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**A LONGITUDINAL ANALYSIS OF THE EFFECT OF DISABILITY TYPE
AND EMOTIONAL/BEHAVIOR PROBLEMS ON DIFFERENT FORMS OF
MALTREATMENT ACROSS CHILDHOOD**

BY

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DISSERTATION

Submitted to the University of New Hampshire

In Partial Fulfillment of

the Requirements for the Degree of

Doctor of Philosophy

in

Sociology

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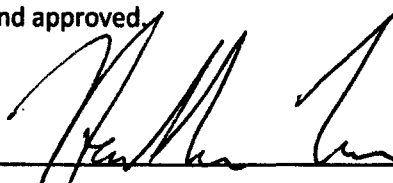
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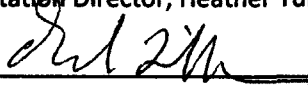


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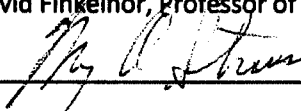
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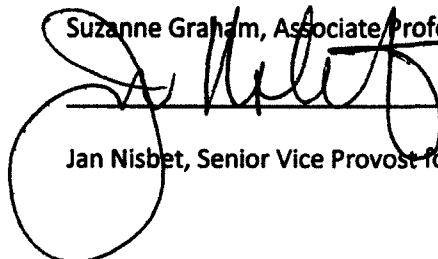
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3/29/13

Date

This dissertation is for my Mom, who does the right thing even when it is hard.

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ABSTRACT

by

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University of New Hampshire, May, 2013

Children are among the most vulnerable people in our population, especially those with disabilities, emotional and behavioral problems (EBP), and those who experience maltreatment. This dissertation increases our understanding of the complex relationships between disability, internalizing symptoms (IS), externalizing symptoms (ES), and maltreatment across developmental stages. Previous literature suggests that children with disabilities (CWD) are at a heightened risk for maltreatment (Spencer, Devereux, Wallace, Sundrum, Shenoy, Bacchus, and Logan 2005 ; Sullivan and Knutson 2000). Yet, recently the Fourth National Incidence Study of Child Abuse and Neglect (NIS-4) has challenged the notion that CWD are at increased risk, showing that for most types of maltreatment CWD are actually at lower risk. Research also suggests that the relationship between disability and maltreatment is far too complex to be understood using a cross-sectional design.

Using the Longitudinal Studies Consortium on Child Abuse and Neglect (LONGSCAN) data following children from birth through age 14, I use longitudinal growth modeling to predict maltreatment risk trajectories across childhood to determine how disability, internalizing symptoms (IS), and externalizing symptoms (ES) are related to risk for maltreatment. Findings indicate the importance of examining specific types of

disabilities, internalizing symptoms (IS), externalizing symptoms (ES) and maltreatments separately and over time. Results suggest that children with learning disabilities are at increased risk for neglect across all of childhood to age 14 relative to their peers without learning disabilities. Children with a combination of both learning and intellectual disabilities are at increased risk for neglect and physical abuse at early ages but their risk dissipates over time. In addition, children with higher levels of internalizing symptoms are at lower risk of psychological maltreatment while children with high levels of externalizing symptoms are at high risk of psychological and physical abuse. Children with learning and intellectual disabilities are more likely to be exposed to multiple types of maltreatments at very young ages, while children with high levels of externalizing symptoms are at high risk of experiencing multiple types of maltreatment as they get older.

INTRODUCTION

This dissertation seeks to better understand the relationships between disability, emotional/ behavioral problems, as indexed by internalizing symptoms² (IS) and externalizing symptoms (ES), and maltreatment exposure across childhood. To date, no studies have examined associations between specific forms of maltreatment, specific types of disabilities, IS, and ES, longitudinally across developmental stages. This dissertation examines four main questions: First, are children with any type of disability (CWD) and/or those with higher levels of emotional/behavioral problems (EBP) at higher risk for maltreatment throughout childhood than children without disabilities (CWOD) and children with lower levels of EBP? Second, are children with specific types of disabilities and/or children with internalizing symptoms (IS), and/or externalizing symptoms (ES) at higher risk for specific types of maltreatments (psychological abuse, neglect, physical abuse)? Third, are CWD and/or EBP more likely to experience multiple types of maltreatments? Lastly, are children with specific types of disabilities and/or

² Within this dissertation, *EBP* refers to when *Emotional/Behavioral problems* are measured together, as one construct. This is different, than when I refer to them as *IS* and *ES*, which is when *internalizing symptoms* and *externalizing symptoms* are measured as separate constructs.

children with internalizing symptoms (IS) and/or externalizing symptoms (ES) more likely to experience multiple types of maltreatment?

Children, regardless of whether or not they have disabilities, or emotional and behavioral problems, are at far greater risk for victimization than adults. Finkelhor identifies three primary reasons that children are at a higher risk for victimization than adults: 1) “children’s developmental immaturity in controlling their own behavior, (2) society’s tolerance for weak sanctions concerning offenses against children and (3) children’s lesser ability to regulate and choose who they associate and interact with” (Finkelhor 2008 pp. 10-11). I suggest that these three reasons create even greater vulnerability for CWD, and children with higher levels of IS and ES relative to children without children with disabilities, and with lower levels of IS and ES. However, these processes likely work differently depending on the type of disability, levels of IS, ES, the type of maltreatment, and the developmental stage in which they occur. Therefore, it is important to better understand the linkages between disability, EBP, and maltreatment and to examine these relationships over time.

Overview of Preview Research

Most previous research on this topic has indicated that children with disabilities experience maltreatment at higher rates than children without disabilities. In the most widely cited study on the topic, Sullivan and Knutson (2000) found a 31% prevalence rate of maltreatment for CWD compared to 9% for children without disabilities (CWOD). Researchers theorize that CWD are at higher risk for many reasons, and disability itself represents an important source of maltreatment risk (Sobsey 2002). Previous research, (Sedlak 2012) incorporates emotional and/or behavioral disorders along with all other

types of disabilities within an “any disability” category. However, like disability, emotional and behavioral problems can involve substantially different types of symptomatology. Some problems children have involve “internalizing” symptoms, such as social withdrawal, anxiety and depression. These are problems that are directed inward towards the self. Other problems children face manifest as “externalizing” symptoms. These are directed outward towards others, such as aggressive, anger and anti-social behaviors. Internalizing and externalizing symptoms can impose different types of risk for children. As a result, I argue that it is important to consider internalizing and externalizing problems separately from one another and separately from disability types when examining risk for maltreatment.

Children with IS and ES have also been found to be at heightened risk for maltreatment (Jaudes and Mackey-Bilaver 2008; Sprang, Clark, and Bass 2005; Turner, Finkelhor, and Ormrod 2009); though, this question has received much less attention (Turner, Finkelhor, and Ormrod 2009). However, the Fourth National Incidence Study of Child Abuse and Neglect (NIS-4) recently challenged the notion that CWD are at increased risk. Using the endangerment standard³, the NIS-4 found that for child maltreatment in general, CWD are at lower risk than CWOD (22.4 per 1,000 compared to 38.2 for all types of maltreatment) (Sedlak 2012). Using the harm standard, the NIS-4 researchers found that CWD had a significantly lower rate (3.1 per 1,000) relative to CWOD (4.2). However, 8.8 CWD per 1,000 were seriously harmed from maltreatment

³ The NIS-4 used two standards for measuring child maltreatment, the harm standard and the endangerment standard. The NIS harm standard is a more objective standard that included cases in which a child is harmed from maltreatment. The endangerment standard is more lenient; allowing for inclusion of cases that meet the harm standard as well as those thought to be in danger of maltreatment³ Sedlak, A. 2012. "Fourth National Incidence Study of Child Abuse and Neglect (NIS-4): Report to Congress " A.f.C.a.F. Department of Health and Human Services, Washington, D.C. ...

(using the harm standard) compared to 5.8 CWOD. These contradictory results from nationally representative cross-sectional studies underscore the necessity for further research in this area.

There are two substantial bodies of literature on maltreatment, disability, and emotional and behavioral problems that suggest causal processes in the opposite direction. One line of research suggests that CWD and those with higher levels of emotional and behavioral problems are at heightened risk for maltreatment (Sprang, Clark, and Bass 2005; Sullivan and Knutson 2000; Turner, Finkelhor, and Ormrod 2009). Alternatively, another body of research shows that children who experience maltreatment are more likely to develop disabilities (Hildyard and Wolfe 2002; Trickett and McBride-Chang 1995) and higher levels of internalizing symptoms (IS) and externalizing symptoms (ES) (Appleyard, Egeland, van Dulmen, and Sroufe 2005; Éthier, Lemelin, and Lacharité 2004; Manly, Kim, Rogosch, and Cicchetti 2001). This dissertation will attempt to reconcile these bodies by accounting for time ordering of these relationships using longitudinal data. This should allow for a better assessment of which children are at an increased risk for maltreatment and which types of maltreatments they are most likely to experience. In this dissertation I will only test *one* direction in this relationship, examining the risk for maltreatment among CWD and children and those with EBP, I will *not* be examining the opposite causal direction.

Developmental Age/Stage Specificity

To better understand the relationship between disability, IS, ES, and specific forms of maltreatment it is important to account for the impact of developmental stages within which these relationships occur. Research on child victimization has found that

children under the age of 12 are at highest risk for being victimized by a family member (Finkelhor 1995), and that children of preschool and elementary ages with disabilities have the highest rate of maltreatment and the risk declines in middle and high school years (Sullivan and Knutson 2000). While researchers have established the importance of developmental stages and ages in maltreatment studies, most studies on disability and maltreatment have not been longitudinal, and therefore do not allow researchers to analyze developmental stage specific impacts of disability, IS, and ES on maltreatment. The differential impact by developmental stage is also affected by the type of disability, the type of IS or ES, and the type/severity of maltreatment considered (Hildyard and Wolfe 2002).

Limitations of previous research

Past research on disability and maltreatment has been limited by grouping many different disabilities together, many types of victimizations in a single measure, or examining a single type of disability and categorizing its relation into a single form of maltreatment (e.g. Alriksson-Schmidt, Armour, and Thibadeau 2010; Brownlie, Jabbar, Beitchman, Vida, and Atkinson 2007; Spertus, Yehuda, Wong, Halligan, and Seremetis 2003). The heterogeneity of disability and victimization makes it important to examine each type separately as well as IS and ES and to allow for comparisons across types. In addition, previous studies often include IS or ES as a broad disability category with other disabilities (Sedlak 2012). Research that has separated out the impact of externalizing symptoms (Spencer et al. 2005; Sullivan and Knutson 2000) and internalizing symptoms (Turner, Vanderminden, Finkelhor, Hamby, and Shattuck 2011) on victimization found that risk for maltreatment differs depending externalizing and internalizing symptoms. In this dissertation I address these limitations by beginning my analysis with broad

categories of disabilities, EBP, and maltreatment (research question 1), consistent with many previous studies, but then I move into a more nuanced analysis of the relationship between specific types of disabilities, IS, ES, and maltreatment subtypes (research question 2).

Definitional issues in previous research

The definitions of disability, emotional and behavioral problems used in previous research differ substantially depending on the research framework, the data available, and the discipline within which they are defined (medicine, psychology, sociology, etc). As there is no “universal” definition of disability, I use the World Health Organization in this dissertation as my definition of disability as a conceptual definition and because of practical constraints in using archival data, I operationalize disability as: the presence of a physical, sensory, learning, or intellectual impairment. IS and ES are treated here as a separate construct operationalized using the Child Behavior Checklist (CBCL), which is a continuous measure of symptoms (not diagnoses) (Achenbach and Edelbrock 1983). Internalizing symptoms (IS), include social withdrawal, somatic complaints, and anxiety/depression. Externalizing symptoms (ES), include delinquency and aggression. Although EBP are sometimes considered disabilities or proxies for undiagnosed disabilities (Helton and Cross 2011; Sullivan and Knutson 2000), I use them as an index of symptomatology in an attempt to better understand the interplay between disability, IS, and ES as they are related to maltreatment. In this dissertation I consider four aspects of maltreatment, including child abuse (sexual, physical, and psychological) and neglect. Maltreatment is measured using Child Protective Services reports (CPS) and self-reports (at ages 12 and 14) used for reliability.

The purpose of this dissertation is to develop a better understanding of how disability, IS, and ES are related to maltreatment and to determine if children with these conditions are at a heightened risk for maltreatment. Further, I seek to better understand which types of maltreatment children are at risk for and at what ages these children are at the highest risk. By accounting for the heterogeneity of disability and maltreatment and variations across developmental stages, I examine the ways in which maltreatment, IS, ES, and disability are related using longitudinal growth modeling.

Organization of this dissertation

The second chapter of this dissertation presents three theoretical rationales for why CWD and those with IS and ES may be at heightened risk for maltreatment. The third chapter begins with a description of the prevalence of disability, IS, ES, and maltreatment, and then moves into a review of the literature that has previously explored these relationships. The fourth chapter is focused on research design and data analysis. The chapter begins with operational definitions of disability, IS, ES, and maltreatment; outlines the four major research questions; and describes the data set and all measures used in the analysis. The chapter concludes with a description of data analysis procedures and formulas used to fit models for research question one. The fifth chapter discusses and describes the results from the four research questions and starts with bi-variate results for each question and then proceeds into the longitudinal growth modeling results for each research question. The sixth and final chapter includes the discussion and limitations. In this last chapter, I review the findings in the context of the previous research in the order of the research questions. Next, I discuss policy and practice recommendations based on my findings, which is followed by future work plans and recommendations. The final section provides the limitations of this dissertation and the conclusion.

CHAPTER 2- THEORETICAL RATIONALE

Researchers have suggested a number of reasons why children with disabilities (CWD) and those with internalizing symptoms (IS) and/or externalizing symptoms (ES) are at a heightened risk for maltreatment. The following section reviews theories that propose why some children (and not others) are at an increased risk for maltreatment with a focus on disability, IS and ES. These theories suggest that characteristics of the child and the quality of interaction with his/her caregiver (or another adult) may contribute to an increased risk for maltreatment. These theories do not intend to displace responsibility for maltreatment or to “blame the victim.” Rather, the theorists seek to better understand why some children are at a heightened risk due to child level characteristics in order to better protect the children at the highest risk. I will present three theories that could explain why CWD and those with IS and ES might be at an increased risk for maltreatment. I do not explicitly test the theories described below, but instead I employ them as potential explanations that support the hypotheses predicting relationships between disability, IS, ES, and maltreatment. I begin with caregiver-stress theory, followed by the routine activities theory (RAT), and then move on to the target congruence model (a revision of the routine activities theory) with a focus on target antagonism and target vulnerability.

Dependency-Stress theory- This traditional theory hypothesizes that CWD may be at an increased risk for certain types of maltreatment because of their greater dependency and its toll on their caregivers (Finkelhor 2008; Westcott and Jones 1999). This theory is commonly referred to as the “dependency-stress” model or the “caregiver-burden” model (Fitzsimons 2009). CWD may be at a heightened risk because they often require more intensive parenting (e.g., attention, help, support, financial resources), which can stretch the care-giving capacities of parents (Jaudes and Mackey-Bilaver 2008; Vig and Kaminer 2002).

Dependency stress theory may be especially relevant for children with physical disabilities and intellectual disabilities who require more hands on day to day assistance. Children with physical disabilities require substantial support with daily needs (eating, dressing, bathing, etc.). Children with learning disabilities require help in educational and problem solving areas. Children with intellectual disabilities may require the learning assistance in addition to the daily needs supports. The dependency-stress theory likely applies to children with IS and ES in a different way than for CWD. Care-giving stress associated with raising a child with IS and ES is more likely to result from stress associated with their child getting into trouble, not engaging others appropriately, acting out in class, etc. (see target antagonism for more detail on this).

Dependency stress theory further argues that families of CWD have higher levels of discord due to parenting stress (Groce 2005). Social isolation of families or parents of CWD has also been cited as an antecedent of violence within these homes. Groce (2005) suggests it is more likely a combination of the two, stating “... child-produced stressors and social isolation are compounded to produce a stressful and potentially violent

situation in a household coping with a disabled child” (Groce 2005). Few researchers have tested this theory; however, for those who have, measures of parental stress alone failed to predict abuse (Benedict, Wulff, and White 1992; Sobsey 2002). These researchers, however, did not include social isolation as a covariate. This theory has been challenged as too narrow and unable to explain complexities in the disability-abuse relationship (Petersilia 2001).

Routine Activities Theory- The Routine Activities (RAT) theory posits that the environments children grow up in, the places where they choose to be, the people they choose to be around, what they possess, and how involved caregivers are in supervising them all contribute to risk for maltreatment:

Routine activities theory holds that victimization risk is a function of lifestyle and/or patterns of routine activities. People who are demographically similar based on variables such as age, sex, race, income, and social setting—face similar victimization risks because of differences in lifestyles or routine activities that enhance a person’s exposure to risky places and potential offenders.... An offender may choose an individual with a disability as a victim out of a belief that apprehension is less likely and that punishment will be less severe if apprehension occurs. (Petersilia 2001 p.20)

Petersilia (2001) describes how RAT applies to individuals with disabilities as victims of crimes. Here, Petersilia argues that CWD may be targeted because even if caught, the consequences are likely to be less severe than if caught targeting a CWOD. Finkelhor (2008) makes a similar argument, identifying three main reasons why children in general are at a higher risk for victimization than adults, including “(2) society’s tolerance for weak sanctions concerning offenses against children” (Finkelhor 2008 pp. 10-11). Typically, RAT has been used to examine victimization outside the home and has only recently been applied to violence and victimization within the home. Within RAT, there

are four main components placing children at heightened risk: proximity to crime, exposure to crime, target attractiveness, and guardianship (Finkelhor 2008).

Proximity to crime simply refers to being in places where crime is prevalent. In the case of victimization within the home, children who live in violent areas are in higher proximity to crime (Finkelhor, Ormrod, Turner, and Hamby 2005). CWD are more likely to live in non-kin placement, foster care, group homes, or institutions, and these placements put them in settings that are more likely to be violent; therefore, they are at a higher risk for victimization within the home (Sobsey 2002).

Exposure to crime refers to behaviors that children and youth engage in, that place them in situations where crimes are more likely to take place (going to parties, being out late at night, etc.). Children with ES, who more often engage in delinquency and aggressive behavior, may break curfew, go out late at night, and be in places where violence and delinquency occur, which make them more likely to be targets of victimization (outside the home). Children with IS who may often exhibit insecurity and self esteem issues might be more likely to associate with people who provide them attention, even if it is unhealthy (Finkelhor 2008). For this reason, children with IS are at a heightened risk for exposure to crime (both within the home and outside the home).

Target attractiveness is the third component of routine activities theory, and it refers to “attributes that might entice offenders, such as owning desirable and portable possessions” (Finkelhor 2008. P.56) or that yielding goods from the victim will be easier than other victims. In this sense, individuals with disabilities, especially visible disabilities (physical and cognitive), and those with IS and ES are at heightened risk for victimization in that they may be considered “easier targets” (Petersilia 2001). This again

applies more readily to crimes that occur outside the home and has been applied primarily to victimizations such as property crime, theft, and sexual victimization.

Guardianship, a component of RAT refers to the notion that increased guardianship/or supervision by an adult will decrease the likelihood of victimization. Routine activities theory has primarily been applied to violence outside the home, giving little attention to the fact that a majority of youth victimization happens within the home, especially for very young children (Finkelhor 2008). The “guardianship” component of RAT might work in the opposite direction for CWD and perhaps children with IS and ES. Exposure to an increased number of caregivers and institutional care could contribute to the vulnerability of CWD (Helton and Cross 2011; Westcott and Jones 1999). Since it is clear that most perpetrators of child victimization are caregivers or acquaintances (Finkelhor and Dziuba-Leatherman 1994), an increased number of caregivers or increased time with caregivers (referred to as “guardianship”) could actually increase risk for child maltreatment. The quality of the relationship and time spent with the caregiver likely determines whether guardianship serves as a protective or risk factor for victimization. Hired caregivers of CWD are often undertrained and underpaid, which could lead to a combination of stress-dependency theory and (reverse) guardianship theory.

In an elaboration of Routine Activities Theory that applies components to victimization within the home, Finkelhor proposes a target congruence paradigm. Below, I describe Target Congruence and how it might be applied to differential victimization of CWD and children with IS and ES.

Target congruence - Following Finkelhor (2008), increased risk for victimization could be due to characteristics of the victims that align with what the perpetrator is seeking in a victim, which he calls “target congruence” (Finkelhor 2008). The categories of Finkelhor’s paradigm that I draw on in this research are target antagonism and target vulnerability. I will exclude the third component target gratifiability, what RAT refers to as “target attractiveness”

Finkelhor (2008) define target gratifiability as “some characteristics of the victim [that] increase their risk because they are qualities, possession, skills, or attributes that offenders want to obtain, use, have access to, or manipulate”(p.60). Since I am not exclusively examining sexual abuse⁴ nor victimizations that take place outside the home (bullying, property theft, etc.), target gratifiability is less helpful in explaining heightened risk for maltreatment among CWD, IS, and ES.

Target antagonism refers to qualities of the victim that arouse anger or jealousy in the offender (Finkelhor and Dziuba-Leatherman 1994). CWD are at increased risk for maltreatment because they may arouse feelings of anger, jealousy over attention, or provoke responses in their caregivers or family members (Petersilia 2001). Children with disabilities often require more time and attention as addressed in the care giving stress section; this can cause tension within the household and erupt into violence. Theoretically CWD, IS, and ES would be at increased risk for maltreatment through target antagonism. Specifically, children might be at increased risk for psychological abuse, neglect, or physical abuse.

⁴ The number of children with sexual abuse reports in the restricted sample is too small to examine as an outcome separate from other types of maltreatments so I will not be able to examine sexual abuse as an outcome on its own. I will continue to review the literature as I can examine sexual abuse as an aggregate outcome with other types of maltreatments.

It is not likely that the diagnosis of a disability places children at heightened maltreatment risk, but rather that it is the behaviors of the child relative to the parent/caregivers expectations that causes the parents and others to maltreat. According to the UNICEF research on disability and maltreatment, children are often at increased risk for victimization well before the date of diagnosis of a disability (Groce 2005). In this sense, a diagnosis could be a protective factor in that the caregiver may better understand why the child behaves in a particular manner and redistributes “blame” or attribution of the behavior.

Children with ES are likely at the highest risk for maltreatment for reasons of target antagonism. In general, children with ES tend to be more defiant and talk back to caregivers and therefore arouse anger in caregivers that leads to maltreatment (Sobsey 2002; Turner, Finkelhor, and Ormrod 2009). In addition, caregivers’ attempts to discipline a child with ES may escalate into neglect, psychological abuse, or physical abuse out of frustration (Briscoe-Smith and Hinshaw 2006). Children with some less confrontational types of disabilities, like sensory disabilities, are at lower risk compared to children with ES but still at higher risk relative to children without disabilities. Many children with externalizing symptoms do not have diagnoses, and parents may not understand the behavior, without a reason, or something to “blame” for the behaviors, children with externalizing symptoms are likely at highest risk for maltreatment. While some children with externalizing symptoms have a diagnosis, conduct disorder for example, many children with externalizing symptoms simply exhibit challenging behaviors without a formal diagnosis.

Children with higher levels of ES and learning disabilities are likely to be at greater risk for maltreatment at older ages, according to the principles of target antagonism. Within the context of childhood, challenging interactions between parents and children with ES could become even more strained as children with ES get older and begin to move into adolescence. Parents without skills, patience, or support to deal with the challenging behaviors of children with these types of behaviors and disabilities could place this group of children at heightened risk for maltreatment as they get older.

Target vulnerability refers to the theory that “some characteristics of victims increase risk because they compromise the potential victim’s capacity to resist or deter victimization and thus make the victim an easier target for the offender. For child victimization, the prototypical risk factors... are attributes such as physical weakness, emotional deprivation, or psychological problems” (Finkelhor 2008, pp. 60-61) Target vulnerability could explain why children with specific types of disabilities and IS or ES are at an increased risk for all types of maltreatment (psychological abuse, neglect, physical abuse, and sexual abuse).

Children with learning and intellectual/cognitive disabilities are less likely to understand risks or interpret signs of danger (Hibbard, Desch, and The Committee on Child Abuse Neglect and Council on Children With Disabilities 2007). The inability to communicate with adults outside of a child’s family or care giving circle may also put children with communication, cognitive, and other forms of physical disabilities at increased risk for maltreatment (Westcott and Jones 1999). Moreover, children with physical and intellectual/cognitive disabilities often do not have the physical or cognitive means of effectively seeking help or avoiding dangerous situations, and they are often

more isolated from peers or social networks in which help-seeking and risk disclosure might take place (Brownlie et al. 2007; Hibbard, Desch, and The Committee on Child Abuse Neglect and Council on Children With Disabilities 2007; Petersilia 2001; Reiter, Bryen, and Shachar 2007).

Children with physical disabilities (mobility disabilities) have diminished capability to deter victimization, including maltreatment, through their inability to physically get away from the situation (Groce 2005). Furthermore, children with many forms of disabilities are not included in sex education classes and are taught “compliance” rather than “assertiveness,” and this exclusion causes them to be increasingly vulnerable to sexual abuse through what Petersilia calls “socially mediated effects of disability” (Hibbard, Desch, and The Committee on Child Abuse Neglect and Council on Children With Disabilities 2007; Petersilia 2001 p. 675). Theoretically, CWD are less likely to recognize the signs of abuse, see the abuse as wrong, and develop and execute an escape plan (Finkelhor 2008).

Children with IS and ES are likely to be considered easier targets for some of the same reasons that CWD are targets. Internalizing symptoms serve as a risk factor in that:

Certain emotional problems may lead to dependent, sexualized, or indiscriminately affiliative behavior that leaves a child open to victimization. Such children may cling to whoever is available or anyone who expresses the slightest interest in them. This may lead them into the company of exploitative, poorly controlled, or abusive people (Finkelhor 2008, p.53).

Additionally, children with IS may have diminished capacity to recognize dangerous situations and may have lesser abilities to deter victimization through an inability to stick up for themselves or ask for help (Finkelhor 2008).

The vulnerability of CWD, IS, and ES will likely be greater than CWOD as children get older. All infants and very young children have a very limited capacity to deter and avoid maltreatment. The differences between children with and without disabilities will likely increase as typical children begin to develop skills that enable them to resist or avoid maltreatment (Petersilia 2001).

Summary

The theories and conceptual models outlined above support the expectation that CWD and/or IS or ES will be at heightened risk for maltreatment. However, as discussed earlier, the reason for their increased risk likely differs depending on their type of disability and the type of maltreatment. These theories suggest that CWD, IS, and ES are likely at increased risk for maltreatment. However, it is important to examine each types of disabilities, IS, ES, and maltreatment separately as these relationships likely differ depending on type of disability, IS, ES, and maltreatment. .

CHAPTER 3- REVIEW OF THE LITERATURE

The following chapter begins with a description of the prevalence of disability, internalizing symptoms (IS), externalizing symptoms (ES), and maltreatment, and then moves into a review of the literature that has previously explored these relationships.

Prevalence and overview

Before discussing the previous research on the relationships between disability, emotional/behavioral problems, and maltreatment, it is important to first review the prevalence rates of each of the core concepts in this dissertation. I begin with the prevalence of disability, move into the prevalence of emotional/behavioral problems, and finish with prevalence rates of maltreatment in the United States.

Prevalence of Disability-Due to advancements in medicine, hygiene, and lifestyle choices, there are an increasing number of people with disabilities in the United States. Diseases and conditions that were once fatal are no longer fatal, and people are living longer than in centuries past while at the same time new conditions and diagnoses are becoming medicalized and diagnosed (Conrad 2005; Halfon, Houtrow, Larson, and Newacheck 2012). Ten percent of the world's population are born with a disability or will acquire a disability by age 19 (Groce 2005). Prevalence estimates vary widely within the United States; the Disability Status Report of 2008 estimated 12.1 percent of people

of all ages have a disability (Erickson, Lee, and von Schrader 2010), and the 2000 census estimated 19.3 percent of people (5 years and older) have a disability (U.S. Census Bureau 2007). The 2008 Disability status report cited that 0.7% of children under four years old are reported to have a disability and this number climbs to 5.1% of children 5 to 15 years old (Erickson, Lee, and von Schrader 2010). The lack of consensus around the prevalence of disability (Altman, Barnartt, Hendershot, and Larson 2003) and the relationship between disability and victimization is attributed to the different ways it is measured and defined. To date, there is no “universal” definition of disability (Sullivan 2009) nor is there any universal standard for categorizing disability (Smart 2001; Sullivan and Knutson 2000).

Previous research has conceptualized disability in a number of ways that reflect this lack of a universal standard. This absence of a universal definition has made comparing past research studies very challenging, even when attempting to compare something as simple as a prevalence rate. A recent meta-analysis highlights this issue by creating heterogeneous and overlapping categories in order to make comparisons across research articles (Jones, Bellis, Wood, Hughes, McCoy, Eckley, Bates, Mikton, Shakespeare, and Officer 2012). This definitional challenge will become more apparent as I discuss the research in detail. The World Health Organization (WHO) defines disability as:

... umbrella term, covering impairments, activity limitations, and participation restrictions. Impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. Thus disability is a complex phenomenon, reflecting an interaction between features of a person’s body and features of the society in which he or she lives (World Health 2001).

The above definition of disability includes six main components: cognition, mobility, self-care, getting along, life activities, and participation. Ideally, the WHO definition would be the standard used for defining disability in research and practice. I will use the WHO definition as a conceptual definition, and because of practical constraints in using archival data, I operationalize disability as: the presence of a physical, sensory, learning, or intellectual impairment. Disability, like victimization, is a concept that is heterogeneous in both type and severity. In this dissertation, I will only be able to differentiate by type of disability and not by severity.

In previous research, clinical or sub-clinical levels of IS and ES are sometimes classified as disabilities (Webber and Plotts 2008). In the most widely cited study on disability and maltreatment for example behavior disorder is treated as a disability (Sullivan and Knutson 2000). Much of the classification of disability, IS, and ES includes overlapping terms and definitions (Rutherford, Quinn, and Mathur 2004). In this dissertation, IS and ES are *not* categorized as disabilities but instead as separate constructs that incorporates a range of symptom levels. In the following subsection, I briefly discuss the definition, prevalence, and common correlates of IS and ES.

Prevalence of Internalizing symptoms and Externalizing symptoms-Internalizing symptoms (IS) also referred to as internalizing problems include: Social withdrawal, somatic complaints, and anxiety/depression and Externalizing symptoms (ES) also referred to as externalizing problems include: delinquency and aggression. Internalizing symptoms are “of an introverted nature, and this includes problems with the self that include worries, fears, somatic complaints, and social withdrawal...over-controlled, over-inhibited, shy-anxious, and personality disordered” (Webber and Plotts 2008, p.13).

Externalizing symptoms are described as “under-controlled, aggressive, acting out, and conduct disordered” (Webber and Plotts 2008, p. 13). The prevalence of IS and ES is not entirely clear because of definitional and measurement issues, similar to those associated with defining and estimating disability (Webber and Plotts 2008). Research has established however that males are more likely to experience externalizing problems while females are more likely to experience internalizing problems (Webber and Plotts 2008).

According to a review of the literature, estimates that reach a diagnosis or clinical level of emotional and behavioral problems (EBP) range from 5% to 26% (Brauner and Stephens 2006). Among children with Emotional or Behavioral Disorders in school, Webber and Plotts (2008) estimate that 75%-85% are male, a majority Caucasian (62%), and most are in the 8-17 year range. The current research uses the Child Behavior Checklist (CBCL) to measure IS and ES, which has been established in the literature as a reliable and valid measure of IS and ES (Webber and Plotts 2008). The CBCL measures behaviors as reported by the caregiver. It is not equivalent to a diagnosis of a disorder but instead assesses a range of symptomatology. As a reminder, within this dissertation, EBP refers to when *emotional/behavioral problems* are measured together, as one construct. This is different, than when I refer to them as IS and ES, which is when *internalizing symptoms* and *externalizing symptoms* are measured as separate constructs.

Interrelatedness of Disability, Internalizing symptoms, and Externalizing symptoms- Disability, IS, and ES are clearly interrelated. However, the degree of interrelatedness has been highly variable in previous research. Learning problems commonly co-occur with IS and ES; the U.S. department of Education (2000) estimates

that around 25-35% of children with clinical level Emotional and Externalizing symptoms also have learning problems (Webber and Plotts 2008). ADHD, which is classified as a learning disability in this dissertation, is sometimes also classified as a behavioral disorder (or clinical level ES), depending on the definition and the discipline in which the research is being conducted. IS and ES have also been found to co-occur, with developmental disabilities and with sensory disabilities. Taken as a whole CWD have higher rates of IS and ES (Kariuki, Honey, Emerson, and Llewellyn 2011).

Prevalence of Maltreatment- Using the National Longitudinal Study of Adolescent Health (ADD health) prospective cohort study of 7th to 12th graders, Hussey et al. found that nearly 42% of respondents had experienced supervisory neglect, 28% of respondents had experienced physical assault, and nearly 5% had experienced sexual abuse by the time they started 6th grade (Hussey, Chang, and Kotch 2006). While trends in maltreatment have shown a decline in the last decade (Jones, Finkelhor, and Halter 2006), individuals that continue to be victimized may be the most vulnerable. Unfortunately, I am unable to examine bullying or any form of peer maltreatment in this dissertation due to data availability. The scope of maltreatment will therefore be limited to psychological abuse, neglect, physical abuse, and sexual abuse.⁵

Psychological (emotional) Abuse is defined as: “a pattern of behavior that impairs a child’s emotional development or sense of self worth. This may include criticism, threats, or rejection, as well as withholding love, support, or guidance” (Child Welfare Information Gateway 2009, p. 3). According to the National Survey of Children’s

⁵ I will be examining sexual abuse only in the aggregate with other types of maltreatment as “any maltreatment” and multiple types of maltreatment. Due to the relatively small number of cases and the sample limitations I will not be able to examine sexual abuse as an outcome independently.

exposure to Violence (NatSCEV), 6.4% of children had experienced psychological maltreatment in the last year and 9.1% had in their lifetime (Finkelhor, Turner, Ormrod, and Hamby 2009). Results from the NIS-4 estimate that from 2005-2006, the rate of psychological maltreatment was 2 per 1,000 children using the Harm standard (Sedlak 2012). These results are most different because the NatSCEV is self-reported data, asking about life time experience and because the NIS-4 is using the harm standard and agency data.

Neglect is the “failure of a parent, guardian, or other caregiver to provide for a child’s basic needs” (Child Welfare Information Gateway 2009 p.2). Neglect is the most prevalent form of child maltreatment (Feerick, Knutson, Trickett, and Flanzer 2006; Sedlak 2012; Sullivan and Knutson 2000; Vig and Kaminer 2002), and it has seen the smallest decline in recent years relative to other forms of maltreatment (Jones, Finkelhor, and Halter 2006). There are four main components of neglect: neglect of basic needs, lack of supervision, emotional neglect, and educational neglect (National Data Archive on Child Abuse and Neglect 2010). Results from the NIS-4 estimate that from 2005-2006, the rate of neglect was 10.5 per 1,000 children using the Harm standard (Sedlak 2012).⁶

Physical Abuse is defined as “nonaccidental physical injury (ranging from minor bruises to severe fractures or death) as a result of punching, beating, kicking, biting, shaking, throwing, stabbing, choking, hitting (with a hand stick, strap, or other object), burning or otherwise harming a child, that is inflicted by a parent, caregiver, or other

⁶ The NIS-4 only includes three of the four components of neglect, physical, emotional, and educational, excluding supervision as a component and instead treating it as a component of physical neglect in this statistic.

person who has responsibility for the child” (Child Welfare Information Gateway 2009 p. 2). According to the National Survey of Children’s exposure to Violence (NatSCEV), 4.4% of children had experienced physical abuse in the last year and 9.1% had experienced physical abuse over the course of their lifetime (Finkelhor, Turner, Ormrod, and Hamby 2009). Importantly, the NatSCEV measure of physical abuse doesn’t require injury⁷(Finkelhor, Ormrod, and Turner 2007b) which is why the percentage is higher than other estimates like that of the NIS-4. Results from the NIS-4 estimate that from 2005-2006, the rate of physical abuse was 4.4 per 1,000 children using the Harm standard (Sedlak 2012).

Sexual Abuse is defined by the NIS-4 behaviors including: “intrusion, child’s prostitution or involvement in pornography, genital molestation, exposure or voyeurism, providing sexually explicit materials, failure to supervise the child’s voluntary sexual activities, attempted or threatened sexual abuse with physical contact.”(Sedlak 2012 p. 73). Results from the NIS-4 estimate that from 2005-2006, the rate of sexual abuse was 1.8 per 1,000 children using the Harm standard (Sedlak 2012).

Multiple types of Maltreatment. Children who experience any victimization often experience more than one type of victimization (Finkelhor 2008; Finkelhor, Ormrod, and Turner 2007a). Using a nationally representative sample of children, Finkelhor, Ormrod, and Turner found that among the 71% of children in the sample who had experienced any victimization, 69% had experienced at least one other form of victimization in the same

⁷ The NatSCEV physical abuse question asks “Not including spanking on your bottom, in the last year, did a grown-up in your life hit, beat, kick, or physically hurt you in any way”

year (2007a). Importantly, this study is examining any type of victimization from a holistic perspective, asking about more than twenty victimization experiences, not just maltreatments within the home. Therefore, the prevalence rates from this study are higher than expected if measuring maltreatment within the home exclusively.

Literature review

The following literature review summarizes previous research on the ways in which disability, IS, and ES are related to maltreatment. Though previous research has examined these relationships in numerous ways, I attempt to organize this literature review around my four primary research questions that consider disability, IS, and ES as predictors of maltreatment.

Research Question 1: Disability, Emotional/Behavioral problems (EBP) as

predictors of Maltreatment- Much of the previous research suggests that children with disabilities (CWD) are at a higher risk for maltreatment than children without disabilities (CWOD); however, estimates vary widely due to differences in reporting, design, conceptualization, and measurement (Jones et al. 2012; Leeb, Bitsko, Merrick, and Armour 2012; Sullivan and Knutson 2000). A recent review and meta-analysis found that, in general, CWD are exposed to more violence than CWOD (Jones et al. 2012). This meta-analysis, which used data from 16 original research studies that met criteria as studies using random samples or whole population studies, examined the relationship between disability and abuse finding that pooled prevalence rates from these 16 studies varied widely from 5% to 68% (Jones et al. 2012).

The most widely cited article on disability and maltreatment reports a 31% prevalence rate of maltreatment among CWD and a 9% prevalence rate among CWOD (Sullivan and Knutson 2000). In this study, Sullivan and Knutson, utilized school records, Child Protective Services (CPS) records, foster care review records, and police databases to test the relationship between disability and maltreatment. Using the school records as a measure of both disability and educational progress, Sullivan and Knutson found that CWD are at heightened risk for maltreatment. They further examined each type of disability and maltreatment, which will be reviewed in detail in subsequent sections (Sullivan and Knutson 2000). Spencer et al. examined children's likelihood of being registered into child protection in West Sussex, United Kingdom (2005). They found children with disabilities were more likely to experience physical abuse, emotional abuse, and neglect but that risk varied by type of disability and type of maltreatment (Spencer et al. 2005). These two studies do an excellent job of examining disability subtypes and maltreatment subtypes; however, they are limited because: (1) they do not examine these relationships over time; and (2) that they do not examine the subtypes of disabilities, IS and ES as they are related to exposure to multiples types of maltreatments across childhood.

The 2011 National Crime Victimization Survey (NCVS), a nationally representative study examining exposure to violence (both reported and unreported to the police), found the 2011 unadjusted rate of violent victimization among children aged 12-15 years was 76 per 1,000 for CWD and 30 per 1,000 for CWOD (Harrell 2012). For the purpose of this study, there are two major limitations of the NCVS: it only reports on individuals age 12 and older and does not report on child abuse or child sexual abuse

(Finkelhor 2008). Some researchers argue that maltreatment among CWD might be reported even less than for CWOD because the child's condition can mask the signs of abuse (Cooke and Standen 2002; Little 2004).

The Fourth National Incidence Study on Child Abuse and Neglect (NIS-4) included disability for the first time and showed that children with a "confirmed disability" had significantly lower rates of physical abuse and harm from maltreatment. However, the study found CWD had significantly higher rates of emotional neglect and of serious injury or harm from maltreatment (Sedlak 2012). These differences could be due to the differences in conceptualization of both disability and maltreatment as the NIS-4, maltreatment is reported using a harm standard and an endangerment standard⁸ (Sedlak 2012). The NIS-4 uses the Office of Special Education and Rehabilitative Service as a resource for a count of disability prevalence but does not define what it means to have a "confirmed disability."

While many studies find a relationship between child disability and maltreatment (Harrell 2012; Spencer et al. 2005; Sullivan and Knutson 2000), a number of studies found no relationship between disability and maltreatment (Benedict, White, Wulff, and Hall 1990; Leeb, Bitsko, Merrick, and Armour 2012). Others found only a weak association between disability and abuse/neglect (Govindshenoy and Spencer 2006). Still others have found CWD to be at a lower risk for maltreatment when measuring maltreatment using an endangerment standard (Sedlak 2012). These differences again, may be due to the lack of specificity in measurement of disability. In this dissertation I

⁸ The NIS harm standard is a more objective standard that included cases in which a child is harmed from maltreatment. The endangerment standard is more lenient; allowing for inclusion of cases that meet the harm standard as well as those thought to be in danger of maltreatment

will measure disability first as a general construct and then examine specific types of disabilities as they are related to maltreatment. In addition I will also account for emotional and behavioral problems (EBP) which can involve substantially different types of symptomatology, in this dissertation measured as externalizing symptoms and internalizing symptoms. Children with EBP are often included in categories with children with disabilities, as they may be here in the NIS-4.

Interestingly, in a sample of children at the Kennedy Institute in Baltimore (all children had disabilities in the sample), researchers found that child functional and developmental characteristics were not associated with maltreatment reporting (Benedict, White, Wulff, and Hall 1990). In fact, these researchers found that the more severe the disability, the lower the risk of maltreatment (Benedict, White, Wulff, and Hall 1990). One important consideration when comparing this study to others is that Benedict et al. (1990) are comparing CWD to each other and not CWD to those without disabilities, and they are using.

This inconsistency suggests that some findings may be due to artifacts of the study design (e.g. small convenience samples, cross sectional studies that do not collect information on timing of maltreatment relative to disability diagnosis, and variability in measurement of disability) (Leeb, Bitsko, Merrick, and Armour 2012). It is obviously important to determine if there is in fact a relationship between disability and maltreatment and what the nature of that relationship is. The relationship between disability and maltreatment is likely complex. The different ways in which disability, IS, ES, and maltreatment have been defined across research and disciplines have caused inconclusiveness among findings.

Due to the heterogeneity of disability, IS, ES, and maltreatment, it is important to examine the relationship between specific types of disabilities and maltreatment (Pears, Kim, and Fisher 2008; Spencer et al. 2005). Many studies show that the risk for maltreatment varies by type of disability (Jaudes and Mackey-Bilaver 2008; Spencer et al. 2005). In research question 2, I examine the relationship between specific types of disabilities and specific types of maltreatment.

Research Question 2- Specific types of Disability, Internalizing symptoms, and Externalizing symptoms as predictors of specific forms of Maltreatment- Due to the heterogeneity of disability, IS, ES, and maltreatment, it is worthwhile to examine the relationship between specific types of disabilities and specific forms of maltreatment (Pears, Kim, and Fisher 2008). Past research suggests that it may be important to separate out different types of maltreatment when assessing disability related risk as they have different patterns that would be masked if lumped into one category of “maltreatment” (Brown, Cohen, Johnson, and Salzinger 1998; Govindshenoy and Spencer 2006; Ouyang, Fang, Mercy, Perou, and Grosse 2008; Sullivan and Knutson 2000). Since most studies on disability and maltreatment use different definitions of disability, at times I will remind the reader which type of disability I am referring to and how the previous research defines that type of disability. The following section will heavily rely on the Sullivan and Knutson (2000) and Spencer et al.(2005) studies as they are the most comprehensive articles on maltreatment and disability and are the only articles to date that examines each type of disability by each type of maltreatment.

Psychological Abuse

Studies specifically looking at psychological abuse are far less prevalent because of the relative new focus or inclusion of psychological abuse as a form of maltreatment. Some studies that included psychological abuse did not examine it as an outcome separate from other types of maltreatment (Turner et al. 2011). Sullivan and Knutson (2000) found that children with disability in general were 3.88 times more likely to experience psychological abuse compared to children without disabilities (CWOD).

Physical Disability- Sullivan & Knutson found that children with physical disabilities are at two and a half times higher risk for psychological abuse relative to CWOD (Sullivan and Knutson 2000). in The National Survey of Children's Exposure to Violence, a Nationally representative sample of children ages 2-17, Researchers found that children with physical disabilities were not at an increased risk for maltreatment relative to children without physical disabilities (Turner et al. 2011). However, Turner et al. (2011) did not report separate types of maltreatment so it is unclear which types of maltreatment children with physical disabilities were at increased risk for.

Sensory Disability (hearing, speech, and vision)- Sullivan & Knutson found that children with speech and language disorders are at nearly seven times the risk for psychological abuse, and children with visual impairments are at two times higher risk relative to CWOD (Sullivan and Knutson 2000).

Learning Disability (hyperactivity/attention problems)- In the UK based study mentioned previously, Spencer et al. (2005) found that children with learning difficulties were almost three times as likely to be registered with the child protective agency for

psychological abuse relative to children without learning difficulties . Sullivan & Knutson found that children with learning disabilities are at two times higher risk for psychological abuse relative to CWOD (Sullivan and Knutson 2000).

Intellectual Disability (developmental delay, mental retardation)- Sullivan and Knutson found that children with mental retardation are at three times higher risk for psychological abuse than CWOD (2000). In their Meta analysis, Jones et al. (2012) found that the risk of psychological abuse is higher in children with mental or intellectual⁹ disabilities by 4.3% (pooled estimate). In a study of Israeli children, those with intellectual disabilities were more likely to have experienced psychological abuse, namely humiliation (Reiter, Bryen, and Shachar 2007), though this study has a very small and non-representative sample.

In a longitudinal study of risk for child abuse and neglect among low income children, researchers found that a low score on a standardized assessment of mental development, measured by the Bayley Scales of Infant Development, was predictive of a maltreatment report in the first three and a half years of life (Dubowitz, Kim, Black, Weisbart, Semiatin, and Magder 2011). This measure of infant development, what they called child functionality, was the only child level variable that was predictive of maltreatment (Dubowitz et al. 2011).

Jaudes and Mackey-Bilaver (2008) used a sample of 101,189 children and found that children with developmental delays and mental retardation were not at increased risk for maltreatment. Turner et al. found that children with developmental or learning

⁹ The mental/intellectual disability category includes intellectual disabilities (learning, autism, Asperger's, attention deficit hyperactivity disorder), and mental disabilities, and developmental disabilities not otherwise defined.

disorders were actually at lower odds of experiencing maltreatment (Turner et al. 2011). However, it is important to note that both learning and developmental disabilities are being measured with a heterogeneous category, including autism, pervasive developmental disorders, Asperger's, developmental delay or retardation, dyslexia, and/or other learning problems (Turner et al. 2011). Unfortunately, Dubowitz et al. (2011), Jaudes and Mackey-Bilaver (2008), nor Turner et al. (2011) reported separate types of maltreatments. Therefore, it is unclear which types of maltreatment children with intellectual disabilities were at increased or decreased risk for.

Internalizing symptoms and Externalizing symptoms- Sullivan and Knutson found that children with behavioral disorders were nearly seven times more likely to experience psychological abuse (2000). Consistent with these findings, a study using clinical evaluations found that children with externalizing problems had higher rates of maltreatment and experienced more severe forms of maltreatment (Sprang, Clark, and Bass 2005) Spencer et al. examined both conduct related behavioral disorders and non-conduct related psychological problems (2005). They found that children with conduct disorders were over eleven times as likely to be registered for psychological abuse. Children with psychological disorders (non-conduct) were eight times as likely to be registered for psychological abuse than those with non-conduct disorders psychological disorders (Spencer et al. 2005).

Using administrative data on Illinois children under age 6, Jaudes and Mackey-Bilaver found that children with mental health and behavioral conditions are nearly twice as likely as children without mental health and behavioral conditions to experience maltreatment (2008). Consistent with this finding on Illinois children, using a nationally

representative dataset, Turner, Finkelhor, and Ormrod, found that children with both high levels of internalizing *and* externalizing symptoms had increased exposure to maltreatment, even after accounting for all previous maltreatments, earlier EBP, and demographics (2009). In a nationally representative sample of children ages 2-17, researchers found that after controlling for other disabilities and confounding factors, children with IS had almost two times the odds of maltreatment (Turner et al. 2011).

Using the Developmental Victimization Survey (DVS), a nationally representative survey of children ages 2-17, researchers found that children with psychiatric diagnoses were at heightened risk for maltreatment relative to children without a psychiatric diagnosis (Cuevas, Finkelhor, Ormrod, and Turner 2009). It is important to note that “psychiatric diagnosis” includes PTSD, ODD/CD, anxiety disorder, depression, ADD/ADHD, Learning Disorder, and Mental Retardation (Cuevas, Finkelhor, Ormrod, and Turner 2009). Again, because Jaudes and Mackey-Bilaver (2008) Turner et al. (2011), and Cuevas, Finkelhor, Ormrod, and Turner (2009) do not separate out the maltreatment outcomes, and only two studies located do separate outcomes of maltreatment the need for research in the area is evident.

Neglect

Sullivan and Knutson found that children with any type of disability were 3.76 times more likely to experience neglect compared to CWOD, and neglect was the most common form of maltreatment among all types of disabilities (2000). The NIS-4 found that children with “confirmed disabilities” are at heightened risk for neglect using the harm standard (4.7 compared to 2.3 per 1,000 children) (Sedlak 2012).

Physical Disability- Sullivan & Knutson found that children with physical disabilities were at nearly two times higher risk for neglect compared to CWOD (2000).

In their study of Illinois children, Jaudes and Mackey- Bilaver found that children with chronic physical health conditions were 1.1 times more likely to experience maltreatment (including physical abuse, sexual abuse, psychological abuse, and neglect) relative to children without physical health conditions (Jaudes and Mackey-Bilaver 2008). This particular study examined children with “physical health conditions,” and this distinction is important to note as we would expect to see different results than if the researchers used a diagnostic measure of “has a physical disability.” Unfortunately, as stated earlier with other types of disabilities, Jaudes and Mackey-Bilaver did not report separate types of maltreatment so it is unclear which types of maltreatment children with physical disabilities are at increased risk for.

Sensory Disability- Sullivan & Knutson found that children with visual impairments were at one and a half times increased risk, while children with hearing impairments were just over two times increased risk, and children with speech and language impairments were at nearly five times higher risk for neglect compared to CWOD (2000). Consistent with these findings from the United States, Spencer et al. found that children with speech and language disorders were more likely to be registered with the UK child protective agency (2005).

Learning Disability- Using the third wave of the National Longitudinal Study of Adolescent Health, researchers found a relationship between ADHD and child maltreatment where the relationship differed depending on symptoms of ADHD i.e.,

inattentive vs. impulsive hyperactive (Ouyang et al. 2008). They found a significant relationship between inattentive symptoms and supervisory and physical neglect. Hyperactive/impulsivity symptoms were significantly associated with supervisory neglect (Ouyang et al. 2008). Sullivan & Knutson found that children with learning disabilities were twice as likely to experience neglect (2000). Spencer et al. found that children with learning difficulties are more than five times more likely be registered with the UK child protective agency for neglect relative to children without learning difficulties (2005).

Intellectual Disability- A review essay of research on children with developmental delays makes the argument that children with mental retardation are at higher risk for neglect because “ordinary standards of care are inadequate for them” (Petersilia 2001, p. 669). In a longitudinal study using a sample of 644 upstate New York families, researchers found that children with low verbal IQ’s were two times more likely to be reported as experiencing neglect (Brown, Cohen, Johnson, and Salzinger 1998). Spencer et al. found that children with Cerebral Palsy are nearly three times more likely be registered with the UK child protective agency for neglect relative to children without Cerebral Palsy (2005).

Internalizing symptoms and Externalizing symptoms- Sullivan and Knutson found that children with behavioral disorders have a seven times higher risk of experiencing neglect relative to CWOD. Brown et al. (1998) found that children who are anxious and/or withdrawn were twice as likely to self-report neglect relative to children without these symptoms. Spencer et al. found that children with conduct disorders were over eight times as likely to be registered for neglect compared with children without conduct disorders. (2005).

Physical Abuse

Most research on disability and physical abuse finds that CWD are at increased risk for abuse (Jones et al. 2012; Sullivan and Knutson 2000 ; Svensson and Bornehag 2011); however, some research showed that CWD are not at increased risk (Govindshenoy and Spencer 2006), and others have found that the relationship is curvilinear (Helton and Cross 2011).

Jones et al. (2012) cite a pooled prevalence rate of 3.56% for physical abuse among CWD with high heterogeneity among prevalence rates. In a review of population-based studies on the relationship between abuse and CWD, Govindshenoy and Spencer (2006) found only four studies that met their criteria for inclusion (population based studies, reporting primary empirical data on association between child abuse and disability, and time order). They concluded that there was weak evidence a relationship existed between disability and maltreatment (Govindshenoy and Spencer 2006). In measuring disability as a continuous measure, Helton and Cross (2011) examined the relationship between child functionality and parental physical assault. They found that there was a curvi-linear relationship between functionality and assault in that children with mild impairment or mid-level functionality were at the highest risk for assault (Helton and Cross 2011).

Physical Disability- Sullivan and Knutson found that children with physical disabilities were at increased risk for physical abuse compared to children without any disabilities (2000).

Sensory Disability- Helton and Cross (2011) argue that disability should be measured as a continuous measure rather than a dichotomous measure to better capture

the full spectrum of CWD. When they used a continuous measure of language skills, they found a curvilinear relationship between language skills and risk for physical abuse. Children with mild or mid-level language skills were at high risk for minor assault compared to children with lower or superior language skills (Helton and Cross 2011). Sullivan and Knutson found that children with hearing, speech, and language delays were at increased risk for physical abuse (2000). Interestingly, Spencer et al. found that children with vision and hearing disabilities were not at a higher risk for child protective registration (2005). However, they found that children with speech and language disorders were more than three times more likely to be registered for physical abuse (Spencer et al. 2005).

Learning Disability- Sullivan and Knutson also found that children with learning disabilities were at increased risk for physical abuse (2000). Ouyang et al. further found a relationship between Attention deficit hyperactivity disorder (ADHD) and child maltreatment, but they determined that the relationship differed depending on subtype of ADHD. They concluded that hyperactive/impulsivity symptoms were significantly associated with supervision neglect and physical abuse (Ouyang et al. 2008). In the UK based study mentioned previously, Spencer et al. found that children with learning difficulties more than three times as likely to be registered with the child protective agency for physical abuse relative to children without learning difficulties (Spencer et al. 2005).

Intellectual Disability- Children with mental or intellectual disabilities were at heightened risk (pooled estimates) for physical abuse (Jones et al. 2012). Spencer et al. found that children with Cerebral Palsy had three times higher risk of registration with

the UK child protective agency relative to children without Cerebral Palsy (Spencer et al. 2005).

Internalizing symptoms and Externalizing symptoms- Sullivan and Knutson (2000) found that risk differed by disability type; for example, children with behavioral disorders were at highest risk for physical abuse based on the finding that these children were seven times more likely to experience physical abuse. Dakil, Cox, Lin, and Flores (2012) used a nationally representative dataset, namely the National Child Abuse and Neglect Data System (NCANDS), to examine the risk factors for physical abuse among children with ES. They found that children with behavior problems were at significantly higher risk for having a substantiated physical abuse report relative to children without behavior problems (Dakil, Cox, Lin, and Flores 2012).

Sexual Abuse

Previous research has found that CWD are at a higher risk for sexual victimization (Brown, Cohen, Johnson, and Salzinger 1998; Brunnberg, Bostrom, and Berglund 2012; Suris, Resnick, Cassuto, and Blum 1996). Pooled prevalence rates show the prevalence of sexual violence is 14% among CWD (Jones et al. 2012). Brunnberg et al. (2012) found that in a sample of Swedish children, the risk for forced sexual intercourse at debut was more common among adolescents with a single disability relative to adolescents without a disability (4.0% and 1.6% respectively) and highest among adolescents with multiple types of disabilities (10.4%). Sullivan and Knutson (2000) found that CWD are 3.14 times more likely to experience sexual abuse compared to CWOD.

Physical Disability- Jones et al. (2012) estimate pooled prevalence rate of 11% for sexual violence among children with physical impairments, with substantial heterogeneity in the estimates. Researchers have found that girls with physical disabilities have higher odds of experiencing sexual abuse compared to those without physical disabilities, with an adjusted odds ratio of 1.57 (Alriksson-Schmidt, Armour, and Thibadeau 2010).

Sensory Disability- In a community sample of children with (and without) speech or language impairments (N=284) followed from age 5 to 25, researchers found that women with language impairments were more likely to report sexual assault/abuse. (Brownlie et al. 2007). In a study of 1,150 adult members of the Norwegian Deaf Register and a comparison group from the general population, deaf females reported sexual assault more than two times more frequently than hearing females (39.6% vs. 19.2% respectively) and deaf males more than three times more frequently (32.8 vs. 9.6%) (Kvam 2004). Additionally, the abuse reported by deaf children was more serious in nature than the abuse reported by hearing children (Kvam 2004).

Learning Disability- Inattentive symptoms of ADHD were associated with an increased risk for contact sexual abuse (OR 2.6) (Ouyang et al. 2008). Sullivan and Knutson (2000) found that children with learning disabilities were at nearly two times higher risk for sexual abuse compared to CWOD. Spencer et al. (2005) found that children with learning difficulties were more than six times as likely to be registered with the child protective agency for sexual abuse relative to children without learning difficulties.

Intellectual Disability- Pooled prevalence of sexual violence among children with mental/intellectual disabilities was estimated at 15% (Jones et al. 2012). Researchers found that “handicapped” children, which the researchers defined as “requiring special education,” were more than 11 times more likely to self-report experiencing sexual abuse (Brown, Cohen, Johnson, and Salzinger 1998). Sullivan and Knutson (2000) found that children with mental retardation were four times higher risk for sexual abuse relative to CWOD.

Internalizing symptoms and Externalizing symptoms- Using data from the Developmental Victimization Survey, researchers found that children with high levels of IS *and* ES experienced more sexual victimization, even when controlling for all other adversity and victimization history (Turner, Finkelhor, and Ormrod 2009). Consistent with these findings, based on the National Survey of Children’s Exposure to Violence, children with internalizing disorders had 75% greater odds of experiencing sexual victimization (Turner et al. 2011). Spencer et al. (2005) found that children with conduct disorders were more than seven times more likely to be registered for sexual abuse relative to children without conduct disorders.

Summary

While previous research finds that risk for maltreatment appears to differ depending on type of disability, IS, or ES, there is less agreement for some variations of these relationships and none of these studies have been done longitudinally to examine these variations. The research that has examined subtypes of disability predicting subtypes of maltreatment relies almost exclusively on two studies (Spencer et al. 2005; Sullivan and Knutson 2000) and very few studies have examined the independent effects

of IS, and ES in predicting different types of maltreatments controlling for disability. While it is clear that relationships differ by type of disability and type of maltreatment, it is also likely that CWD, IS, or ES are experiencing more than one type of victimization. Research questions three and four explore the risk of experiencing multiple types of maltreatment among children with and without disabilities, different levels of IS, and ES. To follow, I review the literature that has previously covered this topic.

Research Question 3-Disability, and Emotional/Behavioral problems as predictors

of experiencing multiple types of Maltreatment- Children who experience any maltreatment, often experience more than one type of maltreatment. Using a nationally representative sample of children, Finkelhor, Ormrod, and Turner (2007a) found that among the 71% of children in the sample who had experienced victimization, 69% had experienced at least one other form of victimization in the same year. Again, in the research by Finkelhor, Ormrod, and Turner (2007), victimization is not limited to violence within the home as it is within this dissertation. Therefore the rates of experiencing poly-victimization are likely higher in their study because of the sheer number of victimization experiences they address.

It seems likely that CWD and those with higher levels of EBP may be more likely to experience multiple types of maltreatments for the same reasons that they are disproportionately more likely to become victims of maltreatment in the first place. Sullivan and Knutson found that CWD and those with behavioral disorders (included in disability category) were more likely to experience more than one type of maltreatment (63%) than CWOD or behavioral disorders (54.9%) (2000). Using the Developmental Victimization Survey (DVS), a national telephone sample of children ages 2-17 (N=

2,030), researchers found that Children with a psychiatric diagnosis have an increased risk for poly victimization (Cuevas, Finkelhor, Ormrod, and Turner 2009).

Noticeably less research has been done on disability, IS, ES, and multiple victimization reports compared to the first two research questions and unfortunately no research was located detailing specific disabilities as predictors of multiple types of maltreatments. Table 3-1 summarizes the previous literature on each of the four research questions highlighting a few major take away points: first, there is a reliance on two major studies for most of the information on the relationship between subtypes of disabilities and subtypes of maltreatment (Sullivan and Knutson 2000; Spencer et al 2005). Second, little is known about IS and ES as predictors of victimization. Third, there is very little research on multiple types of victimizations and no literature was located examining subtypes of disability or IS and ES separately as predictors of multiple types of maltreatment. Lastly, which is not illustrated in the table but is certainly worth mentioning, there is a need for longitudinal research so to better understand at which ages children with disabilities and those with IS or ES are at heightened risk for which types of maltreatments.

Developmental stages and differential risks- Each of the four research questions in this dissertation are being examined longitudinally, allowing for an assessment of the impact of developmental stages on risk for maltreatment. In this section, I will review the previous research on differential risk associated with developmental stage or age. Risks for exposure to maltreatment as well as disability, IS, and ES vary systematically with age and developmental stage. Children under the age of 12 are at highest risk for being victimized by a family member (Finkelhor 1995), making this age group especially

relevant for the current study. Younger children are more likely to experience neglect (Barber and Delfabbro 2009).

Sullivan and Knutson suggest that “age patterns of maltreatment vary across disabilities,” though their data was limited by not having data recorded regarding the date of diagnosis (2000 p. 1264). They find that children of preschool and elementary ages with disabilities have the highest rate of maltreatment and the risk declines in middle and high school years. Importantly, these rates differ by type of disability and by type of maltreatment. Children with sensory disorders were at highest risk in pre-school while children with mental retardation were at highest risk in elementary school (as were CWOD). Children with behavioral disorders were at highest risk for maltreatment in middle school years (Sullivan and Knutson 2000). Otherwise, few studies have examined developmental specific aspects of the relationship between disability, IS, ES, and victimization and questions remain to be answered on developmental aspects of this relationship (English, Bangdiwala, and Runyan 2005).

Since research that examines the impact of specific developmental stages typically does so with cross-sectional data, it is critical to conduct prospective, longitudinal research evaluating the impact of developmental stages on the risk of maltreatment. Each of the four research questions in this dissertation will be tested longitudinally allowing for an examination of the impact of developmental stages on the relationship between disability, IS, ES, and maltreatment.

Table 3-1. Summary Table of Previous research findings on relationship between Disability, EP, BP, and Maltreatment									
Disability, ES or IS		Any Disability	Physical	Sensory	Learning	Intellectual	Emotional & Behavioral Problems	Externalizing Symptoms	Internalizing Symptoms
Maltreatment									
	Any	↑ ^{1,2,3,4} NS ⁵	NS ⁶ ↑			↑ ⁸ NS ⁷ ↓ ⁶	↑ ⁹	NS ⁵ ↑ ^{7,19}	↑ ⁶
	Psych	↑ ^{1,2}	↑ ¹	↑ ¹	↑ ^{1,2}	↑ ^{1,10}		↑ ^{1,2}	
	Neglect	↑ ^{1,2,11}	↑ ¹	↑ ^{1,2}	↑ ^{2,12} ¹	↑ ^{13,2}		↑ ^{1,2}	
	Physical	↑ ² ↓ ¹¹	↑ ¹ ∩ ¹⁴	∩ ^{14,2} ↑ ⁷ ↓ ³	↑ ^{1,2,12}	↑ ²		↑ ^{1,15}	
	Sexual	↑ ^{1,16}	↑ ¹⁷	↑ ¹⁸	↑ ^{1,2,12}	↑ ^{1,13}	↑ ⁹	↑ ²	↑ ⁶
	2or more types	↑ ^{1,3}							
↑ indicates associated with significantly more maltreatment					NS indicates a non-significant relationship with maltreatment				
↓ indicates associated with significantly less maltreatment					∩ indicates a curvi-linear relationship with maltreatment				

¹ Researchers found that relationship differed depending on symptoms of ADHD i.e., inattentive vs. impulsive hyperactivity.

² When researchers used a continuous measure of language skills, they found a curvilinear relationship between language skills and risk for physical abuse. Children with mild or mid-level language skills were at high risk for minor assault compared to children with lower or superior language skills

³ Children with vision and hearing disabilities were not at a higher risk for child protective registration (2005). However, they found that children with speech and language disorders were more than three times more likely to be registered for physical abuse.

- | | |
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| 1. Sullivan and Knutson (2000). | 11. Sedlak (2012). |
| 2. Spencer et al. (2005). | 12. Ouyang et al.(2008). |
| 3. Cuevas, Finkelhor, Ormrod, and Turner (2009). | 13. Brown et al. (1998). |
| 4. Harrell (2012). | 14. Helton and Cross (2011). |
| 5. Benedict, White, Wulff, and Hall (1990). | 15. Dakil, Cox, Lin, and Flores. (2012). |
| 6. Turner, et al. (2011). | 16. Brunnberg et al. (2012). |
| 7. Jaudes and Mackey-Bilaver (2008). | 17. Alriksson-Schmidt, Armour, and Thibadeau (2010). |
| 8. Dubowitz et al. (2011). | 18. Kvam (2004). |
| 9. Turner, Finkelhor, and Ormrod (2009). | 19. Sprang, Clark, and Bass (2005). |
| 10. Reiter, Bryen, and Shachar (2007). | |

Child and Family Factors to consider- Other important factors related to disability, IS, ES, and victimization are both child and family level factors. Child factors considered in previous research and in the current research are child gender and child race. Family and caregiver level factors considered important here include family income, caregiver education, ratio of adults in the home (to total number of people), whether the child lives with a biological or step parent, and if the parent or caregiver has depression.

Child Factors- Research is mixed as to whether the gender of the child is related to higher or lower risk for abuse. Some research finds that boys with disabilities are more likely to be abused than girls with disabilities (Sobsey, Randall, and Parrila 1997). Sullivan and Knutson found that gender differences exist dependent on the type of abuse and depending on disability status (Sullivan and Knutson 2000). In general they found that males with disabilities and females without disabilities were more likely to be maltreated (Sullivan and Knutson 2000). Alternatively, the National Crime Victimization Survey finds that among those with disabilities, females were at a higher risk than males. The opposite is true for individuals without disabilities; nondisabled males are at a higher risk than their female counterparts, and this indicates that patterns of maltreatment likely differ with respect to gender for CWD compared to CWOD. The NIS-4 reported racial and ethnic differences in risk for maltreatment. Black children had the highest risk for any maltreatment followed by Hispanic children, and White children had the lowest risk of maltreatment (Sedlak 2012).

Family and Caregiver Factors- Previous research has established the importance of controlling for family and caregiver risk factors (Sedlak 2012). Research has established that family income had a significant impact on maltreatment risk (Berger 2004; Hussey, Chang, and Kotch 2006; Sedlak 2012). Using the Developmental Victimization Survey, Turner, Finkelhor, and Ormrod (2007) established the importance of family structure (who you live with and the number of caregivers within the home) in predicting maltreatment and for the purposes of this dissertation, in controlling for family structure (Turner, Finkelhor, and Ormrod 2007). Research also suggests that caregiver education status independent of other factors is associated with maltreatment risk (Hussey, Chang, and Kotch 2006). Caregiver depression has been shown to increase risk for child maltreatment, including neglect, physical abuse, psychological abuse, and sexual abuse (Dubowitz et al. 2011; Turner et al. 2011).

Summary

This research is designed to increase our understanding of the complex relationships between disability, IS, ES, and maltreatment. In order to understand the risk of maltreatment for CWD and children with high levels of EBP, we must first understand the temporal ordering of maltreatment, IS, ES, disability. Past research suggests that risk for maltreatment may differ by type of disability, IS, and ES (Spencer et al. 2005; Sullivan and Knutson 2000). Longitudinal research is necessary in order to understand the time periods in which CWD, IS, and ES are at highest risk for maltreatment. To date, no studies have examined maltreatment risk longitudinally, comparing CWD and CWOD

across developmental stages. This dissertation analyzes specific types of disabilities and EBP as they are related to specific forms of maltreatment across childhood.

CHAPTER 4- METHODS

Operational Definitions

Disability is measured as a series of categorical variables indicating the presence of one or more conditions using caregiver reports at ages four and six. This measure includes four types of disabilities: physical, cognitive/intellectual (developmental delay & mental retardation), learning (learning & attention), and sensory (hearing, speech, vision).

Internalizing symptoms and Externalizing symptoms are measured as continuous variables using the child behavior checklist using caregiver, teacher, and child reports at each data collection point (child reports begin at age 12). This measure includes two subscales and a total scale combining the two (using t-scores): Internalizing symptoms or emotional problems (Social withdrawal, somatic complaints, and anxiety/depression) and Externalizing symptoms or behavioral problems (delinquency and aggression).

Maltreatment is measured as a series of categorical variables using CPS (Child Protective Services) records at all data collection points (child reports begin at age 12). This measure comprises four aspects of maltreatment including child abuse (sexual, physical, and psychological) and neglect.

Research Questions

1. Are **children with disabilities (CWD)** at higher risk for **any form of maltreatment** than children without disabilities (CWOD)? Are children with higher levels of **emotional/behavioral problems (EBP)** at higher risk for any form of **maltreatment** than children with lower levels of EBP? Specifically, what is the probability of experiencing **maltreatment** as a function of **disability and emotional/behavioral problems (EBP)**?

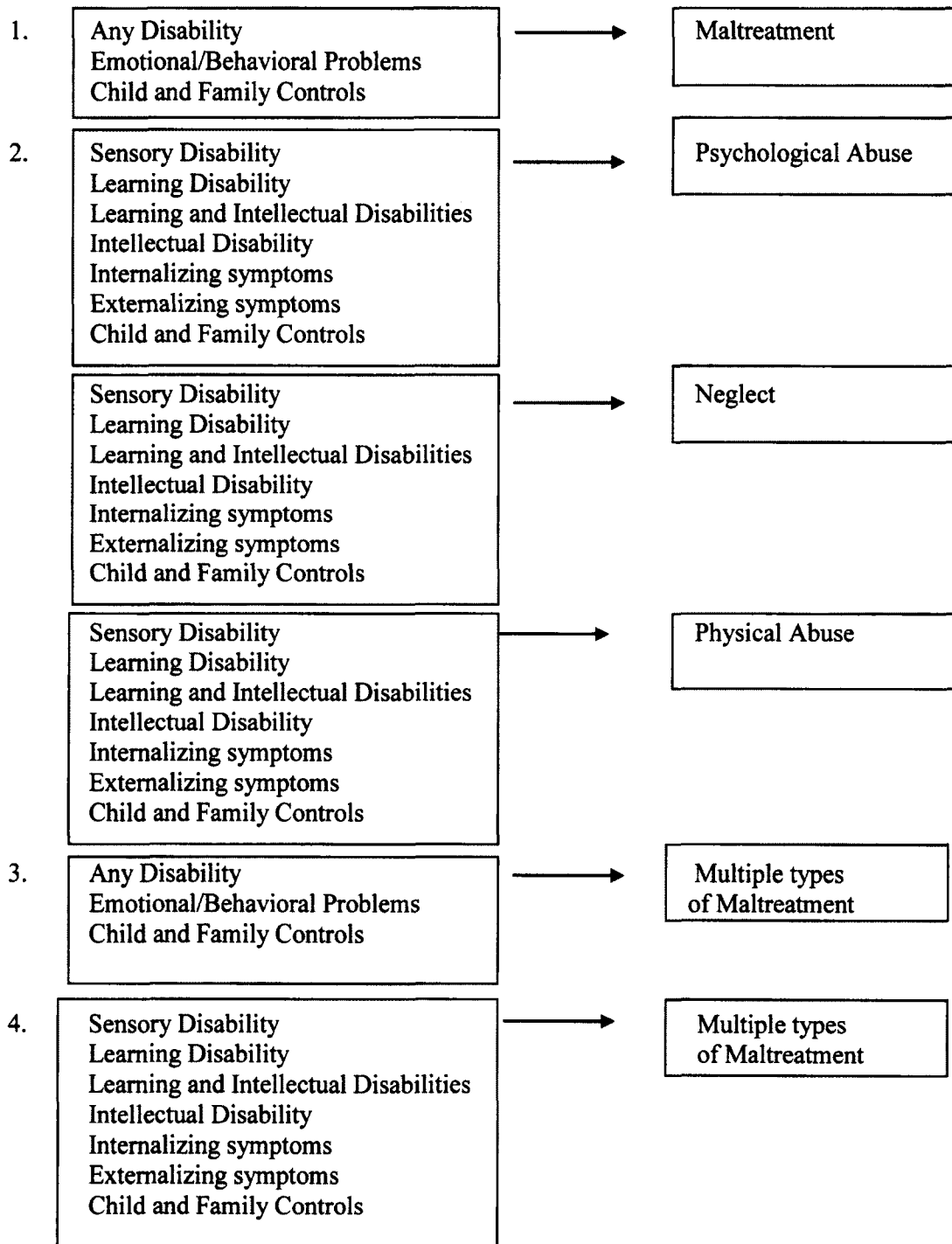
2. Are children with **specific types of disabilities (sensory, learning, intellectual, and learning/intellectual)** at higher risk for **specific types of maltreatments (psychological, neglect, physical)** than children with those specific types of disabilities? Are children with higher levels of **internalizing symptoms (IS)** at higher risk for **specific types of maltreatments** than children with lower levels of internalizing symptoms? Are children with higher levels of **externalizing symptoms (ES)** at higher risk for **specific types of maltreatments** children with lower levels of externalizing symptoms? Specifically, what is the probability of experiencing **maltreatment** as a **function of specific disability type, internalizing symptoms (IS), and externalizing symptoms (ES)**?

3. Are children with **disabilities (CWD)** more likely to experience **multiple forms of maltreatments** than children without disabilities (CWOD)? Are children with higher levels of **emotional/behavioral problems (EBP)** more likely to experience **multiple forms of maltreatments** than children with lower levels of EBP? Specifically, what is the probability of exposure to **two or more maltreatments** as a function of any **disability and emotional/behavioral problems (EBP)**?

4. Are children with **specific types of disabilities** more likely to experience **multiple forms of maltreatments** than children without those specific types of disabilities? Are children higher levels of **internalizing symptoms** more likely to experience **multiple forms of maltreatments** than children with lower levels of internalizing symptoms? Are children higher levels of **externalizing symptoms (ES)** more likely to experience **multiple forms of maltreatments** than children with lower levels of externalizing symptoms? Specifically, what is the probability of exposure to two or more maltreatments as a **function of specific disability type, internalizing symptoms (IS), and externalizing symptoms (ES)**?

* All Research questions control for the impact of the other predictors as well as all significant control variables.

Theoretical Diagrams



Research Design

This dissertation uses archival data from the Longitudinal Studies Consortium on Child Abuse and Neglect (LONGSCAN). LONGSCAN collected longitudinal data from children between birth and 18 years. The LONGSCAN data was collected between 1991 and 2007 (data from later years is not yet released and therefore not included in this analysis). Data from ages birth (0-4), 6, 8, 10, 12, and 14 years are currently available for public use. The children represented in these data vary in maltreatment risk and exposure. Though this is a high-risk sample, there are children in the sample with no Child Protective Service reports of maltreatment, which accounts for roughly 30% of the sample. Sullivan and Knutson estimate the prevalence of child abuse and neglect to be 11% in the total population and 31% for children with disabilities (CWD) (Sullivan and Knutson 2000). Since 70% of the entire LONGSCAN sample, not just CWD, experienced maltreatment, compared to just over 30% maltreatment among children with disabilities in the population, it is clear that the children in this sample experienced much higher rates of maltreatment than children in the general population. This means that the findings from this dissertation may only be generalizable to high-risk populations of children but not necessarily all children in the United States.

Data- LONGSCAN has longitudinal data spanning from ages 0-18 with re-interviewing at ages 4, 6, 8, 12, 14, 16, and 18 and checking in every six months for changes in addresses and phone numbers. At age 10, a phone interview was conducted with a subset of the questions used in the in-person interviews. Data on children under age 12 is from caregiver, teacher, and CPS (Child Protective Services) reports, and data after age 12 includes interviews with the child, parent, teacher, and CPS reports. The sample consists

of 1,354 children (in the base year). The sample size for each subsequent year is shown in Table 1 and is broken down by data collection site and child age. The attrition rate from baseline to age 14 is 25% (National Data Archive on Child Abuse and Neglect 2010). The baseline year is for children of age four or younger. The data was collected at five sites across the United States and spans most regions¹⁰ (Midwest, Southwest, Northwest, South, and East) in urban, suburban, and rural areas.

Table 4-1. Number of responses by site- (full sample)

	Baseline	Age 4	Age 6	Age 8	Age 12	Age 14
Total	1,354	1,250	1,236	1,140	976	930
EA	282	237	255	237	190	196
MW	245	223	225	216	181	177
SO	243	221	222	190	177	170
SW	330	319	299	274	236	206
NW	254	250	235	223	192	181

Due to the variability in site sampling techniques and design, I examined the distribution of my key variables (disability, IS, ES, maltreatment) across each site. The analysis controlled for the site to site differences and impact on the results by testing the models that included dichotomous variables representing each site (with one omitted to serve as the comparison group), and interactions between each site and time. For research questions 1 and 2, the NW and SW sites are excluded because all children in the sample at baseline have a CPS report in these two sites. After removing the NW site (254 and the SW site (330), the sample size became 770 for the present analysis. I chose to exclude NW and SW sites because their sampling design was based on the child having a child

¹⁰ Any differences in findings from these sites are not necessarily reflecting regional differences but instead are more likely reflecting site to site sampling variations.

protection report. The sampling design was confounded with my outcome variable in these two sites and therefore the sample was restricted to the three sites for the first two research questions. I considered using substantiated child protective report instead of any child protective service report so that I might be able to include all five sites in my analyses for all research questions. However, I chose not to for reasons relating directly to LONGSCAN, child abuse substantiation in general and disability specific substantiation issues.

LONGSCAN researchers recommend using the CPS measure of “any” report instead of the substantiated measures in this data set (Hussey, Marshall, English, Knight, Lau, Dubowitz, and Kotch 2005). They found no significant differences in developmental and behavioral outcomes between “any” report and substantiated reports and therefore determined the preference should be given to the any report measure (Hussey et al. 2005).

Researchers using the National Survey of Child and Adolescent Well-Being (NSCAW), a nationally representative probability sample of children and families, investigated for child maltreatment found that substantiation was not a “strong predictor of either ongoing maltreatment or developmental harm ” (Kohl, Jonson-Reid, and Drake 2009 p. 23). Supporting the findings of the Hussey et al (2005), they found that children with any reports of maltreatment had similar outcomes to those with substantiated reports.

In examining issues specifically relating to children with disabilities, past research has found that children with disabilities are less likely to have substantiated reports

because of bias/attitudes/lack of training of authorities throughout the process (Manders and Stoneman 2009). In addition, allegations are less likely to be reported to authorities, because once reported they are less likely to be prosecuted because “officials hesitate to rely on the testimony of a person with a developmental disability” (Petersilia 2001, p. 655). Manders and Stoneman (2009) conducted a study including eight vignettes to determine the impact of disability status on case outcomes in the CPS system. They found that CPS workers responded differently depending on the disability status of the child. Children with cerebral palsy were least likely to receive a substantiated report, as their injuries were interpreted as results of their disabilities rather than as results of abuse. Substantiated reports are patterned by disability status (Manders and Stoneman 2009).

With the information that the any abuse measure is as good as the substantiated abuse measure in the LONGSCAN dataset and arguably in the field of child maltreatment compounded with the possibility that children with disabilities would be less likely to have substantiated reports than children without disabilities. I chose to use the any report measure.

Data on Child maltreatment and disability- The LONGSCAN dataset is especially appropriate in addressing my research questions for a number of reasons:

- 1) It has multiple time points spanning childhood and early adolescence allowing for a longitudinal analysis.

- 2) It has measures of disability, measures of maltreatment, measures of internalizing symptoms (IS) and externalizing symptoms (ES). IS and ES measures as well as child maltreatment assessments are available across all waves of data. Disability

measures are available at baseline (ages 0 to 4) and at age 6, which although is a limitation, is not crucial for addressing the research questions.

3) While there are other datasets available that include disability status, some forms of victimization, and mental health symptoms, there are very few with all three of these core variables and even fewer that have multiple time points, thus allowing for a longitudinal analysis. As my research is attempting to establish temporal order, it was important that I had data on children of very young ages to be able to control for previous experiences, disability, and IS, and ES.

The longitudinal nature of this study allows me to control for earlier maltreatments and IS and ES to and therefore can better establish causal ordering than in cross-sectional design. The three criteria for establishing causation are: the presence of a statistical association, time order, and non-spuriousness (Hamilton 1992). Within the constraints of the design and data, I will be able to determine if there is an association and the time ordering of that association. I will not however be able to rule out all potential sources of spuriousness, that is that I cannot fully eliminate the possibility that the relationship between disability and maltreatment is due to associations with other variables that are unmeasured in this dataset. Unlike the control warranted in a randomized experiment (which is clearly not an option here), I will only be able to control for a few known predictors and possible confounding factors such as parent depression, SES, and gender.

Each of the time varying predictors are lagged by one wave. The time varying predictors include internalizing symptoms (IS), externalizing symptoms (ES), caregiver gender: female, caregiver education (centered), family income (centered), caregiver

depression (centered), ratio of adults to total number in the home, caregiver foster parent: yes, living arrangement: biological or step. By lagging the time varying predictors, each variable refers to a point in the previous wave in chronological time. Therefore, I am predicting change in the outcome variable in the next wave by using the value of the predictor from the previous wave. For example: by lagging the externalizing symptoms variable, I am using externalizing symptoms at age 4 to predict probability of maltreatment at age 6. By lagging each time varying predictor, I am making (statistically) sure that the change I am seeing in the outcome variable is due to a change in the predictor from a previous time period (Singer and Willet 2003).

Internal validity- The LONGSCAN dataset mainly utilized measures that were already considered to have face, construct, and concurrent validity. Due to the wide range in measures on both maltreatment and disability, I utilize multiple indicators for maltreatment, IS, and ES. With maltreatment, the use of CPS reports and self-reports better ensures that I am accurately measuring maltreatment occurrence rather than official reporting of maltreatment. For example, some maltreatment is not reported to CPS, but here I am able to count these self-reports. I examine the reliability among CPS reports using self-reports to find any inconsistencies. The validity of using self-reports at age 12 as well as their accuracy was based on the LONGSCAN data finding that self-reports are a reliable measure of physical and sexual abuse (Nooner, Litrownik, Thompson, Margolis, English, Knight, Everson, and Roesch). The Child Behavior Checklist (CBCL) has established content, construct, and criterion-related validity and is a widely used and highly regarded measure of child EBP (Achenbach and Edelbrock 1983; National Data Archive on Child Abuse and Neglect 2010).

External validity and reliability- The sampling design of LONGSCAN presents threats to external validity as well as reliability. The five sites all had different target populations as well as different sampling designs, which introduces sampling bias due to the lack of representativeness, thereby decreasing generalizability. While the LONGSCAN data does not allow me to make claims about all children, it does allow me to better understand high-risk populations, which are suitable for the research questions I examine.

The Eastern site used both a sample of children at high risk due to prenatal drug use and a control group. In the Midwest site, the risk group was sampled from families already flagged in CPS, and a comparison group was sampled from the same neighborhood. In the Northwest site, both risk and comparison groups had CPS reports, and the risk groups were substantiated. In the Southern site, the risk group was sampled based on higher risk births reported to CPS, while children in the comparison group with high risk births were not reported to CPS. Lastly, in the Southwest site, all children were in foster care, and the risk group was in foster care or adopted out by age 4, and the comparison group was returned to home by age 4.

Clearly these children and families are not representative of families in the United States as a whole. They do, however, allow for analyses on at risk children while comparing them to children at relatively lower risk. I include analytic variables in the analysis that are related to the differences I noted above as well as a series of dichotomous variables to indicate specific sites as well as interaction terms with time to control for site by change over time effects.

Measures- Among the many variables available in LONGSCAN, the main variables that I used to test the described relationships are listed below. All information on the measures

came from the LONGSCAN user's guide and code book (National Data Archive on Child Abuse and Neglect 2010). A full list of the measures is in Appendix A.

Disability is measured in LONGSCAN through parent report of disability. This measure of disability implies a diagnosis of the disability or disorder. In addition, this measure captures disabilities that are most often diagnosed in early childhood or at birth. The primary question asks caregivers: "Does (child's names) have any of these conditions?" and they responded "yes/no" to eight conditions at age 4. These eight conditions are: emotional disorder, mental retardation, developmental delay, physical handicap, hearing problem, speech problem, vision problem, and chronic illness/disease. At age 6, the caregiver was asked a similar question: Has _____ been diagnosed with any of the following problems? hearing problem, speech or talking problem, vision or seeing problem, chronic health condition, physical handicap, hyperactivity or attention problem, learning problem, emotional problem (EP), or mental retardation?

I combined data from the two waves and then collapsed these conditions into four categories: physical, sensory (hearing, speech, and vision), learning (learning problem and hyperactivity/attention problem), and intellectual/cognitive (developmental delay and mental retardation).

It is important to keep in mind that child disability status is based on parent's categorizations of their child's condition. Thus, they reflect parent's interpretations of diagnoses or other medical information they have received concerning their child's disability. The following represent examples of disabilities or conditions that, according to the literature, would fit within the categories that LONGSCAN gave as options for the caregivers in the survey. Disabilities in the hearing, speech, and vision category would

include conditions like blindness, deafness, inability to speak, or another speech disorders (i.e. stuttering). The very broad category of developmental delay would include disabilities such as Autism, Mental Retardation, Down's Syndrome, Cerebral Palsy, seizure disorders, stammering/stuttering, and Autism (Boyle, Boulet, Schieve, Cohen, Blumberg, Yeargin-Allsopp, Visser, and Kogan 2008). Disabilities that could be considered learning disabilities would include conditions specifically relating to reading (dyslexia), mathematics (dyscalculia), or writing (dysgraphia) (Brook and Boaz 2005) as well as Attention Deficit Disorder, Attention Deficit Hyperactivity Disorder, and Autism. Physical disabilities include Cerebral Palsy, Spina bifida or any condition or injury impacting a child's long term ability to walk. There is clearly overlap across disability categories; Autism is both a developmental delay and a learning disability. Cerebral Palsy is considered both a physical disability and a developmental delay. There is a lack of consensus within the literature around a definition of and categorization system for disability. To address some of these definitional issues and to address some (not all) of the overlap I created three additional categories: Intellectual disability only, learning disability only, intellectual and learning disability.

Ideally, using a disability measure for each wave of data would give the most accurate measure of disability at each wave. Here I assume that disability is time invariant when predicting maltreatment, this could be problematic for disabilities that do change over time. However, these categories do allow us to examine subtypes of disability in relation to maltreatment in more specific ways than have previously been possible even giving the limitations.

Some of the disabilities diagnosed in early childhood are unlikely to dissipate or get better with time, while others may. A child with Cerebral Palsy or Downs Syndrome, for example, will not see an improvement in their condition over childhood. Their impairment will likely remain the same from birth to age 14 (the duration of the data I have available). On the other hand, a child with a learning disability might see an improvement or a change in their disability as they change schools, teachers, or as they develop. Longitudinal research on children with Attention deficit hyperactivity disorder (ADHD) showed decreases in prevalence rates from childhood to adolescence, and then to adulthood (Costello, Copeland, and Angold 2011).

Though, labeling theory would argue that once a child is labeled with a disability, this label will follow that child throughout childhood. The stigma of that label will also follow that child. Following this logic, children with disabilities, even if they no longer have all the symptoms of the disabilities, they may still carry the label of the disability and therefore remain at higher risk. The relationships that have developed between CWD and caregivers will likely not change with the removal of a diagnosis. If the parent/child relationship included maltreating, then it will likely to continue even with the removal of a diagnosis. Ideally, this measure would vary with time as disabilities are not all static and time invariant.

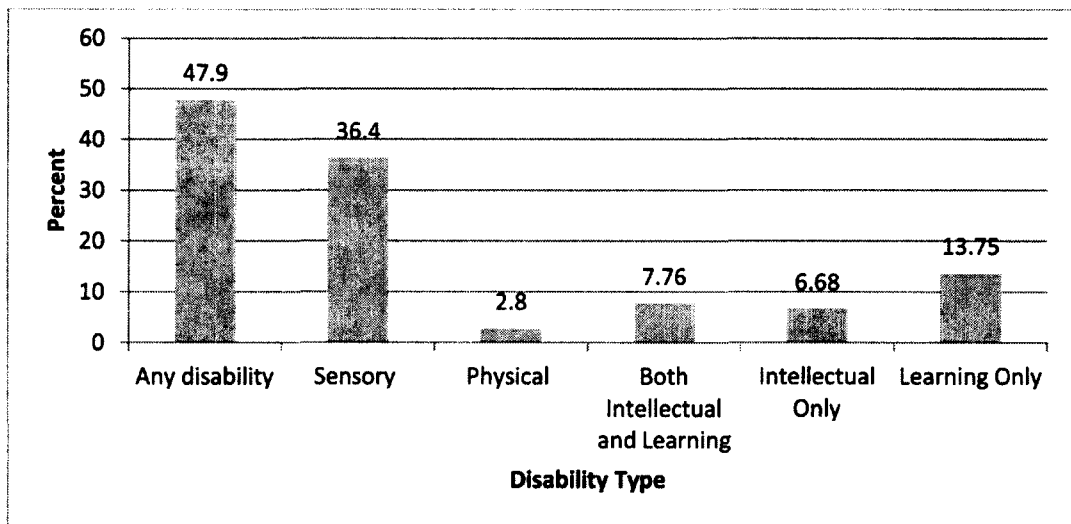
Emotional disorder is excluded from the disability category so as to not be including children with emotional disorders in both disability and internalizing symptoms categories. This will allow for an examination of the independent contribution of IS in predicting victimization, while controlling for the impact of disability. This will also allow an examination of the independent contribution of disability in predicting

victimization, while controlling for the impact of IS. As shown in Table 4-2, within the sample, 47.9% of the children have a disability (461). Table 4-2 shows the number of children with disabilities at ages 4 and 6 to show how the “any” disability variable was created. The third column of table 4-2 is the variable that will be used for research questions 1 and 3.

Table 4-2. **Disability at ages 4 and 6-** Coded as disability for all waves from Age 4-14 (full sample)

Disability type and presence	Age 4 Percent (N)	Age 6 Percent (N)	At age 4 or 6 Percent (N)
Any disability	31.6 (364)	37.6 (364)	47.9 (461)
Any sensory disability			36.4 (354)
Hearing Disability	4.7 (54)	5.2 (59)	7.7 (75)
Speech Disability	20.5 (237)	16.9 (193)	26.8 (260)
Vision Disability	4.4 (51)	9.9 (113)	10.7 (104)
Any intellectual/cognitive disability			12.7 (147)
MR	1.6 (19)	2.0 (23)	2.7 (26)
Developmental Delay	12.4 (144)	-----	12.4 (144)
Any Learning Disability			19.2 (219)
Learning Problem	-----	10.7 (122)	10.7 (122)
ADD/Hyperactivity	-----	12.4 (141)	12.4 (141)
Physical Disability	1.6 (19)	2.2 (25)	2.8 (27)

Figure 4-1. Prevalence of **Disability** at ages 4 or 6 (combined)



Due to the overlap among learning disabilities and intellectual disabilities (many children have both), I created a variable representing three conditions: both learning

disability and intellectual disability, learning disability but no intellectual disability, and intellectual disability but no learning disability. The reference category is neither learning nor intellectual disability. The sensory disability variables remain as originally coded with 1- presence of at least one sensory disability (speech, learning, vision) and 0- no sensory disabilities and the physical disability variable remains as originally coded with 1- presence of physical disability. The overlap in categories is shown in Table 4-3 and reflected in Figure 4-1.

The first column of Table 4-3 (and Figure 4-1) shows the percent overlap of children with intellectual and learning disabilities in the full sample. Children with a learning and an intellectual disability are children who were categorized as having either a developmental delay or mental retardation *and* children with either a “learning” disability or attention disability. Among children in the full sample, just fewer than 8 % and just over 5 % in the restricted sample have both an intellectual and a learning disability. Nearly 14 % of children in the full and 12 % of children in the restricted sample (see Table 4-3) have just a learning disability have at least one “learning” disability or attention disability (see Figure 4-1). Just fewer than 7 % of children in the full sample and just under 4 % in the restricted sample have an intellectual disability (and no learning disability), have at least one classification of developmental delay or mental retardation (by caregiver). Children without a learning or intellectual disability have none of the four conditions but may have another type of disability.

Table 4-3. Overlap of children with **Intellectual and Learning Disabilities** Percent (N)

	Full sample	Restricted sample
Both Intellectual and Learning	7.76 (79)	5.07 (27)
Intellectual Only	6.68 (68)	3.94 (21)
Learning Only	13.75 (140)	11.63(62)
No intellectual or learning	71.81 (731)	79.36 (423)

Internalizing symptoms and Externalizing symptoms are measured using the Child Behavioral Checklist (CBCL) (Achenbach and Edelbrock 1983), which is essentially an index of symptomology. The CBCL was used to measure IS and ES using three scales, the total scale to measure EBP as a composite measure and the IS scale and ES scales to measure the two subscales as separate constructs. The total scale will be used for research questions 1 and 3 to measure Emotional and Behavioral problems (EBP) as a composite scale and the subscales of internalizing symptoms (IS) and externalizing symptoms (ES) will be used for research questions 2 and 4.

The CBCL consists of 96 items used to form 8 syndromes : Social Withdrawal, Somatic Complaints, Anxiety/Depression, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior (National Data Archive on Child Abuse and Neglect 2010). IS and ES are computed from the items that make up these eight syndromes, and I use the t-scores for IS and ES (shown over childhood in Figure 4-2) as recommended by the scale author (Achenbach and Ruffle 2000; National Data Archive on Child Abuse and Neglect 2010). Example items from the internalizing symptoms scale include: cries a lot, too fearful or anxious, refuses to talk, and shy or timid. Example items from the externalizing symptoms scale include: can't sit still, restless, or hyperactive, argues a lot, cruel to animals, and demands a lot of attention.¹¹

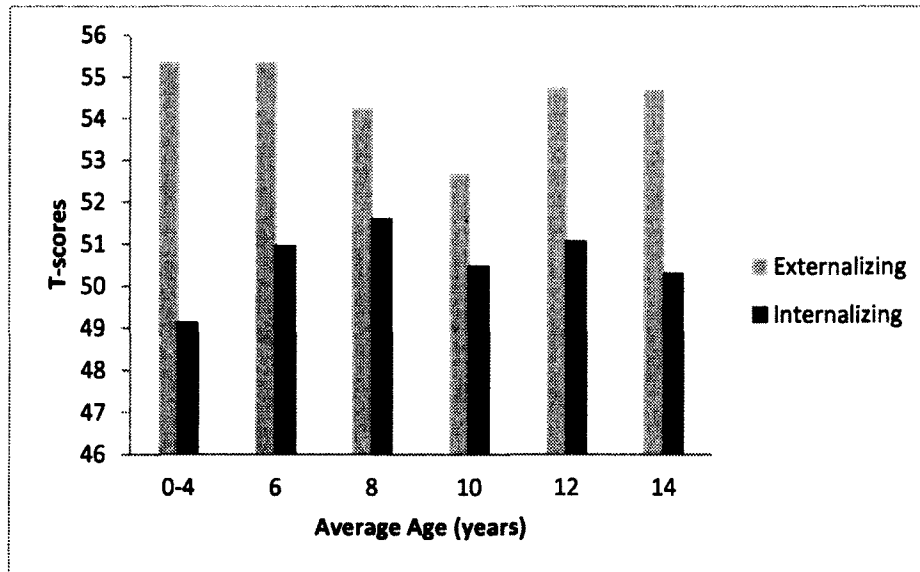
¹¹ For the full scales see Appendix A.

Table 4-4. Child Behavior Checklist average scores for internalizing symptoms and externalizing symptoms by average age

CBCL Score	Age 0-4	Age 6	Age 8	Age 10	Age 12	Age 14
Total- EBP -T- Score						
Mean	53.91	54.39	53.66	51.74	53.63	53.02
St. Dev	10.44	10.87	11.47	12.42	11.95	12.28
Min- Max	24-89	24-89	24-86	30-90	23-91	23-90
Externalizing-ES T score						
Mean	55.34	55.34	54.22	52.66	54.71	54.68
St.Dev	10.69	10.88	11.39	11.82	11.38	11.8
Min-Max	30-89	30-86	30-95	30-93	30-90	32-92
Internalizing- IS T-score						
Mean	49.13	50.95	51.59	50.47	51.06	50.30
St.Dev	9.42	9.87	10.68	11.35	11.01	11.49
Min-Max	33-80	33-85	33-88	33-90	31-83	31-85

In the analyses, the t-scores for the total scale (EBP), IS, and ES are centered at the mean for ease of interpretation. The correlation between IS and ES is 0.66 when including all waves together. This correlation is consistent across waves with the lowest being at age 6 (.625) and the highest at age 14 (.708). Figure 4-2 shows the distribution of IS and ES over childhood. Previous research has also used these scales in the LONSCAN dataset as a related component to disability but utilized only the first and third waves of the data (English, Bangdiwala, and Runyan 2005).

Figure 4-2. Prevalence of Internalizing symptoms and Externalizing symptoms by average age



Internalizing (IS) and externalizing symptoms (ES) are included in this study to determine if children with higher levels of IS and ES are at risk for maltreatment while controlling for disability. The overlap among children with a disability, IS, and ES is shown in Table 4-6. The percentages presented in Table 4-6 reflect data collected at age 8 only. In chapter 3, I briefly discussed the inter-relatedness of disability, IS, and ES. Table 4-5 reflects the overlap of the constructs within this high risk sample. Just over 11% of the sample at age 8 have a disability, and are in the top quintile for IS and ES. Nearly a quarter of the sample has a disability and no IS or ES. The last row of Table 4-5 shows that 36% of the full sample has no disability and no IS nor ES.

Table 4-5. Percent (N) of children with disability, internalizing symptoms (IS) (top quintile), and externalizing symptoms (ES) (top quintile) at age 8

	Percent (N)
Disability, Internalizing symptoms, & Externalizing symptoms	11.38 (109)
Disability	24.11 (231)
Disability & Externalizing symptoms	7.72 (74)
Disability & Internalizing symptoms	4.91 (47)
Internalizing symptoms, & Externalizing symptoms	4.91 (47)
Externalizing symptoms	5.85 (56)
Internalizing symptoms	4.91 (47)
No Disability, No Internalizing symptoms, & No Externalizing symptoms	36.22 (347)

Maltreatment is measured in LONGSCAN using the presence of a CPS reports in four different dimensions of maltreatment, including physical, sexual, and psychological abuse, and neglect. Maltreatment is coded in three ways: first as a dichotomous variable for experiencing any maltreatment yes (1) or no (0), then as a series of variables reflecting the type of maltreatment (psychological abuse, neglect, physical abuse, sexual abuse), and lastly coding to measure multiple types of maltreatments with no maltreatments or single (type) maltreatment (0) and two or more types of maltreatment (1).

Within the full sample (all sites), 70.9% of the children have a CPS report (960). Prevalence of CPS reports decline over time for all types of maltreatment and for both children with and without disabilities. The decline in maltreatment (see Figure 4-3) in general over childhood is consistent with data on known offender (family member) from the US Department of Justice (2004) National Incident-Based Reporting System (NISRS) which show that incidence of victimizations decline from 70% at the youngest ages to around 20% after the oldest age reported (age 12) (Finkelhor 2008). The sharp decline between ages 4 and 6 is earlier and much steeper than most trends, however, the general trend in decline in prevalence of family victimization as the child ages somewhat

consistent with other sources including the Developmental Victimization Survey. The notable difference is that the DVS found physical abuse is higher during the teenage years (Finkelhor 2008).

The reason for this early and steep decline seems to be driven by the neglect reports (see dashed line just below any maltreatment). The decline may also be due to the fact that it is reflective of an “any report” count, which includes any cases of reported maltreatment (both substantiated and unsubstantiated). In addition, it is important to keep in mind that this is longitudinal data on the same children, not panel data or cross sectional data (on national prevalence rates). The data shown is on children who are being victimized repeatedly over their life course, while the data being reported in other sources is aggregate data on all children’s experiences over the life course.

Another possible explanation is regression to the mean. These samples were assembled from children with who were at risk for CPS involvement (or in a control group matched to children at high risk). So the involvement should be highest at point of assembling the sample between birth and age 4. Lastly, an explanation could be that part of the steep decline in the first four years could be due to a selection effect into the study. The impacts of this selection effect on the study outcomes are discussed in Chapter 6.

Figure 4-3. Prevalence of **Maltreatment** by average age

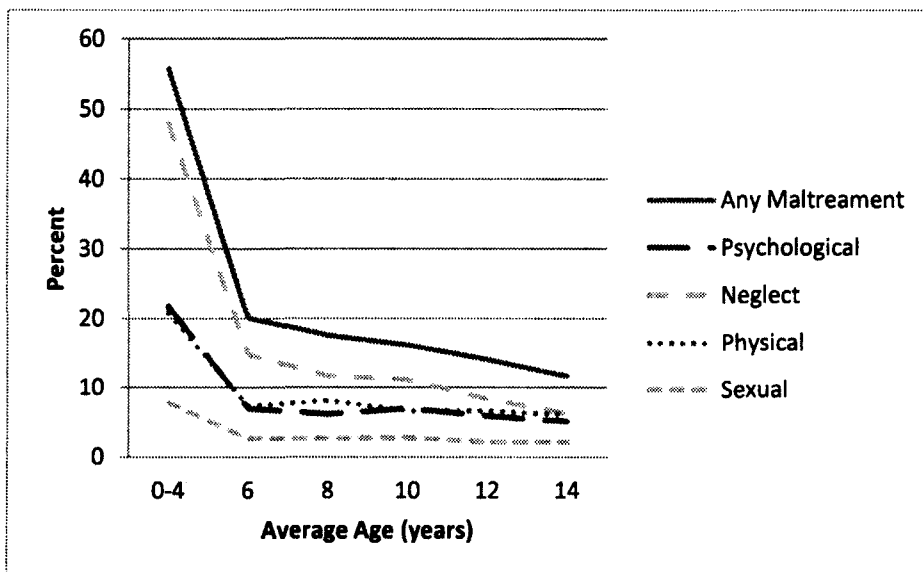


Table 4-6. Percent (N) of children with **Maltreatment** records by average age- (full sample)

CPS Records	Age 0-4	Age 6	Age 8	Age 10	Age 12	Age 14
Any Abuse						
None	44.3(600)	79.9 (1082)	82.4 (1116)	83.8 (1135)	85.9 (1163)	88.3 (1195)
Any	55.7 (754)	20.1 (272)	17.6 (238)	16.2 (219)	14.1 (191)	11.7 (159)
Psychological						
None	78.2 (1059)	93.1(1260)	93.9 (1271)	93.1 (1261)	94.1 (1274)	94.9 (1285)
Any	21.8 (295)	6.9(94)	6.1 (83)	6.9 (93)	5.9 (80)	5.1 (69)
Neglect						
None	52.0 (704)	85.2 (1154)	88.3 (1196)	88.8 (1202)	91.7 (1242)	93.8(1270)
Any	48.0 (649)	14.8(200)	11.7(158)	11.2(152)	8.3(112)	6.2 (84)
Physical						
None	79.2 (1073)	92.7 (1255)	92.0 (1246)	93.4 (1264)	93.4 (1264)	94 (1273)
Any	20.8 (281)	7.3 (99)	8.0 (108)	6.6 (90)	6.6 (98)	6.0(81)
Sexual						
None	92.2 (1248)	97.4 (1319)	97.4(1319)	97.3(1318)	97.7 (1326)	97.9 (1325)
Any	7.8 (106)	2.6 (35)	2.6 (35)	2.7 (36)	2.1 (28)	2.1(29)
# of types						
None	44.3 (600)	79.9 (1082)	82.4 (1116)	83.8 (1135)	85.9 (1163)	88.3 (1195)
Single	27.5 (371)	10.6 (144)	9.5 (128)	7.8 (106)	7.2 (97)	6.3 (85)
2 or more	28.3 (383)	9.5 (128)	8.1 (110)	8.3 (113)	6.9 (94)	5.5 (74)

Psychological Maltreatment is measured as lifetime experiences with psychological maltreatment using CPS data. At baseline, 21.8% of the sample had CPS reports of psychological abuse, and at age 14, just over 5% of the sample had CPS psychological abuse report in that wave (not a cumulative measure) (See Table 4-6). Psychological maltreatment is measured as a dichotomous variable (0=None 1=Any).

A self-report by the adolescent at age 12 is used to compare with CPS reports for reliability purposes only. Questions from the self-reports include 23 items, such as: Have any of your parents ever punished you by not allowing you to sleep, or eat, or drink, like for a whole day? Have any of your parents ever called you names or teased you in a way that made you really feel bad about yourself?

Neglect is measured using CPS data for ages Birth-14. Self-reports were unavailable for neglect. Four aspects of neglect include: neglect of basic needs, lack of supervision, and emotional and educational neglect (National Data Archive on Child Abuse and Neglect 2010). Neglect will be measured as a dichotomous variable (0=None 1=Any). At baseline, 48% of the sample had CPS reports of neglect, and at age 14, just over 6% of the sample had CPS neglect reports in that wave (See Table 4-6).*No self reports were available for neglect.

Physical abuse and assault is measured using CPS data as a dichotomous variable (0=None 1=Any). At baseline, 20.8% of the sample had CPS reports of physical abuse and at age 14, six percent of the sample had CPS physical abuse reports in that wave (See Table 4-6).

Self-reports by the adolescent at age 12 are used to compare with CPS reports for reliability purposes only (16 items- e.g. Has an adult ever hit you with something really dangerous, like a baseball bat or shovel? Has any adult every hit you with something dangerous, like a hairbrush or belt?).

Sexual abuse is measured using CPS reports as a dichotomous variable (0=None 1=Any). At baseline, 7.8% of the sample had CPS reports of sexual abuse, and at age 14, 2.1 % of the sample had CPS sexual abuse report in that wave (See Table 4-6).

Self-reports by the adolescent at age 12 are used to compare with CPS reports for reliability purposes only (including 11 items- e.g. Has anyone ever forced you to look at their sexual parts, Has any adult or older kid ever made you look at something sexual, like picture or movie?) as well as caregiver reports of the child's experience with sexual assault (three items-e.g. To the best of your knowledge has this child ever been touched in a sexual way by an adult or older child?).

Note on Self-reports of Maltreatment. Since retrospective self-reports are available in this dataset, I used the data subset collected at Age 12 on maltreatment during elementary school, after elementary school, in last year, and ever to determine if the relationships found between disability, IES, and CPS reports is also true when using self-reports (cross-sectionally). The self-reports were used as a means of checking to see if the CPS reports were accurately representing the relationships. The findings from this cross-sectional analysis support those found in my longitudinal growth modeling and further suggest that the relationship between disability and abuse is likely understated by using CPS reports alone. (Any) Disability is a significant predictor of any self-reports of

psychological abuse (elementary school), physical abuse (ever), and sexual abuse (ever, elementary, and after elementary school).¹² Consistent with the findings of this dissertation, children with ES are at higher risk for physical abuse (elementary school) and are more likely to self-report multiple types of maltreatment (Ever, elementary school). Children with learning disabilities are more likely to self-report multiple types of maltreatment (Ever, >elementary).

Child/Family Demographics Control variables are from three domains: child, primary caregiver, and family. All child characteristics are time invariant while all caregiver and family characteristics are time varying. While children are nested within families there is no way of knowing if there are siblings in the sample; therefore, child, caregiver, and family variables will all be treated as the same level (no nesting). No caregiver and family variables are available at age 10.

Child demographics include race and gender. Race and gender are both time invariant predictors which means that their values are constant for the duration of the data collection and their frequency distributions are shown in Table 4-7. Gender is measured as Male=1 and Female= 2 and was recoded as Male=0 and Female= 1. The sample was split nearly even among male and female children as shown in Table 4-7. Race was originally coded with 7 categories: white, black, Hispanic, Native American, Asian, and mixed race. Race was then recoded into four dichotomous variables: White, Black, Hispanic, and Other. White is used as the reference category for all analyses. Table 4-7

¹² Neglect was not tested because the data is not available from LONGSCAN at this time.

shows the racial composition of the sample, just over a quarter of the sample is White, just over half of the sample is Black, and 8% of the sample is Hispanic.

Table 4-7. Time invariant child demographics- measured at age 4
Valid Percent (N)

	Valid Percent (N)
Gender	
Male	49.2 (576)
Female	50.8 (595)
Race	
White	26.8 (314)
Black	51.8 (606)
Hispanic	8.0 (94)
Other	13.3 (156)

Caregiver demographics include: caregiver gender, caregiver education, caregiver depression, and caregiver foster parent status. All caregiver demographics are time varying, meaning that if the caregiver's status changes or the caregiver changes over time, the variables reflect these changes.

Caregiver gender is measured as Male=0 and Female= 1. A majority of the primary caregivers are female in the sample for a majority of the waves of data. At baseline, 96% of the primary caregivers were female (see Table 4-8).

Years of education is coded as the number of years of education ranging from 0-20. At baseline, the average number of years of education was 11.65 and it increases to 12.2 by the end of data collection (see Table 4-8). Caregiver depression is measured using the Epidemiologic Studies Depression Scale (CES-D) and as this measure is missing for visit 8, values from visit 6 are used as visit 8 to replace these missing values. Caregiver depression on average goes down over the roughly ten year period of data

collection. At baseline, the average CESD depression score was 12.48, and at child age 14, the average CESD score was 11.53.

Caregiver foster parent status was originally measured as 0= No know foster relationship, 1= foster mother, 2= kinship foster mother, 3= non-kin foster mother, 4= foster father, 5= Kinship foster father, 6= Non-kin foster father. The caregiver foster parent variable was recoded into a dichotomous variable of foster parent (=1) or not (=0). Between birth and four years old, 6.6% of children were living with foster parents compared to only 3.1% at age 14 (see the second to last row in Table 4-8).

Table 4-8. Time-varying caregiver and family demographics by average age¹³

Note: There are no demographic variables available at Visit 10.

	Age 4	Age 6	Age 8	Age 12	Age 14
Continuous measures- Mean (SD)					
Ratio of adults to total number in the home	.414 (.15)	.398 (.15)	.412 (.15)	.430 (.16)	.440 (.16)
Caregiver Education	11.65 (2.08)	11.76 (2.19)	11.92(2.16)	12.2 (2.21)	12.2(2.23)
Family Income (Scale: 1-11)	3.96 (2.72)	4.26 (2.86)	4.72 (2.98)	5.82 (3.14)	5.89 (3.14)
Caregiver depression score (0-59)	12.48(10.93)	11.83(10.55)	-----	11.35(10.04)	11.53(10.18)
Categorical Measures- Valid percent (N)					
Caregiver Gender					
Male	4.0 (50)	4.3 (53)	5.0 (57)	7.7 (74)	7.1 (67)
Female	96.0(1191)	95.7 (1172)	95.0 (1073)	92.3 (882)	92.9 (871)
Respondent relationship to child					
Biological Mother	71.9 (896)	70.4 (862)	68.2 (771)	64.6 (618)	66.8 (627)
Adoptive Mother	4.5 (56)	6.6 (81)	9.1 (103)	10.1 (97)	1.5 (1.5)
Foster Mother	6.2 (77)	4.2 (52)	2.5 (28)	2.1 (20)	4.4 (41)
Biological Father	3.2 (40)	3.3 (40)	3.5 (39)	4.8 (46)	17.2 (216)
Other	14.2 (178)	15.5 (190)	16.7 (179)	18.4 (176)	
Caregiver foster parent:	6.6 (81)	4.7 (57)	5.9 (67)	3.7 (35)	3.1 (29)
Living arrangement					
Biological or step parents	75.4 (940)	73.8 (904)	72.1 (815)	69.9 (669)	72.0 (676)
Adoptive	4.7 (58)	7.2 (88)	9.7 (110)	11.6 (111)	11.1 (104)
Relative	11.4 (142)	9.1 (112)	11.2 (126)	12.9 (123)	12.7 (119)
Non-relative	8.6 (107)	9.9 (121)	7.0 (79)	5.6 (54)	4.3 (40)

Family characteristics are also time varying and include total family income, living arrangement, and ratio of adults to total number of people in the home. This allows for me to incorporate important changes that might have happened within the home or within the child's life that could impact maltreatment risk.

¹³ See Appendix A for details on all variables

Family income is measured using income groupings of \$5,000, ranging from <\$5,000 through >%50,000 (11 categories) and a “don’t know” category for one wave. The “don’t know” category was dropped. As with caregiver education, average family income increases over the data collection period from 3.96 to 5.89 which is about 15,000-19,999 per year to about 20,000 to 24,999 per year (see Table 4-9). This is to be expected as caregivers are getting more education and as inflation and the cost of living increase.

Living arrangement is measured as: 1= Biological or step parents, 2=Adoptive parents, 3=Relative, 4=Non-relative. Living arrangement was recoded into one dichotomous variable: 1= live with biological or step parents and 0= all other living arrangements. For all waves, nearly 70% of the children live with biological or step parents (see the last row of Table 4-8).

Ratio of adults to total number of people in the home is a continuous measure of the number of adults divided by the total number of people in the home. The ratio to adults to total number of people in the home remains relatively constant over the years at around .41 at baseline and .44 at the last wave of available data.

Site Control variables The different data collection techniques utilized in the five different sites makes it necessary to include control variables for the impact of site. In the first two research questions only three sites were included (East, Midwest, and South), and therefore only dichotomous control variables for those sites were included in those analyses. For the last two research questions, all sites were included and thus all site controls were included. The East site was treated as the reference category for all

analyses. The impacts of the site controls is briefly discussed here and not in the results section as these variables were included purely to control for the impact of site and not due to substantive interest. The effect of site on the relationship between disability, EP, ES, and maltreatment are likely reflective of the sampling design of that site and not due to regional differences in the relationship. Compared to children at the eastern site, children at the Midwest site had a significantly higher risk for any abuse, neglect, and having multiple types of abuse reports at age 4, and their risk declined at a faster rate as they got older. Children in the South site had a higher risk for emotional abuse and having multiple types of abuse reports at age 4 and had a higher risk over time (in slope) for any abuse and neglect compared to children at the Eastern site. Children in the Northwest site had a higher risk of having multiple types of abuse reports, but this risk declines over childhood at a faster rate compared to children in the Eastern site. Children at the Southwest site had a higher risk of having multiple types of abuse reports at age 4 compared to children at the Eastern site.

Data Analysis Techniques

The analysis began with descriptive and exploratory analyses and then proceeded into longitudinal growth modeling. I utilized longitudinal growth modeling to predict maltreatment risk trajectories across childhood to determine how disability, IS and ES were related to risk for maltreatment. Longitudinal growth modeling is designed for longitudinal data and is superior to statistical analysis techniques typically employed in analysis of cross sectional data for a number of reasons. Longitudinal growth trajectories

can answer the questions: What is the probability of experiencing maltreatment as a function of disability and emotional/behavioral problems (EBP)?

There are four main reasons why longitudinal growth modeling is a superior analysis technique for the current research questions and data when compared to simpler techniques such as Anova, Chi2, or a single level logistic regression model. First, the data has two levels, the first level is time (each child has between 1-6 waves of data) and the second level is the child. Here the assumption is that waves are nested within children, and therefore each wave belongs to a child. Related to the two levels of data, the second benefit of longitudinal growth modeling is that it is superior to statistical techniques that do not allow for multi-level analysis and therefore violate assumptions of independent observations. To treat each time point as if it were an independent observation and ignore the nesting of time within individuals is a mistake. Third, in using cross-sectional data techniques with one level of analysis, we lose information regarding when change occurs, time varying predictors, and the changing impact of predictors over time. Lastly, longitudinal growth modeling allowed me to examine both variability within and between group differences as well. Below I will describe in greater detail longitudinal growth modeling and the process for running the analyses.

Longitudinal growth trajectories allowed me to examine individual differences in abuse trajectories as well as inter-individual differences within trajectories. This also permitted me to examine change over time in abuse incidence as well as to determine if CWD and those with EBP are at heightened risk across childhood.

Analysis approach- To address my research questions, I estimated longitudinal growth trajectories using multilevel models for change with a dichotomous outcome variable (i.e., multilevel logistic regression analysis). This allowed me to model the probability of maltreatment over time. To follow, I will briefly review some of the benefits of using longitudinal growth modeling and then lay out the process through which I fit the models. The process is described and illustrated using the first research question as an example of how I fit all subsequent models. Longitudinal growth modeling does not require each child to have the same number of waves, which allows for inclusion of children that might otherwise be excluded from other analysis techniques because of missing waves. This allows me to use the full sample of children (Note: for research questions 1-2 this means the subset from 3 sites and for research questions 2-4 this includes all children in the sample- 5 sites). Secondly, it allows for examination of temporal patterns in the data (increases, decreases, remain stable, linear, and nonlinear) (Singer and Willet 2003). Longitudinal growth modeling also allows for the inclusion of time varying predictors and allows those predictors to be both dichotomous (treated as a discontinuity) and continuous.

In order to perform longitudinal data analysis, I first created a person period dataset. This requires having a data set with one row per time period (rather than one row per individual) also called a “long” format dataset. Missing data is not a problem for this analysis as longitudinal growth modeling is flexible and does not need all waves for all individuals to be present (Singer and Willet 2003).

The analysis began using descriptive statistics and OLS regression using individuals to plot empirical growth records for 50 randomly selected children. This allowed me to see how (among those 50 randomly selected cases) individuals differ in individual trajectories and begin descriptively exploring how much variation there is in maltreatment within individuals and among individuals.

After the exploratory work, the analysis then proceeded with fitting multilevel models for change over time. I began with two unconditional models (for each outcome); an unconditional means model and an unconditional growth model (shown below) (Singer and Willet 2003). The unconditional means model allows for examination of the variance in abuse records over time and explores how much of that maltreatment can potentially be explained (though all variance will not be explained because much of it will be due to individual variation or measurement error). The models are broken down into level 1 (within individual), level 2 (between individuals or inter-individual), and a composite model. In the unconditional growth model (Model 0), the intercept of individual i 's change trajectory is represented by β_{0j} , which is also called "true initial status" and is modeled as a logit link function (Guo and Zhao 2000). The slope can be represented by β_{1j} which is also called the true rate of change in maltreatment risk for each wave and is also modeled as a logit link function (see Model 1).

The level-1 error term is denoted by ε_{ij} . The unconditional growth model allows me to calculate estimates of average true initial status and rate of change as well as estimates of variability in initial status and rate of change in risk for maltreatment.

Before moving on to the unconditional growth model to add substantive predictors, I needed to investigate what the best measure of time would be for this analysis. I ran a series of models with different measures of time to obtain the model with the best fit. Actual age could not be used as the measure of time for two reasons: First, at age 10, the date of the interviews is unclear, making it impossible to determine the child's actual age at the age 10 interviews. Secondly, the maltreatment reports are available in a format that gives the maltreatment report(s) for the average ages and not actual ages. The first models shown in Table 4-9 were fit using a linear measure of time (average age). I then tested time as quadratic and cubic functions of time as well as a series of dichotomous variables (see Table 4-9). The series of dichotomous variables was the best fitting model for time predicting any abuse (see Table 4-9). Since there are 6 time points, the first time point is used as the reference category (Time 0) and will not be displayed in future tables. For all analyses, time is parameterized by a series of dichotomous variables with one variable for each time period and with Time 0 (Age 4) representing the reference category. All interactions with time use a linear measure of time measured as average age (centered). This was done to reduce the number of variables in the model as an alternative to including interaction terms with all 5 time variables and because there was statistical evidence that this parsimony was equally good fitting.

Table 4-9. Goodness of Fit statistics: comparing measures of time in predicting any maltreatment

Fixed Effects	Model 0 : No change	Model A: Linear time- average age	Model B: Quadratic time (average age)	Model C: Cubic time (average age)	Model D: Time as series of dichotomous variables
Intercept					
Average Age	-1.520***	-.443***	.0489	.276***	.327***
Average Age ²		-.272***	-.754***	-1.443***	
Average Age ³			.051***	.248***	
Time0 (reference)					
Time1					-.014***
Time2					-2.282***
Time3					-2.502***
Time4					-2.634***
Time5					-2.843***
Variance Components					
Level1: Within person					
Level 2:	1.231	1.888	2.16	2.413	2.461
Intercept ¹⁴					
# of parameter estimates	2	3	4	5	7
Random Effects	1	1	1	1	1
Fixed Effects	1	2	3	4	6
Goodness of fit	8299.926	7484.604	7248.968	7112.270	7112.270
-2LL	8303.926	7490.604	7256.968	7126.270	7126.270
AIC	8317.931	7511.612	7284.979	7175.288	7175.288

Using goodness of fit statistics, I determined the best fitting and most parsimonious model in predicting maltreatment from ages 0 to 14.

¹⁴ None of the models will converge with time as random effect with the exception of linear time. Once I add any additional predictors to the model, with linear time as fixed and random, the model fails to converge.

The unconditional means model (Model 1) provides an overall estimate of probability of maltreatment for all children. Within Model 1, n_{ij} is the predicted probability of any maltreatment. The subscript i indicates time (0 = age 4, 1 = age 6, 2 = age 8, 4 = age 10, 5 = age 12 and 6 = age 14). The subscript j indicates the individual child. The parameter γ_{00} represents initial status, or the log odds of maltreatment at initial status. Since there are no other predictors in this model, all children have the same slope, the only difference in this model among children is where they start at age 4 in maltreatment risk. In Model 1, I begin to examine change over time.

In Model 1, the unconditional growth model, and in all models for all research questions, time 0 or age 0 (birth) to age 4 is treated as reference category. In this model, and again in all models for all research questions, I was not able to treat time as a random effect and therefore will not include an error term on time. The gammas in this model indicate the predicted probability of maltreatment at that time point relative to the reference point (initial status). For example, $\gamma_{10}time1$, is the estimated rate of change from initial status to age 6. These series of dichotomous variables are the components that allow for an examination in change over time. In model 2, I add control and predictor variables starting with control variables for site. All models are shown on the pages to follow. All control variables and interaction terms of the controls by time, disability, EBP were entered into the models. Those that were significant were included in the model and then a likelihood ratio test was performed to determine if the predictors were contributing to the model. Those that were included in the final model are significantly improving the fit of the model. The control variables are: Site (Midwest, South, Northwest, Southwest)

Child gender: Female, Child Race: Other race, Child Race: Black, Child Race: Hispanic, Caregiver gender: Female, Caregiver education (centered), Family Income (centered), Caregiver depression (centered), ratio of adults to total number in the home, caregiver foster parent: yes, living arrangement: Biological or Step. To follow, I outline the formulas for research question 1.

In model 2, the site control variables were entered into the model as well as interaction terms with linear time. In model 2, $\gamma_{01}MidWest_t$ represents the difference in estimated probabilities of maltreatment between children at the Midwest site relative to children at the Eastern site (reference site) controlling for the impact of the other sites (for this questions, just the South). In moving to model 3 for another example, $\gamma_{03}Disability_{jt}$ represents the difference in estimated probabilities of maltreatment between children with disabilities and children without disabilities. As a final example of interpretation, in Model 4 the parameter $\gamma_{90}EBPC_j * Average Age_{ij}$ represents the estimated average true rate of change for children with emotional and behavioral problems.

Model 0: Unconditional Model-

Level 1: Within individual

$$n_{ij} = \ln \left(\frac{P(\text{anyab}_{ij} = 1)}{1 - P(\text{anyab}_{ij} = 1)} \right) = \beta_{0j}$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \mu_{0j}$$

Where $\mu_{0j} \sim N(0, \tau_{00})$

Composite Model:

$$n_{ij} = \gamma_{00} + \mu_{0j}$$

Where *i* represents time and *j* represents individual

Model 1: Unconditional Growth Model

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j} \text{time1}_{ij} + \beta_{2j} \text{time2}_{ij} + \beta_{3j} \text{time3}_{ij} + \beta_{4j} \text{time4}_{ij} + \beta_{5j} \text{time5}_{ij}$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

Where $\begin{pmatrix} \mu_{0j} \\ \mu_{1j} \end{pmatrix} \sim N \left[\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \tau_{00} & \tau_{01} \\ \tau_{10} & \tau_{11} \end{pmatrix} \right]$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{10} \text{time1}_{ij} + \gamma_{20} \text{time2}_{ij} + \gamma_{30} \text{time3}_{ij} + \gamma_{40} \text{time4}_{ij} + \gamma_{50} \text{time5}_{ij}] + [\mu_{0j}]$$

Model 2: Add site control variables to the level 2 model to control for all site to site differences.

The Eastern site is the reference category for all models (and therefore does not appear in the equation).

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j}time1_{ij} + \beta_{2j}time2_{ij} + \beta_{3j}time3_{ij} + \beta_{4j}time4_{ij} + \beta_{5j}time5_{ij} + \beta_{6j}MidWest * AverageAge + \beta_{7j}South * AverageAge$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

$$\beta_{7j} = \gamma_{70}$$

Where $\mu_{0j} \sim N(0, \tau_{00})$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{01}MidWest_{ij} + \gamma_{02}South_{ij} + \gamma_{10}time1_{ij} + \gamma_{20}time2_{ij} + \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} + \gamma_{60}Midwest_j * AverageAge_{ij} + \gamma_{70}Midwest_j * AverageAge_{ij}] + [\mu_{0j}]$$

Model 3: Add DISABILITY to the level 2 model to answer the question “Does disability of the child have an impact on the probability that the child will have an abuse report?”

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j}time1_{ij} + \beta_{2j}time2_{ij} + \beta_{3j}time3_{ij} + \beta_{4j}time4_{ij} + \beta_{5j}time5_{ij} \\ + \beta_{6j}MidWest * AverageAge + \beta_{7j}South * AverageAge \\ + \beta_{8j}Disability_t * AverageAge_{ij}$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \mu_{0j} \\ \beta_{1j} = \gamma_{10} + \mu_{0j}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

$$\beta_{7j} = \gamma_{70}$$

$$\beta_{8j} = \gamma_{80}$$

Where $\mu_{0j} \sim N(0, \tau_{00})$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{01}MidWest_t + \gamma_{02}South_t + \gamma_{03}Disability_j + \gamma_{10}time1_{ij} \\ + \gamma_{20}time2_{ij}time2 + \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} \\ + \gamma_{60}Midwest_j * AverageAge_{ij} + \gamma_{70}Midwest_j * AverageAge_{ij} \\ + \gamma_{80}Disability_j * AverageAge_{ij}] + [\mu_{0j}]$$

*Since the interaction term of Disability*AverageAge is not significant nor adding predictive power to the model, I exclude it from all subsequent models.*

Model 4: Add emotional/behavioral problem variable to the level 1 model to answer the question “Do levels of internalizing/externalizing symptoms of the child have an impact on the probability that the child will have an abuse report?”¹⁵

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j}time1_{ij} + \beta_{2j}time2_{ij} + \beta_{3j}time3_{ij} + \beta_{4j}time4_{ij} + \beta_{5j}time5_{ij} \\ + \beta_{6j}MidWest * AverageAge + \beta_{7j}South * AverageAge \\ + \beta_{8j}EBPC_{ij} + \beta_{9j}EBPC_{ij} * AverageAge_{ij}$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \mu_{0j} \\ \beta_{1j} = \gamma_{10} \\ \beta_{2j} = \gamma_{20} \\ \beta_{3j} = \gamma_{30} \\ \beta_{4j} = \gamma_{40} \\ \beta_{5j} = \gamma_{50} \\ \beta_{6j} = \gamma_{60} \\ \beta_{7j} = \gamma_{70} \\ \beta_{8j} = \gamma_{80} \\ \beta_{9j} = \gamma_{90}$$

Where $\mu_{0j} \sim N(0, \tau_{00})$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{10}time1_{ij} + \gamma_{20}time2_{ij} \\ + \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} + \gamma_{60}Midwest_j \\ * AverageAge_{ij} + \gamma_{70}South_j * AverageAge_{ij} + \gamma_{80}EBPC_{ij} \\ + \gamma_{90}EBPC_{ij} * AverageAge_{ij}] + [\mu_{0j}]$$

*Since the interaction term of IES*AverageAge was not significant nor adding predictive power to the model, I exclude it from all subsequent models.*

¹⁵ I also tested interaction terms between disability*EP, disability*BP, and disability*EP*time, disability*BP*time, none of which were significant

Model 5: ADD Child gender (1=female)

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j}time1_{ij} + \beta_{2j}time2_{ij} + \beta_{3j}time3_{ij} + \beta_{4j}time4_{ij} + \beta_{5j}time5_{ij} \\ + \beta_{6j}MidWest * AverageAge + \beta_{7j}South * AverageAge \\ + \beta_{8j}cbEBPC_{ij}$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}Female_j + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

$$\beta_{7j} = \gamma_{70}$$

$$\beta_{8j} = \gamma_{80}$$

Where $\mu_{0j} \sim N(0, \tau_{00})$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{01}MidWest_j + \gamma_{02}South_j \\ + \gamma_{03}Disability_j + \gamma_{04}Female_j + \gamma_{10}time1_{ij} + \gamma_{20}time2_{ij} \\ + \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} + \gamma_{60}Midwest_j \\ * AverageAge_{ij} + \gamma_{70}South_j * AverageAge_{ij} + \gamma_{80}cbEBPC_{ij}] \\ + [\mu_{0j}]$$

Since gender is not significant or adding predictive power to the model, I exclude it from all subsequent models.

**** I tested the interaction term of gender with time, and it was not significant so it is not included**

Model 5: Add Child race

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j}time1_{ij} + \beta_{2j}time2_{ij} + \beta_{3j}time3_{ij} + \beta_{4j}time4_{ij} + \beta_{5j}time5_{ij} \\ + \beta_{6j}MidWest * AverageAge + \beta_{7j}South * AverageAge \\ + \beta_{8j}EBPC_{ij} + \beta_{9j}child_otherrace * AverageAge_{ij} \\ + \beta_{10j}child_black * AverageAge_{ij} \\ + \beta_{11j}child_hispanic * AverageAge_{ij}$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_otherrace_j \\ + \gamma_{05}child_black_j + \gamma_{06}child_hispanic_j + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

$$\beta_{7j} = \gamma_{70}$$

$$\beta_{8j} = \gamma_{80}$$

$$\beta_{9j} = \gamma_{90}$$

$$\beta_{10j} = \gamma_{100}$$

$$\beta_{11j} = \gamma_{110}$$

Where $\mu_{0j} \sim N(0, \tau_{00})$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{01}MidWest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{10}time1_{ij} \\ + \gamma_{20}time2_{ij} + \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} \\ + \gamma_{04}child_otherrace_j + \gamma_{05}child_black_j + \gamma_{06}child_hispanic_j \\ + \gamma_{60}Midwest_j * AverageAge_{ij} + \gamma_{70}Midwest_j * AverageAge_{ij} \\ + \gamma_{80}cbEBPC_{ij} + \gamma_{90}child_otherrace_j * AverageAge_{ij} \\ + \gamma_{100}child_black_j * AverageAge_{ij} + \gamma_{110}child_hispanic_j] + [\mu_{0j}]$$

**Since the three interaction terms of Child race *AverageAge are not significant nor adding predictive power to the model, I exclude them from all subsequent models.*

Model 6: Add caregiver gender

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j}time1_{ij} + \beta_{2j}time2_{ij} + \beta_{3j}time3_{ij} + \beta_{4j}time4_{ij} + \beta_{5j}time5_{ij} \\ + \beta_{6j}MidWest_j * AverageAge + \beta_{7j}South_j * AverageAge \\ + \beta_{8j}cbEBPC_{ij} + \beta_{9j}cgsex_{ij}$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_other_j \\ + \gamma_{05}child_black_j + \gamma_{06}child_hispanic_j + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

$$\beta_{7j} = \gamma_{70}$$

$$\beta_{8j} = \gamma_{80}$$

$$\beta_{9j} = \gamma_{90}$$

Where $\mu_{0j} \sim N(0, \tau_{00})$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{01}MidWest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_other_j \\ + \gamma_{05}child_black_j + \gamma_{06}child_hispanic_j + \gamma_{10}time1_{ij} \\ + \gamma_{20}time2_{ij}time2 + \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} \\ + \gamma_{60}Midwest_{ij} * AverageAge_{ij} + \gamma_{70}South_j * AverageAge_{ij} \\ + \gamma_{80}cbEBPC_{ij} + \gamma_{90}cgsex_{ij}] + [\mu_{0j}]$$

**Since caregiver gender is not significant nor adding predictive power to the model, I exclude it from all subsequent models.*

Model 7: Add SES variables (caregiver education and family income)

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j}time1_{ij} + \beta_{2j}time2_{ij} + \beta_{3j}time3_{ij} + \beta_{4j}time4_{ij} + \beta_{5j}time5_{ij} \\ + \beta_{6j}MidWest * AverageAge + \beta_{7j}South * AverageAge \\ + \beta_{8j}cbEBPC_{ij} + \beta_{9j}cgeducc_{ij} + \beta_{10j}famincomec_{ij}$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_other_j \\ + \gamma_{05}child_black_j + \gamma_{06}child_hispanic_j + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

$$\beta_{7j} = \gamma_{70}$$

$$\beta_{8j} = \gamma_{80}$$

$$\beta_{9j} = \gamma_{90}$$

$$\beta_{10j} = \gamma_{100}$$

Where $\mu_{0j} \sim N(0, \tau_{00})$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_other_j + \\ \gamma_{05}child_black_j + \gamma_{06}child_hispanic_j + \gamma_{10}time1_{ij} + \gamma_{20}time2_{ij} + \\ \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} + \gamma_{60}Midwest_j * AverageAge_{ij} + \\ \gamma_{70}South_j * AverageAge_{ij} + \gamma_{80}cbEBPC_{ij} + \gamma_{90}cgeducc_{ij} + \gamma_{100}famincomec_{ij}] + \\ [\mu_{0j}]$$

**Since caregiver education is neither significant nor adding predictive power to the model, I exclude it from all subsequent models.*

Model 8: Add caregiver depression

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j}time1_{ij} + \beta_{2j}time2_{ij} + \beta_{3j}time3_{ij} + \beta_{4j}time4_{ij} + \beta_{5j}time5_{ij} \\ + \beta_{6j}MidWest_j * AverageAge + \beta_{7j}South_j * AverageAge \\ + \beta_{8j}cbEBPC_{ij} + \beta_{9j}famincome_{ij} + \beta_{10j}cgDepressionC_{ij}$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_other_j \\ + \gamma_{05}child_black_j + \gamma_{06}child_hispanic_{ij} + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

$$\beta_{7j} = \gamma_{70}$$

$$\beta_{8j} = \gamma_{80}$$

$$\beta_{9j} = \gamma_{90}$$

$$\beta_{10j} = \gamma_{100}$$

Where $\mu_{0j} \sim N(0, \tau_{00})$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_other_j + \\ \gamma_{05}child_black_j + \gamma_{06}child_hispanic_j + \gamma_{10}time1_{ij} + \gamma_{20}time2_{ij} + \\ \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} + \gamma_{60}Midwest_j * AverageAge_{ij} + \\ \gamma_{70}South_j * AverageAge_{ij} + \gamma_{80}cbEBPC_{ij} + \\ \gamma_{90}famincome_{ij} + \gamma_{100}cgDepressionC_{ij}] + [\mu_{0j}]$$

**Since caregiver depression is neither significant nor adding predictive power to the model, I exclude it from all subsequent models.*

Model 9: Add living situation/family composition variables (ratio of adults to total in home, caregiver foster parent, and living arrangement)

Level 1: Within individual

$$n_{ij} = \beta_{0j} + \beta_{1j}time1_{ij} + \beta_{2j}time2_{ij} + \beta_{3j}time3_{ij} + \beta_{4j}time4_{ij} + \beta_{5j}time5_{ij} \\ + \beta_{6j}MidWest_j * AverageAge + \beta_{7j}South_j * AverageAge \\ + \beta_{8j}cbEBPC_{ij} + \beta_{9j}famincomec_{ij} + \beta_{10j}adlrat_{ij} \\ + \beta_{11j}foccg_yes_{ij} + \beta_{12j}live_bio_step_{ij} + \beta_{13j}live_bio_step_{ij} \\ * AverageAge$$

Level 2: Between individual

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Midwest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_other_j \\ + \gamma_{05}child_black_j + \gamma_{06}child_hispanic_{ij} + \mu_{0i}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

$$\beta_{7j} = \gamma_{70}$$

$$\beta_{8j} = \gamma_{80}$$

$$\beta_{9j} = \gamma_{90}$$

$$\beta_{10j} = \gamma_{100}$$

$$\beta_{11j} = \gamma_{110}$$

$$\beta_{12j} = \gamma_{120}$$

$$\beta_{13j} = \gamma_{130}$$

Composite Model:

$$n_{ij} = [\gamma_{00} + \gamma_{01}MidWest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_other_j \\ + \gamma_{05}child_black_j + \gamma_{06}child_hispanic_j + \gamma_{10}time1_{ij} \\ + \gamma_{20}time2_{ij}time2 + \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} \\ + \gamma_{60}Midwest_j * Average Age_{ij} + \gamma_{70}Midwest_j * Average Age_{ij} \\ + \gamma_{80}cbEBPC_{ij} + \gamma_{90}famincomec_{ij} + \gamma_{100}adlrat_{ij} \\ + \gamma_{110}foccg_yes_{ij} + \gamma_{120}live_bio_step_{ij} + \gamma_{130}live_bio_step_{ij} \\ * Average Age_{ij}] + [\mu_{0j}]$$

**Since Foster Parent caregiver status is not significant nor adding predictive power to the model, I exclude it from the final model.*

Once I selected the final model, I examined the residuals both within and between individual levels. The final model is presented in Chapter 5 with the results of fitting the final mode. Since formulas for research questions 2-4 followed the same structure as those presented for research question 1, I will not present formulas for every research question separately. These formulas are available upon request.

To follow are the goodness of fit statistics for each separate outcome (emotional abuse, neglect, physical abuse, and multiple types of maltreatment). The deviance and BIC statistics shown in Table 4-10 indicate that in predicting psychological abuse, Model C is the best fit while the AIC indicates that Model D is the best fit for time. To be consistent with the previous model, I parameterized time using the series of dichotomous variables.

In predicting neglect, the AIC and deviance statistics shown in Table 4-11 indicate that Model D is the best fitting model. The BIC statistic indicates that Model C is a better fit. As with psychological abuse, I went ahead and parameterized time using the series of dichotomous variables since the goodness of fit statistics are not unanimous in showing which model is best.

Table 4-10. Goodness of Fit statistics: comparing measures of time in predicting psychological abuse

Predicting Emotional Abuse	Model 0 : No change	Model A: Linear time- Average Age	Model B: Quadratic time (Average Age)	Model C: Cubic time (Average Age)	Model D: Time as series of dichotomous variables
Fixed Effects					
Intercept	-2.843	-2.128	-1.834	-1.719	-1.701
Average Age		-.186	-.533	-1.064	
Average Age ²			.038	.195	
Average Age ³				-.011	
Time1					-1.598
Time2					-1.749
Time3					-1.611
Time4					-1.794
Time5					-1.970
Variance Components					
Level1: Within person	1.357	1.610	1.747	1.831	1.845
Level 2: Intercept ¹⁶	---	---	---	---	---
# of parameter estimates	2	3	4	5	7
Random Effects	1	1	1	1	1
Fixed Effects	1	2	3	4	6
Goodness of fit					
-2LL	4685.72	4478.258	4405.432	4365.89	4378.082
AIC	4689.72	4484.257	4413.432	4375.89	4374.082
BIC	4703.725	4505.265	4441.443	4410.903	4423.1

¹⁶ None of the models will converge with time as random effect with the exception of linear time. Once I add any additional predictors to the model with linear time as fixed and random the model fails to converge.

Table 4-11. Goodness of Fit statistics: comparing measures of time in predicting neglect					
Predicting Neglect	Model 0 : No change	Model A: Linear time- Average Age	Model B: Quadratic time (Average Age)	Model C: Cubic time (Average Age)	Model D: Time as series of dichotomous variables
Fixed Effects					
Intercept	-1.861	-.709	-.318	-.143	-.111
Average Age		-.321	-.774	-1.441	
Average Age ²			.050	.249	
Average Age ³				-.014	
Time1					-2.211
Time2					-2.546
Time3					-2.599
Time4					-3.004
Time5					-3.366
Variance Components					
Level1: Within person	.840	1.487	1.756	1.919	1.952
Level 2: Intercept	---	---	---	---	---
# of parameter estimates	2	3	4	5	7
Random Effects	1	1	1	1	1
Fixed Effects	1	2	3	4	6
Goodness of fit					
-2LL	7155.092	6260.17	6140.59	5986.26	5970.642
AIC	7159.091	6266.17	6088.589	5996.261	5984.642
BIC	7173.096	6287.177	6116.599	6031.261	6033.659

As with the previous focus on neglect, when predicting physical abuse, the AIC and deviance statistics shown in Table 4-12 indicate that, again, Model D is the best fitting model. The BIC statistic indicates that Model C is a better fit. For consistency, time was parameterized using the series of dichotomous variables since the goodness of fit statistics again failed to reveal one overall best model.

¹⁷ None of the models will converge with time as random effect with the exception of linear time. Once I add any additional predictors to the model with linear time as fixed and random, the model fails to converge.

Table 4-12. Goodness of Fit statistics: comparing measures of time in predicting physical abuse					
Predicting Physical Abuse	Model 0 : No change	Model A: Linear time- Average Age	Model B: Quadratic time (Average Age)	Model C: Cubic time (Average Age)	Model D: Time as series of dichotomous variables
Fixed Effects					
Intercept	-2.840	-2.200	-1.922	-1.821	-1.793
Average Age		-.160	-.465	-.877	
Average Age ²			.033	.154	
Average Age ³				-.008	
Time1					-1.466
Time2					-1.356
Time3					-1.585
Time4					-1.585
Time5					-1.714
Variance Components					
Level1: Within person	1.532	1.741	1.846	1.897	1.918
Level 2: Intercept ¹⁸	----	----	----	----	----
# of parameter estimates	2	3	4	5	7
Random Effects	1	1	1	1	1
Fixed Effects	1	2	3	4	6
Goodness of fit					
-2LL	4802.224	4639.678	4581.374	4558.718	4545.816
AIC	4806.224	4645.679	4589.73	4566.719	4559.817
BIC	4820.229	4666.686	4617.74	4601.732	4608.835

All goodness of fit statistics indicate that Model D is the best fitting model (see Table 4-14). As with all other outcomes, I parameterized time using the series of dichotomous variables.

¹⁸ None of the models will converge with time as random effect with the exception of linear time. Once I add any additional predictors to the model with linear time as fixed and random, the model fails to converge.

Table 4-13. Goodness of Fit statistics: comparing measures of time in predicting multiple types of maltreatment

Predicting Multiple types of Abuse	Model 0 : No change	Model A: Linear time-average age	Model B: Quadratic time (average age)	Model C: Cubic time (average age)	Model D: Time as series of dichotomous variables
Fixed Effects					
Intercept	-2.54	-1.706	-1.143	-1.289	-1.269
Average Age		-.224	-.569	-1.114	
Average Age ²			.038	.200	
				-.011	
Average Age³					
Time1					-1.682
Time2					-1.879
Time3					-1.845
Time4					-2.079
Time5					-2.372
Variance Components					
Level1: Within person	1.332	1.72	1.877	1.98	1.993
Level 2: Intercept ¹⁹	----	----	----	----	----
# of parameter estimates	2	3	4	5	7
Random Effects	1	1	1	1	1
Fixed Effects	1	2	3	4	6
Goodness of fit					
-2LL	5465.464	5117.23	5033.132	4983.918	4977.058
AIC	5469.464	5123.23	5041.131	4993.717	4991.058
BIC	5483.469	5144.237	5069.142	5028.73	5040.076

¹⁹ None of the models will converge with time as random effect with the exception of linear time. Once I add any additional predictors to the model with linear time as fixed and random, the model fails to converge.

CHAPTER 5- RESULTS

In this chapter, I outline the major findings of the research questions described in the previous chapters. For each research question I begin with a brief discussion of the relevant bivariate relationships. These analyses facilitated decision making concerning which variables would be included in the longitudinal growth model analyses to follow. In the longitudinal growth models, I controlled for the effects of all significantly related variables in order to determine the impact of the primary predictors on initial status and change over time in risk for maltreatment. All analyses are conducted using binary logistic regression.

For all analyses, time is parameterized by a series of dichotomous variables with one variable representing each time (age) period, and with Time 0 (Age 4) representing the reference category. The parameters for the variables indexing all subsequent time periods model change in XX compared to Age 4. All interactions with time use a linear measure of time measured as average age (centered). This was done to reduce the number of variables in the model and because there was statistical evidence that this parsimony was equally good fitting. Refer to the methods section for additional details on decision making around how time is parameterized. For research questions 1 and 2, only data from three of the five sites are utilized because of the sampling designs employed in the two sites (see Chapter 4 for more information).

The research questions are ordered to first examine general relationships between disability, IES, and maltreatment (research question 1) and then to move into a more nuanced understanding of the relationship between specific types of disabilities, IS, ES, and specific forms of maltreatment for research question 2. In research question 3, I examine the relationship between disability, emotional/behavioral problems (EBP) and exposure to two or more maltreatments. In the last research question I examine the relationship between specific types of disabilities, internalizing symptoms (IS), and externalizing symptoms (ES) and exposure to two or more maltreatments.

Research Question 1. Are children with disabilities (CWD) at higher risk for any form of maltreatment? Are children with higher levels of emotional/behavioral problems (EBP) at higher risk for any form of maltreatment? Specifically, what is the probability of experiencing maltreatment as a function of disability and emotional/behavioral problems (EBP)

An examination of the bivariate relationship between disability and maltreatment indicates that CWD have a significantly greater percentage of reported maltreatment relative to those without disabilities (CWOD) (see Table 5-1). Children with higher levels of emotional and behavioral problems (EBP) also have a significantly greater percentage of reported maltreatment relative to those with lower levels of EBP as shown in Table 5-1. As a reminder, in this first research question as well as in the third, EBP are treated as a single construct and are measured using a composite scale. The longitudinal growth modeling to follow will allow me to examine the time ordering of the relationship between EBP and maltreatment, and to determine if these relationships remain after

statistically controlling for disability and other variables (e.g., site, child gender: female, child race: other, black, Hispanic, caregiver gender: female, caregiver education, family income, caregiver depression, ratio of adults to total number in the home, caregiver foster parent: yes, living arrangement: biological or step).

Table 5-1. Percent (N) of children experiencing maltreatment by disability, and internalizing/behavioral problem status
Percent (N) of children experiencing abuse

	Disability	No Disability	Total Score-Mean EBP (SD)
Any Maltreatment report	13.13 (171)	10.81 (192)	54.24 (10.94)
No Maltreatment report	89.19 (1,584)	86.87 (1,131)	51.65 (10.94)

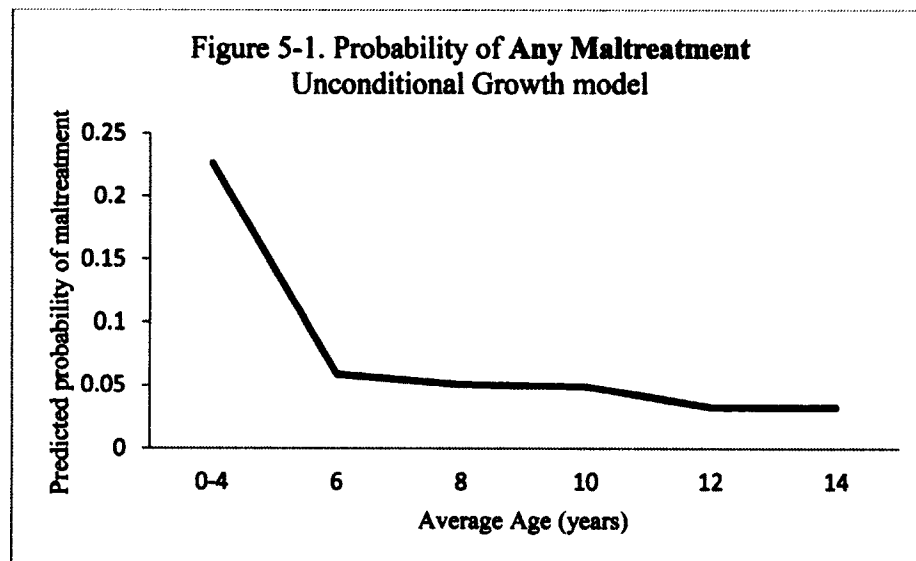
Differences maltreatment reports by disability are significant all at the p<.05 level
Differences maltreatment reports by EBP are significant all at the p<.001 level

Longitudinal Growth models

While the bivariate associations alone indicate that there is a relationship between disability, EBP, and maltreatment, this preliminary analysis is not adequate to effectively address the question of the likelihood of experiencing maltreatment as a function of disability and emotional/behavioral problems (EBP). As discussed in Chapter 4, there are several advantages of employing multilevel in this analysis, including: (1) The data has two levels; multi-level analysis do not violate assumptions of independent observations; (2) In using cross-sectional data techniques with one level of analysis, we lose information on when change occurs, time varying predictors, and the changing impact of predictors over time; and (3) Longitudinal growth modeling allows me to examine both within group differences and between group differences in risk for abuse.

In order to answer this question, I fit a series of longitudinal growth models in which I examine the impact of disability and EBP on the probability of maltreatment at

initial status and the impact of disability and EBP over time while controlling for a range of child and family factors known to be associated with maltreatment. The first two models fitted (results presented in Table 5-2) are unconditional models that allow me to establish whether there is sufficient variability in maltreatment reports to be explained and if this risk for maltreatment changes over time. The results of fitting the first model (Model 0) show that there is considerable variability in the odds of experiencing maltreatment. The variance estimates 1.45 (.21) (not shown in table) indicate that there is considerable variability between individuals in maltreatment risk to be explained. This indicates that level 2 variables (child level variables or time invariant) will be useful in predicting maltreatment risk. The results of fitting Model 1 indicate that the odds of any maltreatment change over time (see Figure 5-1). This means that level 1 variables (or those that change over time) will also be useful in predicting risk for maltreatment.



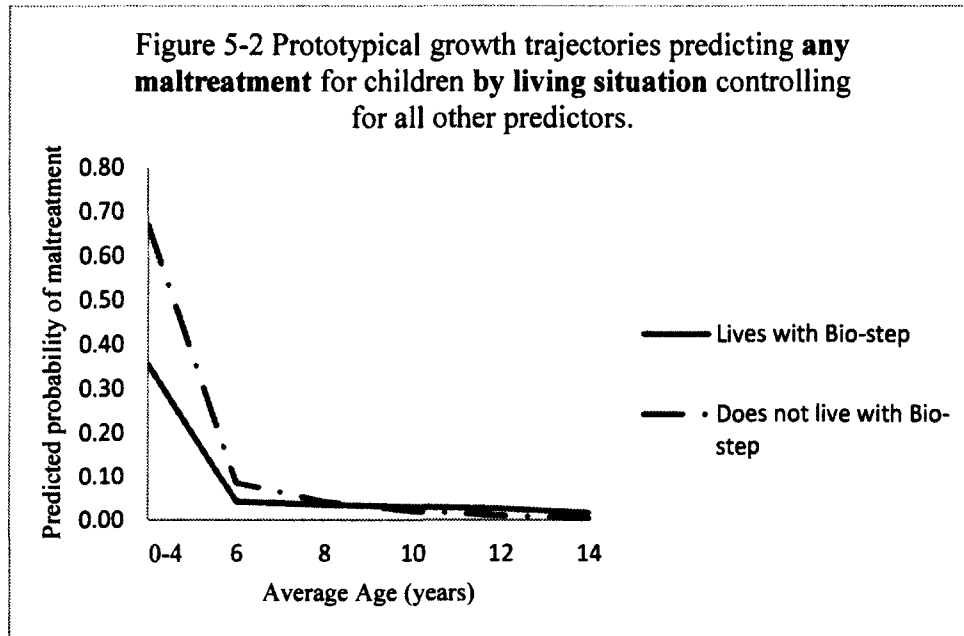
As shown in Figure 5-1, the estimated probability of maltreatment declines over time among children in this high risk sample. The highest risk for any maltreatment, 23%, is estimated to occur at initial status (ages 0-4), and the lowest estimated risk .03% occurs at age 14. At age 0-4 the predicted probability of maltreatment is about 23%, but then for the same kids they are much less likely to experience maltreatment at later ages. The estimated log odds of maltreatment decrease by 1.546 from age 4 to age 6 (see Table 5-2), marking the most dramatic change over time.

The results of fitting model 2 in Table 5-2 indicate that when controlling for site variation, CWD are not at increased risk for maltreatment at age 4. The disability by time interaction is not statistically significant, meaning that CWD and CWOD experience a decline in risk for abuse at roughly the same rate as they get older. In addition, children with higher levels of EBP are not at significantly higher risk for abuse at age 4, nor is there a significant interaction with time.

Since gender of the child had no significant impact on the predicted probability of abuse and did not contribute to the explanatory power of the model, it was excluded from the final model. Caregiver gender, caregiver depression, caregiver education, and caregiver foster parent status were also excluded from the final model as they were not significant predictors of abuse and did not contribute to the explanatory power of the model. In examining the impact of race on abuse probability, Hispanic have an estimated 1.89 lower log odds of maltreatment children compared to white children though difference is only marginally significant (see Table 5-2). Children in families with higher income have lower risk for maltreatment. For every one unit increase in family income scale (an 11 point scale see Chapter 4 for details), children are at an estimated .10 log

odds lower risk for maltreatment. Children in homes with a lower adult to total number of people in the home ratio are at higher risk for abuse for every one additional adult in the home the estimated log odds of maltreatment are reduced by 2.68.

Children living with their biological or step parents are at lower risk than children in other living arrangements, but the probability of abuse over childhood decreases at a slower rate for these children relative to children living in other types of family structures (see Figure 5-2). In other words, living with a biological or step parent is a protective factor for children but is not as protective as children get older as it is in the early years. Figure 5-2 displays prototypical growth trajectories for white children, without disabilities, with average levels of EBP, in homes with average levels of family income, and average adult/child ratio by living situation. Specifically, the figure below shows that at age 4 the predicted probability of maltreatment for a white child, without disabilities, with average levels of EBP, in homes with average levels of family income, and average adult/child ratio living with a biological or step parent is 35% in this high risk sample compared to 67% among children not living with a biological or step parent at age 4. The risk for that same child reduces as s/he gets older for both a child living with biological or step parent and a child living in another living situation (foster parent, living with a relative, etc.). As these children get older, as displayed on the prototypical trajectories, a child living with a biological or step parent is actually at slightly higher risk by age 14, with a predicted probability of .02 compared to .004 among children in other living situations.



The goodness of fit statistics were noted after adding each predictor and each control variable. The goodness of fit statistics (-2LL, AIC, and BIC) suggest that the “Final” model in Table 5-2 is the “best” fitting model in predicting any abuse when compared to all previous models (see last three rows of Table 5-2). The equation for fitting the final model is:

$$\begin{aligned}
 n_{ij} = & [\gamma_{00} + \gamma_{01}MidWest_j + \gamma_{02}South_j + \gamma_{03}Disability_j + \gamma_{04}child_other_j \\
 & + \gamma_{05}child_black_j + \gamma_{06}child_hispanic_j + \gamma_{10}time1_{ij} \\
 & + \gamma_{20}time2_{ij}time2 + \gamma_{30}time3_{ij} + \gamma_{40}time4_{ij} + \gamma_{50}time5_{ij} \\
 & + \gamma_{60}Midwest_j * Average Age_{ij} + \gamma_{70}Midwest_j * Average Age_{ij} \\
 & + \gamma_{80}cbEBPC_{ij} + \gamma_{90}famincome_{ij} + \gamma_{100}adlrat_{ij} \\
 & + \gamma_{110}live_bio_step_{ij} + \gamma_{120}live_bio_step_{ij} * Average Age_{ij}] \\
 & + [\mu_{0j}]
 \end{aligned}$$

Again, I will not show equations for all research questions to follow as they all follow the same structure but they are available upon request. In order to examine the -2LL, I reduced the dataset so that there were no missing cases in the dataset for each

model considered. I then proceeded to fit each model and run Stata's likelihood ratio (LR) test to compare all models to each subsequent model (the final model was compared to the model fit just prior). The LR test accounts for the number of parameters in each model and compares the models fit using the chi2 distribution (this can also be done by hand). This same process was repeated for all outcomes for research questions two through four.

Table 5-2. Longitudinal Growth Model results predicting any maltreatment report using any disability and IES

	Model 0	Model 1	Model 2	Model 3	Final Model
	Coef.(SE)	Coef.(SE)	Coef.(SE)	Coef.(SE)	Coef.(SE)
Fixed Effects					
Intercept	-2.47*** (.09)	-1.230***(.11)	-1.49***(.24)	-1.82***(.38)	.535(.69)
Time invariant predictors					
Disability			.156(.16)	.243(.21)	.062(.23)
Child Race: Other					-.548(.59)
Child Race: Black					-.266(.31)
Child Race: Hispanic					-1.89~(.73)
Time varying predictors					
<i>Time 1</i>		-1.546***(.16)	-1.438***(.21)	-1.475***(.24)	-2.112***(.29)
<i>Time 2</i>		-1.699***(.17)	-1.698***(.25)	-1.720***(.34)	-2.990***(.43)
<i>Time 3</i>		-1.735***(.17)	-2.106***(.30)	-2.058***(.45)	-3.814***(.58)
<i>Time 4</i>		-2.144***(.19)	-2.372***(.36)	-2.424***(.58)	-4.647***(.78)
<i>Time 5</i>		-2.455***(.20)	-2.904***(.44)	-3.024***(.74)	-5.736***(.99)
AvAge *Disability			.026(.04)		
EBP				.011(.01)	.015 (.009)
AvAge* EBP				-.0001(.00)	
Family Income					-.100*(.05)
Ratio of Adults to total #					-2.68***(.67)
Live with Bio or step					-1.40**(.46)
AvAge *Live bio/step					.280***(.09)
Eastern Site (ref)					
MW site			.423(.29)	.388(.31)	.798*(.36)
South site			-.046(.29)	-.136(.31)	-.108(.33)
AvAge *EA Site (ref)					
AvAge *MW site			-.191*(.06)	-.157*(.07)	-.257**(.08)
AvAge *SO site			.167***(.05)	.220***(.06)	.205**(.06)

<i>Goodness of Fit</i>					
Deviance (-2LL)	3250.624	2971.820	1904.807	1706.572	1428.537
AIC	3254.624	2985.820	1930.807	1734.572	1468.537
BIC	3267.501	3030.887	2009.223	1817.217	1584.043

~ indicates p<.10 * indicates p<.05 ** indicates p<.01 * indicates p<.001**

Research Question 2. Are children with specific types of disabilities (sensory, learning, intellectual, and both learning/intellectual) at higher risk for specific types of maltreatments (psychological abuse, neglect, physical abuse)? Are children with higher levels of internalizing symptoms (IS) at higher risk for specific types of maltreatments? Are children with higher levels of externalizing symptoms (ES) at higher risk for specific types of maltreatments? Specifically, what is the probability of experiencing maltreatment as a function of specific disability type, internalizing symptoms (IS), and externalizing symptoms (ES)?

Findings from previous research studies suggest that the risk for having an abuse report may be dependent on the type of disability in relation to the type of maltreatment. This is confirmed through examining the specific relationships between different types of disabilities and different types of maltreatment at the bivariate level (see Table 5-3). Children with learning disabilities, intellectual disabilities or both conditions had significantly greater percentage of each type of maltreatment relative to children without these types of disabilities. For example, 19% of children with both learning and intellectual disabilities have a neglect report compared to 8% of children without either one of these types of disabilities (see second column of Table 5-3). While children with “any” disabilities have a significantly greater percentage of reported emotional abuse, physical abuse, and sexual abuse, it is clear that the intellectual and learning disability children are likely driving this significance. The only other significant relationship is among children with physical disabilities, they are at higher risk for physical abuse, over 9% of children with physical disabilities have a report of physical abuse compared to 3.6% of children without a physical disability (see Table 5-3).

Table 5-3. Percent (N) of children experiencing specific type of maltreatment by disability type (all waves)

Type of Maltreatment	Emotional Abuse	Neglect	Physical Abuse	Sexual Abuse
Type of Disability	Percent (N)			
Any Disability	4.15* (54)	9.83 (128)	4.78**(62)	2.05* (28)
No Disability	2.70* (48)	8.78 (156)	2.87** (51)	1.07* (19)
Physical	7.41~(4)	7.41 (4)	9.26* (5)	0
No Physical	3.26~ (100)	9.3(285)	3.59*(110)	1.57 (48)
Sensory	4.07 (42)	9.3 (96)	4.36 (45)	2.03 (21)
No Sensory	2.97 (62)	9.24 (193)	3.35 (70)	1.29 (27)
Learning	5.11*** (19)	12.10***(45)	5.91***(22)	3.23** (12)
Intellectual	7.14*** (9)	11.11***(14)	8.73***(11)	2.38** (3)
Learning and Intellectual	8.02*** (13)	19.14***(31)	8.02*** (13)	3.09** (5)
Neither Learning nor intellectual	2.72*** (69)	8.23***(409)	2.96***(75)	1.18** (30)

~ indicates p<.10 * indicates p<.05 ** indicates p<.01 *** indicates p<.001

Children with higher levels of IS are significantly more likely to have reports of emotional abuse, physical abuse, and sexual abuse. Likewise, children with higher levels of ES are significantly more likely to report each type of maltreatment (as shown in the last column of Table 5-4). All differences in maltreatment and ES are significant at the p<.005 level (see Table 5-4).

Table 5-4. IS and ES levels among children experiencing specific types of maltreatment (all waves)

Type of maltreatment	Internalizing symptoms	Externalizing symptoms
Emotional Abuse	52.48*(9.82)	62.73*** (10.65)
No emotional Abuse	50.48*(9.87)	57.68*** (10.84)
Neglect	51.39~(10.62)	60.53*** (11.73)
No neglect	50.46~(9.79)	57.57 *** (10.74)
Physical Abuse	52.21 *(10.38)	62.42*** (10.80)
No physical Abuse	50.49 *(9.85)	57.68*** (10.84)
Sexual Abuse	54.19** (10.14)	63.93 *** (11.70)
No Sexual Abuse	50.49 ** (9.86)	57.76*** (10.83)

~ indicates p<.10 * indicates p< ** indicates p<.01 *** indicates p<.001

Longitudinal growth models

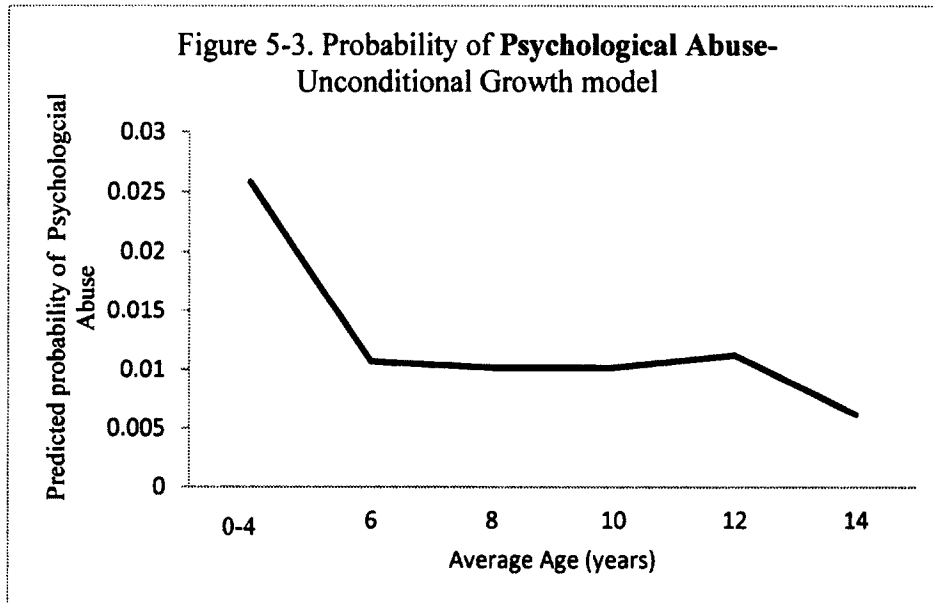
For the relationships presented in Table 5-3, only those that were significant at the bivariate level were examined using longitudinal growth models. Due to small cell sizes, analyses involving physical disabilities and those predicting sexual abuse cannot be included. The following models predict each type of maltreatment separately starting with psychological abuse, then neglect, and lastly physical abuse. Five models are presented for each type of victimization: unconditional means (Model 0), unconditional growth model (Model 1), models with disabilities subtypes as only predictors and site controls (Model 2), a model adding IS and ES (Model 3), and finally a model with all predictors and controls (Model 4- the “Final Model”).

To operationalize specific types of disabilities I use the combined condition dichotomous variables for learning and intellectual disabilities, representing three conditions: both learning and intellectual disability, learning disability no intellectual disability, and intellectual disability no learning disability. The reference category is having neither disability.

Psychological Abuse

Results of the longitudinal growth model predicting psychological abuse are shown in Table 5-5. The result of the unconditional means model indicate that there is variation in psychological abuse to be explained. The variance estimates 2.04 (.50) indicate that there is considerable variability between individuals psychological abuse risk to be explained. In addition, there is significant change over childhood in the odds of psychological abuse as shown in Figure 5-3. The estimated log odds of psychological

abuse decreases by .899 from baseline to age 6 and continues to decline over childhood (until age 14).



As shown in the last column of Table 5-5, in the final model, once the controls are added to the model, learning disability and intellectual disability are not significantly related to psychological abuse. When the disability types are entered into the model with and without controls, children with learning and intellectual disabilities (each combination) are not at significantly higher risk for psychological abuse at age 4 nor are they at increased risk over time. Children with higher levels of ES are at higher risk for psychological abuse. For every one unit increase in externalizing symptoms, the risk for psychological abuse increases by .055 log odds. The protective effect of high levels of IS in predicting psychological abuse is only marginally significant (see the last column of Table 5-5).

Gender of the child, caregiver sex, caregiver depression, caregiver education, family income, and caregiver foster parent status were excluded from the final model as

they were not significant predictors of psychological abuse and did not contribute to the explanatory power of the model. The control variables indicate that children with a higher ratio of adults to total number of people in the home, and those living with bio or step parent are at lower risk at initial status for experiencing psychological abuse. Children in homes with a lower adult to total number of people in the home ratio are at higher risk for abuse for every one additional adult in the home the estimated log odds of psychological abuse are reduced by 2.25. Again, the risk for psychological abuse declines at a slower rate for children living with bio/step parents. The goodness of fit statistics (AIC, and BIC) suggest that the “Final” model in Table 5-5 is the “best” fitting model in predicting any abuse when compared to all previous models (see last three rows of Table 5-5).

Table 5-5. Longitudinal Growth Model results predicting Psychological Abuse report using specific Disabilities, IS and ES

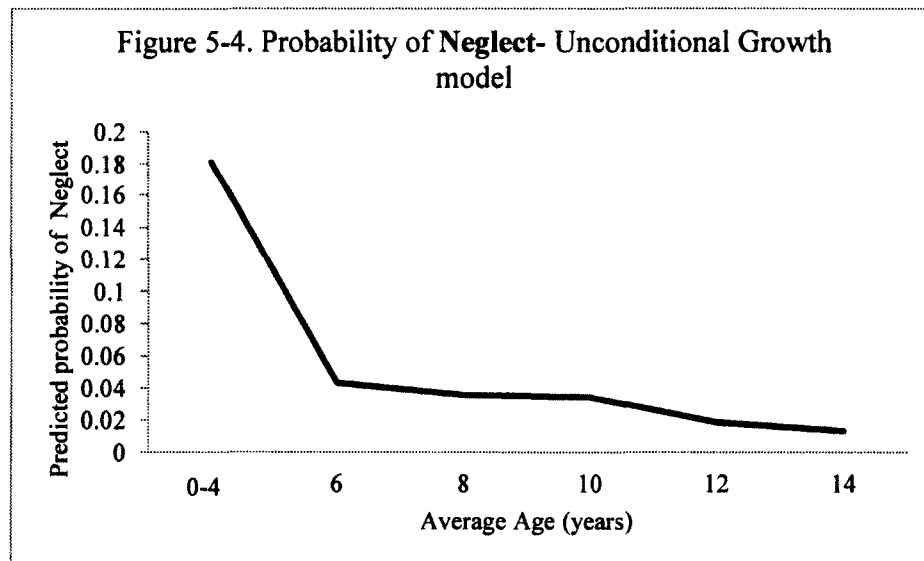
	Model 0 Coef.(SE)	Model 1 Coef.(SE)	Model 2 Coef.(SE)	Model 3 Coef.(SE)	Final Model Coef.(SE)
<i>Fixed Effects</i>					
Intercept	-4.238***(.21)	-3.530***(.24)	-3.752***(.42)	-4.205***(.498)	-1.680*(.69)
<i>Time invariant predictors</i>					
Learning Disability			.637(.46)	.399(.39)	.323(.39)
Intellectual Disability			-.093(1.37)	.750(.88)	.632(.90)
Learning and Intellectual			.734(.61)	.512(.50)	.408(.51)
<i>Time varying predictors</i>					
Time 0 (ref)					
Time 1		-.899**(.28)		-1.246***(.39)	-1.769***(.42)
Time 2		-.949**(.28)		-1.326***(.49)	-2.443***(.58)
Time 3		-.949**(.28)		-1.385***(.63)	-2.989***(.79)
Time 4		-.852**(.27)		-1.477***(.77)	-3.596***(1.02)
Time 5		-1.451**(.32)		-2.826***(1.05)	-5.510***(1.36)
AvAge*Learning			-.007(.08)		
AvAge*Intellectual			.149 (.19)		
AvAge*Both Learning &Intellectual			.013(.10)		
Internalizing Symptoms (IS)				-.039(.02)	-.031~(.02)
Externalizing Symptoms (ES)				.056*(.02)	.055**(.02)
AvAge * IS				.002(.004)	
AvAge * ES				-.001(.004)	
Ratio of Adults to total # in home					-2.248*(.92)
Living with: Bio or step					-1.844***(.52)
AvAge *Living bio/step					.303**(.10)
Eastern Site (ref)					
MW site			.536(.47)	.595(.50)	.725(.51)
South site			.724(.44)	.891 (.47)	.859~(.47)
AvAge *Eastern Site (ref)					
AvAge *MW site			-.150(.12)	-.112(.13)	-.147(.13)
AvAge *South site			.174(.09)	.198(.10)	.212*(.10)
<i>Goodness of Fit</i>					

Deviance (-2LL)	1306.083	1273.599	811.382	707.491	687.833
AIC	1310.083	1291.599	845.342	743.491	725.833
BIC	1322.960	1336.666	948.117	850.530	838.710

~ indicates p<.10 * indicates p<.05 ** indicates p<.01 *** indicates p<.001

Neglect

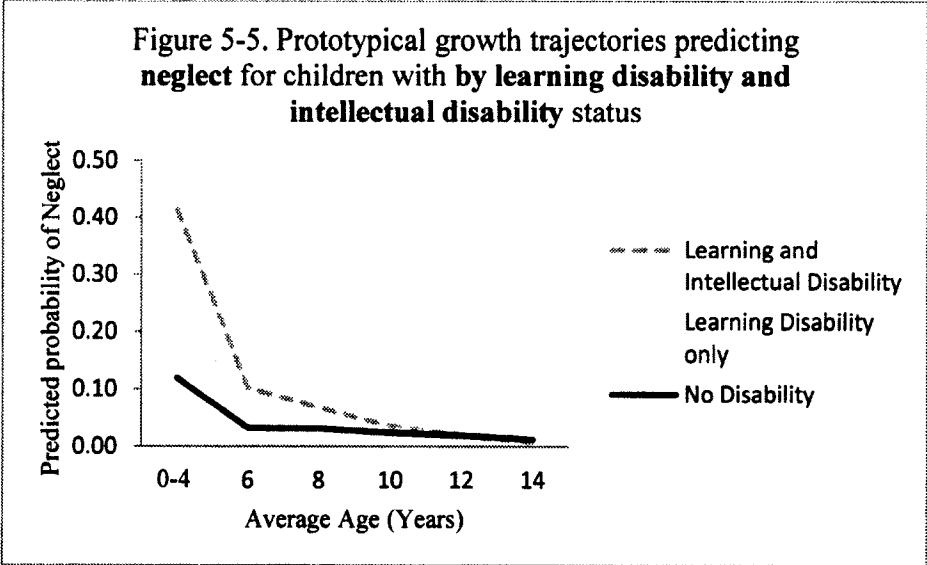
Results of the longitudinal growth model predicting neglect are shown in Table 5-6. The variance estimates from the unconditional means model 1.43 (.60) indicate that there is considerable variability between individuals in neglect risk to be explained. Figure 5-4 shows that there is significant change over time in neglect reports. The estimated log odds of neglect decrease by 1.591 from age 4 to age 6 and continue to decline over childhood (see Table 5-6).



In looking at neglect in Table 5-6, children with the combination both learning and intellectual disabilities are at higher risk for neglect than children without these types of disabilities at age 4 (see Table 5-6). However, the risk for neglect among children with both learning and intellectual disabilities decreases at a faster rate with increasing age compared to their peers without both types of disabilities (see Figure 5-3). Children with

learning disabilities and (no intellectual disabilities) are also at increased risk for neglect compared to children without learning or intellectual disabilities.

Prototypical growth trajectories in Figure 5-5 graphically display the relationship among intellectual/learning disabilities and neglect for white children, with average levels of IS and ES, in homes with average levels of income and average adult to total number of people in home ratio, who live with a biological or step parent. Among children with learning and intellectual disabilities, the predicted probability of neglect at age 4 is .41 and decreases to .008 by age 14. In comparison, children with learning disabilities and average levels of IS and ES are at heightened risk for neglect relative to children without learning disabilities. At age 4, children with learning disabilities have a predicted probability of .25 of experiencing neglect, with the risk decreasing to .011 by age 14. Children with intellectual disabilities alone are not at higher risk for neglect relative to children without intellectual disabilities.



Child gender, caregiver gender, caregiver depression, and caregiver foster parent status were all excluded from the final model as they were not significant predictors of neglect and did not contribute to the explanatory power of the model. Similar to the findings for any abuse, Hispanic children have an estimated 1.77 lower log odds of neglect children compared to white children. Children living in families with higher levels of income have lower risk for neglect at initial status, for every one unit increase in the family income scale (an 11 point scale see Chapter 4 for details), children are at an estimated .13 log odds lower risk for neglect. As with emotional abuse, children living with biological or step parents are at reduced risk at age 4 (risk reduced by 2.77 log odds) but the risk decreases at a slower rate with increasing age.

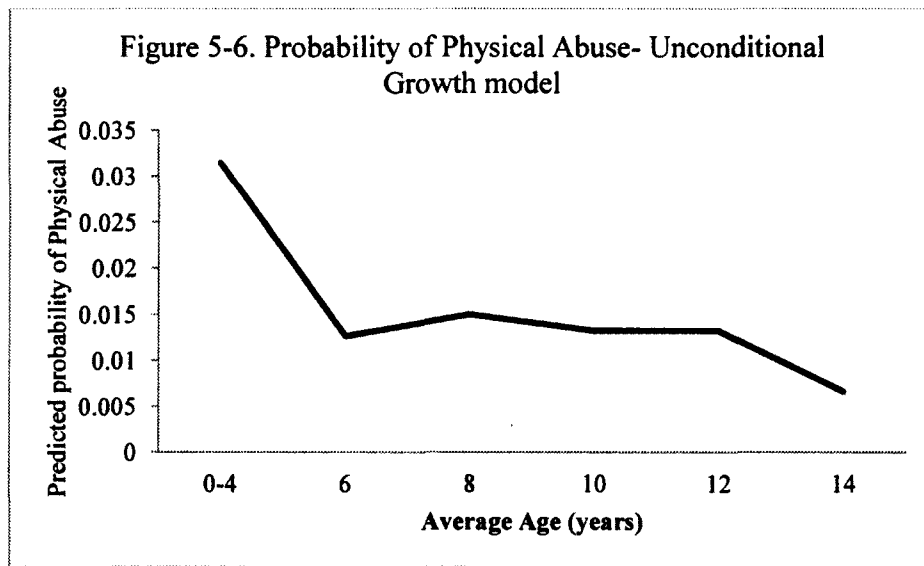
Table 5-6. Longitudinal Growth Model results predicting Neglect report using specific Disabilities, IS, and ES

	Model 0 Coef.(SE)	Model 1 Coef.(SE)	Model 2 Coef.(SE)	Model 3 Coef.(SE)	Final Model Coef.(SE)
<i>Fixed Effects</i>					
Intercept	-2.770***(.10)	-1.507***(.12)	-1.862***(.25)	-1.971***(.27)	.097(.10)
<i>Time invariant predictors</i>					
Learning Disability			.938*(.37)	.932*(.39)	.895*(.40)
Intellectual Disability			.675(1.00)	.522(1.01)	.678(.98)
Learning and Intellectual			1.792**(.52)	1.669**(.54)	1.647**(.57)
Child other race					-.180(.62)
Child Black					.055(.33)
Child Hispanic					-1.767*(.79)
<i>Time varying predictors</i>					
Time 0 (ref)					
Time 1		-1.591***(.17)	-1.473***(.23)	-1.519***(.24)	-2.218***(.32)
Time 2		-1.795***(.18)	-1.752***(.27)	-1.770***(.29)	-3.067***(.50)
Time 3		-1.839***(.18)	-2.122***(.34)	-2.170***(.38)	-4.145***(.70)
Time 4		-2.462***(.22)	-2.752***(.42)	-2.534***(.45)	-5.172***(.93)
Time 5		-2.805***(.24)	-3.220***(.51)	-3.253***(.60)	-6.416***(1.21)
AvAge*Learning			-.101(.07)	-.114(.08)	-.107(.08)
AvAge*Intellectual			-.183(.21)	-.128(.21)	-.202(.22)
AvAge*Both Learning &Intellectual			-.189*(.09)	-.166~(.10)	-.206*(.10)
IS				-.005(.02)	-.003(.01)
ES				.023(.02)	.019(.01)
AvAge * IS				-.000(.003)	
AvAge * ES				-.002(.003)	
Family Income					-.134*(.05)
Ratio of Adults to total # in home					-2.773*(.71)
Living with: Bio or step					-1.46**(.48)
AvAge *Living bio/step					-.405(.10)
Eastern Site (ref)					
MW site			.418(.31)	.401(.32)	1.016 **(.37)
South site			-.327(.32)	-.353(.33)	-.226(.35)

AvAge *Eastern Site (ref)					
AvAge *MW site			-0.185*(.08)	-0.186*(.08)	-0.309**(.09)
AvAge *South site			.218***(.06)	.236***(.06)	.218**(.07)
Goodness of Fit					
Deviance	2830.716	2541.874	1594.906	1489.215	1249.441
AIC	2834.717	2555.875	1628.906	1531.215	1301.441
BIC	2847.593	2600.942	1731.681	1656.094	1452.866
~ indicates p<.10 * indicates p<.05 ** indicates p<.01 *** indicates p<.001					

Physical Abuse

Longitudinal growth model results predicting physical abuse are shown in Table 5-7. The variance estimates 2.08 (.47) from model 0 (not shown in table) indicate that there is considerable variability between individuals in physical abuse risk to be explained. Figure 5-6 displays the results of the unconditional growth model and shows how the probability of physical abuse changes over childhood. The estimated log odds of physical abuse decrease by .932 from age 4 to age 6 and continue to decline over childhood (See Figure 5-6).



In the last column of Table 5-7, results indicate that children with both learning and intellectual disabilities are at the highest risk for physical abuse at age 4. As with neglect, children with both learning and intellectual disabilities experience a sharper decline in risk for physical abuse as they get older (see Figure 5-7). Among children with *both* learning and intellectual disabilities, the predicted probability of physical abuse at

age 4 is .13 and decreases to .0008 by age 14. Children with a learning disability and no intellectual disability, or an intellectual disability but no learning disability, or neither are not at higher risk for physical abuse. Children with higher levels of ES are at significantly higher risk for physical abuse compared to children with lower levels of ES. For every one unit increase in externalizing symptoms, the risk for physical abuse increases by .032 log odds.

Children with a higher ratio of adults to total number of people in the home are at lower risk for physical abuse. Children in homes with a lower adult to total number of people in the home ratio are at higher risk for abuse for every one additional adult in the home the estimated log odds of physical abuse are reduced by 1.81. No other control variables were significantly associated with physical abuse.

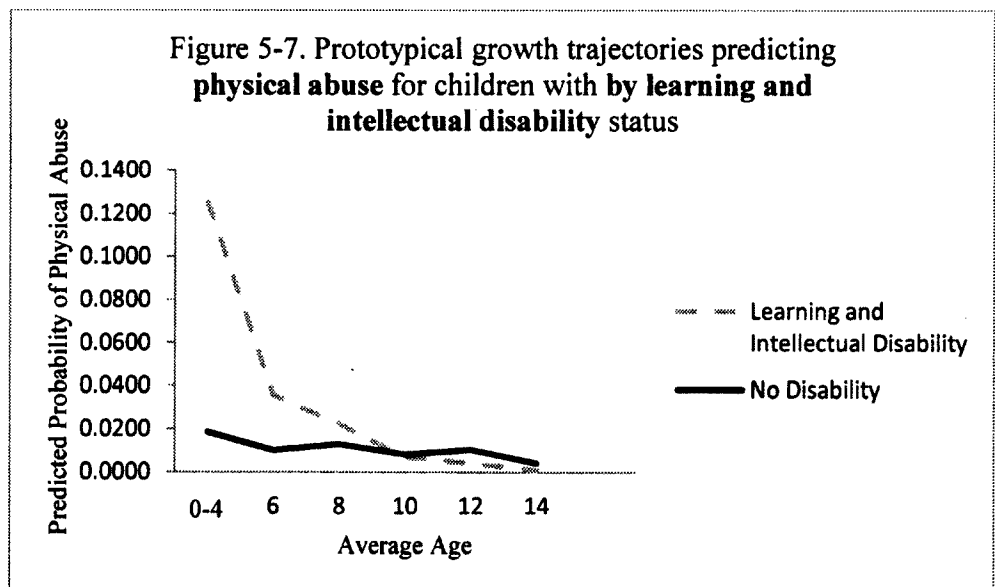


Table 5-7. Longitudinal Growth Model results predicting Physical Abuse report using specific Disabilities, IS, and ES

	Model 0 Coef.(SE)	Model 1 Coef.(SE)	Model 2 Coef.(SE)	Model 3 Coef.(SE)	Final Model Coef.(SE)
<i>Fixed Effects</i>					
Intercept	-4.116***(.19)	-3.424***(.23)	-3.773***(.40)	-4.012***(.44)	-3.221***(.53)
<i>Time invariant predictors</i>					
Learning Disability			.648(.48)	.634(.50)	.544(.49)
Intellectual Disability			1.150(1.06)	.981(1.07)	.968(1.05)
Learning and Intellectual			2.16***(.56)	2.56***(.58)	2.023***(.56)
<i>Time varying predictors</i>					
Time 0 (ref)					
Time 1		-.932***(.27)	-.690***(.34)	-.635***(.35)	-.615~(.35)
Time 2		-.759**(.25)	-.468***(.38)	-.397***(.42)	-.368(.40)
Time 3		-.886**(.26)	-.921***(.47)	-.930***(.55)	-.836(.52)
Time 4		-.886**(.26)	-.689***(.53)	-.755***(.62)	-.605(.58)
Time 5		-1.582***(.32)	-1.496***(.66)	-1.821***(.85)	-1.542*(.78)
AvAge*Learning			.020(.08)	.014(.08)	.030(.09)
AvAge*Intellectual			.044(.16)	.111(.017)	.092(.16)
AvAge*Both Learning &Intellectual			-.363**(.13)	-.438**(.14)	-.369**(.14)
IS				-.039(.02)	-.016(.02)
ES				.025(.02)	.032*(.01)
AvAge * IS				.005(.004)	
AvAge * ES				.002(.004)	
Ratio of Adults to total # in home					-1.808*(.81)
Living with: Bio or step					
AvAge *Living bio/step					
Eastern Site (ref)					
MW site			.566(.44)	.708(.45)	.665(.45)
South site			.047(.43)	.186(.45)	.167(.45)
AvAge *Eastern Site (ref)					
AvAge *MW site			-.207*(.10)	-.260*(.12)	-.273*(.12)
AvAge *South site			.15*(.07)	.166*(.08)	.155~(.08)
Goodness of Fit					

Deviance	1424.971	1392.069	894.493	793.513	791.559
AIC	1428.971	1406.069	928.493	835.513	831.559
BIC	1441.848	1451.136	1031.268	960.392	950.377
~ indicates p<.10 * indicates p<.05 ** indicates p<.01 *** indicates p<.001					

Research Question 3. Are children with disabilities (CWD) more likely to experience multiple types of maltreatments? Are children with higher levels of emotional/behavioral problems (EBP) more likely to experience multiple types of maltreatments? Specifically, what is the probability of exposure to **two or more maltreatments** as a function of **any disability** and **emotional/behavioral problems (EBP)**?

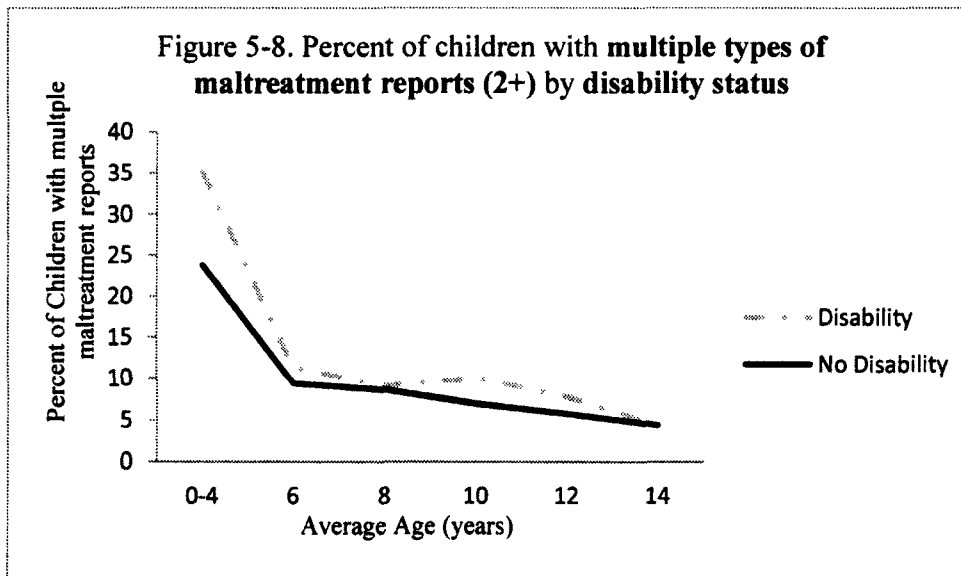
A preliminary examination of the relationship between disability and experiencing multiple types of maltreatment indicated that CWD are more likely to experience two or more types of maltreatment (see Table 5-8), and that this varies by age (see Figure 5-8). Table 5-5 shows the bi-variate relationship between disability and number of types of maltreatment (none, one, two or more). These exploratory findings show that CWD have a significantly greater percentage of reported a single form of maltreatment as well as two or more types of maltreatments; this is also a consistent over childhood (see Figure 5-8). Table 5-8 also reports the average EBP score for children with each number of reports. For children with no reports, the average EBP level is the lowest on average, the highest EBP levels are associated with having two or more reports.

Table 5-8. No maltreatment, single type of maltreatment, and multiple types of maltreatment by disability, and emotional/behavioral problem status

	Percent (N) of children experiencing abuse		Mean CBCL Total score
	Disability	No Disability	Mean EBP (SD)
No report	73.36	79.51	52.57 (11.42)
Single report	13.09	10.68	55.04 (11.49)
Two or more reports	13.56	9.81	57.31 (11.44)

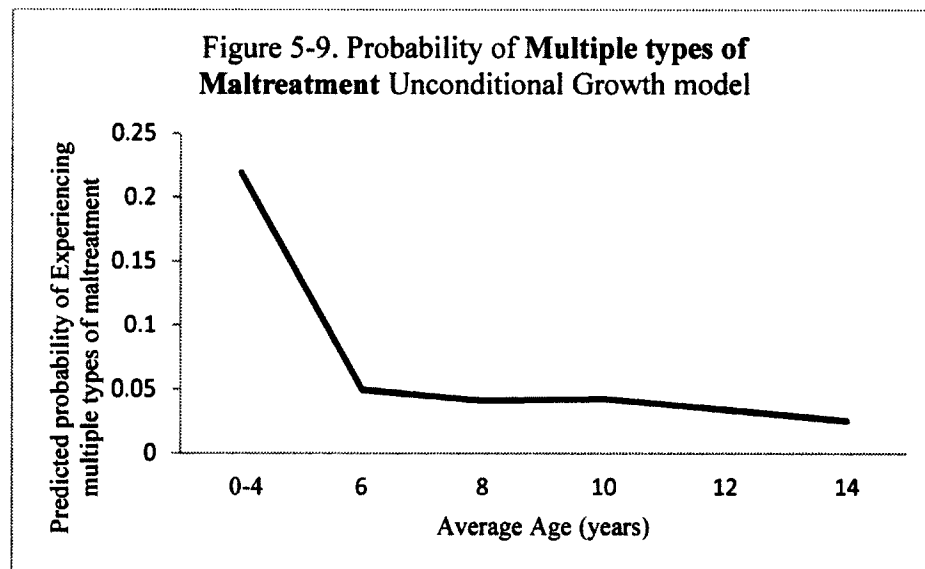
Differences in number of maltreatment reports by disability and EBP are significant all at the $p < .001$ level

Since this research question has three categorical outcomes, I ran exploratory models to determine if ordered logistic regression or binary logistic regression should be utilized. The results from the ordered logistic regression were nearly identical to those of the binary logistic regression. Therefore, I proceed with a binary logistic regression so as to not make the analysis unnecessarily complicated.



Longitudinal Growth Model

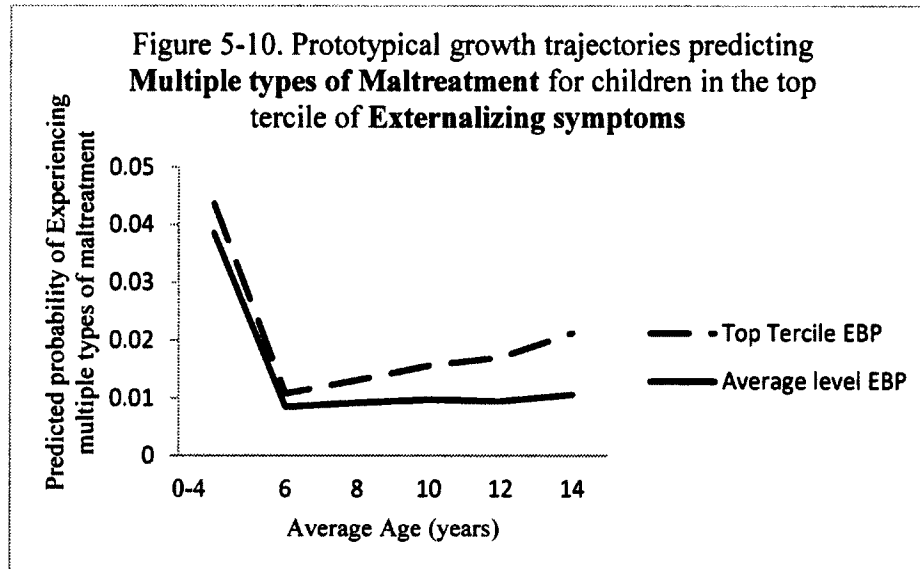
Results of the logistic longitudinal growth model are shown in Table 5-9, showing the relationship between disability, EBP, and the resulting risk of experiencing two or more types of maltreatment. The variance estimates 1.33 (.16) from model 0 (not shown in table) indicate that there is considerable variability between individuals in exposure to multiple types of abuse risk to be explained. The results indicate that there is considerable variation in the number of children experiencing multiple types of maltreatment to be explained. Additionally, figure 5-9 displays the results of the unconditional growth model, which indicates that there is significant change over childhood in probability of children experiencing multiple types of maltreatment (see Figure 5-9). At age 4, the predicted probability of experiencing multiple forms of abuse is .22.



Disability (any) status is not a significant predictor of multiple types of abuse reports nor does it have a significant impact on the change over time in risk for multiple

types of abuse (see Table 5-9). This lack of significance might be due to the fact here all disabilities are combined into one category, which could mask a relationship between individual disability types and multiple types of abuse; I explore this possibility in the next research question. EBP are not significantly associated with multiple types of maltreatment reports at initial status (main effect), but there is a relationship between EBP and change over time. This indicates that children with EBP have an increased risk over time for multiple types of maltreatment.

Figure 5-10 displays prototypical growth trajectories for children with female caregivers, in families with average levels of income, and an average adult child ratio, without disabilities. The prototypical plots show that at age 4, children in the top quintile for EBP are at roughly the same risk as children with lower levels of EBP at age 4, but they are at higher risk for experiencing multiple types of abuse as they get older. The probability of experiencing multiple types of abuse at age 14 for children in the top quintile for EBP is .02, compared to .01 for children with average levels of EBP. It is important to note that while these differences are statistically significant, the differences in probability of multiple types of abuse are quite small (see y axis in Figure 5-10).



Consistent with the analyses in research questions 1 and 2, children living in homes with higher incomes and with a higher ratio of adults to total number in the home (see Table 5-9) are at lower risk for abuse. For every one unit increase in family income scale children are at an estimated .11 log odds lower risk for experiencing multiples types of abuse. Children in homes with a lower adult to total number of people in the home ratio are at higher risk for experiencing multiples types of abuse for every one additional adult in the home the estimated log odds of multiples types of abuse are reduced by 1.29. Children living with a female caregiver are at significantly lower risk for experiencing multiple types of abuse though this relationship is only marginally significant (see Table 5-9).

Table 5-9. Longitudinal Growth Model results predicting Multiple Maltreatment report types using any Disability and EBP

	Model 0 Coef.(SE)	Model 1 Coef.(SE)	Model 2 Coef.(SE)	Model 3 Coef.(SE)	Final Model
<i>Fixed Effects</i>					
Intercept	-2.54*** (.07)	-1.26***(.09)	-3.15***(.31)	-3.13***(.31)	-2.17***(.49)
<i>Time invariant predictors</i>					
Disability			.305~(.17)	.147(.136)	.18(.14)
<i>Time varying predictors</i>					
Time 0 (ref)					
Time 1		-1.682***(.13)	-1.567***(.18)	-1.548***(.19)	-1.546***(.20)
Time 2		-1.879***(.13)	-1.593***(.26)	-1.587***(.28)	-1.465***(.30)
Time 3		-1.845***(.13)	-1.489***(.36)	-1.437***(.38)	-1.401**(.41)
Time 4		-2.079***(.14)	-1.619***(.46)	-1.588**(.51)	-1.429**(.54)
Time 5		-2.372***(.15)	-1.608*** (.56)	-1.590**(.61)	-1.319*(.66)
AvAge *Disability			-.004 (.03)		
EBP				.006 (.008)	.011(.008)
AvAge * EBP				.004** (.001)	.005**(.002)
Caregiver sex: Female					-.515~(.26)
Family Income					-.111***(.02)
Ratio of Adults to total # in home					-1.29**(.43)
Eastern Site (ref)					
MW site			.63 (.39)	.656~(.39)	.773~(.42)
NW site			3.23***(.33)	3.28***(.34)	3.22***(.38)
South site			.89*(.36)	.95**(.37)	.924*(.39)
SW site			2.72***(.33)	2.78***(.33)	2.96***(.36)
AvAge *Eastern Site (ref)					
AvAge *MW site			-.15~(.09)	-.137(.09)	-.227*(.11)
AvAge *NW site			-.143*(.06)	-.175**(.06)	-.182*(.07)
AvAge *South site			.09(.06)	.062(.07)	.04(.08)
AvAge *SW site			-.09(.06)	-.11~(.06)	-.13~(.07)
<i>Goodness of Fit</i>					
Deviance	5465.464	4977.058	3322.874	3042.116	2587.192
AIC	5469.464	4991.058	3356.873	3078.116	2635.192
BIC	5483.469	5040.076	3470.107	3195.937	2789.011

~ indicates p<.10 * indicates p<.05 ** indicates p<.01 *** indicates p<.001

Research Question 4. Are children with specific types of disabilities more likely to experience multiple types of maltreatments? Are children with higher levels of internalizing symptoms (IS) more likely to experience multiple types of maltreatment? Are children with higher levels of externalizing symptoms (ES) more likely to experience multiple types of maltreatment? Specifically, what is the probability of exposure to two or more maltreatments as a function of **specific disability type, internalizing symptoms (IS), and externalizing symptoms (ES)?**

Findings from research question 2 indicate that type of disability does matter when predicting abuse and that the heterogeneity of the “any disability” variable can mask relationships between specific types of disabilities and abuse outcomes. In this analysis, I repeat the multi-maltreatment analyses with separate measures for each disability type.

Table 5-10. Children experiencing no maltreatment, a single type of maltreatment, and multiple types of maltreatment by specific disability type, IS, and ES

# of reports	None	Single	Two or more
Type of Disability	Percent		
Sensory Disability**	73.92	12.85	13.23
No Sensory Disability**	78.06	11.23	10.72
Neither Learning or Intellectual***	78.39	11.35	10.26
Learning ***	71.43	14.52	14.05
Intellectual ***	74.02	10.29	15.69
Both Learning and Intellectual***	69.83	13.06	17.09
	Mean CBCL Score (SD)		
Emotional Problem-**	50.22 (10.52)	51.01 (10.20)	52.30 (11.13)
Behavioral Problem ***	53.60 (11.12)	56.54 (11.38)	58.40 (11.45)

~ indicates p<10 * indicates p<.05 ** indicates p<.01 *** indicates p<.001

As shown in Table 5-10, a greater percentage of children with sensory disabilities experience single or multiple types of abuse compared to children without sensory disabilities. The difference is most pronounced in the last column of Table 5-10, which shows that over 13% of children with sensory disabilities have experienced multiple types of maltreatment compared to under 11% among children without sensory disabilities. As seen in the last four rows of Table 5-10, children with learning and intellectual disabilities have a greater percentage of multiple types of maltreatment relative to children without these types of disabilities. Among children with both intellectual and learning disabilities, 17% have experienced multiple types of multiple maltreatment, compared to just over 10% among those with neither an intellectual or learning disability. Table 5-14 shows the average internalizing symptom (IS) and externalizing symptom (ES) levels for each report score for children with each number of reports, for children with no reports, the average IS level is the lowest on average, the highest IS levels are associated with having two or more reports. The same pattern is exists for ES (see the last row of Table 5-10).

Longitudinal Growth Model

I do not repeat the findings here from the unconditional models predicting multiple types of maltreatment (presented in research question 3) because they are identical (see Model 0 and Model 1 in Table 5-9). Results of the longitudinal growth model are presented in Table 5-11, showing the relationship between specific types of disability, IS, ES, and subsequent risk of experiencing two or more types of maltreatment. There is no significant relationship between sensory disability status and

risk for multiple types of maltreatment reports. Children with learning disabilities and children with both learning and intellectual disabilities are at increased risk for experiencing multiple types of maltreatment at age 4. As seen in previous models predicting maltreatment, risk for experiencing multiple types of abuse declines at a faster rate for children with *both* learning and intellectual disabilities.

Children with higher levels of ES are at increased risk for exposure to multiple types of maltreatment over time, meaning that children with higher levels of ES do not see as steep of a decrease in risk over time when compared to their peers with lower levels of ES. As shown earlier, children with IS are not at increased risk for experiencing multiple types of maltreatment. The relationships between the control variables and number of types of abuse reports are nearly identical to those presented in research question 3. Finding that children living in homes with higher incomes and with a higher ratio of adults to total number in the home are at lower risk for abuse, the only significant difference being that caregiver gender changed from being significant at .10 to .05.

Figure 5-11 shows prototypical growth trajectories for children with female caregivers, in families with average levels of income, and an average adult child ratio without sensory disabilities. As shown in the Figure 5-11, children with learning and intellectual disabilities have the highest risk of having multiples types of maltreatment reports at age 4, but this risk decreases over time at a faster rate than that of children without learning or intellectual disabilities. This results in children with intellectual and learning disabilities having slightly lower risk by age 14 (prob= .004) compared to children with only learning disabilities (prob= .006) and those without learning or intellectual disabilities (prob= .006).

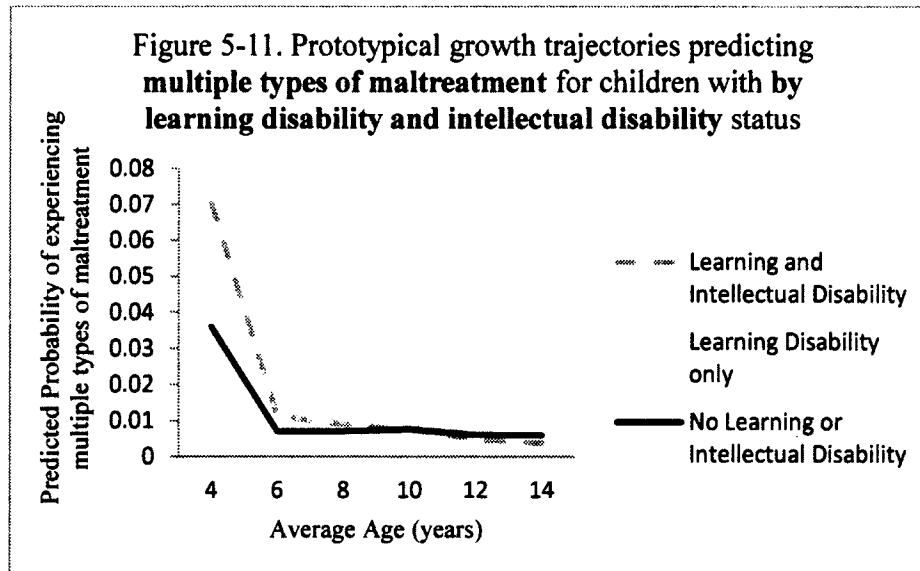
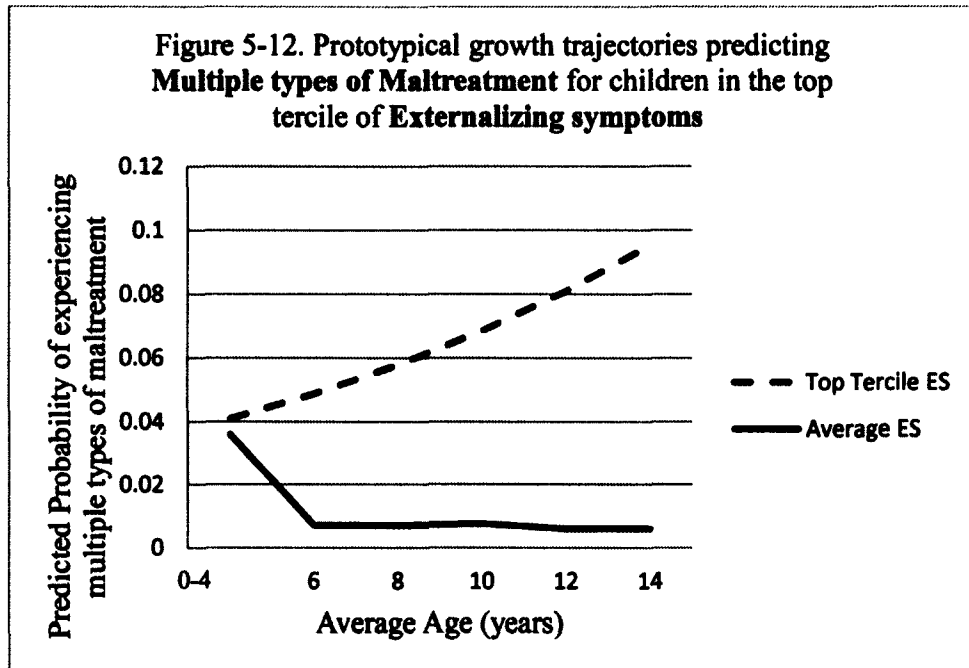


Figure 5-12 shows prototypical growth trajectories for children with female caregivers, in families with average levels of income, and an average adult child ratio without sensory, learning or intellectual disabilities. This figure shows that a completely different pattern emerges for children with externalizing symptoms relative to children with learning and intellectual disabilities.²³ Unlike those children, who are at higher risk at younger ages, children with externalizing symptoms are at increasing risk as they get older for multiple types of abuse reports (see Figure 5-12). Children in the top tercile for externalizing symptoms have a predicted probability of .095 of multiple maltreatment reports at age 14 compared to children with average levels of ES with a predicted probability of .006.

²³ I ran an analysis to determine whether outliers with particularly high values on externalizing symptoms and multiple forms of maltreatment were driving the significant relationship between the two variables (controlling for all variables in final model). When excluding children with very high levels of ES (>34 on centered scale; or the top 27 children in terms of ES scores), the relationships presented in RQ4 all remained the same. In addition, I ran a sensitivity analysis to determine if the analysis in RQ4 is sensitive to these outliers, this analysis showed that children with very high levels of externalizing symptoms are not influencing the fit of the model. Therefore, there is no evidence that outliers on the externalizing symptoms measure were overly influential in predicting multiple types of maltreatment reports.



To illustrate how children with learning and intellectual disabilities and those with behavioral disabilities differ in patterns for multiple types of maltreatments, Figure 5-13 displays a prototypical growth trajectories for children with female caregivers, in families with average levels of income, and an average adult child ratio with each combination of learning and intellectual disability, and ES. Figure 5-13 shows that at very early ages, children with learning (only) and both learning and intellectual disabilities are at increased risk for multiple types of maltreatment reports. After age 6 children in the top tercile for ES surpass children with learning and intellectual disabilities (any combination) and continue to increase in risk. Meanwhile, children with intellectual and learning disabilities decline in risk at the steepest rate relative to children with learning disabilities and children without disabilities.

Figure 5-13. Prototypical growth trajectories predicting multiple types of maltreatment for children by learning disability and intellectual disability and Behavioral Problem status

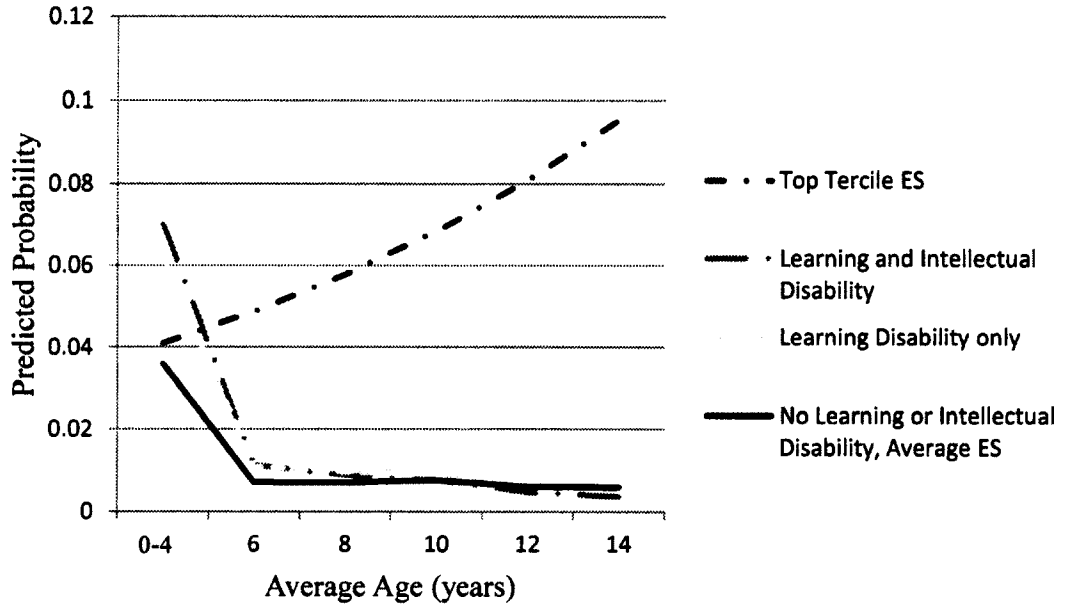


Table 5-11. Longitudinal Growth Model results predicting Multiple types of maltreatment reports using specific disability types

	Model 0 Coef.(SE)	Model 1 Coef.(SE)	Model 2 Coef.(SE)	Model 3 Coef.(SE)	Final Model Coef.(SE)
<i>Fixed Effects</i>					
Intercept	-2.54***(.07)	-1.269***(.09)	-2.989***(.29)	-3.02***(.30)	-2.31***(.43)
<i>Time invariant predictors</i>					
Sensory Disability			-.099(.20)	-.096(.19)	-.019(.19)
Learning Disability Only			.698**(.25)	.613*(.25)	.57*(.26)
Intellectual Disability Only			.423(.36)	.364(.36)	.434(.37)
Both Learning &Intellectual			.523~(.30)	.504~(.30)	.704*(.31)
<i>Time varying predictors</i>					
Time 0 (ref)					
Time 1		-1.682***(.13)	-1.643***(.18)	-1.675***(.19)	-1.649***(.19)
Time 2		-1.879***(.13)	-1.693***(.26)	-1.790***(.28)	-1.659***(.28)
Time 3		-1.845***(.13)	-1.616***(.35)	-1.724***(.38)	-1.578***(.39)
Time 4		-2.079***(.14)	-1.820***(.45)	-2.007***(.50)	-1.824***(.51)
Time 5		-2.372***(.09)	-1.855***(.56)	-2.181***(.62)	-1.838**(.63)
AvAge* Sensory Disability			.048(.031)	-.096(.19)	.028(.03)
AvAge*Learning Disability Only			-.054(.04)	-.062(.04)	-.064(.05)
AvAge*Intellectual Disability Only			-.09 (.06)	-.055 (.06)	-.034(.07)
AvAge* Learning &Intellectual			-.041(.05)	-.082(.05)	-.117*(.01)
Internalizing Symptoms				-.005 (.01)	-.004(.01)
Externalizing symptoms				.008 (.009)	.010(.01)
AvAge * Internalizing symptoms				.0001 (.002)	
AvAge * Externalizing symptoms				.006**(.002)	.006***(.001)
Caregiver sex: Female					-.572*(.25)
Family Income					-.102***(.02)
Ratio of Adults to total # in home					-.980***(.43)
Eastern Site (ref)					
MW site				.508(.38)	.650~(.39)
NW site				3.143***(.33)	3.27***(.34)
South site				.789~(.36)	.831*(.36)
SW site				2.59***(.32)	2.80***(.33)
AvAge *Eastern Site (ref)					
AvAge *MW site				-.107(.09)	-.137(.09)
AvAge *NW site				-.145*(.06)	-.16*(.07)
AvAge *South site				.120~(.07)	-.10(.06)
AvAge *SW site				-.082(.06)	-.019(.19)
<i>Goodness of Fit</i>					
Deviance	5465.464	4977.058	3355.206	3081.562	2878.624
AIC	5469.464	4991.058	3401.205	3135.562	2936.623
BIC	5483.469	5040.076	3554.665	3313.074	3125.824
~ indicates p<.10 * indicates p<.05 ** indicates p<.01 *** indicates p<.001					

Summary of Findings

Findings from research questions one through four are summarized in Table 5-12. The first row of Table 5-12 shows the results of research question 1, which examined disability, and emotional/behavioral problems as predictors of experiencing maltreatment, showing that there was no significant relationship between disability and maltreatment. The first row and seventh column shows that there was also no significant relationship between EBP and maltreatment at initial status or in rate of change.

The second through fourth rows of Table 5-12 display the results of the second research question. This research question was designed to specific types of disability, internalizing symptoms (IS), and externalizing symptoms (ES), as predictors of specific forms of maltreatment. The second row indicates that children with higher levels of ES (second to last column) are at increased risk for psychological abuse, while children with higher levels of IS are at lower risk, though this latter relationship is marginally significant. The third row indicates that children with learning disabilities are at increased risk for neglect at initial status and this risk is constant over time and that children with both learning and intellectual disabilities are at increased risk for neglect but only at young ages (their risk dissipates over time). The fourth row shows that in terms of physical abuse, children with both learning and intellectual disabilities are at increased risk but again, only at young ages. Children with higher levels of ES are at higher risk for physical abuse as shown in the second to last column of the fourth row (see Table 5-12). The fifth row is merely a place marker for the sexual abuse outcome, there are no findings since I was unable to run this as a separate outcome.

The sixth row of Table 5-12 summarizes the findings from the third research question, which examined disability, and emotional/behavioral problems as predictors of experiencing multiple types of maltreatment. In the first column, results show that there is not a significant relationship between disability (any) and experiencing multiple types of maltreatment. The seventh column shows that there is significant relationship between higher levels of EBP and exposure to multiple types of maltreatment over time.

The last row of Table 5-12 also shows findings from the fourth research question, which examined specific types of disability, IS, and ES as predictors of multiple types of maltreatment, showing that children with learning disabilities are at increased risk for exposure to multiple types of maltreatment and this risk remains constant over childhood. The sixth column shows that children with both learning and intellectual disabilities are at increased risk exposure to multiple types of maltreatment but again, only at young ages (their risk dissipates over time). The second to last column shows that children with higher levels of ES are at increased risk exposure to multiple types of maltreatment over time.

Generally speaking, these findings show that children with learning *and* intellectual disabilities or learning disabilities (only), and children with higher levels of ES compared to children without these combinations of disabilities and high levels of ES are at heightened risk for maltreatment but that maltreatment risk differs by disability and ES. To follow, I will review my findings in the context of previous research, discuss *why* some children might be at heightened risk for maltreatment, make several policy and practice recommendations, outline the limitations of this research and summarize my conclusions.

Table 5-12. Summary Table of findings on relationship between Disability, IS, ES, and Maltreatment										
Disability		Any Disability	Physical	Sensory	Learning	Intellectual	Intellectual & Learning	Emotional & Behavioral Problems	Externalizing symptoms	Internalizing symptoms
Maltreatment										
(RQ1)	Any	NS						NS		
(RQ2)	Psych		-----	NS	NS	NS	NS		↑	↓
	Neglect		-----	NS	↑	NS	↑↘		NS	NS
	Physical		-----	NS	NS	NS	↑↘		↑	NS
	Sexual		-----	-----	-----	-----	-----		-----	-----
(RQ3 &4)	2or more types	NS	-----	NS	↑	NS	↑↘	↗	↗	NS
<p>↑ indicates associated with significantly more maltreatment at initial status NS indicates a non-significant relationship with maltreatment ↓ indicates associated with significantly less maltreatment at initial status ↘ indicates risk for maltreatment dissipates over time ↗ indicates risk for maltreatment increases over time</p>										
<p>~Indicates a relationship that is marginally significant at p<.10 all others in table are significant at p.05 Due to small cell sizes, analyses involving physical disabilities and those predicting sexual abuse cannot be included as separate predictors or outcomes. However sexual abuse is included in the any abuse aggregate as well as in the 2 or more types variable and physical disability is included in the "Any disability" variable.</p>										

CHAPTER 6- DISCUSSION AND LIMITATIONS

Past research on disability, emotional and behavioral problems (EBP), and maltreatment is limited because it has often grouped many different disabilities together, included many types of victimizations in a single measure, or examined a single type of disability and a single form of maltreatment (e.g. Alriksson-Schmidt, Armour, and Thibadeau 2010; Brownlie et al. 2007; Spertus et al. 2003) Prior research is further limited by an almost exclusive use of cross-sectional data, which cannot effectively allow the researcher to model complex, longitudinal relationships. Consistent with only a minority of studies on disability, EBP, and maltreatment (Benedict, White, Wulff, and Hall 1990; Leeb, Bitsko, Merrick, and Armour 2012), I found that when child and family measures were taken into account and examined longitudinally, there was no relationship between disability (considered in aggregate) and maltreatment (when types are combined). However, I explored these associations further, unveiling more nuanced relationships between disability type, emotional and behavioral symptomatology, and specific forms of maltreatment. That is, I found that the relationship between disability and maltreatment varies by the type of disability, levels of internalizing symptoms (IS), levels of levels of externalizing symptoms (ES), type of maltreatment, and across childhood.

My first set of findings addresses the question of whether the probability of experiencing maltreatment differs as a function of any disability or EBP, with all types of disabilities and EBP combined. My next findings address the question of whether the probability of experiencing maltreatment differs as a function of specific disability type, IS, and ES. My third set of findings addresses the question of whether the probability of exposure to two or more maltreatment types differs as a function of any disability and EBP. Lastly, I address whether the probability of exposure to two or more maltreatment types differs as a function of specific disability type, IS, and ES.

In this discussion I will outline my findings in the context of previous literature, present possible theoretical reasons for why these groups of children are at heightened risk for maltreatment, make several policy and practice recommendations, outline limitations of the research and summarize my conclusions. However, first, I want to revisit the categories of each type of disability as a brief reminder. The sensory disability group includes hearing, speech and vision problems. The physical disability group only includes physical disability (not otherwise defined) but was not able to be considered in the analyses as a separate category of disability due to small numbers of children with these disabilities; it was, however, included in the aggregate “any disability” variable. Examples of disabilities that would be considered physical disabilities are Cerebral Palsy, spina bifida or any condition or injury impacting a child’s long term ability to walk. The learning disability group includes: hyperactively/attention problems as well as learning disability (not otherwise defined). This is the most heterogeneous group since it encompasses children having difficulty in school with writing and reading as well as those with more severe attention problems and learning difficulties. The intellectual

disability category includes children with both developmental delays as well as mental retardation; examples of disabilities that would be in this category might include: Cerebral Palsy, Downs syndrome, and traumatic brain injury. The combined intellectual disability and learning disability category consists of children with at least one learning disability and one intellectual disability condition.²¹ With these heterogeneous disability categories it is difficult to rank the severity of disability, however, it is reasonable to assume that children in the intellectual and learning disability group will have the most “severe” disabilities in terms of daily needs, reliance on adults, help caring for themselves, interpreting social cues, etc.

Changes in terminology and medicalization have made it increasingly challenging to compare different types of disabilities especially over time and across disciplines, as discussed in Chapter 3. For example, in LONGSCAN, children on the Autism spectrum may or may not be labeled as having a disability but, if they are labeled as having a disability, it unclear what label was applied. At the time of data collection, Autism was not yet on the radar of researchers nor was it a common diagnosis for children. For example some children labeled in the past as having learning disabilities, a generation later, might have been labeled as autistic. The groupings of disability in this dissertation are not ideal but they do give us a glimpse of the conditions, needs, and behaviors of the children within these categories. While limited, these categories do allow me to examine

²¹ It is also important to remember that with the exception of learning and intellectual disabilities, the disability variables are not mutually exclusive, meaning that even if a child has a learning disability or an intellectual disability this does not necessarily mean that they do not also have the other types of disabilities as well (e.g. a sensory or physical disability). The learning and intellectual disability variables are mutually exclusive because they were recoded into categories to be mutually exclusive, the other subtypes are not. See chapter 4 for more information on the construction of the disability variables.

which groups of children are at risk for specific types of maltreatments and at what ages these risks are the highest.

Children at Heightened Risk

To begin this analysis I first examined all types of disabilities, EBP, and maltreatment types together as much of the previous research has done. When treating all disabilities together as a single category (presence or absence of a disability), combining emotional and externalizing symptoms, collapsing all maltreatment types together, and controlling for child and family variables, I found that there was not a relationship between disability and maltreatment. In addition, I found that that there was no relationship between EBP and maltreatment. This finding is inconsistent with previous literature. Jaudes and Mackey-Bilaver (2008) found that children with behavioral and mental health problems are more likely to experience maltreatment and Turner, Finkelhor, and Ormrod (2009) found that children with high levels of *both* IS and ES are more likely to experience maltreatment. The differences in results could be due to measurement differences. In this dissertation, EBP were measured together in a single composite measure and on a continuous scale. Jaudes and Mackey-Bilaver (2008) used a diagnostic measure of behavioral and mental health problems using paid claims codes. In the Turner et al. (2009) study, IS and ES were measured as separate constructs and then evaluated as high levels of one relative to the other.

The second research question considered subtypes of disability, IS, ES (assessed separately) and examined each type of maltreatment separately. To follow, I will review the six separate findings for research question two starting with sensory disabilities and ending with EP. I found that, consistent with some previous literature (Spencer et al.

2005), children with sensory disabilities were not at increased risk for any type of maltreatment (psychological abuse, neglect, or physical abuse). In contrast, Sullivan and Knutson (2000) found that children with sensory disabilities were at increased risk for all types of maltreatment relative to their peers without disabilities. These differences could result from the fact that this dissertation relies on CPS reports of maltreatment and Sullivan and Knutson (2000) utilized school records, Child Protective Services (CPS) records, foster care review records, and police databases to measure maltreatment.

I examined each subtype of sensory disability separately to determine if children with speech, hearing or vision problems were at high risk and through aggregating into a combined “sensory” disability category I masked a relationship among subtypes of sensory disabilities and maltreatment. This was not the case. None of the individual types of sensory disabilities were significantly related to any types of maltreatment.

Second, consistent with some previous research (Ouyang et al. 2008; Spencer et al. 2005; Sullivan and Knutson 2000), I found that children with learning disabilities were at increased risk for neglect and this risk was constant over time. In other words, children with learning disabilities were at higher risk for neglect at age 4 (or baseline) and this heightened risk remained high as they aged into adolescence. However, I also found that children with learning disabilities were *not* at increased risk for psychological abuse or physical abuse, which is at odds with some cross sectional research (Spencer et al. 2005; Sullivan and Knutson 2000).

Third, I found that children with both learning and intellectual disabilities were at increased risk for neglect at early ages, but their risk of being neglected dissipated over

time. Children with both learning and intellectual disabilities were also at increased risk for physical abuse at early ages, but again this risk dissipated in later ages. This is consistent with cross sectional research which found that children with mental retardation were at highest risk for any maltreatment in elementary school compared to CWOD (Sullivan and Knutson 2000). It appears that learning and intellectual disabilities may serve as *both* risk and protective like factors depending on the chronological age of the child. At early ages, the combinations of learning and intellectual disabilities were a risk factor for children, but as they got older, children with these two disabilities actually have lower levels of risk than children without disabilities. Children with both learning and intellectual disabilities were not at increased risk for psychological abuse. I believe that these results help to clarify some of the seemingly contradictory findings in previous research.

Some past research found that children with learning and intellectual disabilities were at increased risk for maltreatment (Jones et al. 2012), while other research found lower risk of maltreatment among children with these forms of disability (Turner et al. 2011). The current research is potentially consistent with both these studies. By using longitudinal data and an analytic technique that appropriately models change over time, I was able to uncover trends across childhood that suggest age-related variations in the nature of maltreatment risk over-time among children with learning and intellectual disabilities, trends that could not be detected in cross-sectional studies.

Fourth, due to the inconsistency in past studies on intellectual disabilities, the current findings on children with intellectual disabilities only (no learning disability) are consistent with some previous studies (Jaudes and Mackey-Bilaver 2008), and

inconsistent with others (Dubowitz et al. 2011; Reiter, Bryen, and Shachar 2007). I found that children with intellectual disabilities (and no learning disabilities) were not at increased risk for any type of maltreatment (psychological abuse, neglect, or physical abuse).

Fifth, I found that children with externalizing symptoms (ES) were at a higher risk for psychological maltreatment and physical abuse from very young ages through adolescence relative to children with lower levels of externalizing symptoms; this greater risk was constant throughout childhood. These findings are consistent with some previous cross sectional research (Dakil, Cox, Lin, and Flores 2012; Sullivan and Knutson 2000). However, these findings are inconsistent with other cross sectional research (Spencer et al. 2005; Sullivan and Knutson 2000), which found that children with ES were not at increased risk for neglect.

Lastly, in terms of the second research question, children with higher levels of internalizing symptoms (IS) were actually at lower risk for psychological abuse, after controlling for disability and externalizing symptoms. However, it is important to keep in mind that this relationship is only marginally significant with a $p < .10$. Inconsistent with Nationally Representative research (Turner et al. 2011), I found that children with IS were not at increased risk for neglect or physical abuse.

In research question 3, I examined the probability of exposure to two or more maltreatment types as a function of any disability and emotional/behavioral problems. In research question 4, I address the probability of exposure to two or more maltreatments as a function of specific disability type, internalizing symptoms (IS), and externalizing

symptoms (ES). I expected the results would be impacted by the specificity of the disability, IS, and ES. No known previous literature has examined specific types of disabilities, IS, ES, and multiple types of maltreatments. Although Sullivan and Knutson did find that children with disabilities (in general) were more likely to experience multiple types of maltreatment (2000) and Cuevas, Finkelhor, Ormrod, and Turner (2010) found that children with a psychiatric diagnosis were more likely to experience poly-victimization.

In research question three, I did not find a relationship between any disability and multiple types of maltreatment (2 or more) after controlling for child and family measures, but children with EBP were more likely to experience multiple forms of maltreatment as they got older (a significant relationship with the time interaction term). Consistent with the poly-victimization literature, as children with high levels of EBP got older, they were more likely to have experienced multiple forms of maltreatment relative to children with average levels of EBP (Cuevas, Finkelhor, Ormrod, and Turner 2009).

Research question 3 should be interpreted with *caution* however, since it combined different types of symptomatology. As previous analyses have suggested, there are potential problems associated with combining disability and symptom types making comparisons across studies difficult. For example, Sullivan and Knutson used a disability variable that includes “behavior disorder”, while I used two grouped variables: disability and EBP. Although my findings are not entirely consistent with those of the 2000 Sullivan and Knutson study, as I did not find a relationship among CWD, they are also, not entirely inconsistent either, as I did find a relationship among children with higher levels of EBP. A limitation of the Sullivan and Knutson is that they were unable to

examine ES or other disability types separately for exposure to multiple types of maltreatment and they were not able to examine this relationship over time.

The fourth research question examined the probability of exposure to two or more maltreatments as a function of specific disability type, internalizing symptoms (IS), and externalizing symptoms (ES). Consistent with results from the second research question, findings show that children with sensory disabilities and those with intellectual disabilities were not at increased risk for experiencing multiple types of maltreatment. Findings also indicate that children with learning disabilities were at an increased risk for experiencing multiple types of maltreatment, and that this risk is constant throughout childhood. As anticipated, children with both intellectual and learning disabilities were at increased risk for experiencing more than one type of maltreatment at young ages, but, again, this risk dissipated as they got older.

Results showed that children with higher levels of externalizing symptoms (ES) were more likely to have multiple maltreatment reports as they got older (a significant relationship with the time interaction term). These children, with higher levels of ES were more likely to experience multiple types of maltreatment as they get older. At age 4, children with higher levels of ES were not at higher risk for experiencing multiple types of maltreatment relative to children with average levels of ES, but as they get older, children with higher levels of ES were at heightened risk. This risk was not only higher as they got older but it followed a different pattern relative to children with lower levels ES and children with disabilities. Children with higher levels of ES did not experience a decline in risk as with other children but instead an increase in risk over time for multiple types of maltreatment reports (as shown in Figure 5-12 in Chapter 5).

These findings highlight the importance of greater specificity in disability type and symptom constellations in understanding maltreatment risk, since children with ES were clearly driving the significant relationship between EBP and multiple types of maltreatment. Children with IS were *not* at higher risk for experiencing multiple types of maltreatment, it was *only* children with ES who were at heightened risk. In fact, as discovered in research question 2, children with higher levels of internalizing symptoms were actually less likely to experience some forms of maltreatment (psychological abuse).

Child and Family Factors No gender differences in maltreatment risk emerged in the analyses. Past research has indicated mixed results on the relationship between gender and disability status in predicting maltreatment and that the relationship differs by type of maltreatment. While Sullivan and Knutson found that males with disabilities and females without disabilities were more likely to be maltreated (2000), the National Crime Victimization Survey found that among those with disabilities, females were at a higher risk than males. One reason that gender differences were not evident in these findings may be due to the fact that I was not able to test for sexual abuse as a separate outcome. Past research has shown that females with disabilities were more likely to be victims of sexual abuse (Sedlak 2012; Sullivan and Knutson 2000). Unlike the findings from the NIS-4, in which Black and Hispanic children were at higher risk for abuse compared to White children (Sedlak 2012), this study revealed that Hispanic children were at lower risk for neglect, and were at lower risk for “any” abuse form though this later finding was marginally significant. No other differences emerged by race. Children in homes with lower income were at higher risk for abuse on average, which is consistent with previous

research. When examined by type of maltreatment, higher income was only a protective factor for neglect; income did not predict psychological or physical abuse.

As expected, living with a biological or step parent served as a protective factor relative to all other living situations (foster parents, adoptive parents, relatives, etc.). Surprisingly, the protectiveness of living with a biological or step parent diminishes as the child enters their teenage years. This is likely a reflection of the fact that biological and step parent families are combined into one category in this dissertation. Since this measure is a time varying predictor, it is sensitive to divorce and remarriages over the 14 years of data collection within the families being studied. Many families in the United States that were once two parent biological families are divorcing and remarrying and therefore being step parent families, therefore it is likely that many parents of the children in this dataset divorced and remarried, therefore becoming step-parent families (though I cannot test this explicitly because these families are combined with two parent families). Past research shows that biological families are more protective and that step parent families are a risk factor for maltreatment (Finkelhor 2008). As children age and parents divorce and remarry, children are more likely to live in step parent homes than biological homes, accounting for the decline in protectiveness of living in a biological or step parent family. Future research should consider these families as separate constructs.

Explaining Heightened Risk

In this section, I present possible theoretical reasons why children with some types of disabilities and higher levels of externalizing symptoms (ES), at increased risk for some types of maltreatments. As in Chapter 2, I suggest that characteristics of the child and the quality of interaction with his/her caregiver (or another adult) may

contribute to an increased risk for maltreatment. I do not intend to displace responsibility for maltreatment or “blame the victim.” Rather, through these theories I hope to better understand why some children are at a heightened risk due to child characteristics in order to better protect the children at the highest risk

Target antagonism may explain in part why children with higher levels of ES and children with learning and intellectual disabilities are at increased risk for maltreatment. As described in Chapter 2, target antagonism refers to traits of the victim that arouse anger or jealousy in the offender (Finkelhor and Dziuba-Leatherman 1994). Children with learning disabilities and children with higher levels of ES may be at higher risk for maltreatment because they may arouse feelings of anger, or provoke other negative reactions in their caregivers or family members.

A portion of the increased risk for maltreatment among children with ES could be due to the challenging nature of their behaviors, such as acting out, talking back, hitting siblings, or engaging in risk taking behavior. Finkelhor describes an example of this: “When young children fail to control their behavior and do dangerous things such as wander away or explore the medicine cabinet, it may provoke parental reactions that escalate into abuse.” (2008 p. 54). Caregivers who have difficulty dealing with these challenging behaviors may, over time, begin to engage in dysfunctional and abusive strategies. Problematic social interactions between parents and children with ES may become even more strained as children with ES get older and begin to move into adolescence (explaining the statistical interaction with time).

When children with disabilities have been given official “diagnoses,” parents have the opportunity to get answers to questions about their child’s behaviors and

limitations and to develop appropriate expectations for their disabled child's future behavior. Children with ES, however, are often not diagnosed and parents may not understand the behaviors their children are exhibiting. Externalizing symptoms may often be construed as children being disobedient or disrespectful; behaviors attributed to children being "bad" rather than impaired or disabled. Previous research has shown that a diagnosis can serve as a protective factor against maltreatment (Groce 2005).

Although the types of challenges associated with externalizing problems are likely to change with age, these behaviors may not disappear entirely over childhood in the way that problems associated with some other types of disabilities might. Children with ES demonstrate behaviors that are directed outward and troublesome to others, such as aggression and delinquency (Achenbach and Edelbrock 1983). As children with ES get older, the behaviors will likely only become *more* challenging, such as moving from hitting a sibling or breaking a toy to getting in fights at school or shoplifting. Indeed, many items in the ES measure such as vandalism, threatens people, and steals, are more common as children age and become increasingly independent (more choice of friends and social circles, ability to navigate public transportation, etc.).

Children with learning disabilities also often exhibit externalizing behaviors (Webber and Plotts 2008). Many of the symptoms of ADHD, for example, are consistent with the symptoms of externalizing problems, such as impulsiveness, aggression, and acting out (Biederman, Faraone, Doyle, Lehman, Kraus, Perrin, and Tsuang 1993; Webber and Plotts 2008). Parents without skills, patience, or support to deal with the challenging behaviors of children with these types of disabilities place this group of children at heightened risk for maltreatment over time. Interestingly, findings from research question

2 showed that children with learning disabilities and no intellectual disabilities, which includes children with hyperactivity/attention deficit disorder (ADD/ADHD) and learning disabilities (not otherwise defined), were at increased risk for neglect but no other forms of maltreatment.²² Since many of the behaviors of children with ADD/ADHD are similar thought to those of children with externalizing symptoms (impulsiveness, acting out) (Webber and Plotts 2008), Given similarity of symptoms, I would have expected that children with learning disabilities would have similar risk outcomes as children with ES, which is not the case. This may be due to the in part to fact that they have received an official diagnosis which provided some explanation for their children's behaviors and more appropriate expectations for the future.

Target vulnerability refers to the theory that “some characteristics of victims increase risk because they compromise the potential victim’s capacity to resist or deter victimization and thus make the victim an easier target for the offender. For child victimization, the prototypical risk factors... are attributes such as physical weakness, emotional deprivation, or psychological problems” (Finkelhor 2008, pp. 60-61). For example, children with learning and intellectual disabilities may be less likely to understand the risk or interpret signs of danger as such (Hibbard, Desch, and The Committee on Child Abuse Neglect and Council on Children With Disabilities 2007).

Children with both intellectual and learning disabilities were at increased risk for maltreatment but they were only at increased risk at early ages. The combination of an intellectual disability and a learning disability reduces the risk of maltreatment over time,

²² Sexual abuse was not tested as an outcome here since the number of cases of sexual abuse was relatively small using only 3 of the 5 sites.

compared to peers with just a learning disability who remain at higher risk throughout childhood. As described in chapter 3, children with intellectual/cognitive disabilities are children with both developmental delays as well as children who were considered to have mental retardation.

Although target vulnerability helps explain why children with both intellectual and learning disabilities are at increased risk for maltreatment early in childhood, it does not explain why children with these types of disabilities experience a decline in risk at later ages and why in adolescence, this combination of disabilities actually becomes a protective factor. According to target vulnerability, children with intellectual and learning disabilities would continue to be at increased risk due to their reduced capacity to resist victimization.

This decline could be due in part to social supports available to parents of children with intellectual disability, since their disabilities are often more visible and more highly supported in the community. Perhaps, parents of children with intellectual and learning disabilities are able to gain increasing access to social supports as their children get older and, as a result, are better able to cope with potential parenting strain. Supports such as respite care and coping resources (including social supports) and structural and environmental supports such as adaptive equipment may allow parents to adjust to the child's impairments early and therefore reduce the risk of maltreatment by mid-childhood when we see a decline in risk for this group of children. The combination of learning and intellectual disabilities, while difficult to adapt to at first, may be less unpredictable relative to children with learning disabilities only or those with emotional or behavioral problems for reasons relating to both the combination of disabilities as well as

environmental/social factors. Although there can be a stigma associated with having a child with a disability, families of children with obvious/visible disabilities may be more openly supported than families of children less visible disabilities. Social supports and acceptance may be harder to find for families with children with learning disabilities or in families where a child has high levels of externalizing symptoms.

Though only marginally significant, the findings indicated that children with children with higher levels of IS when controlling for ES at lower risk for abuse. Why might this be? Since children with IS are more likely to be withdrawn, sad, and socially isolated (Webber and Plotts 2008), they may be less likely to be targets of psychological maltreatment. Parents may be careful not to further damage self esteem or create additional anxiety and may be using extra caution in their words and actions around children with anxiety and depression. Children, who are perceived as more fragile emotionally, may be treated as more delicate, reducing risk of emotional maltreatment. This relationship was only marginally significant and so it is unclear if these children would be at lower risk outside this study population.

This finding that children with internalizing symptoms were not found to be at higher risk for any type of maltreatment, is inconsistent with my predictions using the exposure component of Routine Activities Theory (RAT) and Target Vulnerability. The reason I did not find a relationship might be because I was not able to look at sexual abuse as an outcome separately and because I was not able to examine victimizations outside the home, which is the primary focus of RAT. Routine Activities theory would predict that children with IS are at a heightened risk for exposure to crime. Since I was unable to test the effects of any victimization outside the home, it is possible that children

with higher levels of IS may be experiencing victimizations outside the home that are not being captured in the data available in this dissertation. Guardianship, a component of RAT refers to the notion that increased guardianship/or supervision by an adult will decrease the likelihood of victimization. I had predicted that the guardianship component of RAT would work in the opposite direction for children with disabilities. Since CWD typically have more caregivers, this would expose them to more perpetrators and therefore more opportunities to be maltreated. To test this, I examined whether an increase in the number of adults in the home had a different impact on CWD compared to CWOD (using an interaction term of number of people in home by disability status), and found no difference. It appears that within this high-risk sample, higher number adults in the home serves as a protective factor for both CWD and CWOD.

Children in homes with a higher ratio of adults to total number of people within the home had a lower risk of all types of maltreatment. This is consistent with the notion of less caregiver stress or burden in care giving when there are more people to help in the care giving, thus decreasing the risk for maltreatment. This could also be interpreted as support for Routine Activity Theory (RAT). While typically RAT is applied to violence outside the home, perhaps, it could also be applied to violence within the home. If there are more people within the home, then there is more surveillance of the children, which also results in more surveillance of the potential perpetrator and, as a result, lower levels of maltreatment.

Developmental stage/age was an important component important of this dissertation research. The longitudinal nature of the analyses allowed me to examine the risk of abuse for children from birth to age 14 and determine if risk differed by all

predictors across time. Since all infants and very young children (even those without disability) have a very limited capacity to deter and avoid maltreatment, I hypothesized that risk would be similar for all children at very early ages. In contrast, and in accordance with target vulnerability, I predicted that children with disabilities would be at increased risk as they got older. Petersilia (2001) also suggested that CWD should be more vulnerable as they get older and their skills or limitations become more apparent. This was not supported in the current data. All children in this sample were at lower risk for reported maltreatment (psychological abuse, neglect, physical abuse, and sexual abuse) as they got older with a sharp decline from ages 4-6 and then a very slight decline through age 14 (see Figure 4-3). It is possible that this could be a function of how the data was collected, as will be discussed in the limitation section (later in this chapter). The decline in victimization by a family member throughout childhood, however, is consistent with some other research on maltreatment examining trends in maltreatment across childhood (Finkelhor 2008) with a few exceptions (discussed in detail in Chapter 4). One of these exceptions is the decline between ages 4 and 6 is sharper than seen in other sources (Finkelhor 2008) and is likely due to the fact that LONGSCAN is longitudinal data on the same children, not panel data or cross-sectional data. The data used here reports on children who are potentially being victimized repeatedly over their own life course, while the findings reported elsewhere are often aggregates of different children's experiences over the life course.

Components of target congruence theory, especially target antagonism helped to explain why children with ES are at increased risk for physical and psychological abuse and why this risk increases over time. Target vulnerability helps explain why children

with the combination of intellectual and learning disabilities are at increased risk for neglect and physical abuse at early ages. Social supports and coping may help explain why children with this combination of disabilities are at reduced risk over time but it does not explain the protective effect. In this data, this protective effect leaves children with this combination of disabilities at slightly lower risk. Future research needs to examine the extent of this protective effect and why children with intellectual and learning disabilities might be at reduced risk at older ages and use this as a potential prevention mechanism for other types of disabilities.

Policy and practice recommendations

Previous research (Finkelhor 1995; Sullivan and Knutson 2000) and the findings reported here show that children are at especially high risk for maltreatment at young ages. However, this research refines our understanding of who constitutes risk groups at young ages. Children with externalizing symptoms (ES) emerged as the high risk group for maltreatment from this dissertation at older ages while children with intellectual and learning disabilities are at heightened risk at younger ages.

Children with ES are at increased risk for psychological and physical abuse throughout childhood. Parents of children with ES need access to parenting education that offer guidance on how to correct child behaviors without the use of physical force and yelling or verbal assaults, which may then lead to physical and/or psychological abuse. Home visits and parent education have been found to be effective in reducing child maltreatment (Mikton and Butchart 2009) and would be useful in this context. However, children with ES don't exhibit externalizing symptoms immediately at birth

and therefore traditional post natal home visits may be too early for intervention. An example of a home visiting program is the Nurse family partnerships,²³ in which new mothers are matched with registered nurses and have home visits for the first few years of the child's life. This program advertised on the Center for Disease Control (CDC) Website could be adapted for children with disabilities or ES which could start later for parents of children with externalizing symptoms to help them parent children with oppositional and challenging behaviors. Different prevention approaches are necessary for parents since it is clear that the challenges and onset of these challenges are different depending on ES and types of disability.

Children with learning and intellectual disabilities are at especially high risk at early ages and prevention efforts should be directed at young children with this combination of disabilities to help protect them from maltreatment, especially neglect and physical abuse. New parents of children with intellectual and learning disabilities are dealing with a difficult life transition with having a new baby with a significant disability. These parents will need help in adjusting to care for a child with both an intellectual and a learning disability so to reduce the risk of physical abuse and neglect in early childhood. Post natal home visiting could be especially useful in preventing abuse and neglect for children with intellectual and learning disabilities because of the high risk at very early ages.

Children with intellectual and learning disabilities are at lower risk at older ages. This could be due to a number of factors, including successful prevention efforts, though

²³ <http://www.nursefamilypartnership.org/>

after searching, I have not found any prevention efforts directed at children/families with intellectual disabilities or the combination of learning and intellectual disabilities that would support this notion. An alternate explanation for the decline in risk among this group of children is that the nature of the disability/combination of disabilities is all together different than learning disabilities alone or externalizing symptoms. While challenging in early years, children with intellectual disabilities and the combination of intellectual and learning disabilities are not as unpredictable as children with learning disabilities or children with externalizing symptoms. Benedict et al. (1990) found that children with more severe disabilities were at lower risk for maltreatment because the outcomes were clearer. They further supposed that “parents might be reconciled to the condition and not expect any improved level of functioning from the child.” (Benedict et al. 1990 p. 214). This continued unpredictability and behaviorally changing nature of learning disabilities (alone) and ES, may place these children at continued risk over time.

Children with learning disabilities (and no intellectual disabilities) were at heightened risk for neglect at all ages, through age 14 (end of data collection). SafeCare is a physical abuse and neglect prevention program with specific goals of reducing the EBP *outcomes* of maltreatment (Edwards and Lutzker 2008). This program targets children who are at high risk for physical abuse and neglect and through this program “parents receive weekly home visits to improve skills in several areas, including home safety, health care, and parent-child interaction.”(Child Welfare Information Gateway 2013) Programs like SafeCare should also be adapted for children with learning disabilities, and for children with ES as primary prevention measure to prevent neglect.

While IS and ES are often outcomes of physical abuse and neglect, they can also be predictors of maltreatment, as demonstrated in this dissertation.

An ethnographic study of Child Protective practice that specifically focused on children with disabilities, Shannon and Tappan (2011), found that parents of children with disabilities could not find dentists, respite care workers, and other providers that would treat children with disabilities or EBP. Access to services and important information about disability “friendly” places for families to utilize services is very important for families of children with disabilities and EBP. Parents may have a hard time helping children with school work or finding appropriate help for them, compounded by potential behavioral components like hyperactivity and attention problems.

Home visits and parent education for children with ES and learning and intellectual disabilities should be offered as both primary and secondary prevention avenues. They could potentially be offered through programs like the Nurse family partnerships or more informal parenting classes within the community. While the goal is to keep these high risk children from being abused and entering the child welfare system, research shows that once CWD, ES, and IS are entering the system, child welfare workers do not know what to do with them. This is a missed opportunity to help the parents of CWD and ES as a secondary prevention avenue.

Past research shows that when CWD and those with IS and ES enter the child welfare system, social services are often not prepared to adequately service their needs (Shannon and Tappan 2011). This lack of preparedness places these children at heightened risk for re-victimization within the original family, because there are few

opportunities to place the child with an appropriate foster or adoptive family and the system itself is ill equipped to deal with children with special needs. Children with learning, intellectual and ES are entering the child welfare system at higher rates relative to their peers, as indicated in the results of this dissertation. It is important that, when children with special needs enter the child welfare system, their needs are adequately addressed. Shannon and Tappan (2011) show that many case workers do not have proper placement in homes or access to counseling services appropriate for children with disabilities, among other things.

This research also highlights the importance of CPS agencies including disability status in their records. Kendall-Tackett, Lyon, Taliaferro, and Little report that in 2005 only 19 states required the disability status of the child be included in their Central Registries of Child Abuse and Neglect (2005). Orelove, Hollahan, and Myles (2000) found that only 6% of caseworkers and law enforcement personnel surveyed felt they were “very knowledgeable” about “how to respond to an abused child with disabilities”. A clear recommendation of this dissertation is for all states to include disability status in their CPS reports as a categorical measure (diagnosis), an index of symptomatology of IS, ES, as well as the 6 components from the WHO definition of disability including: cognition, mobility, self-care, getting along, life activities, and participation (see full definition in Chapter 3). Future research would benefit from having reliable and accurate disability measures at all ages.

Future Work

This research marks the beginning of my long term research agenda in which I intend to address the linkages among disability, EBP, and maltreatment, and other forms

of victimization longitudinally. Jones et al. (2012) cite the need for a better estimation of whether victimization precedes the disability, and this dissertation attempts to fill that gap by using longitudinal data with six data points on maltreatment, IS, and ES. Although many studies mention that the relationships examined are likely bi-directional, none directly test this assertion (Lynch 2003; Sobsey 2002; Stein, Jaycox, Kataoka, Rhodes, and Vestal 2003). Does the presence of a disability or the presence of high levels of IS and ES cause increased risk for maltreatment? This dissertation establishes that the answer is both yes and no. For some types of maltreatments, children with ES are at an increased risk for maltreatment; however the magnitude of that risk and the timing of that risk vary according to the maltreatment being assessed. When separating out the types of maltreatment, children with ES are at increased risk for psychological abuse and physical abuse. Children with ES were also at a higher risk for experiencing multiple types of maltreatments as they got older (an interaction with age). Additionally, my research agenda will allow me to address the question of causal ordering: could maltreatment and ES or does IS and ES cause maltreatment as evaluated here? It seems likely that the relationships between disability, internalizing symptoms, externalizing symptoms, and maltreatment are probably bidirectional. This research revealed important findings about CWD, IS, and ES and their risk for maltreatment; however, more research is needed to fully understand these relationships.

Longitudinal data, needs to be collected using the WHO definition, in addition to the ES and IS and a disability diagnosis/condition variable will allow for a more holistic approach to measuring disability and EBP. Future research should also examine other types of victimizations including but not limited to peer victimization, internet

victimization and sexual victimization outside the home in their relation to disability and EBP. A comprehensive approach to answering this question would allow for an examination of disability, EBP, and victimization overtime and examining these relationships as bi-directional and likely cyclical in nature.

Limitations

One of the major limitations of this dissertation is that I was not able to address bullying or peer victimization. It is unfortunate to have such important findings on CWD, IS, and ES and not be able to also examine school and peer victimization. Finkelhor (2008) calls for a holistic approach to studying victimization in which researchers address all aspects of violence in children's lives in order to really understand prevalence and to better protect children from victimization. Regrettably, longitudinal data that includes all types of child victimization as well as disability status is not currently available. Obviously, this is a recommendation for future research.

The LONGSCAN data is not nationally representative and each site used different sampling criteria. Therefore, there are limitations to the generalizations that can be made from the current analyses. The children and caregivers in the LONGSCAN sample were selected because of their increased risk for maltreatment or because the child was already exposed to victimization within the home. Children and families were also drawn into the sample as matched control groups, the type of the control group was determined by the site (see Chapter 4 for more details). Thus, it is exclusively a high-risk sample. This sample allowed me to explore relationships within a group of children that were already

at high risk, and also to determine how the presence of a disability impacts this process. Because of the different sampling criteria, I was only able to use three of the five sites for the first two research questions.

Since this is an exclusively high risk sample using a convenience sampling design, there is a chance that the sample design could impact the results. Children with certain types of disabilities might be differentially selected into the sample because they are deemed at higher risk for maltreatment. This selection effect could impact the results of this dissertation, specifically the initial status outcome. Below I go through two of the ways in which the results might be impacted by the sampling design and potential selection effects:

Hypothetically, children with more obvious disabilities at very young ages could be pulled into the sample because they are deemed to be at higher risk for maltreatment. If this were the case and the impact were purely an effect of selection bias, then children will be at heightened risk at initial status for having a maltreatment report and then the risk should be reduced for the rest of childhood. Maltreatment status, as described in Chapter 4, is determined by the presence of a CPS report and doesn't require substantiation. It is possible that children with some types of intellectual disabilities, Down's syndrome, for example, are often diagnosed at birth or shortly thereafter, and are pulled into the sample because they are perceived as being at higher risk for maltreatment. If this were the case, they would (in my analysis) look to be at significantly heightened risk for maltreatment at initial status. However, the findings indicated that children with intellectual disabilities alone were not at heightened risk for abuse at initial status. Children with a combination of both learning and intellectual disabilities were at

heightened risk for maltreatment at initial status, and this risk dissipated later in childhood. I do not believe that this is a result of a selection effect. If this were simply an artifact of a selection, then I should have also found the same pattern among children with only intellectual disabilities. Moreover, to the extent that selection effects did occur, the effect would be limited to the initial status and would not impact the change over time. In other words, changes over time across the ten years (5 waves) that followed entry into the study should not be affected by the selection.

One study found that social workers are less likely to pursue cases of maltreatment among children with disabilities, because characteristics of the disabilities were confused with contributing to the abuse (Manders and Stoneman 2009). This study also found that social workers were more likely to empathize with parents of children with behavioral problems (Manders and Stoneman 2009). Following this notion, it is possible that children with disabilities could be underrepresented in some high risk maltreatment samples. In this particular sample, this is not the case with the very high percent of children with disabilities at ages 4 and 6 . Due to the high percent of children with disabilities in the sample at baseline (47.9%), it is more likely that in this sample there was some selection effect of disability in the sampling design process. Children with disabilities were probably more likely to be selected into the sample because they were thought to be at higher risk for maltreatment, which could have happened because disability was confounded with the high risk criteria of the sampling selection criteria. The high prevalence of children with disabilities in the sample is likely due to the fact that in each site disability was confounded with the “high risk” criteria, meaning that children in high risk groups were also more likely to have disabilities. For example,

children in the southern site in the high risk group were selected because they had high risk births; these children also had higher rates of disability due to the fact that children with high risk birth also are more likely to have disabilities. Along the same lines in the Eastern site, the high risk groups were children born to drug addicted mothers.

Another possible impact of the site and sampling design is an impact of the site on my outcome. To control for this, I added a site control variable for each site as well as a site by time interaction variable. I cannot control for the site selection effects at each site however, because of the reasons stated above, I am confident that the findings of this dissertation are in fact valid and not merely artifacts of sampling selection. The impact of controlling for the site effects are described in Chapter 4.

Restricting the sample from the five sites to three, limited the sample size available for this research. This resulted, in part, in the inability to examine the effects of disability on sexual abuse risk. It may have also changed my results in ways that I am unable to measure. However, since the results of research question 4, which included all five sites, are consistent with the results of research question 2, I do not believe that the exclusion of the two sites changed the results in ways that are significant to the interpretation of the findings.

The measures of disability in LONGSCAN are lacking in ways that are unchangeable with archival data. The disability measures can only capture the presence of disabilities that are reported by parents or symptoms that are reported, and are not able to detail activity limitations or gauge the severity of any given disability. The disability measure is also limited in that it is based on parent categorization of their child's condition, which may or may not be entirely accurate. Moreover, the disability measures

at ages 4 and 6 only asked about a limited number of disabilities, and left out important disabilities including Autism Spectrum disorders. Children on the Autism spectrum may or may not be labeled as having a disability but, if they are labeled as having a disability, it is unclear what that label is (e.g. learning disability, developmental disability, where they fall on the ES scale, IS scale). This is a limitation and a challenge that researchers studying disabilities will continue to face because of the constantly changing and evolving nature of medicine and medicalization. By using continuous measures of symptomology, to measure conditions like externalizing and internalizing symptoms, the conditions will be more accurately represented over time. In addition, by using the WHO measure of disability, as well as a dichotomous measure of diagnosed measures of conditions we will more accurately be able to measure disability over time and capture the complex nature of disability as it is related to victimization across childhood.

The disability measures are only available at the first two waves of data collection. One of the main limitations of the disability measure is that it was asked only at ages 4 and 6. This may misrepresent the number of children with disabilities since many children are diagnosed with disabilities in school age years (Horner-Johnson and Drum 2006) and as a result may weaken the relationship between disability and maltreatment. This limitation also means that I was unable to account for the changing nature of some types of disabilities like learning disabilities over developmental stages.

Lastly, by relying on Child Protective Services data for my main source of maltreatment data, I likely undercounted the number of children experiencing maltreatment. This limitation was minimized in part through the use of self reports as a measure of reliability. These self reports were only available at ages 12 and 14 and only

for three of the four maltreatment measures (psychological abuse, physical abuse, and sexual abuse). The findings of the self report analyses were consistent with the findings of this dissertation. These cross sectional findings further indicated, as previous research has suggested (Petersilia 2001), that the relationship between disability and maltreatment would be stronger if the data were reliant on exclusively self-reports or a combination of CPS reports and self reported data. Future longitudinal research should use a combination of both self report and CPS data to better account for the maltreatment that is both reported to agencies and that which goes unreported. As discussed in Chapter 4, data with disability status, IS, ES, self reports, CPS records with multiple data point spanning childhood is currently unavailable.

Conclusion

My dissertation clearly demonstrates the importance of separating out the sub-types of disability to determine which groups of children are at the highest risk and delineating types of victimization. Furthermore, the findings of this dissertation highlight the fact that risk for victimization is not static but rather varies over time and across developmental stages. Children with some types of disabilities are at increased risk for maltreatment as are children with externalizing symptoms (ES). Specifically, children with learning disabilities are at increased risk for neglect across all of childhood and children with a combination of both learning and intellectual disabilities are at increased risk for neglect and physical abuse at early ages but their risk dissipates over time. In addition, children with higher levels of internalizing symptoms (IS) are at lower risk of

psychological abuse while children with high levels of ES are at high risk of psychological and physical abuse. Children with learning and intellectual disabilities are more likely to be exposed to multiple types of maltreatments at very young ages, while children with high levels of ES are at high risk of experiencing multiple types of maltreatment as they get older.

The 2005 UNICEF report cites that “Whether disabled due to violence within the family or within the community, once disabled, the child who has already been a victim of violence, now becomes part of the population of disabled children all of whom are at increased risk of subsequent violence” (Groce 2005 p.23). However, no research to date has empirically examined the bidirectional or cyclical relationship between disability, EP, ES, and maltreatment longitudinally. My next step is to determine if this relationship works in a cyclical manner. Both bodies of literature, those that examine disability and EBP predicting maltreatment and those that examine maltreatment predicting EBP and disability, have hypothesized a causal relationships (Éthier, Lemelin, and Lacharité 2004). Yet they have not empirically examined disability, IS, ES, and maltreatment as predictors over time and maltreatment, IS, and ES as outcomes over time.

Despite answering many questions about the risk for maltreatment among children with disabilities, this dissertation also raises many important questions for future research. Why are children with intellectual and learning disabilities at increased risk at young ages relative to their peers without this combination of disabilities? Why might their risk dissipate as they get older? Why aren't children with learning disabilities experiencing the decline in risk around age 10 that children with both intellectual and learning disabilities experiencing? Future research needs to examine these maltreatment,

emotional/behavioral problems, and disability types longitudinally to establish the bidirectional and cyclical nature of these relationships over childhood, adolescence, and throughout the life course. In addition, future research needs to identify the cumulative impacts of one on the other over time.

REFERENCES

- Achenbach, Thomas M. and Craig Edelbrock. 1983. *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington: Department of Psychiatry, University of Vermont.
- Achenbach, Thomas M. and Thomas M. Ruffle. 2000. "The Child Behavior Checklist and Related Forms for Assessing Behavioral/Emotional Problems and Competencies." *Pediatrics in Review* 21:265-271.
- Alriksson-Schmidt, A. I., B. S. Armour, and J. K. Thibadeau. 2010. "Are Adolescent Girls With a Physical Disability at Increased Risk for Sexual Violence?" *Journal of School Health* 80:361-367.
- Altman, Barbara M. , Sharon N. Barnartt, Gerry E. Hendershot, and Sheryl A. Larson. 2003. "Using Survey Data to Study disability: Results from the National Health Interview Survey on Disability " in *Research in Social Science and Disability* vol. 3. Amsterdam: Elsevier.
- Appleyard, Karen, Byron Egeland, Manfred H. M. van Dulmen, and L. Alan Sroufe. 2005. "When more is not better: the role of cumulative risk in child behavior outcomes." *Journal of Child Psychology and Psychiatry* 46:235-245.
- Barber, J. G. and P. H. Delfabbro. 2009. "The profile and progress of neglected and abused children in long-term foster care." *Child Abuse & Neglect* 33:421-428.
- Benedict, Mary I., Roger B. White, Louise M. Wulff, and Belinda J. Hall. 1990. "Reported maltreatment in children with multiple disabilities." *Child Abuse & Neglect* 14:207-217.
- Benedict, Mary I., Louise M. Wulff, and Roger B. White. 1992. "Current parental stress in maltreating and nonmaltreating families of children with multiple disabilities." *Child Abuse & Neglect* 16:155-163.
- Berger, Lawrence M. 2004. "Income, family structure, and child maltreatment risk." *Children and Youth Services Review* 26:725-748.
- Biederman, Joseph, Stephen V. Faraone, Alysa Doyle, Belinda Krifcher Lehman, Ilana Kraus, James Perrin, and Ming T. Tsuang. 1993. "Convergence of the Child Behavior Checklist with Structured Interview-based Psychiatric Diagnoses of ADHD Children with and without Comorbidity." *Journal of Child Psychology and Psychiatry* 34:1241-1251.
- Boyle, Coleen A., Sheree Boulet, Laura A. Schieve, Robin A. Cohen, Stephen J. Blumberg, Marshalyn Yeargin-Allsopp, Susanna Visser, and Michael D. Kogan. 2008. "Trends in the Prevalence of Developmental Disabilities in US Children." *Pediatrics*.
- Brauner, Cheryl Boydell and Cheryl Bowers Stephens. 2006. "Estimating the Prevalence of Early Childhood Serious Emotional/Behavioral Disorders: Challenges and Recommendations." *Public Health Rep.* 121:303-310.
- Briscoe-Smith, Allison M. and Stephen P. Hinshaw. 2006. "Linkages between child abuse and attention-deficit/hyperactivity disorder in girls: Behavioral and social correlates." *Child Abuse & Neglect* 30:1239-1255.

- Brook, Uzi and Mona Boaz. 2005. "Attention deficit and hyperactivity disorder (ADHD) and learning disabilities (LD): adolescents perspective." *Patient Education and Counseling* 58:187-191.
- Brown, Jocelyn, Patricia Cohen, Jeffrey G. Johnson, and Suzanne Salzinger. 1998. "A longitudinal analysis of risk factors for child maltreatment: findings of a 17-year prospective study of officially recorded and self-reported child abuse and neglect." *Child Abuse & Neglect* 22:1065-1078.
- Brownlie, E., Amina Jabbar, Joseph Beitchman, Ron Vida, and Leslie Atkinson. 2007. "Language Impairment and Sexual Assault of Girls and Women: Findings from a Community Sample." *Journal of Abnormal Child Psychology* 35:618-626.
- Brunnberg, Elinor, Margareta Linden Bostrom, and Mats Berglund. 2012. "Sexual force at sexual debut. Swedish adolescents with disabilities at higher risk than adolescents without disabilities." *Child Abuse & Neglect* 36:285-295.
- Child Welfare Information Gateway. 2009. "What is Child Abuse and Neglect?" Children's Bureau ACYF, Washington, DC.
- . 2013. "Administration for children and families; SafeCare", (https://www.childwelfare.gov/preventing/programs/types/safe_care.cfm).
- Conrad, Peter. 2005. "The Shifting Engines of medicalization " *Journal of Health and Social Behavior* 46:3-14.
- Cooke, Pamela and P. J. Standen. 2002. "Abuse and Disabled Children: Hidden Needs....?" *Child Abuse Review* 11:1-18.
- Costello, E. Jane, William Copeland, and Adrian Angold. 2011. "Trends in psychopathology across the adolescent years: What changes when children become adolescents, and when adolescents become adults?" *Journal of Child Psychology and Psychiatry* 52:1015-1025.
- Cuevas, Carlos A., David Finkelhor, Cynthia Clifford, Richard K. Ormrod, and Heather A. Turner. 2010. "Psychological distress as a risk factor for re-victimization in children." *Child Abuse & Neglect* 34:235-243.
- Cuevas, Carlos A., David Finkelhor, Richard Ormrod, and Heather Turner. 2009. "Psychiatric Diagnosis as a Risk Marker for Victimization in a National Sample of Children." *Journal Of Interpersonal Violence* 24:636-652.
- Dakil, Suzanne R., Matthew Cox, Hua Lin, and Glenn Flores. 2012. "Physical Abuse in U.S. Children: Risk Factors and Deficiencies in Referrals to Support Services." *Journal of Aggression, Maltreatment & Trauma* 21:555-569.
- Dubowitz, Howard, Jeongeun Kim, Maureen M. Black, Cindy Weisbart, Joshua Semiatin, and Laurence S. Magder. 2011. "Identifying children at high risk for a child maltreatment report." *Child Abuse & Neglect* 35:96-104.
- Edwards, Anna and John R. Lutzker. 2008. "Iterations of the SafeCare Model: An Evidence- Based child maltreatment prevention program." *Behavior Modification* 32:736-769.
- English, Diana J., Shrikant I. Bangdiwala, and Desmond K. Runyan. 2005. "The dimensions of maltreatment: introduction." *Child Abuse & Neglect* 29:441-460.
- Erickson, W., C. Lee, and S. von Schrader. 2010. "2008 Disability Status Report: the United States." Cornell University Rehabilitation Research and Training Center on Disability Demographics and Statistics, Ithaca, NY.

- Éthier, Louise S., Jean-Pascal Lemelin, and Carl Lacharité. 2004. "A longitudinal study of the effects of chronic maltreatment on children's behavioral and emotional problems." *Child Abuse & Neglect* 28:1265-1278.
- Feerick, Margaret M. , John F. Knutson, Penelope K. Trickett, and Sally M. Flanzer. 2006. *Definitions, Classifications, and Framework for Research*. Baltimore, Maryland: Paul H. Brookes Publisher.
- Finkelhor, D. 1995. "The victimization of children." *American Journal of Orthopsychiatry* 65:177-193.
- Finkelhor, David. 2008. *Childhood Victimization: Violence, Crime, and Abuse in the Lives of Young People*. New York: Oxford University Press.
- Finkelhor, David and J. Dziuba-Leatherman. 1994. "Victimization of children." *American Psychologist* 49:173-183.
- Finkelhor, David, Richard K Ormrod, and Heather A Turner. 2007a. "Poly-Victimization: A Neglected Component in Child Victimization." *Child Abuse & Neglect: The International Journal* 31:7-26.
- Finkelhor, David, Richard K. Ormrod, and Heather A. Turner. 2007b. "Re-victimization patterns in a national longitudinal sample of children and youth." *Child Abuse & Neglect* 31:479-502.
- Finkelhor, David, Richard Ormrod, Heather Turner, and Sherry L. Hamby. 2005. "The Victimization of Children and Youth: A Comprehensive, National Survey." *Child Maltreatment* 10:5-25.
- Finkelhor, David, Heather A Turner, Richard Ormrod, and Sherry L. Hamby. 2009. "Violence, Abuse, and Crime Exposure in a National Sample of Children and Youth." *Pediatrics* 124.
- Fitzsimons, Nancy M. 2009. *Combating Violence & Abuse of People with Disabilities*. Baltimore Paul H. Brookes.
- Govindshenoy, M. and N. Spencer. 2006. "Abuse of the disabled child: a systematic review of population-based studies." *Journal compilation; Blackwell publishing company*.
- Groce, Nora 2005. "Violence against children with disabilities; UN Secretary General's Study on Violence against Children Thematic Group on Violence against Children with Disabilities." UNICEF, New York
- Guo, Guang and Hongxin Zhao. 2000. "Multilevel Modeling for Binary Data." *Annual Review of Sociology* 26:441-462.
- Halfon, Neal, Amy Houtrow, Kandyce Larson, and Paul W. Newacheck. 2012. "The Changing Landscape of Disability in Childhood." *The Future of Children* 22.
- Hamilton, Lawrence C. 1992. *Regression with Graphics*. Belmont: Brooks/Cole.
- Harrell, Erika. 2012. "Crime against persons with disabilities, 2009-2011 Statistical tables." US Department of Justice.
- Helton, Jesse J. and Theodore P. Cross. 2011. "The Relationship of Child Functioning to Parental Physical Assault: Linear and Curvilinear Models." *Child Maltreatment* 16:126-136.
- Hibbard, Roberta A., Larry W. Desch, and The Committee on Child Abuse Neglect and Council on Children With Disabilities. 2007. "Maltreatment of Children With Disabilities." *Pediatrics* 119:1018-1025.

- Hildyard, Kathryn L. and David A. Wolfe. 2002. "Child neglect: Developmental issues and outcomes." *Child Abuse & Neglect* 26:379-695.
- Horner-Johnson, W. and C. E. Drum. 2006. "Prevalence of maltreatment of people with intellectual disabilities: A review of recently published research." *Mental Retardation and Developmental Disabilities Research Reviews* 12:57-69.
- Hussey, Jon M., Jen Chang, and Jonathan B. Kotch. 2006. "Child Maltreatment in the United States: Prevalence, Risk Factors, and Adolescent Health Consequences." *Pediatrics* 118:933-942.
- Hussey, Jon M., Jane Marie Marshall, Diana J. English, Elizabeth Dawes Knight, Anna S. Lau, Howard Dubowitz, and Jonathan B. Kotch. 2005. "Defining maltreatment according to substantiation: distinction without a difference?" *Child Abuse & Neglect* 29:479-492.
- Jaudes, Paula Kienberger and Lucy Mackey-Bilaver. 2008. "Do chronic conditions increase young children's risk of being maltreated?" *Child Abuse & Neglect* 32:671-681.
- Jones, Lisa, Mark A. Bellis, Sara Wood, Karen Hughes, Ellie McCoy, Lindsay Eckley, Geoff Bates, Christopher Mikton, Tom Shakespeare, and Alana Officer. 2012. "Prevalence and risk of violence against children with disabilities: a systematic review and meta-analysis of observational studies." *The Lancet* 12.
- Jones, Lisa M., David Finkelhor, and Stephanie Halter. 2006. "Child Maltreatment Trends in the 1990s: Why does neglect differ from sexual and physical abuse?" *Child Maltreatment* 11:107-120.
- Kariuki, Maina, Anne Honey, Eric Emerson, and Gwynnyth Llewellyn. 2011. "Mental health trajectories of young people after disability onset." *Disability and Health Journal* 4:91-101.
- Kendall-Tackett, Kathleen, Thomas Lyon, Greg Taliaferro, and Liza Little. 2005. "Why child maltreatment researchers should include children's disability status in their maltreatment studies." *Child Abuse & Neglect* 29:147-151.
- Kohl, Patricia L., Melissa Jonson-Reid, and Brett Drake. 2009. "Time to Leave Substantiation Behind: Findings From A National Probability Study." *Child Maltreatment* 14:17-26.
- Kvam, Marit Hoem. 2004. "Sexual abuse of deaf children. A retrospective analysis of the prevalence and characteristics of childhood sexual abuse among deaf adults in Norway." *Child Abuse & Neglect* 28:241-251.
- Leeb, Rebecca T., Rebecca H. Bitsko, Melissa T. Merrick, and Brian S. Armour. 2012. "Does Childhood Disability Increase Risk for Child Abuse and Neglect?" *Journal of Mental Health Research in Intellectual Disabilities* 5:4-31.
- Little, Liza. 2004. "Victimization of Children with disabilities." Pp. 95-108 in *Health consequences of abuse in the family: A clinical guide for evidence-based practice*, edited by K. Kendall-Tackett. Washington, DC: American Psychological Association.
- Lynch, Michael. 2003. "Consequences of children's exposure to community violence." *Clinical Child and Family Psychology Review* 6:265-274.
- Manders, Jeanette E. and Zolinda Stoneman. 2009. "Children with disabilities in the child protective services system: An analog study of investigation and case management." *Child Abuse & Neglect* 33:229-237.

- Manly, Jody Todd, Jungmeen E. Kim, Fred A. Rogosch, and Dante Cicchetti. 2001. "Dimensions of child maltreatment and children's adjustment: Contributions of developmental timing and subtype." *Development and Psychopathology* 13:759-782.
- Mikton, Christopher and Alexander Butchart. 2009. "Child Maltreatment prevention: a systematic review of reviews." *Bull World Health Organization* 87:353-361.
- National Data Archive on Child Abuse and Neglect. 2010. "Longitudinal Studies of Child Abuse and Neglect (LONGSCAN) Assessments 0-12; NDACAN Dataset Number 144 User's Guide and Codebook." Family Life Development Center, Cornell University Ithaca, NY.
- Nooner, K. B., A. J. Litrownik, R. Thompson, B. Margolis, D. J. English, E. D. Knight, M. D. Everson, and S. Roesch. 2010. "Youth self-report of physical and sexual abuse: A latent class analysis." *Child Abuse & Neglect* 34:146-154.
- Orelove, Fred P., Dorothy J. Hollahan, and Kelly T. Myles. 2000. "Maltreatment of children with disabilities: training needs for a collaborative response." *Child Abuse & Neglect* 24:185-194.
- Ouyang, Lijing, Xiangming Fang, James Mercy, Ruth Perou, and Scott D. Grosse. 2008. "Attention-deficit/hyperactivity disorder symptoms and child maltreatment: A population-based study." *The Journal of Pediatrics* 153:851-856.
- Pears, Katherine C., Hyoun K. Kim, and Philip A. Fisher. 2008. "Psychosocial and cognitive functioning of children with specific profiles of maltreatment." *Child Abuse & Neglect* 32:958-971.
- Petersilia, Joan R. 2001. "Crime Victims with Developmental Disabilities." *Criminal Justice and Behavior* 28:655-694.
- Reiter, Shunit, Diane N. Bryen, and Ifat Shachar. 2007. "Adolescents with intellectual disabilities as victims of abuse." *J Intellect Disabil.* 11:371-387.
- Rutherford, Robert B. , Mary Magee Quinn, and Sarup R. Mathur. 2004. *Handbook of Resaerch in Emotional and Behavioral Disorders*. New York: The Guilford Press.
- Sedlak, A. 2012. "Fourth National Incidence Study of Child Abuse and Neglect (NIS-4): Report to Congress " A.f.C.a.F. Department of Health and Human Services, Washington, D.C. .
- Shannon, Patrick and Christine Tappan. 2011. "A qualitative analysis of child protective services practice with children with developmental disabilities." *Children and Youth Services Review* 33:1469-1475.
- Singer, Judith D. and John B. Willet. 2003. *Applied Longitudinal Data Analysis: Measuring Change and Event Occurence*. Oxford: Oxford University Press.
- Smart, Julie. 2001. *Disability, Society, and the Individual* Gaithersburg, Maryland: Aspen Publication
- Sobsey, Dick. 2002. "Exceptionality, Education, and Maltreatment." *Exceptionality* 10:29-46.
- Sobsey, Dick, Wade Randall, and Rauno K. Parrila. 1997. "Gender differences in abused children with and without disabilities." *Child Abuse & Neglect* 21:707-720.
- Spencer, Nick, Emma Devereux, Ann Wallace, Ratna Sundrum, Manjula Shenoy, Claire Bacchus, and Stuart Logan. 2005. "Disabling Conditions and Registration for Child Abuse and Neglect: A Population-Based Study." *Pediatrics* 116:609-613.

- Spertus, Ilyse L. , Rachel Yehuda, Cheryl M. Wong, Sarah Halligan, and Stephanie Seremetis. 2003. "Childhood emotional abuse and neglect as predictors of psychological and physical symptoms in women presenting to a primary care practice." *Child Abuse & Neglect* 27:1247-1258.
- Sprang, Ginny, James J. Clark, and Stephanie Bass. 2005. "Factors that contribute to child maltreatment severity: a multi-method and multidimensional investigation." *Child Abuse & Neglect* 29:335-350.
- Stein, Bradley D., Lisa H. Jaycox, Sheryl Kataoka, Hilary J. Rhodes, and Katherine D. Vestal. 2003. "Prevalence of Child and Adolescent Exposure to Community Violence." *Clinical Child and Family Psychology Review* 6:247-264.
- Sullivan, Patricia M. 2009. "Violence Exposure Among Children with Disabilities." *Clinical Child & Family Psychology Review* 12:196-216.
- Sullivan, Patricia M. and John F. Knutson. 2000. "Maltreatment and Disabilities: A population-based epidemiological study." *Child Abuse & Neglect* 24:1257-1273.
- Surís, Joan-Carles, Michael D. Resnick, Nadav Cassuto, and Robert W. M. Blum. 1996. "Sexual behavior of adolescents with chronic disease and disability." *Journal of Adolescent Health* 19:124-131.
- Svensson, Birgitta and Carl-Gustaf Bornehag. 2011. "Chronic conditions in children increase the risk for physical abuse- but vary with socioeconomic conditions." *Acta Paediatrica* 100.
- Trickett, Penelope K. and Catherine McBride-Chang. 1995. "The Developmental Impact of Different Forms of Child Abuse and Neglect." *Developmental Review* 15:311-337.
- Turner, Heather A., David Finkelhor, and Richard Ormrod. 2007. "Family Structure Variations in Patterns and Predictors of Child Victimization." *American Journal of Orthopsychiatry* 77:282-295.
- . 2009. "Child Mental Health Problems as Risk Factors for Victimization." *Child Maltreatment* 15:132-143.
- Turner, Heather A., Jennifer Vanderminden, David Finkelhor, Sherry Hamby, and Anne Shattuck. 2011. "Disability and Victimization in a National Sample of Children and Youth." *Child Maltreatment* 16:275-286.
- U.S. Census Bureau. 2007. "U.S. Census Bureau, Census 2000 Summary File 3, Matrices P42, PCT26, PCT27, PCT28, PCT29, PCT30, PCT31, PCT32, and PCT33.", Washington, D.C.
- Vig, Susan and Ruth Kammer. 2002. "Maltreatment and Developmental Disabilities in Children " *Journal of Developmental Disabilities* 14:371-386.
- Webber, Jo and Cythia A. Plotts. 2008. *Emotional and Behavioral Disorders: Theory and Practice*. Boston: Pearson.
- Westcott, Helen L. and David P.H. Jones. 1999. "Annotation: The Abuse of Disabled Children." *Journal of Child Psychology and Psychiatry* 40:497-506.
- World Health, Organization. 2001, "Disability", Retrieved June 21, 2009 (<http://www.who.int/topics/disabilities/en/>).

Appendix A- Measures

Measure	Wave	Question & Answer categories
Gender	0-4, 6	Child's Gender 1=Male 2=Female
Age	0-4, 6	Child's date of birth.
Race	0-4, 6	Which one of these best describes child's race or ethnic group? 1 = White 2 = Black 3 = Hispanic 4 = Native American 5 = Asian 6 = Mixed Race 7 = Other
Respondent's relationship to child	0-4, 6, 7- 9,10- 11, 12	What is respondent's primary relationship to child? 1 = Biologic mother 2 = Adoptive mother 3 = Step-mother 4 = (non-kin) foster mother 5 = Kinship foster mother 6 = Grandmother 7 = Biologic father 8 = Adoptive father 9 = Step-father 10 = [Non-kin] foster father 11 = Kinship foster father 12 = Grandfather 13 = Other female 14 = Other male (indicate if mom's boyfriend) 15 = Legal guardian female 16 = Legal guardian male
Family Income	0-4, 6, 7- 9,10- 11, 12	About how much money does (child's) household take in each week, or month or year? Which one of the amounts on this card best describes the household's take-home pay? 1 = < \$5,000 per year; or < \$418 per month; or < 97 per week \$ 2 = \$5,000 – \$9,999 per year; or \$418 – \$833 per month; or \$97 – \$192 per week 3 = \$10,000 – \$14,999 per year; or \$834 – \$1250 per month; or \$193 – \$288 per week 4 = \$15,000 – \$19,999 per year; or \$1251 – \$1666 per month; or \$289 – \$384 per week 5 = \$20,000 – \$24,999 per year; or \$1667 – \$2083 per month; or \$385 – \$480 per week 6 = \$25,000 – \$29,999 per year; or \$2084 – \$2500 per month; or \$481 – \$576 per week 7 = \$30,000 – \$34,999 per year; or \$2501 – \$2916 per month; or \$577 –

		<p>\$673 per week 8 = \$35,000 – \$39,999 per year; or \$2917 – \$3333 per month; or \$674 – \$769 per week 9 = \$40,000 – \$44,999 per year; or \$3334 – \$3750 per month; or \$770 – \$865 per week 10 = \$45,000 – \$49,999 per year, or \$3751 – \$4166 per month; or \$866 – \$961 per week 11 = > \$50,000 per year; or > \$4166 per month; or > \$961 per week 12 = DK/NA</p>
Income supplement	0-4, 6, 7-9,10-11, 12	<p>How many people, including yourself, are dependent on this income? 00 – 99</p> <p>How many rooms, including the kitchen and bathrooms, are there in your entire home?</p>
Number of siblings	0-4, 6, 7-9,10-11, 12	<p>Number of people in relationship to child: Brothers 18 or older in home.</p> <p>Number of people in relationship to child: Other adult male relatives in home.</p> <p>Number of people in relationship to child: Male adult non-relatives in home.</p> <p>Number of people in relationship to child: Sister, half sister under 18 in home.</p> <p>Number of people in relationship to child: Stepsisters under 18 in home.</p> <p>Number of people in relationship to child: Other female relatives under 18 in home.</p> <p>Number of people in relationship to child: Other female non-relatives under 18 in home.</p> <p>Number of people in relationship to child: Brother, half brother under 18 in home.</p> <p>Number of people in relationship to child: Stepbrothers under 18 in-home.</p> <p>Number of people in relationship to child: Other male relatives under 18 in home.</p> <p>Number of people in relationship to child: Other male non-relatives under 18 in home.</p> <p>Is child the oldest child living in the home right now?</p> <p>How many people live in child's household right now? (including child)</p>
Family structure (1)	0-4, 6, 7-9,10-11, 12	<p>What is your current legal marital status?</p> <p>1 = Married 2 = Single; never married 3 = Separate 4 = Divorced 5 = Widowed</p>
Family structure (2)	0-4, 6, 7-9,10-11, 12	<p>Does respondent live with spouse or partner?</p> <p>0 = No = Yes 1</p>
Caregiver education	0-4, 6, 7-9,10-11, 12	<p>What is the highest grade in school or college that you have passed or completed?</p> <p>0 = No formal schooling 1 – 12 = Elementary – high school 3 – 16 = College 17 – 20+ = Graduate/ Professional</p>
Parental	0-4, 6, 12,14	<p>CESD DEPRESSION SCORE</p>

depression		
Disability	0-4	Does child have this condition? Emotional disorder.
	0-4	Does child have this condition? Mentally retarded.
	0-4	Does child have this condition? Developmental delay.
	0-4	Does child have this condition? Physical handicap.
	0-4	Does child have this condition? Hearing problem.
	0-4	Does child have this condition? Speech problem.
	0-4	Does child have this condition? Vision problem.
	0-4	Does child have this condition? Chronic illness/disease.
	6	Has child been diagnosed as having hearing problem?
	6	Has child been diagnosed as having speech-talking problem?
	6	Has child been diagnosed as having vision or seeing problem?
	6	Has child been diagnosed as having chronic health condition?
	6	Has child been diagnosed as having physical handicap?
	6	Has child been diagnosed as having hyperactivity or attention problem?
	6	Has child been diagnosed as having learning problem?
	6	Has child been diagnosed as having emotional problem?
	6	Has child been diagnosed as having mental retardation?
	Emotional/Behavioral Problems	0-4, 6, 8, 10, 12, 14
		CBCL1 Num Acts too young for his/ her age.
		CBCL2 Num Allergy
		CBCL3 Num Argues a lot.
		CBCL4 Num Asthma.
		CBCL5 Num Behaves like opposite sex.
		CBCL6 Num Bowel movements outside toilet.
		CBCL9 Num Can't get his/ her mind off certain thoughts.
		CBCL10 Num Can't sit still, restless, or hyperactive.
		CBCL11 Num Clings to adults or too dependent.
		CBCL12 Num Complains of loneliness.
		CBCL13 Num Confused or seems to be in a fog.
		CBCL14 Num Cries a lot.
		CBCL15 Num Cruel to animals.
		CBCL16 Num Cruelty, bullying, or meanness to others.
		CBCL17 Num Daydreams or gets lost in his/ her thoughts.
		CBCL18 Num Deliberately harms self or attempts suicide.
		CBCL19 Num Demands a lot of attention.
		CBCL20 Num Destroys his/ her own things.
		CBCL21 Num Destroys things belonging to his/ her family or

	others.
	CBCL22 Num Disobedient at home.
	CBCL23 Num Disobedient at school.
	CBCL24 Num Doesn't eat well.
	CBCL25 Num Doesn't get along with other kids.
	CBCL26 Num Not seem to feel guilty after misbehaving.
	CBCL27 Num Easily jealous.
	CBCL28 Num Eats-drinks not food -- don't include sweets.
	CBCL29 Num Fears certain animal, situations, or places other than school.
	CBCL30 Num Fears going to school.
	CBCL31 Num Fears he/ she might think or do something bad.
	CBCL32 Num Feels he or she has to be perfect.
	CBCL33 Num Feels or complains that no one loves him/ her.
	CBCL34 Num Feels others out to get him/ her.
	CBCL35 Num Feels worthless or inferior.
	CBCL36 Num Gets hurt a lot, accident-prone.
	CBCL37 Num Gets in many fights.
	CBCL38 Num Gets teased a lot.
	CBCL39 Num Hangs around with others who get in trouble.
	CBCL40 Num Hears sounds or voices that aren't there.
	CBCL41 Num Impulsive or acts without thinking.
	CBCL42 Num Would rather be alone than with.
	CBCL43 Num Lying or cheating.
	CBCL44 Num Bites fingernails.
	CBCL45 Num Nervous, high-strung, or tense.
	CBCL46 Num Nervous movements or twitching.
	CBCL47 Num Nightmares.
	CBCL48 Num Not liked by other kids.
	CBCL49 Num Constipated, doesn't move bowels.
	CBCL50 Num Too fearful or anxious.
	CBCL51 Num Feels dizzy.
	CBCL52 Num Feels too guilty.
	CBCL53 Num Overeating.
	CBCL54 Num Overtired.
	CBCL55 Num Overweight.
	CBCL56A Num Physical problems without known medical cause - Aches or pains. (not headaches)
	CBCL56B Num Physical problems without known medical cause - Headaches.
	CBCL56C Num Physical problems without known medical cause - Nausea, feels sick.
	CBCL56D Num Physical problems without known medical cause - Problems with eyes.
	CBCL56E Num Rashes or skin problems.
	CBCL56F Num Stomachaches or cramps.
	CBCL56G Num Vomiting, throwing up.

	CBCL56H Num Other problem.
	CBCL57 Num Physically attacks people.
	CBCL58 Num Picks nose, skin, or other parts of body.
	CBCL59 Num Plays with sex parts in public.
	CBCL60 Num Plays with sex parts too much.
	CBCL61 Num Poor school work.
	CBCL62 Num Poorly coordinated or clumsy.
	CBCL63 Num Prefers older kids.
	CBCL64 Num Prefers younger kids.
	CBCL65 Num Refuses to talk.
	CBCL66 Num Repeats certain acts over and over; compulsions.
	CBCL67 Num Runs away from home.
	CBCL68 Num Screams a lot.
	CBCL69 Num Secretive, keeps things to self.
	CBCL70 Num Sees things that aren't there.
	CBCL71 Num Self-conscious or easily embarrassed.
	CBCL72 Num Sets fires.
	CBCL73 Num Sexual problems.
	CBCL74 Num Showing off or clowning.
	CBCL75 Num Shy or timid.
	CBCL76 Num Sleeps less than most kids.
	CBCL77 Num Sleeps more than most kids during day and/ or night.
	CBCL78 Num Smears or plays with bowel movement.
	CBCL79 Num Speech problem.
	CBCL80 Num Stares blankly.
	CBCL81 Num Steals at home.
	CBCL82 Num Steals outside home.
	CBCL83 Num Stores up things he/ she doesn't need.
	CBCL84 Num Strange behavior.
	CBCL85 Num Strange ideas.
	CBCL86 Num Stubborn, sullen, irritable.
	CBCL87 Num Sudden changes in mood or feelings.
	CBCL88 Num Sulks a lot.
	CBCL89 Num Suspicious.
	CBCL90 Num Swearing or obscene language.
	CBCL91 Num Talks about killing self.
	CBCL92 Num Talks or walks in sleep.
	CBCL93 Num Talks too much.
	CBCL94 Num Teases a lot.
	CBCL95 Num Temper tantrums or hot temper.
	CBCL96 Num Thinks about sex too much.
	CBCL97 Num Threatens people.
	CBCL98 Num Thumb-sucking.
	CBCL99 Num Too concerned with neatness or cleanliness.
	CBCL100 Num Trouble sleeping.
	CBCL101 Num Truancy skips school.
	CBCL102 Num Underactive, slow moving, or lacks energy.

		CBCL103 Num Unhappy, sad, or depressed.
		CBCL104 Num Unusually loud.
		CBCL105 Num Alcohol or drugs for nonmedical purposes.
		CBCL106 Num Vandalism.
		CBCL107 Num Wets self during day.
		CBCL108 Num Wets the bed.
		CBCL109 Num Whining.
		CBCL110 Num Wishes to be of opposite sex.
		CBCL111 Num Withdrawn, doesn't get involved with others.
		CBCL112 Num Worries.
		CBCL113 Num Other problems.
CPS Record s- Victimi zation	0-4, 6, 7- 9,10- 11,12	None Given Physical Abuse Sexual Abuse Neglect Dependency Caretaker Absence/Incapacity Emotional maltreatment Moral/legal/educational neglect Abuse General neglect Severe neglect Don't know (Yes/No)
	0-4, 6, 7- 9,10- 11, 12	000 = No maltreatment 420 = Physical abuse 421 = Physical abuse w/injury 422 = Physical abuse injury status unknown 423 = Physical abuse – no injury 430 = Sexual abuse 431 = Intrusion 432 = Molestation with genital contact 433 = Other or unknown sexual abuse 440 = Emotional abuse 441 = Close confinement 442 = Verbal or emotional assault 443 = Other or unknown abuse 450 = Physical neglect 451 = Refusal of health care 452 = Delay in health care 453 = Abandonment 454 = Expulsion 455 = Other custody issues 456 = Inadequate supervision 457 = Other physical neglect 460 = Educational neglect 461 = Permitted chronic truancy 462 = Failure to enroll/other truancy

		<p>463 = Inattention of special educational needs 470 = Emotional neglect 471 = Inadequate nurturance/affection 472 = Chronic/extreme domestic abuse in child's home 473 = Permitted drug/alcohol abuse 474 = Permitted or other maladaptive behavior 475 = Refusal of psychological care 476 = Delay in psychological care 477 = Other emotional neglect 480 = Other maltreatment 481 = General or unspecified neglect 482 = Other or unspecified maltreatment 483 = General or unspecified abuse 484 = Dependency, protective issues</p>
	0-4, 6, 7- 9,10- 11, 12	<p>NIS-2 Alleged: Severity Code 1 = Fatal 2 = Serious 3 = Moderate 4 = Threat of harm 5 = No harm or threat of harm 6 = Unknown</p>
Suspected maltreatment	0-4, 6, 7- 9,10- 11, 12	<p>PSYCHOLOGICAL TRAUMA: SUSPECTED MALTREATMENT (Reason for seeking services) 91 (Suspected) physical abuse 92 (Suspected) sexual abuse 93 (Suspected) emotional abuse 94 (Suspected) physical or emotional neglect 99 Other psychological trauma</p>
Physical Assault self-report	12	Has any adult ever hit you with something really dangerous, like a baseball bat or a shovel? 0=No 1= Yes
	12	Has any adult ever hit you with something dangerous, like a hairbrush or a belt?
	12	An Adult Kicked or Punched you?
	12	An Adult Bitten You?
	12	Has any adult ever pushed you around, like against a wall or down stairs?
	12	An Adult Made a Threat to Cut or Stab You With a Knife, Razor, Fork, or Something Sharp Like That?
	12	Has an adult ever actually stabbed you with a knife, razor, fork, or something sharp like that?
	12	Has any adult ever threatened to shoot you with a gun?
	12	Has any adult ever shot at you with a gun, but didn't hit you?
	12	Has any adult ever done something else that physically hurt you or put you in danger of being hurt?
	12	Has any Adult Bruised You or Gave You a Black Eye?
	12	Has any adult ever broken one of your bones?
	12	Has any adult ever cut you in a way that caused you to bleed or need stitches?
	12	Has any adult ever knocked you out, or made you unconscious?

12	Has any adult ever caused an injury to your eyes, ears, nose, or teeth?
12	Has any adult ever wounded you by shooting you with a gun?
12	<p>About how often did an adult do this to you BEFORE YOU STARTED ELEMENTARY SCHOOL? 0 = Never 1 = 1 time 2 = 2 or 3 times 3 = \geq 4 times <i>Which of these adults did this to you BEFORE YOU STARTED ELEMENTARY SCHOOL?</i></p> <p>Mother Stepmother Foster mother Grandmother Father Stepfather Foster-father Grandfather Parent's boyfriend. Parent's girlfriend. Other male. Other female.</p>
12	<p>About how often has an adult done this to you SINCE YOU STARTED ELEMENTARY SCHOOL until now? 0 = Never 1 = 1 time 2 = 2 or 3 times 3 = \geq 4 times <i>Which of these adults have done this to you SINCE YOU STARTED ELEMENTARY SCHOOL until now?</i></p> <p>Mother Stepmother Foster mother Grandmother Father Stepfather Foster-father Grandfather Parent's boyfriend. Parent's girlfriend. Other male. Other female.</p>
12	<p>About how often has an adult done this to you IN THE LAST YEAR? 0 = Never 1 = 1 time 2 = 2 or 3 times 3 = \geq 4 times <i>Which of these adults have done this to you IN THE LAST YEAR?</i></p> <p>Mother Stepmother Foster mother Grandmother Father Stepfather Foster-father Grandfather Parent's boyfriend.</p>

		Parent's girlfriend. Other male. Other female.
Psychological Maltreatment- Self report	12	Have any of your parents ever called you names or teased you in a way that made you really feel bad about yourself?
	12	Have any of your parents ever blamed you for their own problems?
	12	Have any of your parents ever punished you by not allowing you to sleep, or eat, or drink, like for a whole day?
	12	Have any of your parents ever left you for most of a day or night without telling you where they were, or who was going to take care of you?
	12	Have any of your parents ever made you feel that you couldn't do anything right, no matter how hard you tried?
	12	Have any of your parents ever punished you in an unusual way -like tying you up, or locking you in a closet?
	12	Have any of your parents ever made you feel like they didn't care whether you were safe or healthy?
	12	Have any of your parents ever threatened to hurt you badly?
	12	Have any of your parents ever threatened to abandon or to leave you forever?
	12	Have any of your parents ever threatened to kick you out of your home, or to have you taken away?
	12	Have any of your parents ever tried to kill him/herself, or another person, in front of you?
	12	Have any of your parents ever made you feel like they really didn't love you?
	12	Have any of your parents ever tried to stop you from having or making friends outside the family?
		12
12		Have any of your parents ever had you take care of yourself or other people in ways that you didn't feel old enough to do?
12		Have any of your parents ever made you do something like steal, have sex for money, or carry drugs?
12		Have any of your parents ever been so drunk or high that they behaved in ways that really scared you?
12		Have any of your parents ever threatened to hurt someone very important to you?
12		Have any of your parents ever threatened to hurt or destroy something important to you, like a pet or a favorite thing of yours?
12		Have any of your parents ever kept you home from school when you weren't sick, so you could help them out?
12		Have any of your parents ever refused to allow you to get the help you needed from a doctor?
12		Have any of your parents ever refused to allow you to get the help you needed from someone like a counselor?
12		Have any of your parents ever blamed you for other people's problems when they were not your fault?
12		Have any of your parents ever locked you out of the house on purpose,

		without arranging for a place for you to go?
	12	Have any of your parent's ever humiliated you or embarrassed you very badly by putting you down a lot in front of other people?
	12	(Follow up for all of the above) Answer categories 0=No 1= Yes About how often did this happen ... 0 = Never 1 = Sometimes 2 = Often BEFORE you were in elementary school? SINCE YOU STARTED elementary school till now? IN THE LAST YEAR?
Sexual Abuse-Caregiver report	12	To the best of your knowledge has this child ever been ... (Yes/N0) Sexually abused or molested?
	12	touched in a sexual way by an adult or older child?
	12	evaluated by a doctor or professional for possible sexual abuse?
	12	reported as possibly having been abused to Department of Social Services?
Sexual Abuse-Self report	12	Has any adult or older lid ever made you look at something sexual, like pictures or a movie?
	12	Has anyone ever forced you to look at their sexual parts?
	12	Has anyone ever spied on you or TRIED to look at you without your clothes on when you didn't want them to?
	12	Has anyone ever touched your private parts or bottom in some way?
	12	Has anyone ever TRIED to touch your private parts or bottom in some way, but they weren't able to do it?
	12	Has anyone ever gotten you to touch their private parts or bottom in some way?
	12	Has anyone ever TRIED to get you touch their private parts or bottom in some way, but they weren't able to?
	12	Has anyone ever put some part of their body or anything else inside your private parts or bottom?
	12	Has anyone ever TRIED to put some part of their body or anything else inside your private parts or bottom, but they weren't able to do it?
	12	Has anyone ever put their mouth on your private parts or made you put your mouth on their private parts?
	12	Has anyone ever TRIED to put their mouth on your private parts or get you to put your mouth on their private parts, but they weren't able to do it?
	12	Has anyone ever made you do something else sexual with them or with another person, that we haven't already talked about?
	12	(Follow up for all of the above) Answer categories 0=No 1= Yes About how often did this happen ... 0 = Never 1 = Sometimes 2 = Often About how often has an adult done this to you IN THE LAST YEAR? 0 = Never 1 = 1 time 2 = 2 or 3 times 3 = ≥ 4 times BEFORE you were in elementary school? SINCE YOU STARTED elementary school till now? IN THE LAST YEAR?

	<p>Which of these persons did this to you [in _____ time]</p> <p>Mother</p> <p>Stepmother</p> <p>Foster Mother</p> <p>Girlfriend or parent</p> <p>Older sister</p> <p>Other female relative</p> <p>Other female adult you knew before</p> <p>Female adult stranger</p> <p>An older girl</p> <p>Father</p> <p>Stepfather</p> <p>Foster father</p> <p>Boyfriend of parent</p> <p>Older brother</p> <p>Other male relative</p> <p>Other male adult who you knew before</p> <p>Male adult stranger</p> <p>An older boy</p>
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University of New Hampshire

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Service Building, 51 College Road, Durham, NH 03824-3585
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24-Nov-2010

Vanderminden, Jennifer
Sociology, Horton SSC
993 Second Crown Point Road
Strafford, NH 03884

IRB #: 5016

Study: Exposure to and impact of victimization for children with and without disabilities

Approval Date: 19-Nov-2010

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, *Responsibilities of Directors of Research Studies Involving Human Subjects*. (This document is also available at <http://www.unh.edu/osr/compliance/irb.html>.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,



Julie F. Simpson
Manager

cc: File
Turner, Heather