4.1.1 The first data source is the National Surveys of Child and Adolescent Well-Being, NSCAW-II (NSCAW). NSCAW is a national probability sample of children under the age of 15 at baseline reported to and investigated by Child Protective Services in 2006. NSCAW sampling emphasizes seven large child welfare population states and then adds an additional stratum that includes small samples from a number of other states (Dolan et al., 2011). Although NSCAW does not sample rural areas, reports from urban areas tend to drive the prevalence trends and therefore maybe more policy relevant. Data on report types are drawn from the caseworker report based on a combination of allegation type and the most serious type of maltreatment categories to optimize non-missing data. In other words, if the allegation type was missing, the most severe type was used instead. Neglect subtypes included physical neglect, lack of supervision, educational neglect, substance exposure, abandonment or mixed type allegations. For the purpose of this study, NSCAW II data (n=5,872) were limited to children without prior

maltreatment reports (n=2,648) in order to compare risk factors for different forms of neglect at the time of the first report which mimics the sampling design for the regional dataset. The baseline data for NSCAW II were collected about 10 years after the regional data, however, prior studies (Kim et al., under review) indicate relatively few differences in case characteristics between an earlier NSCAW I study which has a sampling frame closer to the regional data and NSCAW II. Because of some improvements in the sampling and linkage to CPS records for NSCAW II, it was deemed preferable to use the more recent data.

4.4.1.2 Regional Data. The second data source includes linked administrative data from a large study of low income and/or maltreated children from the St. Louis metropolitan region (e.g., Jonson-Reid, Drake & Kohl, 2009). Data were provided by multiple agencies including birth and death records, child protective services, state department of mental health records, Medicaid records, emergency room, income maintenance programs, shelters, juvenile court petitions, highway patrol arrest data, and state level corrections data. This sample includes children age 11 or younger at baseline with first reports for maltreatment in 1993-1994 with or without a history of family poverty (Aid to Families with Dependent Children at baseline (AFDC). The present study excluded the poverty only sample due to a focus on understanding the maltreatment type (n=7,303). When the sample was limited to the perpetrator as parents to mimic the NSCAW sample, the sample size dropped from 7,303 to 5,787. Although limited to a single region, these data provide more detailed ability to look at maltreatment subtypes including medical neglect, lack of supervision, physical neglect, educational neglect, and abandonment that are more consistent with variations in state policy and some of the prior subtype work (Jonson-Reid et al., 2013; Kang et al., 2015).

4.4.2 Measurement

4.4.2.1 Subtypes of Neglect

Across both datasets, the subtypes of neglect are the dependent variables of interest for this analysis. Both data sets provided information on subtypes of neglect, but the types available for analysis vary. For example, while NSCAW data provided more information regarding cases reported for substance abuse or prenatal substance exposure because substance abuse related concerns alone are not screened-in as meeting the definition of child maltreatment in Missouri. In addition, domestic violence cases were only available in NSCAW data, whereas medical neglect was only identified in the regional data.

NSCAW II. Subtypes of child neglect were identified independently in this study or were labeled as mixed. "Physical Neglect (failure to provide)" was coded as 1 if the allegations included lack of basic needs and 0 otherwise. "Lack of supervision" was coded as 1 if the allegations referred to lack of supervision and 0 otherwise. "Abandonment" was coded as 1 if the allegations referred to the abandonment of children and 0 otherwise. "Educational Neglect" was coded as 1 if the allegation related to neglect children's educational needs and 0 otherwise. "Substance Exposure" was coded as 1 if the allegations included issues related to substance exposure and 0 otherwise. "Domestic Violence" was coded as 1 if the allegations included domestic violence and 0 otherwise. "Substance Abusing Parents" was coded as 1 if the allegations included substance abusing parents and 0 otherwise. "Mixed Neglect" was coded as 1 if the allegations included more than two subtypes of neglect and 0 otherwise.

For the LCA, all subtypes of neglect were included along with all the risk factors to examine whether individuals with particular risk factors were more likely to be clustered along with particular subtypes of neglect. For the multinomial regression analysis, each subtype of neglect

was tested as a dependent variable compared to others. Cases reported for "Abandonment" and "Educational Neglect" alone had to be excluded from the multinomial regression analysis due to the small subsample size.

Regional longitudinal study. For the purpose of this study, all cases reported for child neglect were identified independently for subtypes of neglect in this study. "Physical Neglect" was coded as 1 if the allegations included lack of food, inappropriate clothing or shelter, lack of heat, and malnutrition and 0 otherwise. "Lack of Supervision" was coded as 1 if the allegations referred to lack of supervision and 0 otherwise. "Medical neglect" was coded as 1 if the allegations referred to children's untreated illness/injury, severe untreated dental problems, or inappropriately given drugs and 0 otherwise. "Educational neglect" was coded as 1 if the allegations referred to parents' indifferent to children's education needs and 0 otherwise. "Emotional Neglect" was coded as 1 if the allegations included rejection through indifference or blaming, verbal abuse, or threatening children and 0 otherwise. "Abandonment" was coded as 1 if the allegations referred to abandonment and 0 otherwise. "Other types of Neglect" was coded as 1 if the allegations referred to poor hygiene and unsanitary living conditions that posed a threat to children's health and 0 otherwise. "Mixed type of Neglect" was coded as 1 if the allegations included more than two types of neglect and 0 otherwise.

For the LCA, all subtypes of neglect were included with the risk factors to identify meaningful groups. Cases reported for "Abandonment" or "Emotional Neglect" only were excluded from the multinomial regression analysis due to small subsample size.

4.4.2.2 Demographics and Risk Indicators

While NSCAW II does have a number of racial/ethnic group categories, caregivers categorized as Black or White were the most common and due to the regional demographics in

the community, the regional data set is limited to these two groups. To enhance comparability race/ethnicity was dichotomized as Black v other for both. "Child's Gender" was coded as 1 if the child was male (Clément et al., 2016). "Child's Age" was coded as 1 if the child was 5 years or younger. Risk indicators were based on those mentioned in the literature review and attention to an ecological framework. NSCAW collects data on a wide range of risk and protective factors provided through survey instruments and interviews with children, caregivers, and caseworkers at baseline. The regional data contained information on similar constructs but taken from a variety of agency record sources: birth records, caregiver criminal records, caregiver health hospitalization Medicaid records, baseline neighborhood census tract, as well as marital and employment status variables. To the extent possible, similar indicators were used from both datasets.

NSCAW II. In addition to demographic characteristics, the following variables were included in analyses from NSCAW: Child well-being characteristics included: Child's behavioral and mental health problems" was coded as 1 if the child had a history of behavioral or mental health problems and 0 otherwise (Jaudes & Mackey-Bilaver, 2008). "Caregiver's No High School Education" was coded as 1 if the caregiver had not finished high school at baseline and 0 otherwise (Brown et al., 1998). "Caregiver employment status" was coded as 1 for unemployed or 0 other. Caregiver's wellbeing Factors included: "Caregivers' Mental Health" was coded as 1 if the caregiver had a self-reported history of mental health problems (V. Carter & Myers, 2007). "Caregiver's Parenting Skills" was coded as 1 if the caregiver had poor parenting skills and 0 otherwise (Burke et al., 1998, n.d.). "Caregivers' History of Domestic Violence" was coded as 1 if the caregiver had a history of domestic violence and 0 otherwise (Hamby, Finkelhor, Turner & Ormrod, 2010). "Caregivers' substance abuse problems" was

coded as 1 if the caregiver had alcohol or drug-related problems and 0 otherwise (V. Carter &
Myers, 2007). "Caregivers' History of Child Maltreatment" was coded as 1 if the caregiver had a
history of child maltreatment and 0 otherwise. "Caregivers' History of Arrest" was coded as 1 if
the caregiver had a history of arrest and 0 otherwise (Fuller & Wells, 2003; Kim & Drake, 2017;
Sledjeski et al., 2008). "Caregivers' Poor Social Support" was coded as 1 if the caregiver had a
poor social support network and 0 otherwise (Dorsey, Mustillo, Farmer, & Elbogen, 2008;
Sledjeski, Dierker, Brigham, & Breslin, 2008). "Caregiver's High Stress" was coded as 1 if the
caregiver experienced high stress and 0 otherwise (Burke, Chandy, Dannerbeck, Welfare, &
1998, n.d.). "Caregivers' Disability" was coded as 1 if the caregiver identified as disabled and 0
otherwise. Studies (Drake & Jonson-Reid, 2014; Pelton, 2015) have found that poverty the most
predictor to child neglect. Three variables were chosen as a proxy for poverty. "WIC" was coded
as 1 if the caregiver received Women, Infants, and Children food services or 0 otherwise. "Food
Stamps" was coded as 1 if the caregiver received food stamps and 0 otherwise. "TANF" was
coded as a 1 if the caregiver received Temporary Aid to Needy Families and 0 otherwise.
Housing assistance was coded as 1 if noted as received and 0 otherwise. SSI was coded as 1 if a
family reported receiving Supplemental Security Income and 0 otherwise. Given the importance
of an ecological perspective in maltreatment research, an attempt to control for community
context was made. "Community Problems" was coded as 1 if the caregiver reported community
problems related to crime, lower resources, etc. and 0 otherwise (Yang & Maguire-Jack, 2016).

Regional dataset. Unlike NSCAW II, this data set lacks detailed psychological measures and
perceptions of neighborhoods because these types of variables are rarely recorded in
administrative data. On the other hand, in some cases more detailed official records may be more
reliable than self-reported information. The following variables were explored from the regional

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data: "Caregiver's No High School Education" was coded as 1 if the caregiver had not finished

high school at baseline and 0 otherwise (Brown et al., 1998). "Caregiver employment status" was

coded as 1 for unemployed or 0 other. Detailed self-reports of the type of child emotional or

mental health problems were not available, however, there were two indicators of disability

and/or behavioral health problems, Child "Low Birthweight" will be coded as 1 if a child had

birth record identifying low birthweight. Child Disability" was coded as 1 if a child had a

developmental delay/learning disability, or serious chronic health diagnosis from health records

or special education and 0 otherwise. "Caregivers' Mental Health" was coded as 1 if the

caregiver had mental health or substance abuse diagnosis in Medicaid or the Department of

Mental Health Service database. "Caregivers' Substance Abuse" was coded as 1 if the caregiver

had alcohol-related or drug-related problems based on caseworker report or arrest records and 0

otherwise. Several factors were available only if recorded by caseworkers in the CPS data

"Caregivers' Poor social Support" was coded as 1 if the caregiver had social isolation, frequent

relocation, or lack of community support and 0 otherwise. "Caregivers' Poor Parenting Skills"

was coded as 1 if the caregiver had poor parenting skills and 0 otherwise. "Single Parenthood"

was coded as 1 if the caregiver was a single parent and 0 otherwise. "Overburden" was coded as

1 if the caregiver had a new baby in home/pregnancy or heavy continuous childcare

responsibility and 0 otherwise. "Caregivers' History of Child Maltreatment" was coded as 1 if

the caregiver had a history of foster care during their youth and 0 otherwise based on a link to

early foster care records. "Caregivers' History of Arrest" was coded as 1 if the caregiver had a

history of arrest and 0 otherwise (Fuller & Wells, 2003; Kim & Drake, 2017; Sledjeski et al.,

2008). "TANF" was coded as a 1 if the family received Temporary Aid to Needy Families and 0

otherwise. There was no measure of community problems as perceived by the caregiver but

census data were available at the census tract level and used to operationalize the neighborhood in regard to poverty (Jonson-Reid, Drake, & Zhou, 2013). "Community Poverty" was coded as a 1 if the family was living in a tract with a median income below the average median income in Missouri in 1990 and 0 otherwise (Batra & Slottje, 1993).

4.4.3 Data analysis

4.4.3.1 Descriptive and Bivariate analyses.

Bivariate analyses, including chi-square or independent *t*-tests, were used to examine the bivariate associations between individual and family characteristics, risk factors and their relation to subtypes of neglect for both NSCAW and regional datasets. Significant or near significant results were used to select variables for inclusion in the multivariate models.

4.4.3.2 Multinomial Regression Analysis.

SAS 9.4 was used for data management and analysis (SAS Institute, Cary, NC) and PROC Logistic with multiple categories for the dependent variable (Allison, 2012) was applied to compare the risk factors between subtypes of neglect. Multinomial regression analysis is a classification method that generalizes logistic regression to multiclass outcomes. Similar to multivariate regression, multi-collinearity is also a concern in logistic regression as well as sufficient predicted cell counts. Issues of multicollinearity were assess using PROC REG. Some variables were too highly correlated to enter into a single model (for example WIC and TANF in NSCAW). In this case, a combination of results from the bivariate statistics and reasonable cell count were used to choose between options. Odds ratios are output for a given level of the dependent variable (a subtype of neglect) compared to the other types. A significant odds ratio over 1 suggests an increased likelihood of that characteristic associated with a given type compared to others. A significant odds ratio between 0 and 1 indicate a lower likelihood.

4.4.3.3 Latent class analysis.

PROC LCA was used to attempt to see if children could be classified by subtype and are appropriate for use with categorical data (Lanza, Collins, Lemmon, & Schafer, 2007). Some have argued that classification or person-based approaches like LCA may be more useful in identifying target groups for prevention because they allow for understanding how combinations of risk and protective factors identify a particular group. In this case, the subtypes are entered as descriptive variables that may help define a group rather than a dependent variable as in the case of the regression approach. Item response probabilities are generated for a variable in regard to a given class to indicate whether that characteristic is more or less likely to be part of that class. There are multiple methods for determining the final class solution. The likelihood-ratio G^2 (Lanza et al., 2007) and Bayesian Information Criterion (BIC) (Nylund, Asparouhov, & Muthén, 2007) statistics are frequently used to select the best model. The number of appropriate numbers of the latent class is determined by a substantial drop in the likelihood-ratio G^2 and the degrees of freedom when a class was added into the model (Lanza et al., 2007). Moreover, a smaller BIC value usually indicates a better model (Lanza et al., 2007). On the other hand, entropy (or uncertainty) is also a concern. Entropy was reported to show the uncertainty in classification. There is higher certainty in classification when the value is closer to 1 (Wang & Wang, 2012). Finally, there is a practical need to be interpretable. In some cases, more or fewer classes may be indicated by numeric assessment, but not be the best in regard to discussing practical differences between the classes.

4.5   Results

4.5.1   Descriptive

4.5.1.1 Demographic and risk factors

Table 9 illustrates the frequencies for demographic and risk factors present for cases in both the NSCAW and Regional datasets. In both datasets, gender was almost evenly distributed. The unemployment proportion was high for both samples, but highest in the regional data (33.1% v 55.5%). In NSCAW 30% of the sample was identified as Black compared to about 64% identified as Black in regional data. The NSCAW had an average of 2.34 children (SD = 1.33) but because the regional study selected one child per family there was no accurate sibling count available. Caregivers were less likely to have graduated high school in the regional data compared to NSCAW (33.1% v 24.4% respectively). Relatively few children had noted disability or behavioral health concerns though this was more likely to be noted in the NSCAW data. The caregivers in the NSCAW data were much more likely to be identified as having substance abuse problems but substance abuse was reportable as a form of neglect in NSCAW and self-reported problems are different than reliance on diagnoses as was the case for the regional data. A similar caution is warranted in comparing the proportion with domestic violence or prior history of maltreatment noted. Across samples, the majority of caregivers reported receiving some form of income or material needs support although there was more detail available in regard to the type of support in NSCAW. In terms of perceptions about the community, 44.84% of NSCAW caregivers reported problems in the community. In the regional data, the majority of caregivers (73.75%) lived in lower resource and SES census tracts.

4.5.1.2 Subtypes of neglect

Table 1 illustrates the percentage of subtypes of neglect identified in both datasets. The most common singular form of neglect was lack of supervision in both data sets, but it was much higher in the regional data (27.51% v 45.2%). As aforementioned, in Missouri, substance abuse as well as domestic violence are not reportable as maltreatment and therefore are not present as subtypes of neglect in the table. It is not clear why medical neglect was not reported in NSCAW although it may be an artifact of the use of caseworker classification of the type of report. As shown some subtypes were simply too rare to include in bivariate analyses (e.g., emotional neglect, abandonment).

Table 9: Characteristics of the NSCAW and Regional datasets samples.

	NSCAW II without prior reports (n = 2,654)	Regional Data (n = 5,067)
Demographic factors		
Child's Gender (Male)	51.21 %	52.60 %
Caregiver's Unemployment	33.12 %	56.54 %
Caregiver's Race (Black)	29.85 %	64.66 %
No High School Education	24.42 %	33.08 %
Child wellbeing factors		
Emo/beh/learn/sub	3.96 %	NA
Behavioral problems	10.29 %	NA
Disability	NA	3.94 %
Age (5 years or younger)	68.65 %	46.46 %
Parenting factors		
Cognitive Impairment	3.81 %	1.01 %
Physical Impairment	1.96 %	0.49 %
Disability	5.54 %	1.50 %
Alcohol Abuse Problems	4.48 %	2.88 %
Drug Abuse Problems	16.54 %	4.91 %
Substance Abuse Problems	19.58 %	7.53 %

	NSCAW II without prior reports (n = 2,654)	Regional Data (n = 5,067)
Mental Health Problems	15.76 %	36.93 %
HX of Domestic Violence	17.11 %	1.50 %
HX of Arrest	10.06 %	11.35 %
HX of Child Maltreatment	15.60 %	0.74 %
# of children	2.34 (SD=1.33)	NA
Poor Social Support	19.93 %	8.92 %
Poor Parenting Skills	19.14 %	25.56 %
High Stress	38.81 %	NA
Over-burden	NA	5.68 %
Economic factors		
WIC	53.47 %	NA
Food stamp	45.33 %	NA
TANF	13.23 %	71.37 %
Housing subsidy	10.85 %	NA
SSI (a disability check)	15.67 %	NA
Problems in the community		
Problems overall	44.84 %	NA
Neighborhood Poverty (Census Track)	NA	73.75 %
Child neglect outcomes		
Physical Neglect	(82) 8.95 %	(447) 11.94 %
Neglect (lack of supervision)	(252) 27.51 %	(1,695) 45.28 %
Emotional Neglect	NA	(3) 0.08 %
Medical Neglect	NA	(321) 8.58 %
Abandonment	(19) 2.07 %	(49) 1.31 %
Educational Neglect	(10) 1.09 %	(290) 7.75 %
Substance Exposure Neglect	(101) 11.03 %	NA
Domestic Violence	(88) 9.61 %	NA

	NSCAW II without prior reports (n = 2,654)	Regional Data (n = 5,067)
Substance Abuse Neglect	(87) 9.50 %	NA
Mixed Neglect	(277) 30.24 %	(665) 17.77 %
Other Neglect	NA	(273) 7.29 %

4.5.2   Bivariate Analysis

4.5.2.1 Differences in risk and demographic factors by subtype of neglect in NSCAW II

Table 10-1 illustrates results of bivariate analyses for all variables that were significantly different between at least two subtypes using the NSCAW data. Boldface indicates significance and the superscript numbers correspond to the subtype columns being compared. So, for example, the proportion of males among "Lack of Supervision" (2) cases was significantly higher than those among the "Mixed Neglect" (6) cases as noted by a superscript of six. The proportion of caregivers receiving WIC was higher for children reported for substance exposure than any other subtype. Cases reported for multiple forms of neglect had higher rates of stress than any other subtype and cases reported for physical neglect were more likely to have caregivers with a disability than any other subtype but substance abuse related neglect. Some risk or demographic factors tested are not shown due to lack of bivariate associations, including high school education, food stamps, TANF, housing subsidy, SSI recipients, and child's learning problems.

Table 10-1: Bivariate Analysis of Risk Factors between Neglect Subtypes in NSCAW

	Physical Neglect[1] (N=82)	Lack of Supervision[2] (N=252)	Substance Exposure[3] (N=101)	Domestic Violence[4] (N=88)	Substance Abuse[5] (N=87)	Mixed Neglect[6] (N=277)
Demographic factors						
Child Gender	58.54 %	**55.16 %[6]**	53.47 %	47.73 %	44.83 %	**42.96 %[2]**
Unemployment	**62.20 %[4]**	71.03 %	**63.37 %[4]**	**78.41 %[1, 3, 6]**	68.97 %	**64.26 %[4]**
Caregiver's race	22.83 %	30.95 %	**26.63 %[6]**	38.64 %	24.14 %	**24.55 %[3]**
WIC	**62.20 %[2, 3, 4]**	**48.02 %[1, 3, 5, 6]**	**84.16 %[1, 2, 4, 5, 6]**	**46.59 %[1, 3, 5, 6]**	**66.67 %[2, 3, 4]**	**64.62 %[2, 3, 4]**
Child's age	**78.05 %[3]**	**70.63 %[3, 6]**	**98.01 %[1, 2, 4, 5, 6]**	**71.59 %[3, 6]**	**79.31 %[3]**	**83.03 %[2, 3, 4]**
Child wellbeing factors						
Behavioral Prob.	**20.73 %[2, 3, 4, 5]**	**9.13 %[1]**	**9.90 %[1]**	**5.68 %[1]**	**4.60 %[1, 6]**	**13.00 %[5]**
Parenting factors						
Disability	**19.51 %[2, 3, 4, 6]**	**5.95 %[1]**	**6.93 %[1]**	**2.27 %[1, 5]**	**9.20 %[4]**	**7.22 %[1]**
Substance Abuse	**13.41 %[3, 5, 6]**	**18.65 %[3, 4, 5, 6]**	**80.20 %[1, 2, 4, 5, 6]**	**9.09 %[2, 5, 6]**	**43.68 %[1, 2, 3, 4]**	**52.35 %[1, 2, 3, 4]**
Mental Health	**31.71 %[2, 4, 5]**	**14.68 %[1, 6]**	**21.78 %[4]**	**10.23 %[1, 3]**	**13.79 %[1, 6]**	**27.44 %[2, 5]**
Hx of DomVio	**23.17 %[4]**	**14.29 %[4, 6]**	**12.87 %[4, 6]**	**53.41 %[1, 2, 3, 5, 6]**	**14.94 %[4, 6]**	**33.21 %[2, 3, 4, 5]**
Hx of Arrest	**9.76 %[6]**	**13.89 %[4, 6]**	**19.80 %[4]**	**9.09 %[3, 5, 6]**	**19.54 %[4]**	**20.58 %[1, 2, 4]**
Hx of CAN	**30.49 %[2, 3]**	**18.65 %[1, 6]**	**15.84 %[1, 6]**	21.59 %	21.84 %	**26.35 %[2, 3]**
Poor Support	**40.24 %[2, 4, 5]**	**21.03 %[1, 3, 6]**	**37.62 %[2]**	**25.00 %[1]**	**13.79 %[1, 6]**	**35.38 %[2, 5]**
Poor Parenting	**34.15 %[3, 4, 5]**	**28.57 %[3, 4, 5]**	**16.83 %[1, 2, 6]**	**6.82 %[1, 2, 6]**	**16.09 %[1, 2, 6]**	**34.30 %[3, 4, 5]**
High Stress	**57.32 %[2, 6]**	**43.65 %[1, 6]**	**54.46 %[6]**	**53.41 %[6]**	**51.72 %[6]**	**69.31 %[1, 2, 3, 4, 5]**
Problems in the community						
Com. Problems	**51.22 %[4, 5]**	44.84 %	**54.46 %[4, 5]**	**39.11 %[1, 3]**	**22.99 %[1, 3]**	44.04 %

*Note 1: Com. Problems=Community Problems High school education, food stamp, TANF, housing subsidy, SSI, Child's emotional, behavioral and learning problems were excluded since there were no bivariate association across subtypes of neglect; *Note 2: Number in superscript showed that the risk factor was significant between each subtype and the comparison group in bivariate analysis (chi-square); *Note 3: Gender=1, Male; Race=1, Black, Child's age (< 6 years old); *Note 4: Significance, p<0.05

4.5.2.2 Differences in risk and demographic factors by subtype of neglect in the Regional data

Table 10-2 is structured similarly to Table 10-1 but provides the bivariate results for risk

and demographic factors and subtypes of neglect in the Regional Dataset. Caregivers in the

regional data were more likely to be unemployed if they were among the physical neglect and

mixed neglect groups which corresponds to similar differences in TANF receipt as well as the

proportion of Black families by the group. A similar relationship was seen for mixed neglect

cases in the NSCAW sample but not for physical neglect (refer back to Table 10-1). Caseworkers

were more likely to note poor parenting skills among families reported for educational neglect.

This was significantly lower for all other subtypes except medical neglect. Cases in the mixed

neglect category were more likely to be single parents and have been in foster care as a youth

than any other category. On the other hand, caregivers' mental health problems, history of

domestic violence, history of arrest, and child or caregiver disability were not significant

between families reported for different types of neglect.

Table 10-2: Bivariate Analysis of Risk Factors between Neglect Subtypes in Regional Data

	Physical Neglect[1] (N=523)	Lack of Supervision[2] (N=1,890)	Medical Neglect[3] (N=357)	Educational Neglect[4] (N=445)	Other Neglect[5] (N=806)	Mixed Neglect[6] (N=301)
Demographic factors						
Child's Gender	51.82 %[3]	52.12 %	56.86 %[1, 5]	51.24 %	50.41 %[3]	54.49 %
Unemployment	73.23 %[2, 3, 4, 5]	51.96 %[4, 5, 6]	59.66 %[1, 6]	65.84 %[1, 2, 5, 6]	57.61 %[1, 2, 4, 6]	73.09 %[2, 3, 4, 5]
Caregiver's race	81.57 %[2, 3, 4, 5, 6]	63.36 %[3, 4, 5, 6]	72.32 %[1, 2, 5]	73.80 %[1, 2, 3, 5]	56.36 %[1, 2, 3, 4, 6]	75.67 %[1, 2, 5]
CG Education	41.49 %[2]	28.89 %[1, 3, 4, 5, 6]	38.66 %[2]	35.73 %[2, 6]	39.08 %[2]	44.52 %[4]
Child's Age	40.34 %[3,4]	44.13 %[3, 4, 5, 6]	33.33 %[1,2,4]	92.81 %[1, 2, 3, 5, 6]	38.09 %[2, 4]	36.54%[2,4]
Economic factors						
TANF	86.04 %[2, 3, 4, 5]	70.26 %[1, 3, 4, 5, 6]	75.91 %[1 ,2]	77.08 %[1, 2]	76.77 %[1, 2]	81.40 %[2]
Caregivers' wellbeing factors						
Single Parenthood	43.98 %[2, 6]	39.15 %[1, 6]	42.58 %[6]	42.92 %	40.35 %[6]	53.49 %[1, 2, 3, 5]
CG Sub. Abu.	12.05 %[2, 3, 4, 5]	8.47 %[3, 4, 6]	5.32 %[1, 2, 6]	5.39 %	7.07 %[1, 6]	15.95 %[2, 3, 5]
Hx of CAN	0.57 %[6]	0.58 %[6]	0.84 %	0.67 %	0.82 %[6]	2.33 %[1, 2, 5]
Hx of Arrest	12.43%[4]	11.75%[4]	10.336%	7.87%[1, 2, 6]	10.67%	14.29%[4]
Poor Support	89.87 %[4]	91.80 %[4]	91.88 %	94.61 %[1, 2, 5, 6]	90.22 %[4]	88.37 %[4]
Poor Parenting	69.79 %[4]	73.97 %[4, 6]	71.99 %[4]	81.57 %[1, 2, 3, 5]	71.20 %[4]	76.08 %[2]
Over-burden	6.69 %[2, 4]	4.50 %[3, 5, 6]	7.00 %[2,4]	3.37 %[1, 3, 5, 6]	7.74 %[2, 4]	7.64 %[2,4]
Community factors						
Com. Poverty	87.38 %[2, 3, 4, 5]	70.85 %[1, 3, 4, 5, 6]	78.99 %[1, 2]	75.51 %[1, 2, 6]	78.13 %[1, 2, 6]	84.05 %[2, 4, 5]

*Note 1: Number in superscript showed that the risk factor was significant between each subtype and the comparison group in bivariate analysis (chi-square)

*Note 2: Mental health problems, History of domestic violence, and caregivers' disability were excluded since there was no significance in bivariate analysis
*Note 3: Significance, p<0.05
*Note 4: Gender=1, Male; Race=1, Black, Child's age (< 6 years old)

4.5.3   Multinomial Regression Models

4.5.3.1 NSCAW.

The model fit for the multinomial regression indicates adequate fit (-2 LogLikelihood X^2=2454.953, df=80, p<.0001). The Max-rescaled r-square was 0.423 indicating a strong model. Table 11-1 to 11-6 illustrate the results of the multinomial regression analysis of subtypes from NSCAW II. Although the multinomial regressions are similar, the results are reported as separate models by comparison group for ease of interpretation by the reader.

In model one, the comparison group is physical neglect. Three variables were significant in discriminating between substance exposure cases and the comparison: cases were about 2.5 times more likely to be receiving WIC, were more than 39 times more likely to report a substance abuse problem but were nearly four times less likely to be noted as having poor parenting skills. Poor parenting skills also differentiated domestic violence and substance abuse cases compared to physical neglect in the same direction. As might be expected domestic violence cases were more likely to include caregiver note of a history of domestic violence (nearly 5 times higher) and substance abuse cases were more likely to include a history of caregiver substance abuse (7.5 times higher). There was a similar relationship between substance abuse and mixed type neglect. Poor social support was less likely for lack of supervision (OR=.48) or substance abuse (OR=.25) cases compared to physical neglect.

Table 11-1: Multinomial Logistic Regression Model in NSCAW (Model 1, comparison group= Physical Neglect)

vs. Physical Neglect	Lack of Supervision		Substance Exposure		Domestic Violence		Substance Abuse		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	0.02	1.02 (0.60, 1.74)	0.16	1.18 (0.60, 2.29)	-0.32	0.73 (0.38, 1.40)	-0.31	0.73 (0.38, 1.40)	-0.41	0.66 (0.39, 1.13)
Child Age	-0.08	0.92 (0.44, 1.92)	0.92	**6.19 (1.23, 31.25)**	0.14	1.14 (0.48, 2.74)	-0.15	0.86 (0.34, 2.14)	0.09	1.10 (0.51, 2.35)
WIC	-0.44	0.64 (0.37, 1.11)	0.92	**2.52 (1.17, 5.43)**	-0.52	0.60 (0.31, 1.17)	0.22	1.25 (0.63, 2.48)	0.08	1.08 (0.62, 1.89)
Substance Abuse	0.58	1.79 (0.83, 3.88)	3.67	**39.09 (16.23, 94.18)**	0.13	1.14 (0.40, 3.24)	2.01	**7.50 (3.21, 17.51)**	2.03	**7.65 (3.67, 15.95)**
Mental Health	-0.59	0.56 (0.27, 1.17)	-0.60	0.55 (0.23, 1.32)	-0.81	0.45 (0.16, 1.25)	-1.13	0.32 (0.12, 0.84)	-0.55	0.58 (0.28, 1.18)
Hx Domestic Violence	-0.45	0.64 (0.33, 1.24)	-0.44	0.64 (0.27, 1.54)	1.58	**4.83 (2.31, 10.14)**	-0.39	0.68 (0.29, 1.58)	0.46	1.58 (0.84, 2.99)
Hx CAN	-0.27	0.76 (0.40, 1.44)	-0.85	0.43 (0.18, 0.99)	-0.05	0.96 (0.43, 2.13)	-0.12	0.89 (0.40, 1.96)	-0.35	0.70 (0.37, 1.33)
Low Social Support	-0.73	**0.48 (0.25, 0.91)**	0.18	1.19 (0.55, 2.59)	-0.45	0.64 (0.29, 1.42)	-1.39	**0.25 (0.11, 0.60)**	-0.36	0.70 (0.38, 1.30)
Poor Parenting	0.32	1.38 (0.72, 2.65)	-1.27	**0.28 (0.12, 0.65)**	-1.71	**0.18 (0.06, 0.53)**	-0.96	**0.38 (0.16, 0.91)**	-0.24	0.79 (0.41, 1.50)
High Stress	-0.04	0.97 (0.53, 1.77)	-0.11	0.90 (0.42, 1.92)	0.31	1.37 (0.65, 2.87)	0.39	1.48 (0.72, 3.05)	0.59	1.80 (0.97, 3.34)
Community Problems	-0.21	0.81 (0.48, 1.37)	-0.11	0.90 (0.46, 1.74)	-0.70	**0.50 (0.26, 0.97)**	-0.41	0.67 (0.35, 1.27)	-0.27	0.76 (0.45, 1.30)

Table 11-2: Multinomial Logistic Regression Model in NSCAW (Model 2, comparison group= Lack of Supervision)

vs. Lack of Supervision	Physical Neglect		Substance Exposure		Domestic Violence		Substance Abuse		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	-0.02	0.98 (0.58, 1.66)	0.14	1.15 (0.67, 1.98)	-0.34	0.71 (0.42, 1.21)	-0.33	0.72 (0.43, 1.20)	-0.43	**0.65 (0.45, 0.95)**
Age	079	1.08 (0.51, 2.26)	1.92	**6.70 (1.47, 30.52)**	0.21	1.24 (0.64, 2.42)	-0.07	0.93 (0.46, 1.89)	0.17	1.19 (0.71, 1.99)
WIC	0.44	1.56 (0.90, 2.70)	1.37	**3.92 (2.05, 7.50)**	-0.07	0.93 (0.54, 1.59)	0.66	**1.94 (1.12, 3.34)**	0.52	**1.68 (1.14, 2.47)**
Substance Abuse	-0.58	0.56 (0.26, 1.21)	3.08	**21.79 (11.33, 41.91)**	-0.45	0.64 (0.27, 1.51)	1.43	**4.18 (2.28, 7.65)**	1.45	**4.26 (2.71, 6.71)**
Mental Health	0.59	1.80 (0.86, 3.77)	-0.02	0.98 (0.47, 2.06)	-0.22	0.80 (0.32, 2.04)	-0.55	0.58 (0.25, 1.32)	0.03	1.04 (0.60, 1.77)
Hx Domestic Violence	0.45	1.58 (0.81, 3.08)	0.01	1.01 (0.47, 2.17)	2.03	**7.62 (4.17, 13.91)**	0.06	1.07 (0.51, 2.21)	0.91	**2.49 (1.55, 4.01)**
Hx CAN	0.27	1.31 (0.69, 2.49)	-0.58	0.56 (0.27, 1.16)	0.23	1.26 (0.63, 2.51)	0.15	1.17 (0.60, 2.27)	-0.08	0.93 (0.57, 1.49)
Low Social Support	0.73	**2.08 (1.10, 3.94)**	0.91	**2.49 (1.29, 4.78)**	0.29	1.33 (0.67, 2.67)	-0.65	0.52 (0.24, 1.12)	0.37	1.45 (0.91, 2.32)
Poor Parenting	-0.32	0.72 (0.38, 1.39)	-1.59	**0.20 (0.10, 0.41)**	-2.03	**0.13 (0.05, 0.35)**	-1.29	**0.28 (0.13, 0.57)**	-0.56	**0.57 (0.36, 0.91)**
High Stress	0.04	1.04 (0.57, 1.90)	-0.07	0.93 (0.50, 1.72)	0.35	1.41 (0.78, 2.56)	0.43	1.53 (0.87, 2.69)	0.62	**1.87 (1.22, 2.86)**
Community Problems	0.21	1.23 (0.73, 2.07)	0.10	1.11 (0.64, 1.90)	-0.49	0.61 (0.35, 1.06)	-0.20	0.82 (0.49, 1.38)	-0.06	0.94 (0.64, 1.37)

Model two (Table 11-2) compared other subtypes to cases reported for lack of supervision. The likelihood of WIC use, substance abuse problems, and low parenting skills was similar in comparing substance abuse cases to lack of supervision as it was in model 1 (refer back to Table 3a-1). However, substance abuse cases were more likely to report poor social support (OR=2.49) compared to lack of supervision cases. The most dramatic change between the two models was for mixed type cases. Whereas only one variable was predictive in Table 3a-1, six variables discriminated between mixed type and lack of supervision. Males and families with poor social support were less likely to be mixed report cases. Families receiving WIC, having caregiver substance abuse problems, domestic violence histories and high stress were more likely to be among mixed cases.

In Model three (Table 11-3) a report involving substance exposure related neglect was the comparison. Physical neglect, lack of supervision, and mixed type neglect had the greatest number of significant variations from substance exposure. All three groups were less likely to note the use of WIC, less likely to involve caregiver substance abuse and more likely to have a note of poor parenting skills. Cases reported for physical neglect were more likely to include caregivers with histories of maltreatment. On the other hand, as expected, almost all children were being reported for prenatal substance exposure before they were born.

Table 11-3: Multinomial Logistic Regression Model in NSCAW (Model 3, comparison group= Substance Exposure)

vs. Substance Exposure	Physical Neglect		Lack of Supervision		Domestic Violence		Substance Abuse		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	-0.16	0.85 (0.44, 1.66)	-0.14	0.87 (0.51, 1.50)	-0.48	0.62 (0.32, 1.21)	-0.47	0.62 (0.34, 1.16)	-0.57	**0.57 (0.34, 0.94)**
Child Age	-1.82	**0.16 (0.03, 0.81)**	-1.90	**0.15 (0.03, 0.68)**	-1.68	**0.19 (0.04, 0.90)**	-1.97	**0.14 (0.03, 0.68)**	-1.73	**0.18 (0.04, 0.80)**
WIC	-0.92	**0.40 (0.18, 0.85)**	-1.37	**0.26 (0.13, 0.49)**	-1.44	**0.24 (0.11, 0.51)**	-0.71	0.49 (0.23, 1.04)	-0.85	**0.43 (0.23, 0.80)**
Substance Abuse	-3.67	**0.03 (0.01, 0.06)**	-3.08	**0.05 (0.02, 0.09)**	-3.54	**0.03 (0.01, 0.08)**	-1.65	**0.19 (0.09, 0.39)**	-1.63	**0.20 (0.11, 0.36)**
Mental Health	0.60	1.83 (0.76, 4.42)	0.02	1.02 (0.49, 2.13)	-0.20	0.82 (0.29, 2.29)	-0.53	0.59 (0.24, 1.44)	0.05	1.05 (0.55, 2.02)
Hx Domestic Violence	0.44	1.56 (0.65, 3.74)	-0.01	0.99 (0.46, 2.13)	2.02	**7.54 (3.30, 17.21)**	0.05	1.05 (0.44, 2.56)	0.90	2.47 (1.24, 4.92)
Hx CAN	0.85	**2.35 (1.02, 5.44)**	0.58	1.79 (0.86, 3.70)	0.81	2.25 (0.94, 5.39)	0.73	2.09 (0.92, 4.71)	0.50	1.66 (0.85, 3.23)
Low Social Support	-0.18	0.84 (0.39, 1.81)	-0.91	**0.40 (0.21, 0.77)**	-0.62	0.54 (0.24, 1.21)	-1.56	**0.21 (0.09, 0.48)**	-0.54	0.58 (0.33, 1.05)
Poor Parenting	1.27	**3.56 (1.54, 8.22)**	1.59	**4.92 (2.45, 9.89)**	-0.44	0.65 (0.22, 1.94)	0.31	1.36 (0.58, 3.18)	1.03	**2.80 (1.48, 5.31)**
High Stress	0.11	1.11 (0.52, 2.39)	0.07	1.08 (0.58, 1.99)	0.42	1.52 (0.71, 3.23)	0.50	1.65 (0.83, 3.29)	0.70	**2.01 (1.12, 3.59)**
Community Problems	0.11	1.11 (0.57, 2.16)	-0.10	0.91 (0.53, 1.56)	-0.59	0.55 (0.28, 1.09)	-0.30	0.74 (0.40, 1.38)	-0.16	0.85 (0.51, 1.41)

Table 11-4: Multinomial Logistic Regression Model in NSCAW (Model 4, comparison group= Domestic Violence)

vs. Domestic Violence	Physical Neglect		Lack of Supervision		Substance Exposure		Substance Abuse		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	0.32	1.37 (0.72, 2.64)	0.34	1.41 (0.83, 2.38)	0.48	1.61 (0.83, 3.14)	0.01	1.01 (0.53, 1.90)	-0.09	0.91 (0.54, 1.55)
Child Age	-0.14	0.87 (0.37, 2.09)	-0.22	0.87 (0.41, 1.57)	1.69	**5.41 (1.10, 26.48)**	-2.09	**0.75 (0.32, 1.76)**	-0.04	**0.96 (0.48, 1.90)**
WIC	0.52	1.68 (0.86, 3.28)	0.07	1.08 (0.63, 1.85)	1.44	**4.13 (1.00, 9.02)**	0.74	**2.09 (1.07, 4.08)**	0.59	**1.81 (1.05, 3.10)**
Substance Abuse	-0.13	0.88 (0.31, 2.50)	0.45	1.58 (0.66, 3.76)	3.54	**34.33 (13.25, 88.96)**	1.88	**6.59 (2.63, 16.52)**	1.90	**6.72 (2.96, 15.25)**
Mental Health	0.81	2.24 (0.80, 6.25)	0.22	1.25 (0.49, 3.17)	0.20	1.22 (0.44, 3.43)	-0.33	0.72 (0.24, 2.15)	0.25	1.29 (0.53, 3.13)
Hx Domestic Violence	-1.58	**0.21 (0.10, 0.43)**	-2.03	**0.13 (0.07, 0.24)**	-2.02	**0.13 (0.06, 0.30)**	-1.97	**0.14 (0.06, 0.31)**	-1.12	**0.33 (0.19, 0.58)**
Hx CAN	0.05	1.05 (0.47, 2.34)	-0.23	0.80 (0.40, 1.59)	-0.81	0.45 (0.19, 1.07)	-0.07	0.93 (0.41, 2.11)	-0.31	0.74 (0.38, 1.44)
Low Social Support	0.45	1.56 (0.70, 3.47)	-0.29	0.75 (0.38, 1.50)	0.62	1.87 (0.83, 4.22)	-0.94	0.39 (0.16, 0.96)	0.09	1.09 (0.56, 2.11)
Poor Parenting	1.71	**5.51 (1.90, 15.98)**	2.03	**7.62 (2.89, 20.08)**	0.44	1.55 (0.51, 4.66)	0.74	2.10 (0.69, 6.44)	1.47	**4.34 (1.67, 11.29)**
High Stress	-0.31	0.73 (0.35, 1.54)	-0.35	0.71 (0.39, 1.28)	-0.42	0.66 (0.31, 1.40)	0.08	1.08 (0.54, 2.20)	0.28	1.32 (0.73, 2.40)
Community Problems	0.70	**2.01 (1.04, 3.90)**	0.49	1.63 (0.95, 2.83)	0.59	1.81 (0.92, 3.57)	0.29	1.34 (0.69, 2.59)	0.43	1.53 (0.89, 2.65)

The model four comparison group was domestic violence involved neglect (Table 11-4). Substance exposure, substance abuse, and mixed type neglect were all more likely to involve caregiver substance abuse (between 6.5 and 34 times higher) as well as receive WIC. As expected, all other forms of neglect were less likely to include a report of domestic violence history. Physical, supervisory and mixed type neglect were more likely to have a note of poor parenting skills. Physical neglect cases were two times more likely to note community problems which are the only model in which this was significant.

Model five compared substance abuse neglect to all other types (Table 11-5). Poor social support was more likely (2.5 to 4.8 times) for all other types except lack of supervision than all other types. Low parenting skills were more commonly noted for physical, supervisory and mixed type neglect. Compared to substance abuse neglect, supervisory and domestic violence neglect cases were less likely to note WIC use.

Table 11-5: Multinomial Logistic Regression Model in NSCAW (Model 5, comparison group= Substance Abuse)

vs. Substance Abuse	Physical Neglect		Lack of Supervision		Substance Exposure		Domestic Violence		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	0.31	1.36 (0.72, 2.60)	0.33	1.40 (0.84, 2.33)	0.47	1.60 (0.86, 2.98)	-0.01	0.99 (0.53, 1.88)	-0.10	0.91 (0.55, 1.50)
Child Age	0.15	1.61 (0.47, 2.90)	0.07	1.07 (0.53, 2.19)	1.98	7.21 (1.47, 35.46)	0.29	1.33 (0.57, 3.12)	0.24	1.28 (0.61, 2.64)
WIC	-0.22	0.80 (0.40, 1.60)	-0.66	**0.52 (0.30, 0.89)**	0.71	2.03 (0.96, 4.27)	-0.74	**0.48 (0.25, 0.94)**	-0.14	0.87 (0.50, 1.49)
Substance Abuse	-2.01	**0.13 (0.06, 0.31)**	-1.43	**0.24 (0.13, 0.44)**	1.65	**5.21 (2.56, 10.63)**	-1.88	**0.15 (0.06, 0.38)**	0.02	1.02 (0.59, 1.77)
Mental Health	1.13	**3.11 (1.20, 8.08)**	0.55	1.73 (0.76, 3.95)	0.53	1.70 (0.69, 4.17)	0.33	1.39 (0.47, 4.15)	0.58	1.79 (0.83, 3.85)
Hx Domestic Violence	0.39	1.48 (0.64, 3.45)	-0.06	0.94 (0.45, 1.95)	-0.05	0.95 (0.39, 2.30)	1.97	**7.15 (3.27, 15.65)**	0.85	**2.34 (1.20, 4.59)**
Hx CAN	0.12	1.13 (0.51, 2.49)	-0.15	0.86 (0.44, 1.67)	-0.73	0.48 (0.21, 1.08)	0.07	1.08 (0.48, 2.45)	-0.23	0.79 (0.42, 1.49)
Low Social Support	1.39	**4.00 (1.68, 9.52)**	0.65	1.92 (0.90, 4.12)	1.56	**4.78 (2.08, 10.98)**	0.94	**2.56 (1.04, 6.30)**	1.03	**2.79 (1.36, 5.74)**
Poor Parenting	0.96	**2.62 (1.11, 6.20)**	1.29	**3.62 (1.75, 7.47)**	-0.31	0.74 (0.32, 1.72)	-0.74	0.48 (0.16, 1.45)	0.72	**2.06 (1.03, 4.11)**
High Stress	-0.39	0.68 (0.33, 1.40)	-0.43	0.65 (0.37, 1.15)	-0.50	0.61 (0.30, 1.21)	-0.08	0.92 (0.46, 1.87)	0.20	1.22 (0.70, 2.12)
Community Problems	0.41	1.50 (0.79, 2.87)	0.20	1.22 (0.73, 2.06)	0.30	1.35 (0.72, 2.52)	-0.29	0.75 (0.39, 1.45)	0.14	1.15 0.69, 1.91)

4.5.3.2 Regional Data

The model fit for the multinomial regression indicates adequate fit (-2 LogLikelihood X^2=13868.925, df=105, p<.0001). The Max-rescaled r-square was low (0.09) indicating the poor predictive utility of the model. Table 3b-1 to 3b-6 are structured in the same fashion as above and illustrate outcomes of the multinomial regression model for the regional data. Again, findings are reported in tables as six different models for ease of interpretation.

In model one (Table 12-1) the comparison is physical neglect. Educational neglect appeared to have the most variation by comparison. Educational neglect cases were more likely to include a notation of poor social support and poor parenting skills and less likely to include caregiver substance abuse, notation of overburden or reside in higher poverty census tracts. Mixed neglect cases appeared similar except for a higher likelihood of caseworker noting single parent status. Cases reported for medical, supervisory or other neglect were less likely to have unemployed caregivers.

Model two compared types with supervisory neglect (Table 12-2). Physical, educational and mixed type neglect were more likely to note unemployment. Physical, other, and mixed type neglect cases were more likely to be in lower-income census tracts. Black caregivers were more common among physical and educational neglect cases. Mixed neglect cases were more likely to have caregivers with a history of foster care as well as substance abuse problems.

Table 12-1: Multinomial Logistic Regression Model in Regional Data (Model 1, comparison group= Physical Neglect)

vs. Physical Neglect	Lack of Supervision		Medical Neglect		Educational Neglect		Other Subtypes		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	0.12	1.13 (0.92, 1.37)	0.30	**1.36 (1.03, 1.78)**	0.10	1.11 (0.86, 1.44)	0.05	1.06 (0.84, 1.32)	0.22	1.24 (0.93, 1.65)
Age	-0.03	0.97 (0.79, 1.20)	-0.42	**0.66 (0.49, 0.87)**	3.01	**20.37 (13.40, 30.96)**	-0.22	0.82 (0.63, 1.02)	0.15	0.86 (0.64, 1.17)
Unemployment	-0.59	**0.55 (0.44, 0.70)**	-0.39	**0.68 (0.50, 0.93)**	-0.04	0.97 (0.72, 1.30)	-0.44	**0.65 (0.50, 0.84)**	0.07	1.07 (0.76, 1.51)
Black	-0.48	**0.62 (0.47, 0.81)**	-0.20	0.82 (0.57, 1.17)	-0.13	0.88 (0.62, 1.24)	-1.02	0.36 (0.27, 0.48)	-0.32	0.72 (0.49, 1.06)
No High School	-0.31	**0.73 (0.59, 0.90)**	0.71	1.03 (0.77, 1.37)	-0.08	0.93 (0.71, 1.21)	0.02	1.02 (0.80, 1.29)	0.15	1.16 (0.86, 1.57)
Child Dis.	0.45	1.58 (0.96, 2.59)	1.46	**4.30 (1.47,12.56)**	0.17	1.19 (0.64, 2.22)	0.37	1.45 (0.81, 2.57)	0.12	1.13 (0.56, 2.26)
TANF	-0.30	0.74 (0.55, 1.00)	-0.31	0.73 (0.49, 1.09)	-0.21	0.81 (0.56, 1.19)	0.01	1.01 (0.72, 1.41)	-0.29	0.75 (0.49, 1.15)
Single Parent	-0.02	0.98 (0.79, 1.21)	0.07	1.07 (0.80, 1.43)	-0.05	0.95 (0.72, 1.25)	0.02	1.03 (0.81, 1.30)	0.40	**1.49 (1.10, 2.02)**
Sub. Abuse	-0.17	0.84 (0.61, 1.16)	-0.78	0.46 (0.27, 0.79)	-0.82	**0.44 (0.27, 0.72)**	-0.38	0.68 (0.47, 1.00)	0.29	1.33 (0.88, 2.01)
Mental Health	-0.05	0.95 (0.77, 1.17)	-0.12	0.89 (0.67, 1.19)	0.00	0.99 (0.76, 1.31)	-0.10	0.91 (0.72, 1.15)	0.13	1.14 (0.85, 1.53)
Hx DomVio	-0.04	0.96 (0.35, 2.65)	0.50	1.65 (0.49, 5.58)	0.18	1.20 (0.34, 4.24)	0.26	1.29 (0.44, 3.85)	0.04	1.04 (0.24, 4.44)
Hx Arrest	0.18	1.20 (0.89, 1.63)	0.00	1.00 (0.65, 1.55)	-0.12	-0.35 (0.45, 1.09)	-0.03	0.97 (0.68, 1.34)	0.12	1.13 (0.74, 1.73)
Hx CAN	0.14	1.15 (0.31, 4.24)	0.44	1.56 (0.31, 7.90)	0.36	1.44 (0.29, 7.29)	0.22	1.25 (0.31, 5.13)	1.33	3.76 (0.95, 14.85)
Poor Support	0.17	1.19 (0.85, 1.66)	0.23	1.26 (0.78, 2.05)	0.56	**1.76 (1.06, 2.91)**	0.04	1.04 (0.71, 1.51)	-0.20	0.82 (0.52, 1.30)
Poor Parenting	0.13	1.14 (0.91, 1.43)	0.04	1.04 (0.76, 1.42)	0.61	**1.83 (1.33, 2.52)**	0.03	1.03 (0.80, 1.33)	0.22	1.25 (0.89, 1.75)
Over-burden	-0.25	0.78 (0.51, 1.18)	0.09	1.10 (0.63, 1.90)	-0.69	**0.50 (0.27, 0.94)**	0.34	1.41 (0.90, 2.19)	0.11	1.12 (0.64, 1.95)
Com. Poverty	-0.56	**0.57 (0.42, 0.78)**	-0.29	0.75 (0.50, 1.13)	-0.58	**0.56 (0.39, 0.82)**	-0.15	0.86 (0.61, 1.21)	-0.14	0.87 (0.56, 1.36)

Note: Hx DomViolence= History of Domestic Violence, Com. Poverty= Community Poverty, Sub, Abuse=Substance Abuse

Table 3b-2: Multinomial Logistic Regression Model in Regional Data (Model 2, comparison group= Lack of Supervision)

vs. Lack of Supervision	Physical Neglect		Medical Neglect		Educational Neglect		Other Subtypes		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	-0.12	0.89 (0.73, 1.08)	0.19	1.21 (0.96, 1.52)	-0.01	0.99 (0.80, 1.22)	-0.06	0.94 (0.79, 1.11)	0.10	1.10 (0.86, 1.41)
Age	-0.03	1.03 (0.84, 1.27)	-0.42	**0.68 (0.53, 0.86)**	3.01	**20.97 (14.18, 31.00)**	-0.22	**0.82 (0.69, 0.98)**	0.15	0.89 (0.64, 1.16)
Unemployment	0.59	**1.80 (1.43, 2.27)**	0.20	1.23 (0.95, 1.58)	0.55	**1.74 (1.37, 2.21)**	0.15	1.17 (0.97, 1.40)	0.66	**1.93 (1.44, 2.58)**
Black	0.48	**1.62 (1.24, 2.12)**	0.28	1.32 (0.99, 1.77)	**0.35**	**1.43 (1.09, 1.86)**	-0.54	**0.59 (0.48, 0.71)**	0.16	1.17 (0.85, 1.62)
No High School	0.48	**1.37 (1.11, 1.69)**	0.34	**1.40 (1.10, 1.79)**	**0.23**	**1.26 (1.01, 1.59)**	0.33	**1.39 (1.16, 1.67)**	0.46	**1.59 (1.22, 2.06)**
Child Dis.	-0.45	0.64 (0.39, 1.04)	1.00	2.73 (0.98, 7.58)	-0.28	0.75 (0.44, 1.29)	-0.09	0.92 (0.57, 1.47)	-0.34	0.72 (0.38, 1.34)
TANF	0.30	**1.35 (1.00, 1.82)**	-0.01	0.99 (0.73, 1.35)	0.09	1.01 (0.82, 1.46)	0.30	**1.36 (1.08, 1.70)**	0.01	1.01 (0.71, 1.44)
Single Parent	0.02	1.02 (0.83, 1.26)	0.09	1.09 (0.85, 1.40)	-0.03	0.97 (0.77, 1.21)	0.05	1.05 (0.87, 1.26)	0.42	**1.52 (1.17, 1.98)**
Substance Abuse	0.17	1.19 (0.86, 1.63)	-0.60	**0.54 (0.33, 0.90)**	-0.65	**0.52 (0.33, 0.82)**	-0.21	0.81 (0.59, 1.11)	0.46	**1.58 (1.10, 2.26)**
Hx DomVio	0.04	1.05 (0.38, 2.90)	0.55	1.73 (0.67, 4.48)	0.22	1.25 (0.46, 3.44)	0.30	1.35 (0.63, 2.92)	0.08	1.09 (0.31, 3.80)
Hx Arrest	-0.18	0.83 (0.61, 1.13)	-0.18	0.83 (0.57, 1.21)	-0.54	**0.58 (0.40, 0.85)**	-0.22	0.08 (0.61,1.06)	-0.06	0.94 (0.65, 1.35)
Hx CAN	-0.14	0.87 (0.24, 3.18)	0.30	1.35 (0.37, 4.94)	0.22	1.25 (0.34, 4.56)	0.08	1.08 (0.40, 2.98)	1.18	**3.26 (1.22, 8.74)**
Poor Support	-0.17	0.84 (0.60, 1.18)	0.06	1.07 (0.70, 1.62)	0.39	1.48 (0.95, 2.32)	-0.14	0.87 (0.65, 1.17)	-0.37	0.69 (0.47, 1.03)
Poor Parenting	-0.13	0.88 (0.70, 1.10)	-0.09	0.91 (0.70, 1.19)	0.48	**1.61 (1.23, 2.12)**	-0.10	0.91 (0.75, 1.10)	0.09	1.10 (0.81, 1.48)
Over-burden	0.25	1.29 (0.85, 1.96)	0.35	1.41 (0.88, 2.28)	-0.44	0.65 (0.37, 1.14)	0.59	**1.81 (1.28, 2.56)**	0.36	1.44 (0.88, 2.35)
Com. Poverty	0.56	**1.75 (1.28, 2.38)**	0.27	1.31 (0.96, 1.79)	-0.02	0.98 (0.74, 1.29)	0.40	**1.50 (1.20, 1.87)**	0.42	**1.52 (1.06, 2.18)**

Note: Hx DomViolence= History of Domestic Violence, Com. Poverty= Community Poverty

Compared to medical neglect (Model 3, Table 12-3), most other subtypes varied on at least three risk factors except supervisory neglect. Supervisory neglect cases were more likely to involve substance abuse but were similar on all other measures. Child disability was much less likely (about 3 or more times lower) for physical, educational, other and mixed type cases. Educational neglect cases were more likely to include caregiver unemployment and notations of poor parenting skills.

Model four compares all other with Educational neglect (Table 12-4) and so the comparison to medical neglect is a mirror of notes from the prior paragraph. Educational neglect appears relatively distinct from the other subtypes but the factors that differ varied with the exception that all other types were less likely to note poor parenting skills. Substance abuse is more common for physical, supervisory and mixed type neglect. Overburden was high for all other types except supervisory neglect. Community poverty was more common for physical, other or mixed type neglect.

Model five compared types to other neglect (Table 12-5). While there were significant variations between types in this table, interpretation is complicated by the fact that other includes a variety of subtypes or neglect that was simply classified as other originally. Results are not discussed in detail for this reason.

Table 12-3: Multinomial Logistic Regression Model in Regional Data (Model 3, comparison group= Medical Neglect)

vs. Medical Neglect	Physical Neglect		Lack of Supervision		Educational Neglect		Other Subtypes		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	-0.30	**0.74 (0.56, 0.97)**	-0.19	0.83 (0.66, 1.05)	-0.20	0.82 (0.62, 1.09)	-0.25	0.78 (0.60, 1.00)	-0.09	0.92 (0.67, 1.25)
Age	0.42	**1.52 (1.14, 1.90)**	0.39	**1.48 (1.16, 1.90)**	3.43	**31.08 (19.98, 48.35)**	0.20	1.22 (0.93, 1.60)	0.28	0.32 (0.94, 1.84)
Unemployment	0.39	**1.47 (1.08, 2.01)**	-0.20	0.82 (0.63, 1.05)	0.35	**1.42 (1.04, 1.95)**	-0.05	0.95 (0.72, 1.26)	0.45	**1.57 (1.10, 2.26)**
Black	0.20	1.23 (0.85, 1.76)	-0.28	0.76 (0.57, 1.01)	0.07	1.08 (0.75, 1.54)	-0.82	**0.44 (0.32, 0.60)**	-0.12	0.89 (0.59, 1.32)
No High School	-0.03	0.97 (0.73, 1.30)	-0.34	**0.71 (0.56, 0.91)**	-0.10	0.90 (0.67, 1.22)	-0.01	0.99 (0.76, 1.30)	0.13	1.13 (0.82 1.57)
Ch Dis	-1.46	**0.23 (0.08, 0.68)**	-1.00	0.37 (0.13, 1.02)	-1.29	**0.28 (0.09, 0.82)**	-1.09	**0.34 (0.12, 0.98)**	-1.34	**0.26 (0.08, 0.82)**
TANF	0.31	1.36 (0.92, 2.02)	0.01	1.01 (0.74, 1.38)	0.10	1.11 (0.75, 1.63)	0.32	1.37 (0.97, 1.93)	0.02	1.02 (0.66, 1.58)
Single Parent	-0.07	0.93 (0.70, 1.25)	-0.09	0.91 (0.71, 1.17)	-0.12	0.89 (0.66, 1.20)	-0.04	0.96 (0.73, 1.26)	0.33	**1.39 (1.00, 1.94)**
Substance Abuse	0.78	**2.17 (1.27, 3.72)**	0.60	**1.83 (1.12, 3.00)**	-0.05	0.95 (0.51, 1.78)	0.40	1.49 (0.87, 2.55)	1.06	**2.89 (1.65, 5.08)**
Hx DomVio	-0.50	0.61 (0.18, 2.05)	-0.55	0.58 (0.22, 1.50)	-0.32	0.72 (0.22, 2.44)	-0.24	0.78 (0.28, 2.19)	-0.46	0.63 (0.15, 2.61)
Hx Arrest	-0.00	0.99 (0.64, 1.54)	0.18	1.20 (0.83, 1.75)	-0.36	0.70 (0.43, 1.15)	-0.04	0.97 (0.64, 1.46)	0.12	1.13 (0.69, 1.82)
Hx CAN	-0.44	0.64 (0.13, 3.25)	-0.30	0.74 (0.20, 2.71)	-0.08	0.92 (0.18, 4.69)	-0.22	0.80 (0.20, 3.28)	0.88	2.41 (0.60, 9.68)
Poor Support	-0.23	0.79 (0.49, 1.28)	-0.06	0.94 (0.62, 1.43)	0.33	1.39 (0.79, 2.45)	-0.20	0.82 (0.52, 1.29)	-0.43	0.65 (0.38, 1.10)
Poor Parenting	-0.04	0.96 (0.70, 1.32)	0.09	1.09 (0.84, 1.43)	0.57	**1.76 (1.24, 2.50)**	-0.01	0.99 (0.74, 1.33)	0.18	1.20 (0.83, 1.74)
Over-burden	-0.09	0.91 (0.53, 1.58)	-0.35	0.71 (0.44, 1.14)	-0.78	**0.46 (0.23, 0.89)**	0.25	1.28 (0.78, 2.11)	0.02	1.01 (0.55, 1.86)
Com. Poverty	0.29	1.33 (0.89, 2.01)	-0.27	0.76 (0.56, 1.05)	-0.29	0.75 (0.51,1.10)	0.13	1.14 (0.81, 1.62)	0.15	1.16 (0.74, 1.82)

Note: Hx DomViolence= History of Domestic Violence, Com. Poverty= Community Poverty

Table 12-4: Multinomial Logistic Regression Model in Regional Data (Model 4, comparison group= Educational Neglect)

vs. Educational Neglect	Physical Neglect		Lack of Supervision		Medical Neglect		Other Subtypes		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	-0.10	0.90 (0.70, 1.17)	0.01	1.01 (0.82, 1.25)	0.20	1.22 (0.92, 1.62)	-0.05	0.95 (0.75, 1.21)	0.11	1.12 (0.83, 1.51)
Age	-3.01	**0.05 (0.03, 0.08)**	-3.04	**0.05 (0.03, 0.07)**	-3.43	**0.03 (0.02, 0.05)**	-3.23	**0.04 (0.03, 0.06)**	-3.16	**0.04 (0.03, 0.07)**
Unemployment	0.04	1.04 (0.77, 1.40)	-0.55	**0.58 (0.45, 0.73)**	-0.35	0.70 (0.51, 0.97)	-0.40	**0.67 (0.51, 0.87)**	0.10	1.11 (0.78, 1.57)
Black	0.13	1.14 (0.81, 1.61)	-0.35	**0.70 (0.54, 0.92)**	-0.07	0.93 (0.65, 1.33)	-0.89	**0.41 (0.31, 0.55)**	-0.19	0.82 (0.56, 1.21)
No High School	0.08	1.08 (0.82, 1.42)	-0.23	0.79 (0.63, 0.99)	0.10	1.11 (0.82, 1.50)	0.09	1.10 (0.85, 1.42)	0.23	1.26 (0.92, 1.72)
Ch Dis	-0.17	0.84 (0.45, 1.57)	0.28	1.33 (0.78, 2.27)	1.29	**3.62 (1.22, 10.78)**	0.20	1.22 (0.66, 2.25)	-0.05	0.95 (0.46, 1.97)
TANF	0.21	1.23 (0.84, 1.80)	-0.09	0.91 (0.68, 1.22)	-0.10	0.90 (0.61, 1.33)	0.21	1.24 (0.89, 1.72)	-0.08	0.92 (0.60, 1.41)
Single Parent	0.05	1.05 (0.80, 1.39)	0.03	1.03 (0.82, 1.29)	0.12	1.13 (0.83, 1.53)	0.08	1.08 (0.84, 1.39)	0.45	**1.57 (1.14, 2.16)**
Substance Abuse	0.82	**2.28 (1.39, 3.74)**	0.65	**1.92 (1.23, 3.01)**	0.05	1.05 (0.56, 1.96)	0.44	1.56 (0.95, 2.56)	1.11	**3.03 (1.80, 5.12)**
Hx DomVio	-0.18	0.84 (0.24, 2.96)	-0.22	0.80 (0.29, 2.20)	0.32	1.38 (0.41, 4.65)	0.08	1.08 (0.36, 3.21)	-0.14	0.87 (0.20, 3.75)
Hx Arrest	0.35	1.43 (0.92, 2.21)	0.53	**1.71 (1.17, 2.50)**	0.36	1.43 (0.87, 2.34)	0.32	1.38 (0.91, 2.01)	0.47	1.61 (0.99, 2.61)
Hx CAN	-0.36	0.69 (0.14, 3.51)	-0.22	0.80 (0.22, 2.92)	0.08	1.08 (0.21, 5.49)	-0.14	0.87 (0.21, 3.56)	0.96	2.61 (0.65, 10.43)
Poor Support	-0.56	**0.57 (0.34, 0.94)**	-0.39	0.68 (0.43, 1.06)	-0.33	0.72 (0.41, 1.27)	-0.53	**0.59 (0.37, 0.95)**	-0.76	**0.47 (0.27, 0.81)**
Poor Parenting	-0.61	**0.55 (0.40, 0.75)**	-0.48	**0.62 (0.47, 0.82)**	-0.57	**0.57 (0.40, 0.80)**	-0.58	**0.56 (0.42, 0.76)**	-0.39	**0.68 (0.47, 0.99)**
Over-burden	0.69	**1.99 (1.06, 3.73)**	0.44	1.55 (0.88, 2.73)	0.78	**2.19 (1.12, 4.27)**	1.03	**2.80 (1.57, 5.02)**	0.80	**2.22 (1.13, 4.38)**
Com. Poverty	0.58	**1.78 (1.22, 2.60)**	0.02	1.02 (0.77, 1.35)	0.29	1.34 (0.91, 1.96)	0.42	**1.53 (1.11, 2.09)**	0.44	**1.55 (1.01, 2.37)**

Note: Hx DomViolence= History of Domestic Violence, Com. Poverty= Community Poverty

Table 12-5: Multinomial Logistic Regression Model in Regional Data (Model 5, comparison group= Other Subtype of Neglect)

vs. Other Subtypes	Physical Neglect		Lack of Supervision		Medical Neglect		Educational Neglect		Mixed Neglect	
	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)	b	OR (CI)
Gender	-0.05	0.95 (0.76, 1.19)	0.06	1.07 (0.90, 1.26)	0.25	**1.28 (1.00, 1.66)**	0.05	1.05 (0.83, 1.33)	0.16	1.17 (0.90, 1.54)
Age	0.22	1.25 (0.98, 1.58)	0.19	**1.21 (1.05, 1.47)**	-0.20	0.82 (0.62, 1.07)	3.23	**25.40 (16.90, 38.17)**	0.07	1.08 (0.80, 1.44)
Unemployment	0.44	**1.55 (1.20, 2.00)**	-0.15	0.86 (0.72, 1.03)	0.05	1.05 (0.80, 1.39)	0.40	**1.49 (1.15, 1.95)**	0.50	**1.65 (1.21, 2.27)**
Black	1.02	**2.77 (2.07, 3.71)**	0.54	**1.71 (1.41, 2.08)**	0.82	**2.26 (1.66, 3.09)**	0.89	**2.44 (1.82, 3.26)**	0.70	**2.01 (1.43, 2.82)**
No High School	-0.02	0.98 (0.78, 1.25)	-0.33	**0.72 (0.60, 0.86)**	0.01	1.01 (0.77, 1.32)	-0.09	0.91 (0.71, 1.17)	0.13	1.14 (0.86, 1.52)
Ch Dis	-0.37	0.69 (0.39, 1.23)	0.09	1.09 (0.68, 1.75)	1.09	**2.97 (1.03, 8.62)**	-0.20	0.82 (0.45, 1.52)	-0.25	0.78 (0.39, 1.56)
TANF	-0.01	0.99 (0.71, 1.39)	-0.30	**0.74 (0.59, 0.92)**	-0.32	0.73 (0.52, 1.03)	-0.21	0.81 (0.58, 1.12)	-0.29	0.75 (0.51, 1.09)
Single Parent	-0.02	0.98 (0.77, 1.24)	-0.05	0.96 (0.80, 1.15)	0.04	1.05 (0.80, 1.37)	-0.08	0.93 (0.72, 1.19)	0.37	**1.45 (1.09, 1.94)**
Substance Abuse	0.38	**1.46 (1.00, 2.14)**	0.21	1.23 (0.90, 1.69)	-0.40	0.67 (0.39, 1.15)	-0.44	0.64 (0.39, 1.05)	0.67	**1.95 (1.28, 2.95)**
Hx DomVio	-0.26	0.77 (0.26, 2.30)	-0.30	0.74 (0.34, 1.60)	0.24	1.28 (0.46, 3.57)	-0.08	0.92 (0.31, 2.74)	-0.22	0.80 (0.22, 2.97)
Hx Arrest	0.03	1.03 (0.73, 1.47)	-0.30	0.22 (0.95, 1.66)	0..04	1.04 (0.68, 1.57)	-0.32	0.73 (0.48, 1.11)	0.15	1.17 (0.78, 1.11)
Hx CAN	-0.22	0.80 (0.20, 3.28)	-0.08	0.92 (0.34, 2.53)	0.22	1.25 (0.31, 5.09)	0.14	1.15 (0.28, 4.72)	1.10	3.01 (0.97, 9.30)
Poor Support	-0.04	0.97 (0.66, 1.41)	0.14	1.15 (0.86, 1.53)	0.20	1.22 (0.78, 1.92)	0.53	**1.70 (1.05, 2.74)**	-0.23	0.79 (0.52, 1.22)
Poor Parenting	-0.03	0.97 (0.75, 1.26)	0.10	1.11 (0.91, 1.34)	0.01	1.01 (0.76, 1.35)	0.58	**1.78 (1.32, 2.40)**	0.19	1.21 (0.88, 1.67)
Over-burden	-0.34	0.71 (0.46, 1.11)	-0.59	**0.55 (0.39, 0.78)**	-0.25	0.78 (0.48, 1.28)	-1.03	**0.36 (0.20, 0.64)**	-0.23	0.79 (0.48, 1.32)
Com. Poverty	0.15	1.17 (0.83, 1.64)	-0.40	**0.70 (0.56, 0.88)**	-0.13	0.88 (0.62, 1.24)	-0.42	**0.66 (0.49, 0.92)**	0.01	1.02 (0.69, 1.50)

Note: Hx DomViolence= History of Domestic Violence, Com. Poverty= Community Poverty

4.5.4 Latent Class Analysis (LCA)

Results for the LCA analyses for both datasets are illustrated in Figures 1a and 1b with model fit available in Table 4.

4.5.4.1 NSCAW

Up to a 6-class LCA model for both datasets was tested to see if there were varying typologies of risk factors and subtypes of neglect. In the NSCAW data (see Table 13), the likelihood-ratio G^2 statistics dropped significantly from the 1-class to 2-class model, and it kept dropping as more classes added although the change in the numbers got smaller for higher classes. Since the purpose of this study is to examine whether risk factors tied with a certain subtype of neglect, a 5-class LCA model was chosen for interpretability and because the entropy value was higher for the 5-class compared to either the 4 or 6-class models.

Table 13: Results of Latent Class Analysis for NSCAW and Regional Datasets

Model	Likelihood Ratio G^2	Df	BIC	Entropy
		NSCAW II		
1-class	34429.05	4194281	18884.96	1.00
2-class	27381.72	4194258	15284.21	0.82
3-class	26288.49	4194235	14856.56	0.77
4-class	25740.97	4194212	14634.62	0.73
5-class	25015.88	4194189	14490.11	0.76
6-class	24689.93	4194166	14503.74	0.74
		Regional data		
1-class	21150.26	33554406	20105.85	1.00
2-class	16993.92	33554380	17040.92	0.75
3-class	16400.06	33554354	16828.13	0.79
4-class	15591.32	33554328	16483.65	0.77
5-class	13925.02	33554302	16387.59	0.76
6-class	14148.51	33554276	15752.33	0.83
7-class	14068.51	33554250	15640.33	0.82

Note. df = degrees of freedom. BIC = Bayesian Information Criterion.

In the case of the present study, there was a desire to compare the results from the two datasets. A 5-class solution was favored according to the G^2 results. A visual inspection was done for the lower-class models and the practical interpretation of class differences by subtype

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was not improved. The five-class model is presented and discussed.

Figure 1a. Item-Response Probability for Risk Factors & Neglect Subtypes in NSCAW Data
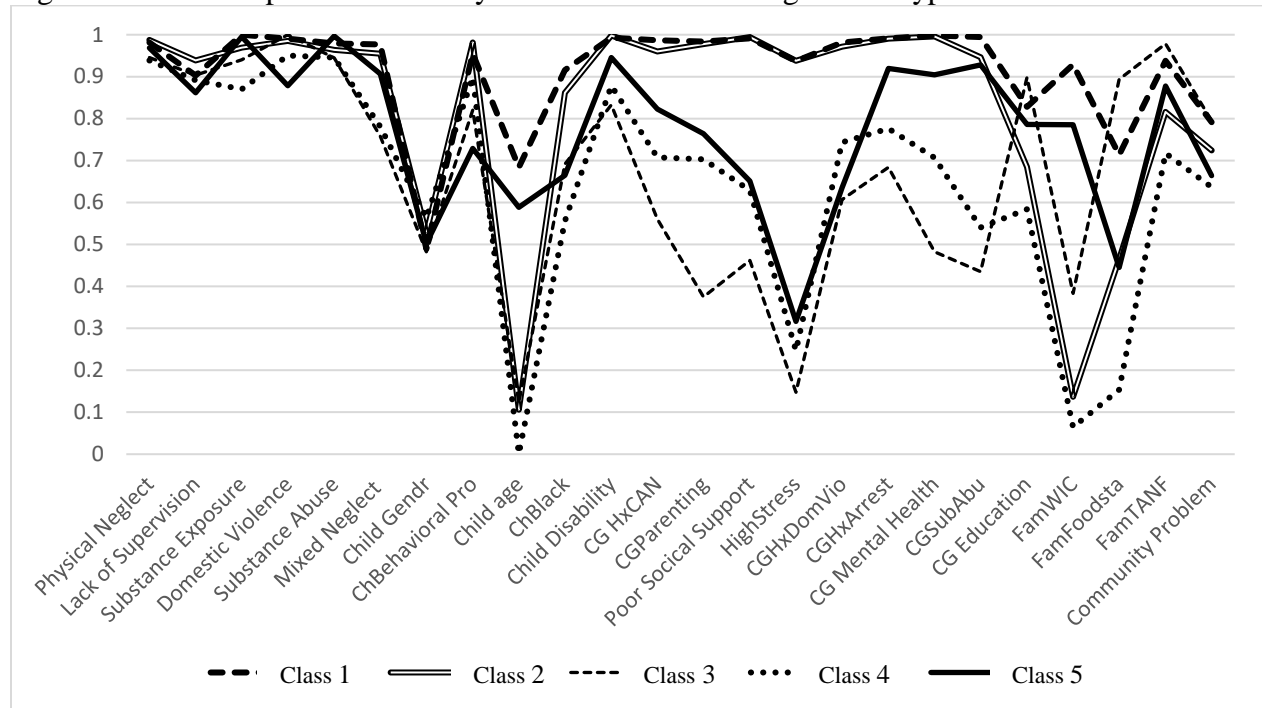
Note. Ch=Child, CG=Caregiver, Sub Exp = Exposure to Substance Abuse, ParSkl=Parenting Skills, Hx DomVio=History of Domestic Violence, HisCAN = History of child abuse and neglect

The percentage of the NSCAW sample was not too dissimilar by class. About 10.46% were assigned to Class 1, 24.26% to Class 2, 35.57% to Class 3, 5.2 to Class 4, and 24.51% to Class 5. As shown in Figure 1a, all five classes showed very high probabilities of involving each subtype of neglect – although class four had a lower probability of including substance exposure. None of the classes had a higher IPR than .5 for mixed type neglect. Generally, classes one and two have the highest probabilities across multiple caregiver risk factors although class three and four appeared to be the lowest to most caregiver risk factors but were higher in regard to material need than all other classes but Class one. Class three had high levels of caregiver domestic violence, criminal, substance abuse, and disability concerns but lower rates of material need and

concerns regarding parenting skills, stress or social support than the two highest overall caregiver

risk classes (class one and two) regard to poverty and material need.

4.5.4.2 Regional data

The results of the LCA for the regional data are shown in Figure 1b with the model fit

results in Table 4, and the likelihood-ratio G^2 statistics dropped until the 6-class model was

added and it began to rise. While the BIC value in the 7-class model was the lowest, the

difference between the 6-class and 7-class model was very small. The 6-class model had a high

propensity (Entropy=0.83) which indicated that individuals could be accurately assigned to the

latent class. Therefore, a 6-class model was retained as the best model of risk factors and

subtypes of neglect in the regional dataset.

Figure 1b. Item-Response Probability for Risk Factors & Neglect Subtypes in Regional Data
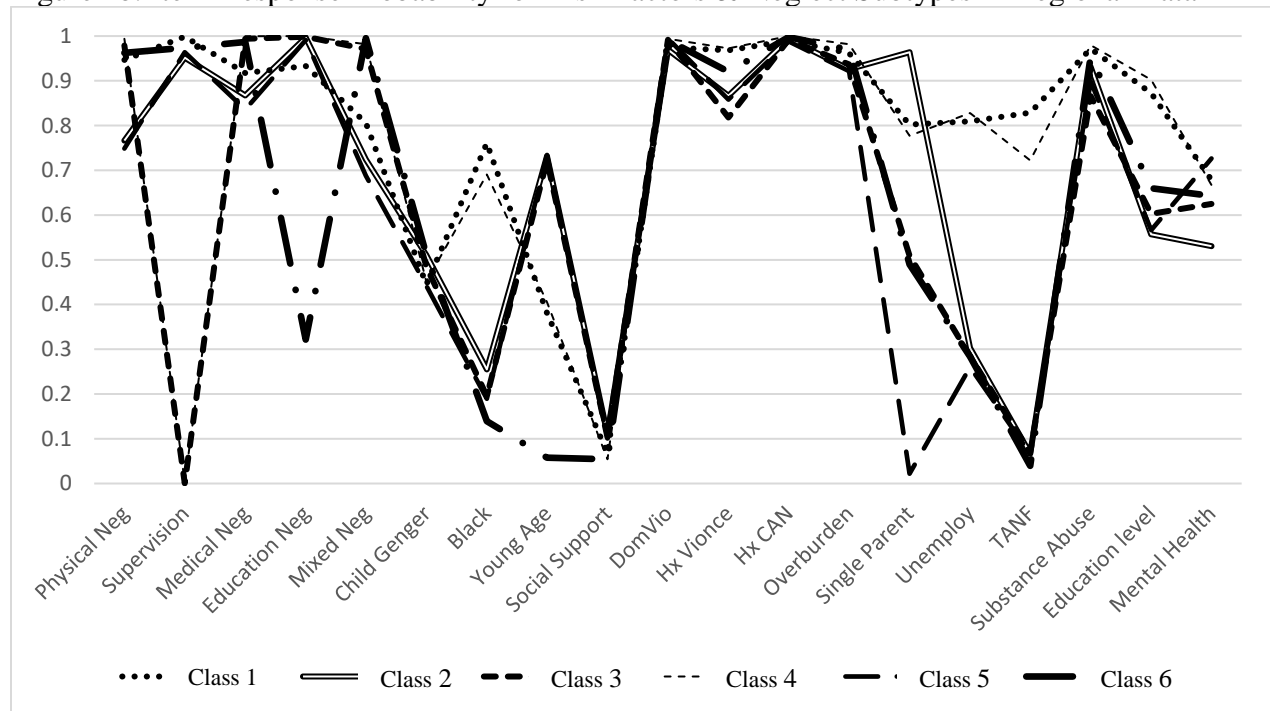
Note. Ch=Child, CG=Caregiver, MenHea=Mental Health Problems, Unemploy=Unemployment, DV=History of Domestic Violence History

The percentages of the sample assigned to classes 1 to 6 were 16.55%, 23.00%, 23.47%, 11.68%, 18.24%, and 7.07% respectively. As can be seen in Figure 1b, there was more variability in the IPR for subtypes (mixed and physical neglect compared to others) than found in the NSCAW data, however, there was less variability across risk factors. Class three was distinctive in the lack of supervision neglect cases but otherwise looked quite similar to other classes. Class five followed a similar pattern with a distinct lack of educational neglect cases, but relatively similar in other respects across classes- although the class had the lowest probability for single parenthood noted as a risk factor. Class one and four appeared to be associated with higher material need class than all others but had relatively little variation by subtype of neglect.

4.6 Discussion

The present study did find variation in risk and demographic factors using two different data sets with different forms of data (administrative and survey). This was only true, however, for the variable based approaches. The person-oriented analytic models were less informative in regard to subtypes but were consistent with the idea of CPS families facing multiple risk factors- most classes had high probabilities for multiple risk factors in both datasets.

Findings specific to a given subtype are difficult to summarize as the subtypes captured in the data varied. Consistent with some of the scant prior work (Yang & Maguire-Jack, 2016) found that family characteristics differed for physical neglect compared to lack of supervision neglect across a number of dimensions in both datasets in bivariate analyses though this was greatly attenuated in multinomial models for NSCAW data. Moreover, our findings were not consistent with Carter and Myers' finding (2007) that mental health and substance abuse were associated with physical neglect specifically. We also found significant variation between mixed neglect cases and supervisory neglect. Both bivariate and multivariate models using both data

sets indicated a number of practically important (effect size) differences between cases reported for multiple types of neglect and supervisory neglect.

While the variable based approach was able to identify some variations between subtypes, it is clear that all subtypes included multiple forms of risk factors. It is possible that the "rolling iceberg theory" best captures reported maltreatment. This theory suggests that vulnerable families may share a set of risk factors that may manifest in a number of different forms of child maltreatment (Melissa Jonson-Reid et al., 2003). This is similar to the concept of multi-finality in developmental psychopathology (Cicchetti & Rogosch, 1996). In other words, the same set of initial conditions may result in different outcomes. While there may be mechanisms that enable or inhibit certain outcomes these are either too idiosyncratic to measure or we are not yet measuring the correct things. If this is true, then the intervention programs for child neglect may not need to be individualized based on subtypes noticed at the time of a report.

NSCAW data were unique in identifying caregiver substance abuse, child substance exposure and domestic violence as subtypes of neglect. While all states consider some form of child neglect reportable as maltreatment, there is significant variation in the specificity as well as the types of behaviors included (Child Welfare Gateway, 2016). It is interesting to note that the NSCAW sample is primarily comprised of information from seven states with very large child welfare populations. This is due to the sampling strategy. None of these states explicitly name domestic violence as a form of reportable maltreatment in policy and yet these comprised a sufficiently large subgroup of cases in the present study. It may be that this reflects a lack of attention in the study to what was initially reported by the report source compared to the worker impression of the problem behavior being reported. There was some "face validity" to the notion of these cases being distinct as slightly over half of caregivers in this group that self-reported a

history of domestic violence. Given the oft-noted overlap between domestic violence and child maltreatment (Kohl et al., 2005; Jonson-Reid & Drake, 2018), it may be that this offers a particular window into this population in regard to neglectful behavior. On the other hand, these cases included relatively low levels of endorsement of other caregiver risk factors meaning that it may be that these cases are a group of caregivers reported due to failing to protect a child from domestic violence rather than neglecting other child-rearing needs.

Among various risk factors, there were differences in how important (in regard to the proportion of cases) they appeared based on caregiver report as compared to administrative data records. The most consistent factor in both data sets across maltreatment types, however, was material need or poverty. While it is clear that poverty alone is not responsible for all maltreatment, the association is well-established (Pelton, 2015). Prior research does indicate a stronger relationship between poverty and child neglect overall (Drake & Jonson-Reid, 2014). The present analysis did not compare neglect to other forms of maltreatment and indicators of low income and a material need existed in the vast majority of cases. While this paper is not the first to call attention to this, it is important to note that emerging research does suggest that there is a practically relevant gain from addressing material need in regard to reducing child maltreatment generally (Conrad-Hiebner & Byram, 2018) and some evidence specific to neglect (Raissian & Bullinger, 2017). More work is needed to understand how to optimize impact in regard to the amount of aid and the form in which it is delivered. As studies mount, it may be possible to see if particular gains are made for subtypes that may be more impacted by resources. For example, one might hypothesize that a family with more resources may be able to offset parenting deficits in regard to supervision by purchasing high-quality child care or after-school programming for older children.

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4.7 Strengths and Limitations

While this study provides the ability to add to the scant literature on neglect subtypes, there are a number of limitations. First, although the ecological framework suggests that factors at multiple levels of the ecosystem be explored, the availability of risk factors are limited in different ways in both datasets. Further, some ecological models suggest the importance of change over time (Lynch & Cicchetti, 1998). The present analyses were restricted to the presence or absence of a given factor at the time of or shortly before a maltreatment report. It may be that a lack of ability to follow families prospectively diminishes our understanding of how a particular factor at a given time may set the stage for a specific subtype of neglecting behavior. Very few prospective studies of vulnerable families exist and even fewer provide detailed measures of maltreatment occurrence let alone subtypes of maltreatment. To the extent possible, studies that involve young families should at a minimum request a link to official CPS records to improve our ability to understand the precursors to CPS contact. Second, some of the subtypes, like abandonment, are practically important and perhaps different than a parent that neglects ongoing care but even in relatively large studies, the sample size was too small to explore further. Third, although the use of two data sets helps to triangulate findings regarding the risk factors for subtypes of neglect, the data varied in regard to data collection periods and approaches. For example, NSCAW offers a wide range of risk and protective factors through survey instruments and interviews, and regional data provided more "actual" data through the linkage through administrative data. Therefore, the variables under the same label might have different meanings due to the differing ways of measurement. In addition, two datasets contained a different set of subtypes of neglect cases. On the other hand, with additional research that

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continues to use differing forms of data, we may begin to fill in some of these gaps in regard to measurement over time.

Despite the limitations, there are also strengths. This is the first study that attempted to systematically examine the unique risk factors to children reported for subtypes of neglect while also attempting to address some of the methodological challenges related to child neglect research. No one study contains the level of consistency and specificity desired to carefully study subtype variation. There may, however, be other studies in addition to those used here that could be used for additional sources of triangulation that may eventually yield some consistent factors for intervention. This study also advances work in understanding how differing methodological approaches to analyses (person v variable-based models) may lead to different conclusions. It is hoped that this study will encourage further comparisons like this so we can better understand what information is gained or lost depending on these approaches. Indeed, as the use of models produced by machine learning techniques like predictive risk modeling (Cuccaro-Alamin, Foust, Vaithianathan, & Putnam-Hornstein, 2017; Vaithianathan, Maloney, Putnam-Hornstein, & Jiang, 2013) gain increasing attention, this comparison becomes of critical import in regard to practice and policy.

For the time being, there is insufficient evidence to suggest the need for an individualized intervention approach for subtypes of neglect. While this may yet emerge in further study, there is certainly sufficient evidence to warrant attention to better prevention and intervention approaches for neglect overall. There has, unfortunately, been equal inattention to neglect in intervention and services research. Only one approach to date has significant research support in use with child neglect (Chaffin et al., 2012). Addressing material need is mentioned as an additional promising strategy earlier, but this work is just emerging. It is hoped that the present

study will encourage further methodological innovations and research to inform intervention so

that we can better prevent and intervene in cases of child neglect.

Chapter 5: Discussion and Implications

As stated in the introduction, child neglect is the most prevalent form of maltreatment in the United States (US DHHS, 2019). As such, this form of maltreatment represents the greatest burden on the child protection system. Significant research suggests that this form of maltreatment is also at least as detrimental as other forms of maltreatment to the health and development of children (Block et al., 2005; Gilbert et al., 2009; Jonson-Reid et al., 2004; Kessler et al., 2005; Newland et al., 2013; Norman et al., 2012; Snyder & Merritt, 2014; Widom et al., 2012). Because of this, child neglect also likely comprises the majority of the estimated costs attributed to maltreatment (Fang, Brown, Florence, & Mercy, 2012).

Given the impact of this issue, there has been surprisingly little research dedicated to child neglect compared to other forms of maltreatment (Dubowitz, 2007). There remains significant debate about what behaviors or conditions should be included as child neglect (e.g., Goldman et al, 2003; Hearn, 2011; Stowman & Donohue, 2005). Definitions vary in state policy and across research studies in regard to specifying medical neglect, or substance abuse with neglect or educational neglect, etc. In addition, it is not clear if these specific behaviors and conditions are different in a practical sense. In other words, we do not have sufficient research to understand whether subtypes have differing outcomes that would suggest the need for customizing interventions or policies to address unique forms of neglect.

This dissertation aimed to help fill gaps in knowledge about particular forms of child neglect as they relate to state statutes, child welfare outcomes, and different risk and protective factor profile. While not all child maltreatment is reported, the burden of known allegations of neglect was sufficient to warrant a focus on reported cases of neglect in the present study. The three research aims repeated here corresponded to the three papers.

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Aim 1: To examine how state policy defining what is reportable as maltreatment may relate to trends in the prevalence of official reports of neglect

Aim 2: To understand whether subtypes of neglect are associated with particular types of child welfare policy-relevant outcomes (recurrent reporting and foster care entry)

Aim 3: To explore risk and protective factors that discriminate between neglect and other forms of abuse with an eye toward understanding specific subtypes of neglect.

Unfortunately, the same issues that limit our understanding of child neglect related to definitions and policy variations that guide what is reportable as neglect, made it impossible to identify a single data source sufficient to address the aims of the study. Similar to Slack and colleagues (2011), the present study used multiple data sources to try to maximize the ability to build knowledge of subtypes of neglect. Because this is a three-paper model dissertation, findings specific to analyses have already been presented within the three papers. This chapter highlights major findings from papers, as well as lessons learned overall and implications for research, practice, and policy. Because the primary limitations were related to the data sources, limitations (or lessons learned) are discussed first.

5.1 Limitations and Challenges

It was necessary to use multiple data sets to attempt to capture both issues of policy variation across states and sufficient attention to subtypes of neglect. Each data set had its own unique strengths and weaknesses that made triangulation of findings challenging. Additionally, substantial research indicates that over time in families where maltreatment recurs, children become more and more likely to experience multiple forms of abuse and neglect (Bae et al., 2009; Drake et al., 2003; Mennen et al., 2010). While any one report of maltreatment may not reveal all forms of abuse or neglect, the ability to understand if subtypes are different becomes

nearly impossible in cases with recurrence. Thus, analysis had to be limited to children at their

first known report of maltreatment. This was not a problem for the federal data as the sample size

was vast or the regional data that was sampled based on first reports. It did become a limitation

in regard to sample size with NSCAW as about 50% of the study sample included children with

multiple reports. Challenges in comparability are discussed by AIM.

AIM 1: NCANDS is a federal data set based on case-level data submitted by states each

year going back a number of years. As such, this dataset has the advantage of allowing for

comparison of state policy environments, multiple years of coverage and large sample size. On

the other hand, the way in which data are recoded for inclusion into the national files provides

only limited information on neglect subtype (General neglect, medical neglect, and neglect

mixed with other forms of maltreatment). NSCAW is a national probability sample of children

with investigated reports of maltreatment, but they chose a sampling design based on capturing

the most data from states with the largest child welfare population and exclude rural areas. Only

very small samples are drawn from the remaining participating states and all are grouped

together in a separate stratum that is not sufficient for policy analysis. So, only data from the

seven large state-level strata could be used. On the other hand, NSCAW data provided much

more detailed subtype information (failure to provide, lack of supervision, abandonment,

educational neglect, substance exposure, and substance abuse related to prenatal substance

exposure or manufacture of a controlled substance in the presence of a child). While the full

NSCAW data set is relatively large once reduced by half and then further focused on neglect

alone, the cell-sized became insufficient to support multivariate analysis.

AIM 2 included all three data sources. The regional data set included linked

administrative data, focused on children with a first report and following them for multiple years.

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The region had a particularly detailed amount of information on specific behaviors and conditions reported making this the most robust source of subtype information. On the other hand, data were solely from agency electronic records as compared to the self and worker report data in NSCAW, meaning there is less richness in the availability of risk and protective factors that may also explain recurrence or entry into care. NCANDS captures the most variation in race and ethnicity with a very large sample but had the least number of available risk or protective factors for controls of the three datasets. While most studies of recurrence use some form of survival analysis to control for a time, the way in which NSCAW captured information about recurrence limits the ability to use dates in the analysis because one needs to use caseworker report to supplement the administrative information to obtain a reasonable rate for recurrence. Further, it is not possible to create completely comparable subtype categories. For example, NCANDS and the regional data have a separate category for medical neglect but NSCAW does not. NSCAW and the regional data breaks out subtypes like educational neglect or lack of supervision but NCANDS does not. If this meant that each data set excluded all others it would be possible to reduce analyses to certain types, but in all cases, all children with CPS responses are included meaning the differences are purely in how the data are coded not in regard to actual sample groups included.

AIM 3: NSCAW and the regional data had the most robust set of risk and protective factors to attempt to understand variation in subtypes according to the presence or absence of certain case characteristics. Therefore, only these two datasets could be used.

5.2 Policy Implications

Paper one identified two primary policy-relevant findings. First, in regard to the national data, the inclusion of educational neglect in a state's policy did seem to impact the prevalence of

neglect cases. In regard to outcomes, there did not appear to be differences in recurrence or

foster care entry for educational neglect cases, but this could not be analyzed using the national

data. It is unclear how states respond to these allegations and very little research in this area

exists. Because there was no little in the likelihood of recurrence and foster care entry, however,

this suggests that this group of children faces significant ongoing risk warranting further

attention.

Second, the subtype categorization in NSCAW was somewhat puzzling in relation to the

policies that guide maltreatment reporting in the large states. For example, none of those states

had official reporting inclusion for domestic violence and yet this was a large subset of neglect

cases in these data. While from a clinical perspective what the worker perceives as the type of

maltreatment may be quite valuable, from a policy perspective it is important to understand what

set of factors were noted by the person making the report and what factors allowed a report to be

"screened in" for a response. In addition to the sampling structure, this apparent mismatch

between policy gateways and definitions suggests that using NSCAW for policy research is a

challenge.

5.3 Practice Implications

Practice implications stem from AIMS 2 and 3. While the present study found some

differences in recurrent reporting and foster care entry outcomes between neglect and other

forms of maltreatment, there were no strong effects between subtypes. The present findings

support prior research suggesting neglect is an equal or stronger driver of further CPS

involvement (Jonson-Reid et al., 2018; Jonson-Reid et al., 2019). The few subtype findings

reported were inconsistent across data sets and warrant further research.

5.3.1 Risk Factors, Assessment, and Intervention

AIM 3 did uncover some variation by subtype of neglect in regard to risk factors present at baseline. In particular, there appeared to be differences in family characteristics between physical neglect and various other types which were consistent with prior research (Yang & Maguire-Jack, 2016). While the specific characteristics associated with physical neglect differed from Carter and Myers (2007), the variation in data sources used across studies make it difficult to know if this is a measurement issue or a true difference.

There are many risk assessment instruments in use by CPS across states, but many instruments have not been subjected to validity and reliability tests (Baird, Wagner, Healy, & Johnson, 1999; Baumann et al., 2011). It is argued those tools do not help CPS workers to make better decisions due to weak reliability and validity (Kang & Poertner, 2006). While this argues perhaps for greater granularity in characteristics assessed, some studies (D'andrade, Austin, & Benton, 2008) find that actuarial instruments have stronger predictive validity than consensus-based instruments. Generally, the items found in actuarial instruments could be largely identified with linked administrative data like that available in the regional data set. It is not at all clear whether instruments can be developed to accurately predict maltreatment type risk as compared to any risk of maltreatment (e.g., Putnam-Hornstein & Needell, 2011). Only one other study could be identified that tried to predict neglect specifically (Slack et al., 2011). If replicated, the present study indicates that there may be some differences between physical neglect (also known as failure to provide and associated with food, shelter and other basic needs) cases and others. Without further research, however, it is not clear that such differences warrant separate assessment and programming. In other words, there is insufficient evidence of a practically large difference in subtypes that warrant customized screening and intervention.

5.3.2   Theory and Program Development

There is some mounting evidence that at least at first report there may be important differences for child neglect overall compared to other forms of abuse. While there are several possible mechanisms related to neglectful parenting, there is a strong current related to poverty that suggests a form of social capital and/or additional strain related to neighborhood conditions that seem to have a better fit (Jonson-Reid et al., 2013; Slack et al. 2004; Zolotor & Runyan, 2006). This is supported by emerging research suggesting that addressing material need does reduce the risk of neglect (Raissan & Bullinger, 2017).

It remains unclear whether subtypes of neglect have a particular causal path. It is possible that the "iceberg theory" best captures the dynamics between the risk factors and children reported for different subtypes of neglect. This theory suggests that vulnerable families may share a set of risk factors that may manifest in a number of different forms of child maltreatment (Jonson-Reid, Drake, Chung, & Way, 2003), and this is similar to the concept of multi-finality in developmental psychopathology (Cicchetti & Rogosch, 1996). If this is true, then the intervention programs for child neglect may not need to focus on the different risk factors or subtypes of neglect but need to focus on the cumulative risk of the family.

5.4   Research Implications

This dissertation focused on children who received some sort of assessment or investigation following a report of maltreatment. While this dissertation found that significant variations in definitions of child neglect across states and the association between the definition of child neglect and the child neglect caseload in the state level, it is not clear if this also impacts who is screened in for a CPS response. It is common that state statutes are provided as a guideline for individuals who screen calls from reporters and determine if a report can be

accepted for a CPS response (McLaughlin & Jonson-Reid, 2017). However, reporters may also understand these and categorize cases accordingly. In other words, it is possible that if mandated reporters know that educational neglect is reportable then they will report a child for that reason. If educational neglect is not reportable, perhaps reporters simply turn to other ways of categorizing cases like "lack of supervision." It is also possible, however, that entirely different populations of children are excluded from CPS response in some states due to how neglect is defined. Research on screened out cases is very sparse, but there is some indication that their risk of recurrence is similar to cases that are screened in (Jonson-Reid et al., 2019). With the huge discrepancies in child neglect definitions across states, some children may be protected in one state and be excluded in another state. For example, about half of the states do not include educational neglect and this does appear related to report volume. When subgroups are excluded from initial reports, we have no way of knowing if other systems become involved with the family or if the case simply reappears later when a new problem arises.

Child neglect is defined differently in Federal and State laws. The NCANDS data represents the largest and most complete (in terms of coverage) source of information about children reported for maltreatment across states and therefore most amenable to policy comparisons. It is not clear why the decision to recode neglect cases into just two categories was made. Even if it is difficult to develop consistent categories by state one could still choose four of five relatively common subtypes across states according to policy (e.g., physical neglect, supervision, education, medical, etc.). Then states could be allowed to report whatever categories they have and state tables would simply read as missing for categories not available. There is precedence for doing this related to things like states having differential response assessments or not in the current Child Maltreatment report. While the predictors available in

NCANDS are less than ideal, at least greater detail would allow for some comparisons of prevalence between states and understanding of case outcomes like recurrence. For now, it is important that analyses are replicated in multiple states and compared to better enhance our understanding of subtype prevalence and relationship to child welfare outcomes. In a recent review of maltreatment recurrence, studies were only available to compare policies across six states (Jonson-Reid et al., 2019).

While it is common for cases reported for physical neglect or lack of supervision to have a second type of maltreatment in one report (DHHS, 2018), not much known regarding the cases with a different combination of maltreatment types. For example, in the NCANDS data (DHHS, 2018), about 14% of children had two different types of maltreatment in a single report, especially for children reported for neglect. The number was even higher in NSCAW and the regional data. For the purpose of this dissertation, cases reported for two or more neglect types were categorized as mixed neglect to compare with another sole subtype of neglect, but the nature of the report type combination was ignored. Future studies should more carefully assess varying combinations of types and subtypes of maltreatment.

The present dissertation focused on two child welfare policy-relevant outcomes: recurrent reports and foster care entry. Some differences were found regarding foster care entry outcomes for children reported for different subtypes of neglect. Although foster care is the most costly form of child welfare intervention and generally considered a negative outcome for CPS, surprisingly little research on foster care entry has been done. When conducting a review, only 9 studies could be found that looked at predicting entry into care that could examine maltreatment type prior to entry (Barth, Gibbons, & Guo, 2006; Bartholomew & Horowitz, 1991; V. B. Carter, 2010; Drake et al., 2003; English et al., 2015; Fajardo & Fajardo, 2013; Horwitz, Hurlburt,

Cohen, Zhang, & Landsverk, 2011; Kohl, Jonson-Reid, & Drake, 2009a; Needell et al., 2003;

Rivaux et al., 2008) Data sources, maltreatment types available and follow-up periods all varied.

Instead, most research on foster care focuses on reunification or re-entry. This leaves a

significant gap in the evidence-base in regard to the prevention of placement.

While recurrence and foster care entry are important outcomes, child welfare policy also

includes references to child well-being (Jonson-Reid & Drake, 2016). Much remains unknown

about whether children reported for different between subtypes of neglect may have different

child wellbeing outcomes. Some studies (MacMillan, 2000; Tyler, Allison, & Winsler, 2006)

suggest that children involved in physical and psychological neglect incidents are more likely to

show long-term developmental delay. The studies that have looked at neglect and outcomes

frequently use retrospective assessment of neglect. It is possible that persons with more problems

later in life are disposed to recall their childhoods differently than persons with fewer adult

problems. This makes the specific trajectories associated with neglect less clear.

There were differences in outcomes for AIM 3 in regard to the analytic strategy. Most

published child welfare-related research relies on a variable based approach to analyses. In a

recent scoping review only four studies attempted some form of classification analysis and only

two provided some comparison of models using both approaches (Jonson-Reid et al., 2019). v

Person-oriented approaches assume a more holistic view and can identify either individual

trajectories or hidden groups of persons that may be useful in regard to looking at whether or not

there are particular patterns that may be useful to guide intervention (Bámaca-Colbert & Gayles,

2010; Bergman & Trost, 2006). On the other hand, variable based approaches can allow for

building models based on particular theoretical constructs and/or individual risks that may be

easier to link directly to a given intervention approach. As new approaches to modeling risk and

outcomes like predictive risk modeling (e.g., Vaithianathan, Maloney, Putnam-Hornstein, & Jiang, 2013) are used, it is important that researchers compare findings using different analytic strategies to better understand what is gained or lost by choosing a given approach.

Finally, while there has been increasing attention to the implementation of evidence-based services in child welfare, researchers note that most child neglect intervention programs fail to address the primary goal of the intervention-reducing future child neglect (Allin, Wathen, & MacMillan, 2005; Hearn, 2011; MacMillan et al., 2009). In other words, more studies are needed to tie risk factor reduction than measurement of recurrence, foster care, or child well-being outcomes. Various compilations of evidence-based programs exist like the Child Welfare Evidence-based Clearinghouse (CEBC) and the ways in which programs are rated as evidence-based varies. A review of the literature located two programs that were designed to be used with neglecting families or prevention of neglect (i.e., Family Connections and SafeCare). To date, only SafeCare has a significant body of working testing it with a child welfare population (e.g., Silovsky et al., 2011; Chaffin et al, 2012). The present study focused on understanding system trajectories and risk factors for subtypes but work like this needs to be tied to intervention development and testing. While we do not have sufficient evidence as yet for the need for type-specific interventions within the neglect population, we should be exploring whether or not there are subpopulations in services studies (Jonson-Reid et al., 2013; 2017) or in intervention studies (Allin et al., 2005) that fare better or worse.

Conclusion

Despite the limitations of the current project, there are some strengths worth mention. While data sets vary in regard to data collection periods, the two national administrative data sources and one regional longitudinal study provided a unique opportunity to address some of the

gaps regarding subtypes of neglect. Second, while the recognition of the impact of policy differences on reporting is not new (Jonson-Reid et al., 2017), to my knowledge, this is the first study to examine the association between subtype of neglect in state-level policy and neglect caseloads. This is also the first known study to examine the trajectory of children through child welfare intervention and recurrence according to different forms of neglect and one of the few studies to assess entry into foster care according to prior maltreatment type.

Child neglect represents a significant cost to individual development and society at large. While research on this issue is building, it is surprising that more than 30 years after Wolock and Horowitz (1984) coined the phrase "neglect of neglect", there is still so little work done in this area. It is hoped that this study will inspire more work on child neglect so that we may improve our ability to prevent and intervene.

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Appendix A: Definitions of the Child Neglect Across States (2014)

States/Type of Neglect	Physical Neglect	Emotional Neglect	Education Neglect	Medical Neglect	Abandonment Neglect	Separate	Substance Abuse[9]	Lack of Supervision
Alabama	×			×				×
Alaska	×			×				
Arizona	×			×		×	PA	×
Arkansas	×	×	×	×		×	PAS	×
California	×			×	×		U	×
Colorado	×		×	×	×		PM	×
Connecticut	×	×	×		×			
Delaware	×	×	×	×			U	×
Florida	×	×		×		×	S	
Georgia								
Hawaii	×	×		×			S	×
Idaho	×		×	×				
Illinois	×			×	×		PS	
Indiana	×		×	×		×	PM	×
Iowa	×			×			PM	×
Kansas	×			×		×		×
Kentucky	×		×		×		U	×
Louisiana	×	×			×		P	
Maine	×		×			×		×
Maryland	×	×		×				×
Massachusetts	×	×		×			P	×
Michigan	×			×				
Minnesota	×		×	×	×		PSU	×
Mississippi	×		×	×				×
Missouri	×		×	×				
Montana	×	×	×	×		×	M	×
Nebraska	×		×	×		×		×
Nevada	×		×	×	×			

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[9] Different types of "substance abuse" were identified in the child neglect definition.

- Prenatal (**P**) exposure of a child to harm due to the mother's use of an illegal drug or other substance (14 States)
- Manufacture (**M**) of a controlled substance in the presence of a child or on the premises occupied by a child (12 States)
- Allowing (**A**) a child to be present where the chemicals or equipment for the manufacture of controlled substances are used or stored (3 States): Arizona, Arkansas, and Washington.
- Selling (**S**), distributing, or giving drugs or alcohol to a child (7 states and Guam): Arkansas, Florida, Hawaii, Illinois, Minnesota, Ohio, and Texas.
- Use (**U**) of a controlled substance by a caregiver that impairs the caregiver's ability to adequately care for the child (8 States).

State	C1	C2	C3	C4	C5	C6	C7	C8
New Hampshire	×	×	×	×		×		
New Jersey	×	×	×	×	×			×
New Mexico	×		×	×		×		
New York	×	×	×	×		×	U	×
North Carolina	×			×	×			×
North Dakota	×	×	×	×		×	P	
Ohio	×		×	×		×	MS	
Oklahoma	×	×	×	×		×	PMU	×
Oregon	×			×			PM	
Pennsylvania	×			×			M	×
Rhode Island	×			×	×		U	×
South Carolina	×		×	×				×
South Dakota	×		×	×	×		PM	×
Tennessee	×		×	×			M	×
Texas	×			×		×	SU	
Utah	×			×	×			
Vermont	×			×	×			
Virginia	×			×	×		M	
Washington	×			×			A	
West Virginia	×		×	×	×		M	×
Wisconsin	×			×			P	
Wyoming	×		×	×	×			×

Appendix B-1: Binary Analysis for Survival Curve (Re-report vs. No Risk)

Variables	Coding	% Censored	Log-Rank or Wilcoxon Chi-Square		Pr >Chi-Square
Gender	Female				
	Male				
Type of Child Maltreatment	Physical Neg.	39.45	61.08	(L)	<.0001
	LOS	27.45			
	Educational	20.08			
	Medical	27.06			
	Other	27.87			
	Mixed	41.91			
	Physical Abu.	26.32			
	Sexual Abuse	30.82			
Unemployment	Employment	22.71	8.57	(L)	0.031
	Unemployment	32.21			
Race	Not Black	21.16	9.26	(L)	0.023
	Black	32.16			
Education	High School	25.56	0.04	(L)	0.841
	No High School	27.04			
Child Disability	No	38.52	1.73	(L)	0.180
	Yes	28.90			
TANF	No	17.28	5.26	(L)	0.02
	Yes	31.26			
Caregiver Disability	No	28.63	3.93	(L)	0.04
	Yes	32.85			
Single Parenthood	No	26.35	0.75	(L)	0.38
	Yes	31.31			
Substance Abuse	No	25.68	54.15	(L)	<.0001
	Yes	55.28			
Mental Health	No	28.27	0.28	(L)	0.60
	Yes	29.80			
Hx of Domestic Violence	No	28.72	0.66	(L)	0.41
	Yes	28.87			
Hx of Arrest	No	26.29	19.08	(L)	<.0001
	Yes	43.49			
Hx of CAN	No	28.43	13.72	(L)	0.0002
	Yes	57.33			
Poor Social Support	No	25.09	0.11	(L)	0.73
	Yes	29.18			
Poor Parenting	No	23.85	1.38	(L)	0.23
	Yes	30.89			
Overburden	No	27.89	5.53	(L)	0.02
	Yes	38.93			
Poor Community	No	23.03	8.04	(W)	0.004
	Yes	30.24			

Appendix B-2: Binary Analysis for Survival Curve (Foster care entry vs. No Risk)

Variables	Coding	% Censored	Log-Rank or Wilcoxon Chi-Square		Pr >Chi-Square
Gender	Female	32.08		(L)	0.97
	Male	31.75			
Type of Child Maltreatment	Physical Neg.	41.62	57.91	(L)	<.0001
	Supervision Neg.	30.09			
	Educational	20.97			
	Medical	28.45			
	Other	31.8			
	Mixed	46.54			
	Physical Abuse	30.8			
	Sexual Abuse	32.86			
Unemployment	Employment	25.1	39.33	(L)	<.0001
	Unemployment	35.83			
Race	Not Black	23.53	49.66	(L)	<.0001
	Black	35.64			
Education	High School	28.76	49.66	(L)	<.0001
	No High School	36.89			
Child Disability	No	39.52	25.58	(L)	<.0001
	Yes	31.62			
TANF	No	21.28	3.11	(L)	0.078
	Yes	34.29			
Caregiver Disability	No	31.83	0.24	(L)	0.626
	Yes	35.14			
Single Parenthood	No	30.24	4.63	(L)	0.031
	Yes	33.74			
Substance Abuse	No	28.82	164.40	(L)	<.0001
	Yes	58.26			
Mental Health	No	29.87	20.89	(L)	<.0001
	Yes	36.66			
Hx of Domestic Violence	No	31.76	3.34	(L)	0.067
	Yes	39.39			
Hx of Arrest	No	29.68	55.34	(L)	<.0001
	Yes	45.44			
Hx of CAN	No	31.61	15.71	(L)	<.0001
	Yes	60			
Poor Social Support	No	27.04	6.27	(L)	0.012
	Yes	32.54			
Poor Parenting	No	25.54	28.53	(L)	<.0001
	Yes	34.65			
Overburden	No	31.13	15.33	(L)	<.0001
	Yes	41.31			
Poor Community	No	25.59	16.77	(L)	<.0001
	Yes	33.58			

Appendix C-1: Logistic regression in NSCAW II (Outcome: Re-report vs. No Risk)

Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Point Estimate	95% Wald Confidence Limits	
Physical Neglect	0.03	0.39	0.01	0.94	1.03	0.48	2.22
Lack of Supervision	0.55	0.28	3.82	0.05	1.74	1.00	3.04
Substance Exposure	0.46	0.34	1.82	0.18	1.59	0.81	3.12
Domestic Violence	0.38	0.38	1.02	0.31	1.46	0.70	3.06
Substance Abuse	-0.17	0.42	0.17	0.68	0.84	0.37	1.93
Mixed Neglect	0.38	0.28	1.89	0.17	1.46	0.85	2.51
Physical Abuse	-0.07	0.49	0.02	0.89	0.94	0.36	2.47
Unemployment	-0.12	0.18	0.39	0.53	0.89	0.62	1.28
Black	0.54	0.20	6.94	0.01	1.71	1.15	2.55
Education	0.32	0.19	2.98	0.08	1.38	0.96	2.00
TANF	0.42	0.23	3.24	0.07	1.53	0.96	2.42
SSI	0.23	0.24	0.96	0.33	1.26	0.79	2.01
Child Behavioral Prob.	0.62	0.24	6.55	0.01	1.86	1.16	3.00
Hx of CAN	0.53	0.19	7.91	0.00	1.69	1.17	2.44

Appendix C-2: Logistic regression in NSCAW II (Outocme: Foster Care Entry vs. No Risk)

Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Point Estimate	95% Wald Confidence Limits	
Physical Neglect	-0.23	0.34	0.45	0.50	0.80	0.41	1.55
Lack of Supervision	0.15	0.38	0.16	0.69	1.16	0.55	2.44
Substance Exposure	-1.59	0.59	7.18	0.01	0.20	0.06	0.65
Domestic Violence	-0.23	0.42	0.30	0.58	0.80	0.35	1.80
Substance Abuse	0.59	0.32	3.52	0.06	1.81	0.97	3.36
Mixed Neglect	-0.61	0.36	2.79	0.09	0.54	0.27	1.11
Physical Abuse	-1.13	0.60	3.50	0.06	0.32	0.10	1.06
Unemployment	0.32	0.18	3.25	0.07	1.37	0.97	1.94
Black	0.22	0.19	1.31	0.25	1.25	0.85	1.82
Education	-0.70	0.21	10.85	0.00	0.49	0.33	0.75
TANF	-0.60	0.28	4.51	0.03	0.55	0.32	0.96
SSI	-0.15	0.25	0.36	0.55	0.86	0.52	1.41
Child Behavioral Prob.	0.44	0.25	3.18	0.07	1.55	0.96	2.52
Hx of CAN	0.95	0.18	27.78	<.0001	2.59	1.82	3.70

Appendix D-1: Competing Risk Model in NCANDS data (Outcome: Re-report vs. No Risk)

	Parameter Estimate	Standard Error	StdErr Ratio	Chi-Square	Pr > ChiSq	Hazard Ratio
Physical Neg.	-0.14	0.09	3.98	2.27	0.13	0.87
LOS	0.05	0.06	9.24	0.87	0.35	1.05
Educational	-0.25	0.05	5.75	29.90	<.0001	0.78
Medical	-0.46	0.04	2.84	123.09	<.0001	0.63
Other	-0.04	0.07	4.92	0.33	0.56	0.96
Mixed	-0.18	0.25	12.15	0.52	0.47	0.84
Physical Abu.	-0.09	0.08	10.46	1.16	0.28	0.91
Sexual Abuse	0.18	0.02	4.41	53.59	<.0001	1.20
Age	-0.01	0.00	0.96	2.29	0.13	0.99
Sex	0.03	0.04	6.99	0.42	0.52	1.03
Race	0.02	0.05	2.94	0.14	0.71	1.02
Substance Abuse	0.16	0.06	3.38	7.01	0.01	1.17
Mental Health	0.31	0.08	2.67	16.47	<.0001	1.37
Child Disability	0.25	0.04	2.67	48.35	<.0001	1.29
CG Disability	0.07	0.04	2.28	3.74	0.05	1.07
Poor	0.09	0.06	7.86	2.13	0.14	1.09

Appendix D-2: Competing Risk Model in NCANDS data (Foster Care Entry vs. No Risk)

	Parameter Estimate	Standard Error	StdErr Ratio	Chi-Square	Pr > ChiSq	Hazard Ratio
Physical Neg.	-0.50	0.37	7.44	1.85	0.17	0.61
LOS	-0.05	0.14	11.84	0.11	0.74	0.95
Educational	-0.44	0.22	13.04	4.17	0.04	0.64
Medical	-1.43	0.20	4.26	49.49	<.0001	0.24
Other	-0.38	0.17	5.11	4.93	0.03	0.69
Mixed	-0.85	0.33	5.45	6.65	0.01	0.43
Physical Abu.	-0.33	0.19	9.87	3.21	0.07	0.72
Sexual Abuse	0.72	0.03	2.17	597.30	<.0001	2.06
Age	0.01	0.01	1.05	0.51	0.48	1.01
Sex	-0.04	0.09	7.58	0.21	0.65	0.96
Race	0.06	0.46	22.05	0.02	0.90	1.06
Substance Abuse	1.53	0.31	19.08	24.23	<.0001	4.63
Mental Health	1.24	0.15	5.52	64.57	<.0001	3.46
Child Disability	0.14	0.28	14.38	0.25	0.62	1.15
CG Disability	0.32	0.31	14.70	1.02	0.31	1.37
Poor	1.25	0.43	41.96	8.49	0.00	3.48

Appendix E-1: Competing Risk Model in Regional data (Outcome: Re-report vs. No Risk)

Ref= Physical Neg.	Parameter Estimate	Standard Error	StdErr Ratio	Chi-Square	Pr > ChiSq	Hazard Ratio
LOS	-0.13	0.08	0.90	2.35	0.13	0.88
Educational	-0.06	0.12	0.96	0.22	0.64	0.94
Medical	-0.28	0.11	0.89	6.46	0.01	0.76
Other	-0.05	0.09	0.91	0.32	0.57	0.95
Mixed	0.00	0.12	0.89	0.00	0.98	1.00
Physical Abu.	0.00	0.11	0.90	0.00	0.99	1.00
Sexual Abuse	0.19	0.19	0.94	1.03	0.31	1.22
Child Gender	-0.04	0.05	0.91	0.52	0.47	0.97
Unemployment	-0.22	0.06	0.94	14.01	0.00	0.81
Black	0.11	0.08	0.90	2.14	0.14	1.12
Education	0.04	0.05	0.91	0.62	0.43	1.04
Child Disability	-0.03	0.15	0.87	0.03	0.86	0.98
TANF	-0.01	0.08	0.95	0.04	0.85	0.99
CG Disability	0.46	0.20	1.01	5.43	0.02	1.58
Single Parenthood	-0.07	0.05	0.92	1.71	0.19	0.94
Substance Abuse	-0.20	0.10	0.90	4.16	0.04	0.82
Mental Health	-0.06	0.05	0.90	1.06	0.30	0.95
Domestic Violence	0.08	0.17	0.80	0.23	0.63	1.09
Hx of Arrest	0.00	0.08	0.92	0.00	0.99	1.00
Hx of CAN	0.54	0.35	0.98	2.31	0.13	1.71
Poor Support	-0.11	0.07	0.89	2.19	0.14	0.90
Poor Parenting	0.01	0.06	0.93	0.04	0.85	1.01
Overburden	0.06	0.10	0.94	0.36	0.55	1.06
PoorCom	-0.71	0.59	0.95	1.46	0.23	0.49

Appendix E-2: Competing Risk Model in Regional data (Foster Care Entry vs. No Risk)

Ref= Physical Neg.	Parameter Estimate	Standard Error	StdErr Ratio	Chi-Square	Pr > ChiSq	Hazard Ratio
LOS	-0.19	0.07	0.95	8.34	0.00	0.83
Educational	-0.26	0.10	0.92	7.40	0.01	0.77
Medical	-0.33	0.09	0.93	14.01	0.00	0.72
Other	-0.12	0.07	0.96	2.74	0.10	0.88
Mixed	0.09	0.10	0.98	0.84	0.36	1.09
Physical Abu.	-0.04	0.09	0.95	0.23	0.63	0.96
Sexual Abuse	0.22	0.14	0.89	2.41	0.12	1.24
Child Gender	0.00	0.04	0.94	0.00	0.99	1.00
Unemployment	-0.11	0.04	0.92	6.30	0.01	0.89
Black	0.20	0.06	0.91	9.94	0.00	1.22
Education	0.10	0.04	0.94	5.60	0.02	1.10
Child Disability	-0.14	0.11	0.92	1.58	0.21	0.87
TANF	0.05	0.06	0.94	0.64	0.42	1.05
CG Disability	0.34	0.13	0.91	6.20	0.01	1.40
Single Parenthood	-0.03	0.04	0.93	0.64	0.42	0.97
Substance Abuse	0.31	0.07	1.07	18.20	<.0001	1.37
Mental Health	0.07	0.04	0.96	2.27	0.13	1.07
Domestic Violence	0.09	0.15	0.93	0.35	0.55	1.09
Hx of Arrest	0.21	0.06	1.02	11.99	0.00	1.24
Hx of CAN	1.01	0.23	0.90	18.61	<.0001	2.75
Poor Support	0.25	0.11	0.97	5.03	0.02	1.29
Poor Parenting	0.33	0.08	0.96	17.27	<.0001	1.39
Overburden	0.28	0.11	0.96	6.24	0.01	1.33
PoorCom	0.31	0.63	1.03	0.24	0.63	1.36