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Early Head Start Home Visitor's Identification of Risk for Maltreatment

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EARLY HEAD START HOME VISITOR'S IDENTIFICATION OF RISK FOR MALTREATMENT

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Infants and toddlers enrolled in Early Head Start are at increased risk for child maltreatment due to the presence of numerous factors across a developmental-ecological framework, such as poverty, parental mental health problems, and developmental disability (e.g., Belsky, 1993; Bronfenbrenner, 1979). Within Early Head Start, home visitors are in a unique position to identify the families most likely to experience maltreatment. However, research has demonstrated that home visitors are often ill-equipped to identify and address risk factors such as parental mental health concerns, substance abuse, and domestic violence (Azzi-Lessing, 2011; Tandon, Mercer, Saylor, & Duggan, 2008). Further, little is known about how home visitors understand risk for maltreatment.

The current mixed methods study sought to: (a) identify how Early Head Start home visitors understand maltreatment, determine risk for maltreatment, and refer families identified as at-risk to relevant Early Head Start program and community-based services; and (b) identify the association between presence of risk factors and court-substantiated child maltreatment to develop the model of factors that best predicts maltreatment occurrence. To answer these questions, archival program and clinical service data and juvenile court records on 743 Early Head Start families were extracted and analyzed. Qualitative interviews exploring identification of risk for maltreatment

were also conducted with Early Head Start home visitors and supervisors.

Results demonstrate high risk for maltreatment, with 14.9% of enrolled families having a court-substantiated case of maltreatment. Home visitors identified numerous risk factors for maltreatment across child, caregiver, interactional, and social/environmental risk levels. Of the risk factors identified, being a single parent, presence of intimate partner violence, and prior CPS involvement were predictive of court-substantiated maltreatment. There was no significant difference in maltreatment prediction between evidence-based risk factors and home visitor risk factors. Families with actual and predicted maltreatment were significantly more likely to receive program services than families without maltreatment. Findings provide rich information about the role that home visitors play in maltreatment prevention within Early Head Start. Directions for effectively training home visitors to engage families and deliver program and community-based services in a manner that reduces risk for and prevents maltreatment are discussed.

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Chapter 1: Introduction and Literature Review

Child maltreatment has been identified as a pervasive social problem and a public health issue (Institute of Medicine [IOM] & National Research Council [NRC], 2013). Maltreatment and its associated consequences pose a direct threat to the mission of Early Head Start as defined in the Head Start Performance Standards, which is to promote school readiness by enhancing cognitive, social, and emotional development, and build positive parent–child relationships and improve family well-being (U.S. Department of Health and Human Services [U.S. DHHS], 2016a). Early experiences of child abuse and neglect are associated with impairments in cognitive development, emotional well-being, language and communication skills, physical health, and general school readiness (e.g., Cicchetti & Toth, 2000), which directly interfere with healthy child and family well-being.

Recent estimates have suggested that approximately 9.4 per 1,000 children in the United States experience substantiated maltreatment (U.S. DHHS, 2016b). Further, 17.1 per 1,000 children experience substantiated abuse and neglect perpetrated by their parent or caregiver (Sedlak et al., 2010). Children in the zero to three age group, consistent with those served by Early Head Start, experience the highest rates of maltreatment (ACF, 2012; U.S. DHHS, 2016b). It is at this young age that adverse life experiences can be particularly harmful (e.g., Shonkoff & Garner, 2012), highlighting the critical need to prevent maltreatment. The developmental-ecological theoretical model is one framework with which the etiology of child maltreatment can be understood (Belsky, 1993; Bronfenbrenner, 1979). This model situates risk factors identified in the literature across child, caregiver, interactional, and social/environmental levels. The presence of and

interaction between these risk factors place young children and families, especially those served by Early Head Start, at increased risk for maltreatment.

Early Head Start Family Service Workers, hereafter referred to as home visitors, are in a unique position to identify the presence of risk factors in the families they serve and ameliorate those risk factors through the provision of services or referrals to community agencies. Home visitors have frequent access to families in their homes throughout their enrollment in Early Head Start as required by the Performance Standards (U.S. DHHS, 2016a). However, the existing literature on Early Head Start and other home visitation programs does not specifically address the role of home visitors in maltreatment prevention. This reflects a lack of focus on maltreatment prevention as a primary program aim. Current Early Head Start policies require programs to have methods of identifying and reporting actual or suspected instances of maltreatment, and research has demonstrated that home visitors tend to accurately assess for child safety in instances when there is immediate risk or serious harm (Ashton, 1999). However, the guidelines do not include training in the identification of risk prior to actual occurrence of maltreatment (U.S. DHHS, 2016a). As a result, home visitors are ill-equipped to identify and address factors that are highly associated with maltreatment, such as parental mental health concerns, substance abuse, and domestic violence (Azzi-Lessing, 2011; Tandon et al., 2008). Further, there has been no literature to date examining the extent to which home visitors are aware of the association between these risk factors and child maltreatment.

Impact of Maltreatment on Child and Family Outcomes

Child maltreatment has a profound impact on a child's healthy development and

is associated with numerous, persistent detrimental outcomes, including neurophysiological, cognitive, and behavioral deficits (Cicchetti & Toth, 2005). A substantial body of literature demonstrates that the consequences of child maltreatment directly interfere with the identified goals of Early Head Start, to promote school readiness by enhancing cognitive, social, and emotional development, and to build positive parent-child relationships and improve family well-being, as outlined in the Head Start Act and the Performance Standards (U.S. DHHS, 2016a). This further highlights the critical need to address maltreatment in order to reduce the threat to child competence and healthy family functioning.

Research has demonstrated that child abuse and neglect are associated with a variety of structural changes in the brain and persistent impairments in neurobiological and neuropsychological functioning (Shonkoff & Garner, 2012; Teicher & Samson, 2016). Most notably, structural brain changes have been identified in the areas related to response to stressful situations (Heim, Newport, Mletzko, Miller, & Nemeroff, 2008; Lupien, Fiocco, & Wan, 2005). Research has implicated the biological stress response system as a physiological area greatly affected by early experiences of maltreatment, such that it is continually activated and demonstrates increased reactivity to stress (De Bellis, 2005; Heim et al., 2008; Jaffee & Christian, 2014; Shonkoff & Garner, 2012). Recent reviews of the neurobiological effects of abuse and neglect found morphological alterations and significant impacts on auditory, visual, and somatosensory brain regions, including the hippocampus, amygdala, portions of the prefrontal cortex, and sensory cortex (Child Welfare Information Gateway, 2015; Teicher & Samson, 2016).

The neurophysiological consequences that occur following exposure to traumatic

stress are seen in a child's response to emotional stimuli and ability to effectively regulate emotions (Langevin, Cossette, & Hébert, 2016; Wilson, Hansen, & Li, 2011). Children who have experienced maltreatment demonstrate difficulty correctly identifying emotion faces, understanding emotional expressions, and responding appropriately to affect produced by others, which leads to emotional distress and difficulty with affective dysregulation (Briere, 2002; Cicchetti & Toth, 2005). Kim and Cicchetti (2010) found that maltreated children displayed significantly lower levels of emotion regulation, defined as capacity to modulate emotional arousal, than nonmaltreated children.

Disturbances in cognitive function have also been linked with child maltreatment. Children who have experienced abuse and neglect display deficits in basic memory processes, such as encoding, memory monitoring, and retrieval (Eisen, Goodman, Qin, Davis, & Crayton, 2007) and executive functions such as planning and attention (DeBellis, 2005). Maltreated children tend to perform poorly on measures of executive function, abstract thinking, attention, and concentration (DeBellis, Hooper, Spratt, & Woolley, 2009; Erickson & Egeland, 2010). Children with early abuse experiences are more likely to have delays in grammar and vocabulary comprehension, produce significantly fewer words pertaining to physiological states and negative affect, and often struggle with multiple word and sentence meanings (Eigsti & Cicchetti, 2004; Hyter, Henry, Atchison, Sloane, & Black-pond, 2003).

These deficits in emotion regulation and cognitive functioning contribute to the higher rates of academic, behavioral, and relational problems among children who have experienced abuse and neglect (IOM & NRC, 2013). Maltreated children are more likely to demonstrate poorer school performance into adolescence (Moradi, Doost, Taghavi,

Yule, & Dalgleish, 1999) and exhibit greater numbers of externalizing behaviors, including aggression and conduct problems, which contribute to a high rate of problematic peer relationships (Kim & Cicchetti, 2010; Langevin, Hébert, & Cossette, 2015; Lansford, Criss, Dodge, Shaw, Pettit, & Bates, 2009). Further, research has demonstrated that maltreated children have delayed social problem solving skills and conflict avoidance skills, creating additional risk for dysfunction in interpersonal relationships (Tyler, Allison, & Winsler, 2006).

These deficits are amplified by disruptions in the parent-child relationship that occur as a result of maltreatment. Maltreated children likely experience harsh, inconsistent, or insensitive parenting and a lack of modeling of appropriate skills that interfere with the ability to develop effective strategies for emotion regulation (Kim & Cicchetti, 2010; Shipman & Zeman, 2001). Abusive parents are more likely to experience their own emotion regulation difficulties, which when compounded with high levels of parental stress and limited knowledge about child development, lead parents to become frustrated and perceive childrearing as more difficult than non-abusive parents (Hecht & Hansen, 2001; Mammen, Kolko, & Pilkonis, 2003).

Gould and colleagues (2012) found that these detrimental outcomes persist well into adulthood. This places children at risk for other long-term effects such as substance abuse (e.g., Dunn, Tarter, Mezzich, Vanyukov, Krisici, & Krillova, 2002) and mental and physical health problems (Mulvihill, 2005; Widom, Czaja, Bentley, & Johnson, 2012). The dysfunctional response to stressful situations puts maltreated children at greater risk for depression and posttraumatic stress disorder (PTSD), particularly following exposure to subsequent stressors or traumas (Heim, Newport, Bonsall, Miller, & Nemeroff, 2001;

Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009). Further, relational difficulties with caregivers and peers are associated with difficulty forming healthy relationships later in life, potentially increasing the likelihood of intergenerational transmission of abuse (Golden, 2009; Harden, 2004).

The Developmental-Ecological Theory of Maltreatment

In order to prevent the numerous detrimental outcomes associated with maltreatment, it is critical to understand the factors that contribute to increased likelihood for abuse and neglect. Belsky (1993) first outlined a comprehensive developmental-ecological framework of risk factors for maltreatment, based on Bronfenbrenner's (1979) theory of child development. This framework organizes risk factors for child maltreatment into four categories: (a) child factors, (b) parent factors, (c) factors in the interactional context between parents and children, and (d) factors in the broader context. An extensive body of research has identified that the likelihood of maltreatment is influenced by this complex and diverse set of factors that are interrelated and interact to increase risk (Belsky, 1993; Cicchetti & Toth, 2005; Hecht & Hansen, 2001).

Risk factors at the child level include characteristics or behaviors that make children more likely to be in unsafe situations or that place increased demands on parents or caregivers, such as developmental disabilities (e.g., Palusci, 2011), behavioral problems (Belsky, 1993; Urquiza & McNeil, 1996), or physical health needs (Belsky, 1993; Palusci, 2011). Brown, Cohen, Johnson, and Salzinger (1998) conducted a longitudinal study examining risk factors for maltreatment and found pregnancy and birth complications were significantly associated with child physical abuse, and identified low child verbal IQ and difficult temperament as a risk factor for neglect and maltreatment in

general. A study from the United Kingdom also identified low birth weight as a risk factor for maltreatment (Sidebotham, Heron, & ALSPAC Study Team, 2006).

Parent risk factors include stressors that reduce the parent's ability to provide adequate care for their children, such as depression, substance abuse, and low education and age (Asawa, Hansen, & Flood, 2008; Belsky, 1993; Dubowitz, Kim, Black, Weisbart, Semiatin, & Magder, 2011; Stith et al., 2009). In particular, a significant relationship has been identified between maternal substance abuse, maternal depression, and child maltreatment (Hecht & Hansen, 2001; National Academy of Sciences, 2013). The link between parental depression and maltreatment may be driven by elevated parental stress and parental discipline strategies (Venta, Velez, & Lau, 2016), highlighting the interaction between risk factors across levels. Other caregiver level risk factors include single parenthood, instability in employment, and low educational attainment (Brown et al., 1998; Ha, Collins, & Martino, 2015).

Within the child's immediate interactional context, numerous factors contribute to increased risk for maltreatment. Broad family instability characterized by frequent changes in childcare arrangements is thought to increase risk for maltreatment (Ha et al., 2015). In particular, poor parenting practices and limited understanding of child development have been associated with maltreatment (Daro & Cohn-Donnelly, 2002; Hecht & Hansen, 2001). Abusive parents also tend to interact with their children less frequently than nonabusive parents (Urquiza & McNeil, 1996) and have less supportive and responsive caregiving relationships (Belsky, 1993; Brown et al., 1998). Families in which violence between caregivers is present are more likely to experience maltreatment; research has demonstrated that child physical abuse co-occurs in between 45 and 70% of

families experiencing partner violence (Graham-Bermann, 2002; Holt, Buckley, & Whelan, 2008; Palusci, 2011). Prior family involvement with Child Protective Services (CPS), particularly a history of substantiated cases, also increases risk for maltreatment. Duffy, Hughes, Asnes, and Leventhal (2015) found that families with a history of substantiated risk had a higher number of paternal risk factors, including maternal and paternal domestic violence and maternal criminal history. Another family demographic factor that has been associated with child neglect include large family size (Brown et al., 1998).

The broader social and environmental context also contributes to risk for maltreatment. National prevalence data indicate that young children living in poverty are at increased risk for maltreatment (Belsky, 1993; Sedlak et al., 2010). A substantial body of literature has explored environmental risk factors in the context of neighborhoods (Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007; Maguire-Jack, 2014; Maguire-Jack & Showalter, 2016; Martin, Gardner, & Brooks-Gunn, 2012; Molnar et al., 2016), including family support, neighborhood violence, neighborhood childcare burden, social disorganization, and low neighborhood quality. Child maltreatment is also more likely to occur in families who have inadequate housing and are receiving public assistance (Palusci, 2011). It is likely that the persistent and pervasive stressors associated with poverty and low-resource neighborhoods reduce parents' ability to provide a nurturing, supportive, and responsive environment for their children, highlighting the interrelatedness of risk factors (Hecht & Hansen, 2001). Similarly, families that lack informal social support are also at increased risk for maltreatment. Spilsbury and Korbin (2013) suggest that access to informal social support from family members or friends

helps to buffer stress through providing emotional support and other resources. The authors also cite Thompson (1995), noting that this informal social support can also provide modeling of appropriate caregiving behaviors.

Early Head Start

Early Head Start is a nation-wide, federally funded early intervention program that provides multidisciplinary services for low-income pregnant mothers and children birth through three. The three primary program aims are (1) the promotion of school readiness by enhancing cognitive, social, and emotional development, (2) building positive parent-child relationships, and (3) improving overall family well-being (U.S. DHHS, 2016a). Broadly, Early Head Start focuses on the domains of child development and competence, as well as the broader family and community context in which development occurs (Fantuzzo, McWayne, & Bulotsky, 2003).

Early Head Start emerged out of the Head Start Act reauthorization in 1994, following a study of the Head Start program that identified the need to support families with children under the age of three. Policy makers, service providers, and researchers recognized that Head Start faces numerous challenges resulting from serving children at a later stage of development (Love et al., 2001), although a clear program theory of change has never been described. The 1994 expansion established the mandate for the inclusion of services for infants and toddlers, developing the two-generation approach with services beginning before birth (Raikes, Brooks-Gunn, & Love, 2013). The Performance Standards guiding Head Start program implementation and governance were revised in 1996 to include Early Head Start, but did not go into effect until 1998. The first wave of 68 new Early Head Start programs began service provision in 1996. Additional waves of

enrollment following the 1998 reauthorization led to a significant expansion of services, including the development of 635 Early Head Start programs (Love et al., 2001). As of the most recent evaluation, Early Head Start was serving approximately 125,000 children nationwide, following receipt of 1,850 additional funding slots under the American Recovery and Reinvestment Act of 2009 (Raikes et al., 2013; Vogel et al., 2015). However, federal budget cuts associated with sequestration in 2011 reduced all program grants by approximately five percent, leading to a decrease of 51,000 Head Start enrollment slots and 6,000 Early Head Start enrollment slots, though a portion of these slots were eventually re-funded (U.S. DHHS, 2013).

There are three program options available to participants in Early Head Start. Service delivery models include center-based care, home-based care, and combination options that include both center- and home-based care. The Performance Standards identify rules and regulations for each specific program model, including curriculum, staff requirements, frequency and length of home visits, and screening tools (Raikes et al., 2013; U.S. DHHS, 2016a). Research on each program option has been conducted since the initial authorization; for the most recent results of the Early Head Start Research and Evaluation Project (EHSREP), see Love, Chazan-Cohen, Raikes, and Brooks-Gunn (2013). The current study focuses on the home-based program option.

Risk for Maltreatment within Early Head Start

While improving family well-being is a primary aim of Early Head Start, reductions in child maltreatment is not a primary program outcome (Sama-Miller et al., 2016). The initial Early Head Start authorization and the corresponding Performance Standards did not include a focus on maltreatment; subsequent reauthorizations and

modifications have not identified maltreatment prevention as a primary program aim. Yet, numerous risk factors have been identified in the literature (e.g., Belsky, 1993) that place young children, especially those served by Early Head Start, at increased risk for maltreatment.

Many of the risk factors described within the developmental-ecological model contribute to the eligibility and selection of participants in Early Head Start. Children in the birth-to-three age range (i.e., those served by Early Head Start) experience the highest rates of maltreatment (U.S. DHHS, 2016b). Further, federal regulations require that at least 90% of enrolled families have annual household incomes below the federal poverty guidelines (U.S. DHHS, 2016a). Federal guidelines also require Early Head Start to provide 10% of enrollment slots to children with developmental disabilities. Other associated risk factors, such as homelessness and receiving government assistance (i.e., TANF, or Temporary Aid for Needy Families), make families automatically eligible for participation in Early Head Start under the Eligibility, Recruitment, Selection, Enrollment, and Attendance (ERSEA) standards (U.S. DHHS, 2015). In addition, children in the foster system are also categorically eligible for enrollment (U.S. DHHS, 2015).

Beyond risk, recent research has identified that children enrolled in Early Head Start do in fact experience maltreatment at rates higher than those of the general population. A study of maltreatment rates across Early Head Start program models found that over the 13-year study period, 15.8% of the sample had experienced maltreatment, with 5% having experienced maltreatment during the birth through three range alone (Green et al., 2014). A smaller study examining maltreatment within an Early Head Start

home-based program found that 7.8% of the sample had experienced court-substantiated maltreatment in the six years following program enrollment (Hubel, Schreier, Flood, & Hansen, 2012). The presence of risk factors, along with the high prevalence of maltreatment, make young children and families enrolled in Early Head Start an appropriate group for services designed to prevent maltreatment. There is a clear gap between the intervention provided by Early Head Start and the needs of families who participate in the program, at least with respect to the prevention of child maltreatment.

Home Visitation as Maltreatment Prevention

Home visitation first emerged as a policy option in 1992, having developed out of a need to provide services to high-risk families that experience barriers to participation in typical interventions, such as lack of transportation (Daro, 2000, 2005). Home visitation typically targets low-income families who experience complex, interrelated difficulties and disorganized lifestyles that may interfere with program participation (Bilukha et al., 2005; Daro & Cohn-Donnelly, 2002). Engagement in program services remains a particular challenge for high-risk families who tend to participate inconsistently, infrequently, or for brief periods of time (Alonso-Marsden et al., 2013; Ammerman et al., 2006; Daro, 2006; McCurdy et al., 2006). Home visitation attempts to reduce these barriers through regular contact with families in their own homes, thus eliminating the need for transportation, and increasing parent engagement by focusing on the child in the context of visits and providing individualized services to families (Korfmacher et al., 2008; Raikes et al., 2006; Shonkoff & Phillips, 2000).

The Task Force on Community Preventive Services and the Centers for Disease Control and Prevention (CDC) have endorsed home visitation as a critical element of

maltreatment prevention (CDC, 2003). In a review of reviews, Mikton and Butchart (2009) found that early home visiting programs are consistently effective in reducing risk for maltreatment, but identified mixed results related to prevention of maltreatment itself. For example, Barlow, Simkiss, and Stewart Brown (2006) identified methodological concerns that limit the ability to draw conclusions about program effectiveness. However, a meta-analysis of 21 studies of home visitation programs found a median 39% reduction in abuse and neglect for children enrolled in home visitation programs (Bilukha et al., 2005). Further, in a meta-analysis of 60 studies, Sweet and Appelbaum (2004) found a significant decrease in potential for child abuse and neglect following participation in home visitation programs. Home visitation provides increased access to at-risk families with the aim of identifying individual needs, assessing for child safety, and providing multidisciplinary, targeted, integrated services across all levels of developmental-ecological risk (Asawa et al., 2008; Daro & Cohn-Donnelly, 2002; Howard & Brooks-Gunn, 2009).

Numerous home visitation delivery models exist, varying with respect to the age of children served, the range of services offered, who provides the services, and what outcomes are evaluated (Howard & Brooks-Gunn, 2009). However, all home visitation programs share the common goal of improving the parent-child relationship in the home at an early age, in order to enhance child development and family functioning, and tend to offer comprehensive and individualized services (Asawa et al., 2008; Astuto & Allen, 2009). Evidence-based home visitation programs are currently being evaluated as part of the federal Maternal, Infant, and Early Childhood Home Visitation (MIECHV) funding and research initiative (Haskins & Margolis, 2014). Early Head Start has been identified

as an evidence-based home visitation program under the MIECHV initiative (Avellar & Supplee, 2013; Haskins & Margolis, 2014; Sama-Miller et al., 2016). Results from a large-scale randomized controlled study examining Early Head Start outcomes found that the program was effective in improving a wide array of child, parent, and family outcomes (Sama-Miller et al., 2016; Vogel, Brooks-Gunn, Marin, & Klute, 2013). However, recent evaluations of the effectiveness of various home visitation programs found that Early Head Start does not measure reductions in maltreatment as a primary program outcome, but as secondary outcomes only (Howard & Brooks-Gunn, 2009; Sama-Miller et al., 2016).

Despite this lack of focus, research has highlighted the potential of Early Head Start to reduce maltreatment (Fantuzzo et al., 2003). In the first longitudinal study of maltreatment prevention within Early Head Start, Green and colleagues (2014) evaluated a subset of sites in the EHSREP, including four home-based sites, one center-based site, and two combined programs. Overall, children who were enrolled in Early Head Start had fewer child welfare encounters and were less likely to have had a substantiated report of child abuse between the ages of five and nine, compared to children who did not receive Early Head Start services. Although there were no significant differences in the other age ranges, trends suggest fewer child welfare encounters for Early Head Start participants. It is important to note that results also indicated a greater number of neglect reports between the ages of birth and five; however, this likely reflects a surveillance effect in Early Head Start and subsequent formal care and education preschool programs. Despite some conflicting results, this initial evaluation demonstrated promise and indicates the need for additional research to elaborate upon these findings.

Research has also demonstrated numerous positive effects of Early Head Start that may indirectly reduce maltreatment by addressing factors across all levels of the developmental-ecological framework that have been associated with increased risk. Parents who received Early Head Start services have been found to be more emotionally supportive than parents who did not participate in the program, and children tend to display fewer behavioral problems after completing Early Head Start (ACF, 2006). Chazan-Cohen and colleagues (2007) found that Early Head Start was effective in reducing levels of maternal depression. Further, Early Head Start is a well-structured model with stable federal funding, successful implementation on a large scale, and evidence suggesting that Early Head Start has had positive impacts on overall outcomes (Sama-Miller et al., 2016; Vogel, Brooks-Gunn, Marin, & Klute, 2013). This illustrates the promise of the Early Head Start program as a site for maltreatment prevention. There is both a significant need and opportunity to focus program effort and resources toward this goal. Despite these promising results, there continues to be a substantial gap in the literature examining the extent to which Early Head Start prevents maltreatment, and in particular, the role that home visitors play toward this end.

Role of home visitors. Although home visitors are in a unique position to assess the presence of risk factors through regular contact with families in their homes (Pecora, Chahine, & Graham, 2013), research has identified that they are often ill-equipped to address issues such as parental mental health, substance abuse, and domestic violence (Azzi-Lessing, 2011; Harden, Denmark, & Saul, 2010). Numerous evaluations have shown that the complexity of problems exhibited by at-risk families often surpasses the ability of home visitors, both in identifying problems and addressing them (Chaffin,

2004; Eckenrode et al., 2000; Tandon et al., 2008). For example, Harden and colleagues (2010) found that home visitors interpret symptoms of maternal depression, such as sleeping all day, as a relatively normal function of poverty rather than a behavior indicating need for concern. Home visitors may also be reluctant to discuss concerns because they are embarrassed to address sensitive issues, fear it will cause a strain in the relationship (Hebbeler & Gerlach-Downie, 2002; Kitzman, Cole, Yoos, & Olds, 1997), or do not understand how to connect families to available resources (Duggan et al., 2004). Without training, home visitors may also overlook obvious risk factors due to the presence of family strengths, leading to a belief that there is no need to address identified risk (Pecora et al., 2013). Some home visitors have reported a belief that involving child protective services would be harmful to the family and that they may be better equipped to address a family's needs independently (Sedlak et al., 2010).

This complex risk identification process also includes expectations, norms, and values that vary across culture and ethnicity, particularly related to parenting practices (Ashton, 1999; Cyr, Michel, & Dumais, 2013). Ethnic minority social service workers and those not born in the United States are less likely to identify or report concerns related to child maltreatment than are white social service workers (Ashton, 2004). This is particularly relevant given the diverse population served by Early Head Start. Further, the often ambiguous and unpredictable nature of the risk factors experienced by Early Head Start families compound the complex, subjective, and uncertain context in which risk identification occurs (Gambrill & Shlonsky, 2000; Pecora et al., 2013).

The most pervasive issue seems to be a lack of training for home visitors in identifying, understanding, and addressing risk factors. Even when risks have been

successfully identified, home visitors report having little training in how to address factors such as mental health or substance abuse problems, leading them to feel unprepared for working with families on these issues (Tandon et al., 2008). Early investigations revealed inadequate levels of training and support for home visitors (Wasik & Roberts, 1994). A lack of clear Early Head Start program guidelines may promote uncertainty regarding home visitor roles in addressing parental mental health needs (Tandon et al., 2008). There is limited guidance directing the training of Early Head Start home visitors in the assessment and identification of risk factors for maltreatment, despite the ample opportunity through pre-service and ongoing trainings required by the Performance Standards (U.S. DHHS, 2016a). Further, differences in program and community resources may lead to confusion as to whether home visitors provide targeted intervention themselves or if they are able refer families to appropriate services. This challenge is amplified by the use of paraprofessionals as home visitors (Korfmacher, 2008). While Head Start Performance Standards require that home visitors have knowledge of child development, safety and nutrition, adult learning principles, and family dynamics, there are no regulations for educational background or experience with child maltreatment and its associated risk (U.S. DHHS, 2016a). Overall, research has identified that paraprofessionals demonstrate weaker effects compared to professional service providers (Howard & Brooks-Gunn, 2009). Further, Sweet and Appelbaum (2004) found that 45% of home visitation programs employ paraprofessionals as home visitors. For these reasons, the field sees a persistent request from home visitors for programs to provide more training and support related to identification of risk for maltreatment (Daro, 2009; Gill, Greenberg, Moon, & Margraf, 2007).

Current Study

Although Early Head Start identifies the promotion of healthy family functioning as a primary program goal (U.S. DHHS, 2016a), the prevention of maltreatment is overlooked as a crucial component of this aim (Howard & Brooks-Gunn, 2009; Sama-Miller et al., 2016). Children and families enrolled in Early Head Start are at increased risk for maltreatment and experience maltreatment at higher rates than those of the general population (Green et al., 2014; Hubel et al., 2012). There is clear potential for Early Head Start to prevent and reduce child abuse and neglect through the existing intervention framework and goal of enhancing healthy family functioning. However, the lack of explicit focus on maltreatment prevention has led to a paucity of research on the role that home visitors play in this process and the extent of home visitors' ability to identify risk for maltreatment. Further, little is known about how to assist home visitors in identifying when risk factors are present in a manner that makes maltreatment more likely. To date, there has been limited research on how home visitors determine risk for maltreatment among the families they serve, and how services are provided to and utilized by these families.

This study meets a clear area of need and will help expand the efforts of Early Head Start programs to promote healthy family functioning through a focus on the prevention of child maltreatment, by identifying (a) how Early Head Start home visitors understand and determine risk for maltreatment (along with any gaps in their knowledge to direct future training efforts); (b) how home visitors refer families identified as at risk for maltreatment to relevant Early Head Start program and community-based services; and (c) the association between these risk factors and court-substantiated maltreatment.

Home visitors are in a unique position to identify risk for maltreatment among these vulnerable families and are able to provide direct, targeted intervention and referrals to necessary resources. Once Early Head Start home visitors are able to identify families at high risk for maltreatment, they will be able to connect parents with specific services to ameliorate those risk factors, which will in turn improve the effectiveness of Early Head Start, strengthen families, and prevent child maltreatment.

The rationale for the current project has also grown out of needs identified through an ongoing, collaborative partnership between the University of Nebraska-Lincoln (UNL) Department of Psychology's Psychological Consultation Center and a local Early Head Start/Head Start program at Community Action Partnership of Lancaster and Saunders Counties. Community Action Partnership has contracted with the Psychological Consultation Center at UNL since 1999 to provide mental health, early education, and developmental services for Early Head Start and Head Start families and staff, in accordance with Head Start Performance Standards. Results from previous research (e.g., Asawa, 2008; Hubel, Schreier, Flood, & Hansen, 2014) and clinical observation at the local Early Head Start have identified the substantial occurrence of risk for and presence of maltreatment among families enrolled in the Early Head Start program. Consequently, a need for a more comprehensive understanding of how home visitors determine risk for child maltreatment and work with families at risk for maltreatment was identified in partnership with Early Head Start program administration.

The specific aims, corresponding hypotheses, and benefits expected for this study were as follows:

Primary Aim 1: Identify the presence of evidence-based risk factors for

maltreatment in Early Head Start families, and the relationship between those risk factors and family maltreatment status (i.e., court-substantiated maltreatment).

Hypothesis 1: It was expected that multiple child, parent, interactional, and social/environmental risk factors would be present among Early Head Start families. It was expected that significant relationships would exist between the presence and number of risk factors and maltreatment status.

Primary Aim 2a: Identify factors Early Head Start home visitors use to determine risk for maltreatment.

Hypothesis 2a: It was expected that Early Head Start home visitors would have varying conceptual understandings and descriptions of risk for maltreatment. It was expected that Early Head Start home visitors would identify risk factors that are consistent with the literature (e.g., parental depression, substance use) and those that vary from the literature (e.g., missed well-child visits, canceled or missed home visits). It was expected that Early Head Start home visitors would have varying responses to identified risk (e.g., report to the Child Abuse and Neglect Hotline, service referral).

Primary Aim 2b: Identify the relationship between risk factors indicated by Early Head Start home visitors and family maltreatment status.

Hypothesis 2b: It was expected that significant relationships would exist between the risk factors identified by Early Head Start home visitors and court-substantiated maltreatment reports.

Primary Aim 3: Develop a model of the combination of risk factors that best predicts family maltreatment status.

Hypothesis 3: It was expected that a combination of evidence-based risk factors

and those risk factors identified by Early Head Start home visitors would most effectively predict maltreatment status.

Primary Aim 4: Identify the relationship between the risk model that best predicts maltreatment and service referral and utilization for Early Head Start families.

Hypothesis 4: It was expected that families identified by the model that best predicts risk (identified in Primary Aim 3) would be more likely to have been referred to services within the program (e.g., housing services) and/or outside of the program (e.g., community mental health services). It was expected that the families identified as high-risk would be less likely than low-risk families to utilize program services.

Overall, this study identifies whether the factors identified by Early Head Start home visitors effectively predict risk for maltreatment. An increased understanding of how home visitors identify and respond to risk for maltreatment provides direction for improved fit between program services and family needs. Results also give insight into gaps in understanding of risk for maltreatment, which provides guidance for comprehensive training of home visitors in the identification of risk factors across all levels of the developmental-ecological model. Identification of gaps in home visitors' knowledge allows for effective training of staff in order to successfully assist and engage families in services. Further, determination of the combination of risk factors that best predicts actual occurrence of maltreatment as defined by court-substantiated instance of maltreatment increases the ability of home visitation programs to predict maltreatment and direct home visitors and program staff to priority areas of intervention when risk exists across multiple levels. For example, if parent factors such as maternal depression or presence of domestic violence are predictive of occurrence of maltreatment, program

staff will be able to prioritize interventions or referrals designed at ameliorating those specific risk factors. This is particularly important, as prior research has indicated that the most at-risk families tend to have particular difficulty engaging in program services (Daro & Cohn-Donnelly, 2002). The current study examines the relationships between level of participation in specific program services (e.g., visits with home visitors, health-related visits, individualized program services, mental health services) and risk for maltreatment. Findings increase understanding of and provide direction for targeted response and intervention, which may increase family engagement and length of participation in Early Head Start. For example, if families most likely to experience maltreatment are referred to and engage in particular program components, it may be possible to develop interventions for use within those domains. Further, this research identifies additional training needs within Early Head Start specific to how the program can best be delivered to prevent maltreatment based on the presence of specific risk factors.

The current research is unique in that it utilizes mixed methodology and occurs within the context of a well-established relationship with a local Early Head Start program. This allows findings to be immediately translated into practical improvements in the provision of program services that are currently delivered through this ongoing partnership, such as improved screening and prediction procedures for maltreatment, targeted selection of Early Head Start components to individual families, and improved trainings delivered by Mental Health Consultants to home visitors and program administrators regarding identification and reduction of maltreatment risk. Findings from this study contribute to the ability of Early Head Start and other home visitation programs

to reduce child maltreatment for infants and toddlers.

Chapter 2: Method

A sequential mixed methods approach was used to conduct this study. Creswell and colleagues (2011a) identified this approach to be particularly beneficial for investigators attempting to gain a contextual, multidisciplinary understanding of complex concepts. This study relied primarily on secondary data analyses of archival data collected by the local Early Head Start program and Mental Health Consultants from UNL. Juvenile Court records from the Nebraska Justice system, an online record-keeping system for state trial court information, were collected to assess child maltreatment variables. Narratives from interviews with home visitors and supervisors provided qualitative information about identification of risk for maltreatment.

Participants

Subjects in the archival database were 743 children enrolled in Early Head Start home-based services in southeastern Nebraska between 2008 and 2015. There are no exclusionary criteria for this portion of the study. For the majority of analyses, one child was randomly selected as the target child in families with multiple enrolled siblings, leading to a subsample of 522 children. Parents enrolled their children from the prenatal period through their child's third birthday. In the subsample, children were 14 months old on average, 52.3% of children were male, and 50.4% were European-American. See Table 1 for additional child and caregiver demographics for the full sample and the subsample.

Table 1
Child and Caregiver Demographics

Child			
		N = 743	*N* = 522
Age (in years)		*M* = 1.15 (.94)	*M* = 1.18 (.90)
Gender	Male	380 (51.1%)	273 (52.3%)
	Female	363 (48.9%)	249 (47.7%)
Ethnicity	White	371 (49.9%)	263 (50.4%)
	Hispanic	151 (20.3%)	109 (20.9%)
	Black or African American	119 (16.0%)	84 (16.1%)
	Multiracial/Bi-racial	57 (7.7%)	35 (6.7%)
	Asian	36 (4.8%)	25 (4.8%)
	American Indian/Alaska Native	8 (1.1%)	5 (1.0%)
Primary Language	English	422 (56.8%)	300 (57.5%)
	Middle Eastern/South Asian	165 (22.2%)	112 (21.5%)
	Spanish	107 (14.4%)	77 (14.8%)
	East Asian	23 (3.1%)	16 (3.1%)
	African Languages	11 (1.5%)	8 (1.5%)
	European/Slavic Languages	9 (1.2%)	5 (1.0%)
	Other	2 (0.3%)	1 (0.2%)
Caregiver			
Gender	Male	27 (3.6%)	16 (3.1%)
	Female	716 (96.4%)	506 (96.9)
Ethnicity	White	415 (55.9%)	292 (55.9%)
	Hispanic	126 (17.0%)	92 (17.6%)
	Black or African American	120 (16.2%)	86 (16.5%)
	Asian	40 (5.4%)	27 (5.2%)
	Multiracial/Bi-racial	21 (2.8%)	12 (2.3%)
	American Indian/Alaska Native	13 (1.7%)	9 (1.7%)
Primary Language	English	427 (57.5%)	304 (58.2%)
	Middle Eastern/South Asian	165 (22.2%)	110 (21.1%)
	Spanish	105 (14.1%)	77 (14.8%)
	East Asian	23 (3.1%)	16 (3.1%)
	African Languages	12 (1.6%)	9 (178%)
	European/Slavic Languages	9 (1.2%)	5 (1.0%)
	Other	2 (0.3%)	1 (0.2%)
Highest Grade Completed	Less than high school degree	278 (37.4%)	186 (35.6%)
	High school diploma/GED	266 (35.8%)	191 (36.6%)
	Some college/Associates degree	137 (18.4%)	103 (19.7%)
	Bachelor's Degree	49 (6.6%)	33 (6.3%)
	Advanced Degree	13 (1.7%)	9 (1.7%)

Although the data for this study were archival, families are continuously enrolled in Early Head Start and new measures are collected on an ongoing basis as part of routine

program and clinical services. For the purposes of this study, only data collected at enrollment and in the first year of participation was used.

All Early Head Start home visitors and supervisors (n = 17) employed during a three-month recruitment period (Spring 2015) were invited to participate in the qualitative component of the study (Primary Aim 2a). There were no exclusionary criteria for this portion of the study. Of the 17 home visitors and supervisors, 14 (82.4%) elected to participate. Home visitors ranged in age from 22 to 57 (M = 36.57, SD = 11.58). All 14 participants were female and 11 (78.6%) identified as White. Ten participants (71.4%) had a Bachelor's degree and four (28.6%) attended some college or had an Associate's degree. Participants had between six and 189 months of experience (M = 52.21, SD = 51.09).

Setting

Community Action Partnership of Lancaster and Saunders Counties is the grantee for the Early Head Start program serving a mid-sized Midwestern community and outlying rural areas. During the overall study period (2008-2015), the program served approximately 260 families with the majority of children (74%) receiving home-based services and a small proportion (26%) receiving center-based services. These numbers do not include participants in grantee agencies that serve primarily Head Start children ages three to five. Both local and national Early Head Start home-based and center-based programs work towards the same overarching goals of promoting child competence and improving healthy family functioning; however, they differ substantially in the manner in which services are structured and delivered (ACF, 2006). While home-based programs require a minimum of 48 90-minute visits with the primary caregiver per year, center-

based programs mandate four educational meetings per year. Home visitors have more frequent and consistent interaction with families enrolled in the home-based program and have more opportunity to identify risk for maltreatment. As a result of differences in program structure, the inclusion of center-based participants and center-based staff was not appropriate for this study.

Community Action Partnership and the Head Start Program Policy Council expressed willingness to participate in the current project and were involved in the design and planning process. The project was presented to Community Action Partnership and Head Start Policy Council prior to data collection. As described previously, the current study has grown out of needs identified during this collaborative relationship. Families experiencing and at risk for child maltreatment are a consistent area of concern and intervention in the consultation and direct services provided by UNL Department of Psychology's Psychological Consultation Center through its contract with Community Action Partnership.

Measures

Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977).

The CES-D is a brief self-report measure designed to identify presence of current parental depressive symptoms. Initially designed for use in epidemiologic studies of depression in the general population, the CES-D is a commonly used measure in work with parents of Early Head Start children (Faldowski, Chazan-Cohen, Love, & Vogel, 2013). Home visitors in the local Early Head Start program collect this measure from parents within 45 days of enrollment consistent with Performance Standards (U.S. DHHS, 2016a) and again at the start of each subsequent program year for the duration of

enrollment. The measure consists of 20 items that assess common symptoms of depression. Each item is scored according to the frequency of occurrence of the symptom in the past week rated on a four-point Likert-type scale, with responses ranging from *rarely or none of the time* (0 points) to *most or all of the time* (3 points). Total scores range from 0 to 60, and a score of 16 is commonly used as a cut-off between clinical and non-clinical levels of depressive symptoms (Radloff, 1977).

The CES-D was normed using a non-clinical community sample of 2,846 individuals and a clinical sample of 105 individuals. Internal consistency reliability was excellent, ranging from .85 for the community sample to .90 for the clinical sample (Radloff, 1977). Test-retest reliability was in the acceptable range (.45 to .70). Concurrent and construct reliability were excellent. Subsequent research has consistently shown the CES-D to have reliability greater than .80, the minimum acceptable reliability in psychology research (e.g., Faldowski et al., 2013). Use of the total score has been recommended for use in epidemiologic research (Radloff, 1977).

Behavioral, Emotional, and Social Screening (BESS; Veed, Cronch, Flood, & Hansen, 2006). The BESS is a rating scale used to identify risk for healthy development among children birth through 5. This instrument was developed by the Psychological Consultation Center (PCC) at UNL for the screening of Early Head Start and Head Start children in Nebraska and has been in use since 2000. Screening items were designed and selected for brevity, ease of administration, and salience of items for identifying risk. The BESS is administered by home visitors to parents or caregivers of Early Head Start children within 45 days of enrollment.

The BESS comprises three forms (Infant, Toddler, and Preschool) and screens for

behavioral, environmental/familial, and parent/child interactional risk factors; the Infant and Toddler forms were utilized in the current study. The Infant form is designed for children birth through 17 months and contains six behavioral items (e.g., *how often does your child make eye contact with an adult he/she knows*). The Toddler form is designed for children 18 through 36 months and contains 10 behavioral items (e.g., *how often does your child have temper outbursts*). The behavioral items are rated on a 4-point Likert-type scale based on the frequency of the child's behavior: *rarely or never* (0 points) to *almost always* (3 points). Both forms of the BESS also contain seven items addressing child maltreatment and environmental or familial risk factors (e.g., *has your child ever been physically abused*), rating their occurrence as *No* (0 points)*, Concern/Unconfirmed* (1 point), or *Yes* (1 point). The home visitor working with the family was also asked to complete three additional questions pertaining to their observation of the parent/child interaction, rated on the same 4-point Likert-type scale. For the purposes of this study, the Infant and Toddler BESS were used to assess parental mental health problems, parental substance abuse, child behavior problems, and problems with parent–child interactions using individual items and scale scores. The environmental/familial risk item assessing presence of parental mental health problems was significantly correlated with scores on the CES-D (Radloff, 1977) above the clinical cut-off on the Infant form (r = .338) and the Toddler form (r = .336). Four items assessing exposure to child maltreatment were re-coded dichotomously and were significantly correlated with a court-substantiated instance of child maltreatment on the Infant form (r = .204) and the Toddler form (r = .209). These results support the validity of the measure in identifying families who have experienced and are at risk for parental depression and child

maltreatment. The BESS has also proved useful in prior studies using this sample (e.g., Hubel, Schreier, Flood, & Hansen, 2012) to adequately identify risk factors for maltreatment.

The BESS was revised in 2013 and used during the final three years of data collection using this sample (BESS-R; Schreier, Hubel, Flood, & Hansen, 2013; Schreier, Flood, & Hansen, 2014). The BESS-R is comprised of four forms – Early Infancy, Late Infancy, Toddler, and Preschool – and screens for behavioral and familial/environmental risk factors. For the purposes of the current study, the Preschool form was excluded. The Early Infancy form is designed for children birth through 9 months and contains five behavioral items. The Late Infancy form is designed for children 10 through 17 months and contains six behavioral items. The Toddler form is designed for children 18 through 37 months and contains 10 behavioral items. All forms of the BESS-R also contain nine items addressing child maltreatment and familial/environmental risk factors. Items assessing parent/child interactions were removed from the BESS-R initial administration. Administration and scoring of the BESS-R occurs in the same manner as described above. In a small sample of BESS-R administered between 2013 and 2015, internal consistency reliability for the behavioral scales ranged from .437 to .667, demonstrating poor to questionable reliability. Internal consistency reliability for the familial/environmental risk factors ranged from .620 to .691, demonstrating questionable reliability. All data entered into the models included items that were consistent between the BESS and the BESS-R.

Early Head Start Records. Additional information was gathered from ChildPlus, the database used by Early Head Start staff for case management and record

keeping. Information in ChildPlus was collected via an application packet that parents completed prior to enrollment and by home visitors based on their visits with families. This information included both family and service information. Family needs related to self-sufficiency (e.g., education, housing, employment) and interest in services related to functioning (e.g., Finances, Food and Nutrition, Housing, Employment) were assessed in the application packet. Presence and number of reports made by the program to the Child Abuse and Neglect Hotline were collected in order to assess program-identified risk for maltreatment. Prior research has highlighted the importance of including unsubstantiated reports to collect information about maltreatment (Green et al., 2004; Leiter, Myers, & Zingraff, 1994). These instances were not considered to be substantiated cases of maltreatment. See Table 2 for family information and child maltreatment risk factors extracted from records. Information on participation in Early Head Start program services was also gathered from ChildPlus (Table 3).

Mental Health Clinical Records. Information related to the provision of mental health services was collected as part of the ongoing partnership between Early Head Start and the UNL Mental Health Consultants. See Tables 2 and 3 for mental health risk factors and services included in the current study.

Table 2
Evidence-Based Risk Factors and Items Used to Assess Risk Factors

Evidence-Based Risk Factors	Measurement Tools and Items Used to Assess Risk Factors
Child Level	
Behavior problems	Primary caregiver indicates a behavior problem occurring *Often* or *Almost Always* on BESS or BESS-R ***OR*** Referral for child mental health services[b]
Pregnancy risk	Birth weight less than 5lbs, 8oz[a] ***OR*** Complications with delivery [a] ***OR*** Problems at birth[a] ***OR*** Mother had health problems during the delivery[a] ***OR*** Pregnancy was identified as high risk[a]
Developmental disability	Child has a diagnosed disability[a] ***OR*** an area of concern has been identified[a]
Caregiver Level	
Less than high school degree	Primary caregiver's educational attainment is less than high school[a] ***OR*** Educational needs identified[a]
Teen parent	Primary caregiver was a teen parent[a]
Unemployed	Primary caregiver is unemployed[a] ***OR*** Employment needs identified[a]
Mental health concerns	Primary caregiver CES-D score of 16 or above ***OR*** Primary caregiver endorses current mental health problems on BESS or BESS-R ***OR*** Referral for adult mental health services[b]
Substance abuse concerns	Primary caregiver endorses substance abuse concerns on BESS or BESS-R ***OR*** Current or prior substance abuse identified[a]
Interactional Level	
Intimate partner violence concerns	Primary caregiver endorses intimate partner violence on BESS or BESS-R ***OR*** Caregiver has experienced a violent crime[a] ***OR*** Need for Emergency Domestic Violence services identified[a]
Housing concerns	Family identified as currently or previously homeless[a]

Prior maltreatment or CPS involvement	Program record of CPS report[a] ***OR*** Primary caregiver endorses prior involvement with CPS on BESS or BESS-R ***OR*** Primary caregiver endorses previous child abuse or neglect on BESS or BESS-R
Prior mental health treatment	Referral for mental health services focused on parent-child interaction[b]
Inappropriate developmental expectations	Home visitor indicates inappropriate developmental expectations occurring *Often* or *Almost Always* on BESS or BESS-R
Close birth spacing	Another child born into the family 18 months prior to or after the target child[a]
Social/Environmental Level	
Limited household resources	Family identifies difficulty meeting basic needs[a] ***OR*** Family identifies a lack of basic household resources[a]
TANF recipient	Family identified as current or previous TANF recipient[a]
Limited social support	Primary caregiver identified difficulty with social support system[a] ***OR*** Caregiver identifies having relationships with people who can provide support[a] ***OR*** Caregiver identifies having community contacts for assistance[a]

[a] Extracted from ChildPlus
[b] Extracted from Mental Health Records

Table 3
Early Head Start Program Services and Indicators Used to Assess Services

Early Head Start Program Services	Measurement Tools and Indicators
Number of visits by a home visitor	ChildPlus record: Number of home visits completed since enrollment[a]
Number of services received through Early Head Start	ChildPlus record: Count of the services received since enrollment[b]
	ChildPlus record: Presence of each service received since enrollment[b]
Length of enrollment	Length of time each child was enrolled in Early Head Start

[a] Number of home visits was recorded differently in the records prior to the 2012-2013 program year. Only number of home visits for families enrolled after the 2012-2013 program year are included.
[b] The services recorded in ChildPlus provided through the Early Head Start program include: Emergency Crisis Assistance, Housing Assistance, Adult ESL (English as Second Language classes), Adult Education, Employment Training, Substance Abuse Services, Child Abuse Prevention Services, Domestic Violence Assistance, assistance obtaining Child Support, Parenting Education, Marriage Education, WIC (Women Infants and Children Program) Services. Mental health clinical services recorded in ChildPlus include: Mental Health Assessment, Clinical Response to Mental Health Referral (internal), and Joint Home Visit.

Nebraska Justice Records. The Nebraska Justice system provides online access to public information on a majority of the state trial court's case information available through juvenile court records. Accessible records include public information; all non-public information (e.g., Social Security numbers) is redacted from the records before they are entered into the system. The Nebraska Department of Health and Human Services (DHHS) receives reports of possible incidents of child maltreatment and agency workers determine whether risk is sufficient to file a case with the juvenile court system. A case is filed with juvenile court when it is determined that risk for maltreatment exists and that DHHS voluntary services are inadequate for addressing this risk. A filed case is

considered a substantiated instance of child maltreatment (Voices for Children of Nebraska, 2006). The Justice system was used to assess and track occurrence of maltreatment. Occurrence of maltreatment was measured by the child's parent having ever been referred to juvenile court for charges involving the Early Head Start child or a sibling in the family subsequent to the target child's birth.

Procedures

Data collection, coding, and entry within the study was completed according to Primary Aim 1 (hereafter referred to as the "Quantitative Component"), Primary Aim 2a (hereafter referred to as the "Qualitative Component"), and Primary Aims 2b through 4 (hereafter referred to as the "Mixed Methods Component").

Quantitative component. This study relied on an archival database that is part of a larger research endeavor that has developed out of the established collaborative partnership among UNL, Community Action Partnership, and Early Head Start. The larger research project has been continuously approved by the UNL Institutional Review Board since 2004 (IRB #6595). Inclusion of Nebraska Justice records in this protocol has been continuously approved by the UNL IRB since 2011. A waiver of informed consent was provided given the archival nature of the study and minimal risk to participants. Information in the archival SPSS database is gathered on a regular basis from clinical records of Early Head Start services that are kept in accordance with the Head Start Program Performance Standards regarding record keeping requirements (U.S. DHHS, 2016a). All participants were assigned a unique identifying number; no identifying information was included in the SPSS database. The Project Director maintained the archival database throughout the project period.

To extract juvenile court records, a research assistant was trained to search the Nebraska Justice database for records that match the names of participants included on the list from the archival database and used date of birth to verify that records were those of the participants. This research assistant did not participate in any other data extraction. Prior to completion of juvenile court record extraction, the research assistant left the project. The Project Director completed the remaining Justice database search. Presence of juvenile court records were entered into a separate IBM SPSS database and later merged by the Project Director.

Qualitative component. The qualitative interview was developed by the Project Director for use in this study. A team of doctoral students in clinical psychology carefully reviewed the interview script and gave feedback in order to ensure clarity. The Project Director piloted the interview with three staff members employed by the same agency who served a part-day center-based Head Start program, and thus had experience with a similar population. Minor changes were made following the pilot interviews. Three central questions guided the final interview, focusing on how home visitors understand and conceptualize maltreatment, factors that lead home visitors to have concern for the families with whom they work, and how they work with families they have identified as at-risk (see Appendix A). Interviews used open-ended questioning followed by probes to generate conversation, as recommended by Creswell & Plano Clark (2011b). Participants were also asked to read three vignettes (see Appendix A) and respond to open-ended questions about components of the vignette that are a concern and how they would work with the family. Vignettes were counter-balanced based on ethnicity (i.e., European-American, Hispanic, Middle-Eastern), creating six sets of

vignettes.

All home visitors and supervisors employed during the three-month recruitment period were recruited for participation in the qualitative interviews. This three-month period occurred within the overall study period in which quantitative data were extracted. Semi-structured interviews focusing on the understanding and identification of risk for maltreatment were conducted with 14 home visitors and supervisors. The decision was made to include supervisors in this study in order to increase the number of participants and because each supervisor had previously been a home visitor. A graduate student member of the project staff with basic training and experience in interviewing and information gathering techniques who had not previously worked with the home visitors or supervisors conducted the interviews. Each interview lasted between 45 minutes and one hour and was conducted in a private space at Community Action Partnership. At the completion of the interview, participants received $25 in reimbursement for their time. Interviews were audio recorded with the permission of the participant and transcribed by staff at UNL's Bureau of Sociological Research. Interviews were transcribed into Microsoft Word documents and uploaded into Dedoose, the qualitative data software that was used for data analyses. All identifying information was redacted during the transcription process.

Mixed methods component. Following coding and analysis of the qualitative component (described in the following section), additional variables identified by home visitors and supervisors were extracted from the records and added to the archival database by the Project Director. All subsequent analyses were conducted using this complete database.

Data Analyses

The data analyses for the current study included both quantitative and qualitative methodologies. Multiple data sources were combined to test the proposed hypotheses for the study's four Primary Aims. Analysis of quantitative and qualitative data was consistent with a sequential design, in which initial data collection is used to inform subsequent data collection of a different methodology (Creswell et al., 2011a). Evaluation of Primary Aims 1, 3, and 4 relied heavily on three categories of variables drawn from the established archival database and from juvenile court records in the Justice database: (a) presence of risk for maltreatment at each level of the developmental-ecological model (Table 2), (b) Early Head Start Program Services (Table 3), and (c) Nebraska Justice records.

Logistic regression models were used to statistically test the research hypotheses for Primary Aim 1, 2b, and 3. The analyses were based on secondary data with a fixed sample size ($N \approx 600$), so a sensitivity analysis was performed using G*Power Version 3.1 to determine the smallest effect detectable with 80% power given the sample size and a two-tailed test with α set at .05. Results indicated that the analyses would be able to detect a small- to medium-sized effect (OR = 2.52) with 80% power, suggesting adequate sensitivity. Receiver operating characteristic (ROC) curve analysis was used to evaluate and compare the predictive accuracy of final logistic regression models identified in Primary Aims 1, 2b, and 3. Negative binomial regression models were used to statistically test the research hypotheses for Primary Aim 4. A sensitivity analysis indicated that the analyses would be able to detect a relative rate of 1.20 (20% increase in service referrals or services utilized) with 80% power. SPSS Version 22 was used to

perform all quantitative analyses in the study.

Analyses for Primary Aim 2a were conducted using Dedoose, a qualitative data analysis tool that employs a web-based interface for efficient data coding and database searching retrieval. Dedoose incorporates the identification and exploration of coding patterns in qualitative data to be automated via program-generated tables and user-defined output. The Project Director reviewed all interviews and conducted a content analysis using the process described by Miles and Huberman (1994). First, data reduction was performed; the data were coded into small, meaningful units of analysis and operationalized in an iterative fashion. Data display was then used to review coded text segments and identify themes and patterns prior to drawing overall conclusions. Important quotes related to the primary interview questions were identified throughout the coding process. A graduate research assistant was then trained to code interviews in Dedoose using the identified coding scheme. Five interviews (38%) were randomly selected to be independently coded by the research assistant. Reliability across codes ranged from 77 to 100%. Codes with reliability below 90% were reviewed to reach consensus. All interviews were re-coded by the Project Director using the modified coding scheme.

Chapter 3: Results

Occurrence of Child Maltreatment

Occurrence of child maltreatment was measured in the following ways: (a) presence of a juvenile court record for the target child; (b) presence of a juvenile court record for another sibling in the family; and (c) report made to the CPS hotline by Early Head Start program staff. The outcome variable of substantiated maltreatment is distinct from the risk factor of prior maltreatment (see Table 2).

In the full sample, a juvenile court record existed for the target child in 91 (12.2%) of cases. Of those cases, 39 (5.2%) of the juvenile court records occurred after participation in Early Head Start has concluded. An additional 26 children (3.5%) had a record for another juvenile family member subsequent to Early Head Start participation. Early Head Start staff made a report to the CPS hotline regarding 32 (4.3%) children in the full sample.

In the subsample, a juvenile court record existed for the target child in 60 (11.5%) of cases. Of those cases, 26 (5.0%) of the juvenile court records occurred after participation in Early Head Start has concluded. An additional 18 children (3.4%) had a record for another juvenile family member subsequent to Early Head Start participation. Early Head Start staff made a report to the CPS hotline regarding 21 (4.0%) children.

The primary outcome variable of court-substantiated maltreatment utilized in subsequent analyses was comprised of presence of a maltreatment record for the target child *OR* presence of a maltreatment record for another sibling in the family subsequent to the target child's birth. This reflects the notion that substantiated maltreatment within a family affects all members of the family unit, even if the target child was not explicitly

listed in the report. In the full sample, 117 children (15.7%) experienced a court-substantiated instance of maltreatment subsequent to the birth of the target child. Of the 522 families in the reduced sample, 78 (14.9%) experienced a court-substantiated instance of maltreatment.

Primary Aim 1

Identify the presence of evidence-based risk factors for maltreatment in Early Head Start families, and the relationship between those risk factors and family maltreatment status (i.e., court substantiated maltreatment). It was expected that multiple child, parent, interactional, and broader social/environmental risk factors would be present among EHS families. Seventeen risk factors were extracted from the database across the four levels. Due to the frequency of missing data, three variables were removed from the interactional and social/environmental levels. Fourteen variables across the four levels were included in the final evidence-based model. It was also expected that significant relationships would exist between the presence and number of risk factors and maltreatment status. Univariate and bivariate analyses were conducted to better understand the frequency of evidence-based risk factors in this sample (Table 4). Results indicate significant relationships between court-substantiated maltreatment and variables at the caregiver and interactional levels. At the caregiver level, mental health concerns and substance abuse concerns were significantly associated with a maltreatment record. At the interactional level, IPV concerns, housing concerns, prior maltreatment, and inappropriate developmental expectations were significantly associated with a maltreatment record. Intercorrelations between each variable can be seen in Table 5.

Table 4
Evidence-Based Risk Factors and Phi Correlation with Court-Substantiated Maltreatment

	n (%)	% missing	*r*
Child Level			
Behavior problems	114 (21.8%)	32 (6.1%)	.079
Pregnancy risk	298 (57.1%)	1 (0.2%)	.048
Developmental disability	146 (28.0%)	1 (0.2%)	.014
Caregiver Level			
Less than high school degree	190 (36.4%)	0	.007
Teen parent	32 (6.1%)	2 (0.4%)	.027
Unemployed	303 (58.0%)	5 (1.0%)	-.084
Mental health concerns	166 (31.8%)	6 (1.1%)	.149**
Substance abuse concerns	27 (5.2%)	36 (6.9%)	.107*
Interactional Level			
Intimate partner violence concerns	101 (19.3%)	9 (1.7%)	.281**
Housing concerns	82 (15.7%)	25 (4.8%)	.149**
Prior maltreatment or CPS involvement	74 (14.2%)	5 (1.0%)	.248**
Prior mental health treatment [a]	41 (7.9%)	228 (43.7%)	.105
Inappropriate developmental expectations [a]	2 (0.4%)	189 (36.2%)	.187**
Close birth spacing	81 (15.5%)	0	.058
Social/Environmental Level			
Limited household resources	361 (69.2%)	1 (0.2%)	.081
TANF recipient	92 (17.6%)	31 (5.9%)	.031
Limited social support [a]	28 (5.4%)	465 (89.1%)	.120

*$p < .05$, **$p < .01$, [a] omitted from the regression model

Table 5
Intercorrelations between Evidence-Based Risk Factors.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Child behavior problems	--													
2. Pregnancy risk	.061	--												
3. Developmental disability	.205**	.107*	--											
4. Less than high school degree	-.004	-.038	-.044	--										
5. Teen parent	.015	.044	.006	.123**	--									
6. Unemployed	-.122**	-.013	-.036	.214**	-.068	--								
7. Mental health concerns	.149**	.178**	.163**	-.050	.063	-.005	--							
8. Substance abuse concerns	.036	.064	.049	-.051	-.020	.018	.175**	--						
9. IPV concerns	.042	.002	-.004	-.059	.022	-.042	.294**	.175**	--					
10. Housing concerns	-.010	.046	-.113*	.024	.103*	.061	.137**	.146**	.270**	--				
11. Prior abuse	.055	.059	.124*	-.056	-.014	.027	.212**	.213**	.145**	.057	--			
12. Close birth spacing	.031	.082	.051	.050	-.022	-.014	.068	-.029	.033	.019	.069	--		
13. Limited household resources	.024	.125**	-.010	.044	-.038	-.048	.071	-.036	.060	.077	-.048	.022	--	
14. TANF recipient	.034	.038	-.080	.126**	-.038	.089	.082	-.033	.020	.101*	-.076	.091*	-.038	--

*$p < .05$, **$p < .01$

To identify risk factors that predict maltreatment, a series of logistic regression models were estimated. The outcome variable of court-substantiated maltreatment was coded 1 if there were court-substantiated instances of maltreatment and 0 if there were not. The models in each corresponding aim included a total of 401 cases, after accounting for listwise deletion. Of these cases, 56 were "actual" maltreatment cases as defined by a court-substantiated maltreatment report. For this subsample of 401 cases, 51.1% were male, 47.6% were white, and English was the primary language for 56.6%. Primary caregivers were 97% female, 53.6% white, 56.6% speak English as the primary language, and 37.7% had less than a high school degree.

Table 6 provides estimated regression coefficients, standard errors, p-values, and odds ratios for the predictors in the logistic regression. As shown, IPV risk ($\widehat{OR}$ = 4.337, $p < .001$) and prior maltreatment or CPS involvement ($\widehat{OR}$ = 2.735, $p = .01$) each contributed significantly to the model, while holding all other variables constant. Specifically, families with intimate partner violence were 4.337 times as likely to have a court-substantiated instance of child maltreatment, and families with prior maltreatment or CPS involvement were 2.735 times as likely to have a court-substantiated instance of maltreatment.

Table 6
Summary of Logistic Regression Analysis for Evidence-Based Risk Factors Predicting Court-Substantiated Maltreatment.

Predictors	$\hat{B}$	$\widehat{SE}(\hat{B})$	$e^{\hat{B}}$
Child Level			
Behavior problems	.489	.350	1.630
Pregnancy risk	.467	.352	1.596
Developmental disability	-.174	.380	.840
Caregiver Level			
Less than high school degree	.300	.348	1.349
Teen parent	-.994	.829	.370
Unemployed	-.392	.335	.676
Mental health concerns	.210	.356	1.233
Substance abuse concerns	-.171	.620	.843
Interactional Level			
Intimate partner violence concerns	1.467**	.356	4.337
Housing concerns	.596	.373	1.815
Prior maltreatment or CPS involvement	1.006*	.407	2.735
Close birth spacing	.286	.393	1.332
Social/Environmental Level			
Limited household resources	.395	.389	1.485
TANF recipient	.387	.382	1.473
Constant	-3.360		
χ^2		51.00	
df		14	
% maltreated		14.0%	

Note: e^B = exponentiated B.
*$p < .05$, **$p < .01$

Primary Aim 2a

Identify factors Early Head Start home visitors use to determine risk for maltreatment. It was expected that Early Head Start home visitors would have varying conceptual understandings and descriptions of risk for maltreatment. It was expected that Early Head Start home visitors would identify risk factors that are consistent with the literature (e.g., parental depression, substance use) and those that vary from the literature (e.g., missed well-child visits, canceled or missed home visits). It was expected that

Early Head Start home visitors would have varying responses to identified risk (e.g., report to the Child Abuse and Neglect Hotline, service referral).

Primary Aim 2a involved qualitative analysis of interview data focusing on the following three questions: *(a) What do you consider maltreatment of children?; (b) Warning signs or red flags are characteristics that make children and families more likely to experience maltreatment. Based on your experience working with families, what are warning signs or red flags for maltreatment?;* and *(c) How do you work with families when you have identified warning signs for maltreatment?* Data were analyzed and themes were identified separately by central question. Results of each central question are presented below.

What do you consider maltreatment of children? Home visitors were provided an opportunity to identify types of maltreatment; specific maltreatment types identified by home visitors were then probed for further detail. All home visitors identified at least one form of maltreatment. Ten home visitors (71.4%) specifically identified *Physical Abuse* as a type of maltreatment. Within this category, eight home visitors (57.1%) described hitting a child. Four home visitors (28.6%) referenced spanking as a potential form of physical abuse. Eight home visitors (57.1%) specifically identified *Neglect* as a type of maltreatment. When prompted further, 12 home visitors (85.7%) described a failure to provide basic needs for a child as a type of maltreatment. Seven home visitors (50%) identified *Emotional Abuse* as a type of maltreatment. Within this category, six home visitors (42.9%) described a lack of attention or engagement from a caregiver. Seven home visitors (50%) identified *Sexual Abuse* as a type of maltreatment. When asked to define sexual abuse, each of these seven home visitors described inappropriate

touching involving a child. Finally, six home visitors (42.9%) identified *Exposure to Domestic Violence* as a type of maltreatment. Within this category, three home visitors (21.4%) included the failure to protect a child from exposure to violence.

Home visitors were also asked to discuss how they identify maltreatment when it is occurring. Many participants identified observable behaviors or characteristics such as physical injuries or housing conditions to identify abuse and neglect as it is occurring. However, home visitors also reported that they watch and interpret how the child and caregiver interact to determine when they should be concerned about maltreatment. One home visitor described:

> At this point the kids don't necessarily say anything because they're so little but if the child said something, sometimes the parents tell you…sometime you can tell just by seeing how the parents act when you're there. Like watching how they treat the kids.

Similarly, another home visitor explained:

> I think by the way they act in front of you or by the way the kids will act because sometimes the kids try to say something or do something and he looked at his mom like he need authority, feel like something is wrong there for the kids.

What are red flags or warning signs for maltreatment? Home visitors identified a number of red flags across child, parent, family, and environmental levels that indicate that maltreatment may be likely to occur in the future. Participants identified a total of 86 risk factors (Table 7). Of those, 37 risk factors were measurable using available data sources (Table 8). Some variables were subsumed under broader categories of variables (e.g., physical health concerns).

Table 7
Home Visitor Identified Risk Factors

- *Child Level*
  - Academic problems
    - Bullying
    - Getting in trouble
  - Behavior problems
    - ADHD
    - Active/hyperactive
    - Defiant
    - Inappropriate language
    - Tantrums
    - Aggressive behaviors
      - Biting
      - Hitting
      - Throwing things
      - Yelling
  - Behaviors
    - Child appears nervous/shuts down
    - Child cries frequently
    - Child needs attention from caregiver
    - Child is quiet
  - Challenging developmental stages
    - Teenagers
    - Toddlers
  - Developmental disability
    - Autism
    - Language delay
    - Gross motor delay
  - Physical appearance
    - Physical injuries
    - Poor hygiene
  - Physical health problems
    - Colic
    - Frequent illness
    - Poor nutrition
  - Change in appearance/behavior
  - Mental health problems
- *Caregiver Level*
  - Employment issues
    - Caregiver works night shift
    - Caregiver works two jobs
    - Unemployment
  - Caregiver mental health problems
    - Depression
    - Postpartum depression

- Caregiver stress
  - Caregiver is overwhelmed
- Physical appearance
  - Poor hygiene
  - Unclean home
- Poor coping strategies
  - Caregiver does not seek help
- Stressful life events
  - Bereavement
  - Divorce/separation
  - Job loss
  - Loss of transportation
  - Miscarriage
  - Pregnancy
- Caregiver history of abuse
- Caregiver is guarded
- Caregiver learning history
- Caregiver physical health problems
- Caregiver substance use problems
- Exposure to violence
- First time caregiver
- Low educational attainment
- Poor nutrition
- Short temper
- Single parenthood
- Young parenthood

Interactional Factors

- Caregiver expectations for child behavior
- Caregiver is not attentive/engaged
  - Father is not involved
- Caregiver response to child behavior
  - Caregiver is overprotective
  - Lack of knowledge about parenting
- Disability in other family member
- Family disorganization
  - Family inactivity
- Household size
  - Blended family
    - Unrelated adult involvement
  - Close birth spacing
- Mismatch between child and caregiver
- Missed appointments
- Parental conflict
  - Poor family communication
    - Lack of love/respect
- Prior abuse

Social/Environmental Level
- Dangerous neighborhoods
  - High crime rates
- Housing issues
  - Cheap housing
- Cultural/immigration issues
  - Cultural norms
  - Isolation
  - Language barrier
  - Unaware of local resources
  - War/unrest in country of origin
- Lack of social support
- Limited resources
- Poor school systems
  - Lack of disability services
- Poverty/low-income
  - Insurance issues
  - Loss of food stamps
  - Overdue bills

Table 8
Home Visitor Risk Factors and Items Used to Assess Risk Factors

Home Visitor Risk Factors	Measurement Tools and Items Used to Assess Risk Factors
Child Level	
Behavior problems	Primary caregiver indicates a behavior problem occurring *Often* or *Almost Always* on BESS or BESS-R ***OR*** Primary caregiver indicates temper tantrums occurring *Often* or *Almost Always* on BESS or BESS-R ***OR*** Primary caregiver indicates defiance occurring *Often* or *Almost Always* on BESS or BESS-R ***OR*** Referral for child mental health services[b]
Developmental disability	Child has a diagnosed disability[a] ***OR*** An area of concern has been identified by the primary caregiver[a] ***OR*** Child has a language delay[a] ***OR*** Child has a gross motor delay[a]
Child physical health problems	Child has a chronic condition[a] ***OR*** Child has anemia[a] ***OR*** Child has asthma[a] ***OR*** Child has hearing difficulties[a] ***OR*** Child has vision difficulties[a] ***OR*** Child has high lead levels[a] ***OR*** Child has diabetes[a]
Toddler	Child is between the ages of 12-36 months at enrollment[a]
Caregiver Level	
Less than high school degree	Primary caregiver's educational attainment is less than high school[a] ***OR*** Educational needs identified[a]
Teen parent	Primary caregiver was a teen parent[a]
Unemployed	Primary caregiver is unemployed[a] ***OR*** Employment needs identified[a]
Mental health concerns	Primary caregiver CES-D score of 16 or above ***OR*** Primary caregiver endorses current mental health problems on BESS or BESS-R ***OR*** Referral for adult mental health services[b]
Substance abuse concerns	Primary caregiver endorses substance abuse concerns on BESS or BESS-R ***OR*** Current or prior substance abuse identified[a]
Recent bereavement	Death in the immediate family or household in

	the two years prior to enrollment[a]
Recent divorce/separation	Divorce or separation in the immediate family in the two years prior to enrollment[a]
Caregiver physical health problems	Primary caregiver has a chronic condition[a]
First-time caregiver	Child is the oldest child of the primary caregiver[a]
Single caregiver	Primary caregiver identified as sole caregiver[a]
Interactional Level	
Intimate partner violence concerns	Primary caregiver endorses intimate partner violence on BESS or BESS-R ***OR*** Caregiver has experienced a violent crime[a] ***OR*** Need for Emergency Domestic Violence services identified[a]
Housing concerns	Family identified as currently or previously homeless[a]
Prior maltreatment or CPS involvement	Program record of CPS report[a] ***OR*** Primary caregiver endorses prior involvement with CPS on BESS or BESS-R ***OR*** Primary caregiver endorses previous child abuse or neglect on BESS or BESS-R
Parent/child interaction concerns	Home visitor indicates inappropriate developmental expectations occurring *Often* or *Almost Always* on BESS or BESS-R ***OR*** Primary caregiver identified as attentive to their child's cries and signals occurring *Rarely* or *Sometimes* on BESS or BESS-R ***OR*** Primary caregiver identified as needing *Immediate Support* or *Significant Support* in positive discipline[a]
Poor household routines	Primary caregiver identified as needing *Immediate Support* or *Significant Support* in household routines[a]
Household size	Number of individuals living in the home[a]
Close birth spacing	Another child born into the family 18 months prior to or after the target child[a]

Missed EHS home visits	Percentage of missed home visits compared to total home visits[a]
Social/Environmental Level	
Limited household resources	Family identifies difficulty meeting basic needs[a] ***OR*** Family identifies a lack of basic household resources[a]
Limited social support	Primary caregiver identified difficulty with social support system[a] ***OR*** Caregiver identifies having relationships with people who can provide support[a] ***OR*** Caregiver identifies having community contacts for assistance[a]
Personal crime	Index score (m = 100) representing the combined risks of rape, murder, assault, and robbery by zip code[c]
Property crime	Index score (m = 100) representing the combined risks of burglary, larceny, and motor vehicle theft[c]
Recent immigration	Family new to the United States in the three years prior to enrollment[a]
Lack of language proficiency	Primary caregiver's English proficiency is *None* or *Some*[a]
Poverty	Family income was below 100% of federal poverty guidelines[a] ***OR*** Family was on public assistance[a] ***OR*** Family was eligible for EHS due to homelessness[a]
Lack of medical coverage for child	Child not enrolled in medical coverage[a]
SNAP recipient	Family receives SNAP[a]

[a] Extracted from ChildPlus
[b] Extracted from Mental Health Records
[c] Extracted from moving.com city comparison reports. Rates are created using a variety of sources including U.S. Census Bureau estimates and projections for city-level populations and Federal Bureau of Investigation, local police departments and municipalities for crime information

At the child level, home visitors identified a variety of child behaviors and characteristics. Many home visitors described how physical and mental health challenges

may lead to increased risk for abuse or neglect. For example, one participant noted "Probably children who act out, children who have, like autism or ADD/ADHD, any other physical or mental health issues. Children who have colic because parents can get frustrated pretty easily when they cry a lot." Another home visitor identified child behavior problems as a risk factor and explained why it might lead to maltreatment:

> The defiant behavior, the kids that always say 'no' back to the parents, the ones that don't listen…Just kids that don't listen to you or follow your directions. Just typical behavior of tantrums and not understanding how to take care of their tantrums, or to redirect or guide them to different activities.

At the caregiver level, home visitors identified being unmarried or divorced, substance use problems, and parent's own learning history as risk factors for maltreatment. For example, one home visitor stated, "I suppose if you know the background of the parent, how they were raised…that could be how they possibly raise their own children because they don't know any better." A primary theme emerged regarding stressful life events (e.g., job loss, miscarriage, bereavement) as a risk factor. One home visitor described concerns related to coping with stressful life events:

> High stress levels. I think that really triggers the emotional response of like that breaking point of when it's gonna happen, and unfortunately all our families have high stress…so that's a big one. And on top of that, like I said the new relationships, break ups, things like that…different jobs, loss of a job where they would be more stressful, overdue bills, anything that can trigger that response of not handling it in the appropriate way or the best way for the child.

Another participant noted, "It could be how well they handle stress, how do they deal

with stressful situations, are they able to walk away from something or are they just kind of let all that energy exert out onto the child."

At the interactional level, home visitors identified family interaction and communication as a risk factor. One home visitor described, "If you have a family perhaps with poor communication styles, where you are not able to share your feelings or say how you're feeling or have somebody listening to you. I would say – your family time together." Another participant described the parent/child relationship, explaining "…the lack of just emotion of responding to their children. That's a huge concern on the neglect side I should say and the lack of bonding…the lack of interest in sharing about kinda milestones in their child's development." The majority of home visitors identified the relationship between caregivers as a risk factor for maltreatment. The following quote from a home visitor is illustrative of how participants saw caregiver relationship stress or conflict as increasing risk:

> I think just the relationship factor between parents, looking at how they interact with each other. Maybe they have different parenting styles that could be stress for each other. If one parent does stuff one way and another parent does it another way, that would be stressful within a relationship.

Finally, at the social/environmental level, home visitors identified factors related to access to resources, including homelessness, poor school systems, and other challenges associated with low-income families (e.g., food stamps). An interesting finding was a common concern among home visitors surrounding issues of culture or immigration. Some home visitors identified that war or unrest in the country of origin would lead to increased parental stress, while others identified practical concerns about language

barriers and isolation from family. One home visitor illustrated these concerns:

> People that come from different countries because it's hard when you move from your own place to a different country and you get very sad and you're homesick and I saw people that got very depressed and they were crying all day and they didn't care about their kids, and sometimes they said 'Oh I came here because I want a better life for my children, but look where we are and we are alone.'

Another participant described concerns that lack of knowledge about cultural values may increase risk, stating "You have to understand the place you live, you have to understand the people, the culture, the way people live."

Overall, no child factors were identified by more than half of home visitors. The most commonly identified risk factors reflected the role of the parent (n = 10), including parental stress, parental mental health problems, and violence in the home. One home visitor noted:

> I just think stress is a huge thing that leads to that and just what's going on in the family and how everybody's interacting…mom, dad, relationship or that kind of thing can definitely…I mean if they're not getting along it might be taken out on the kids.

Another home visitor stated:

> If you know one parent's dealing with depression, that might be, like, unintentional neglect to the children just because…if they're depressed, they're not gonna be meeting the needs of the kids to be up and aware of what they need if they can't take care of themselves.

Some home visitors also described the process by which these risk factors may lead to

maltreatment in the future among Early Head Start families that face multiple life stressors. The following quote illustrates this mechanism:

> I think parents focus on, it's a fight or flight mode. They focus on what they need right now and a lot of times education and the ways to…care for your child isn't the priority on the list…I mean they wanna get food on the table, they want the big things first of…living, the needs, so I think that goes, they focus on that and then the children are kind of back a bit.

In addition, lack of financial resources *(n* = 12) and the quality of the neighborhood (*n* = 12) were commonly identified as risk factors, often in combination. To illustrate this, one participant explained:

> Livin' in a bad neighborhood and living in a very poor neighborhood…that sounds kind of like discrimination, but a lot of negative things happen in poor neighborhoods because they don't know any better and don't have the resources to make it better.

Yet another home visitor echoed this concern, describing:

> If they live in a more low-income neighborhood with higher crime rates or more violence. They go to a bad school, if they have a lot of crime that's happening around them, basically just living in a bad neighborhood that doesn't have a lot of money or resources.

How do you work with families when you have identified warning signs for maltreatment? Eleven home visitors (78.5%) reported that they typically discuss risk for maltreatment with families while three home visitors (21.4%) reported that they do not communicate with families about concerns. Home visitors reported that their

decision to discuss concerns was based on their understanding of families and their likely reactions, particularly when they felt they had a good relationship. For example, "If it's a family I've just had for four weeks, I sometimes don't think it's the right time to bring it up because it can really cause a bad relationship between me and them that might not get better."

For many home visitors, communicating with families about identified concerns is a primary function of their job. However, it was difficult for participants to distinguish between conversations about risk factors and conversations about incidents of maltreatment. This is illustrated by the following quote:

> I'm in that home for a reason, not just to come play and have a great time, we wanna change their lives and let them know there's maybe a better way to handle things or there's just another option for them because again, we're mandatory reporters and we make that very clear from the get-go and I would do reminders like throughout the year and just be like, 'Hey, don't want you to forget, this is what I've gotta do,' and in my head I'm like, 'If I can get in there and be a little preventive of anything, then great cause I don't wanna call CPS and totally change the lives of a family.' If we can nip it while it's small or while I think it's small, then great cause I don't wanna go to the extreme of waiting and waiting until the explosion of a call needs to happen.

Related to why home visitors may not discuss risk for maltreatment with families, two themes emerged: home visitor discomfort and potential consequences within families. Participants reported concerns about how conversations about risk would be interpreted by families, with many identifying worries about being unintentionally

insulting or blaming. For example, "You don't want to insult any, you have to be careful of choosing the discussion that you want to have and not insulting them."

Many participants expressed worry that bringing up concerns would cause risk to worsen, or would cause the family to shut down and cease talking to the home visitor or even participating in the program. One home visitor described, "Like if no matter how you tried to do it, if it was gonna come off really bad and then something might happen because you brought it up." Another home visitor noted, "You wanna share the information, but you don't want them to not open their door the next, or drop the program."

When home visitors did decide to discuss concerns with enrolled families, they tended to approach the conversations broadly. This is illustrated by one participant, who explained "I've made comments, like not directly, but kind of talked about it in a broader term of this is good for children everywhere. It's not so much focused on 'your children need this.'" Home visitors were also likely to engage in broad discussion along with the provision of resources or education. Another home visitor described:

> I would definitely bring out some parent education. I wouldn't necessarily, I'd make it broad and say, 'I'm just sharing this with my families' and not target them specifically but just kind of talk about like different ways of discipline like instead of spanking, do this or talk about positive reinforcement, give them resources of places that can help if there's a specific thing that they're having an issue with.

Home visitors also reported connecting families to available resources designed to ameliorate the area of concern. For example, one participant explained that they "…give some resources that can help if there's a specific thing that they're having an issue with

such as housing or they need food or lack of clothes or parental counseling or just sharing resources with them." Another home visitor stated, "I try to bring some resources, good resources about child neglect and abuse and what are the results lead for this family and what's going on to happen and give her how to avoid this to happen." The importance of connecting families to resources is illustrated in the following quote:

> We build up these mechanisms, those support systems, I mean, it comes down to that. Because I'm only gonna be in their life for a short period of time, so I need them to find an outside resource, besides me, I'm nice, but I need them also to find the community resources.

Every home visitor reported that they would discuss concerns about families with their supervisors and half stated that they would discuss concerns with other home visitors. The most common reason for not discussing concerns with other home visitors were beliefs about confidentiality and family privacy. For example, one home visitor described:

> You don't want to give away that kinda thing about your family when you know they're gonna see them at playgroup or something and they'll be like 'Oh that's the family that has that going on.' And it's all confidential but they might kinda pick up on who you're talking about.

This confusion about confidentiality was echoed by other home visitors. One explained that there is "fear of confidentiality about working with their families that – not sharing that information with others is what they're supposed to do." However, another home visitor appeared to understand that consultation could occur within the bounds of confidentiality. She elaborated:

> I know it has to be confidential, but if I can give them an idea of what's going on, see if, you know, those that have been here longer have experienced that and I can see what they did to address those issues with their previous families.

Home visitors also identified training needs related to working with families when they have identified concerns. For example, one participant suggested, "Just attending more trainings about specifically what to do in certain situations. Maybe having a list of warning signs where we can see them and know, um, yeah, just trainings and lists." Another home visitor described the need for training on initiating those conversations:

> I think a little bit more training on speaking to families initially, because I think it is a very intimidating topic to talk about with families…how do you bring that up to a parent, how do you say, 'Oh, excuse me but I have a concern right now and this is what it is.'

Participants also noted that this training should occur more frequently in order to become more comfortable with these topics. This is illustrated by the following quote:

> It's that continuous training…I feel like we need to do more training or as family educators, just…even DHHS, like I heard there was a training maybe a month ago or so for CPS talking about what are typical calls they get, what are signs, what are things that would make you call, and I think to have kinda those examples of what it is we're looking for, cause again, if maybe your background that you grew up with, you were in not a very good home and so it might seem normal, but what does, everybody's standard is different, so it's kinda like let's get on the same page. I know you can't have a book that has everything laid out for you, but I think the more we talk about it and the more trainings you attend, the better idea,

you know what to look for and the way things could be looking.

Vignettes. Exploratory, descriptive analyses were conducted with the vignettes (Table 9). The first vignette included 10 risk factors: teen parent, single parent, unemployment, financial difficulties, presence of an unrelated male in the home, presence of drug paraphernalia, missed home visits, concerns about a current pregnancy, history of premature delivery, and child having difficulty gaining weight. Home visitors identified between six and 10 risk factors; on average, participants identified 7.5 risk factors. Three risk factors – unemployment, presence of drug paraphernalia, and concerns about a current pregnancy – were identified by all 14 home visitors. Fewer than half of the participants identified being a teen parent, a single parent, or a child having difficulty gaining weight as concerning.

Table 9
Frequency of Vignette Risk Factors Identified by Home Visitors

	n (%)
Vignette 1	
Teen parent	5 (35.7%)
Single parent	5 (35.7%)
Unemployment	14 (100%)
Financial difficulties	12 (85.7%)
Presence of an unrelated male in the home	12 (85.7%)
Presence of drug paraphernalia	14 (100%)
Missed home visits	12 (85.7%)
Concerns about current pregnancy	14 (100%)
History premature delivery	10 (71.4%)
Child having difficulty gaining weight	7 (50.0%)
Vignette 2	
Feeding disorder	11 (78.5%)
Use of a gastronomy tube	8 (57.1%)
Picky eaters	10 (71.4%)
Parental conflict	14 (100%)
Parental substance use	14 (100%)
Employment problems	11 (78.5%)
Caregiver acting guarded about safety	11 (78.5%)
Caregiver "seeming down"	5 (35.7%)
History of parental conflict and substance use	7 (50.0%)
Limited social support	12 (85.7%)
Caregiver does not initiate conversation about concerns	7 (50.0%)
Vignette 3	
Large family size	6 (42.9%)
Part-time employment	9 (64.3%)
Low educational attainment	9 (64.3%)
Parental stress	13 (92.9%)
Child behavior problems	13 (92.9%)
Household safety concerns	5 (35.7%)
Difficulty with bedtime	9 (64.3%)
Inappropriate developmental expectations	10 (71.4%)
Parental disengagement/poor monitoring	8 (57.1%)

The second vignette included 11 risk factors: feeding disorder, use of a gastronomy tube (G-tube), picky eaters, parental conflict, parental substance use, employment problems, caregiver acting guarded about safety, caregiver "seeming down," history of parental conflict and substance use, limited social support, and caregiver does

not initiate conversation about concerns. Home visitors identified between five and 11 risk factors; on average, participants identified 7.9 risk factors. Parental conflict was the only risk factor identified by all 14 home visitors. Three risk factors – caregiver "seeming down," history of parental conflict and substance use, and caregiver not initiating conversations about concerns – were identified by fewer than half of the participants.

The third vignette included nine risk factors: large family size, part-time employment, low educational attainment, parental stress, child behavior problems, household safety concerns, difficulty with bedtime, inappropriate developmental expectations, and parental disengagement/poor monitoring. Home visitors identified between three and nine risk factors; on average, participants identified 5.85 risk factors. No risk factors were identified by all 14 home visitors. Having a large family size and household safety concerns were identified by fewer than half of all participants.

Primary Aim 2b

Identify the relationship between risk factors indicated by Early Head Start home visitors and family maltreatment status. It was expected that significant relationships would exist between the risk factors identified by Early Head Start home visitors and court-substantiated maltreatment reports. Thirty-seven variables identified by home visitors were measurable using existing data sources and were extracted from the database across the four levels. Univariate and bivariate analyses were conducted to better understand the frequency of evidence-based risk factors in this sample (Table 10). Results indicate significant relationships between court-substantiated maltreatment and variables at the caregiver and interactional levels. At the caregiver level, mental health

concerns, substance abuse concerns, and being a single parent were significantly associated with court-substantiated maltreatment. At the interactional level, IPV concerns, recent divorce or separation, a chronic physical health or emotional condition of another family member, housing concerns, prior maltreatment or CPS involvement, and percentage of missed home visits were significantly positively correlated with court-substantiated maltreatment. Intercorrelations are provided for variables at the child level (Table 11), caregiver level (Table 12), interactional level (Table 13), and social/environmental level (Table 14).

Table 10
Home Visitor Risk Factors and Phi Correlation with Court-Substantiated Maltreatment

	n (%)	% missing	*M* (*SD*)	*r*
Child Level				
Behavior problems	114 (21.8%)	32 (6.1%)		.079
Chronic physical health or emotional condition	143 (27.4%)	3 (0.6%)		.103*
Anemia [a]	7 (1.3%)	219 (42.0%)		-.008
Asthma [a]	8 (1.5%)	218 (41.8%)		.093
Hearing problems [a]	20 (3.8%)	215 (41.2%)		-.079
Vision problems [a]	8 (1.5%)	221 (42.3%)		-.073
High lead levels [a]	2 (0.4%)	221 (42.3%)		-.036
Diabetes [a]	0	221 (42.3%)		--
HV disability concerns	191 (36.6%)	1 (0.2%)		.016
Toddler (ages 1-3)	275 (52.7%)	2 (0.4%)		.051
Caregiver Level				
Less than high school degree	190 (36.4%)	0		.007
Teen parent	32 (6.1%)	2 (0.4%)		.027
Unemployed	303 (58%)	5 (1.0%)		-.084
Mental health concerns	166 (31.8%)	6 (1.1%)		.149**
Substance abuse concerns	27 (5.2%)	36 (6.9%)		.107*
First time caregiver	161 (30.8%)	0		-.047
Single parent	220 (42.1%)	0		.197**
Interactional Level				
Intimate partner violence concerns	101 (19.3%)	9 (1.7%)		.281**
Recent divorce or separation [a]	81 (15.5%)	126 (24.1%)		.192**
Recent bereavement	73 (14.0%)	2 (0.4%)		.047
Chronic physical health or emotional condition of other family member	208 (39.8%)	25 (4.8%)		.166**
Housing concerns	82 (15.7%)	25 (4.8%)		.149**
Prior maltreatment or CPS involvement	74 (14.2%)	5 (1.0%)		.248**
Household size		0	4.02 (1.58)	-.010
Parent/child interaction concerns [a]	27 (5.2%)	101 (19.3%)		.090
Poor household routines [a]	24 (4.6%)	420 (80.5%)		-.010
Close birth spacing (< 18 months)	81 (15.5%)	0		.058
Missed EHS home visits (%)[a]	286	236 (45.2%)	.22 (.17)	.219**
Social/Environmental Level				
Limited household resources	361 (69.2%)	1 (0.2%)		.081
Recent immigration	80 (15.3%)	3 (0.6%)		-.075
Lack of medical coverage for child	12 (2.3%)	2 (0.4%)		-.007
Limited social support [a]	28 (5.4%)	465 (89.1%)		.120
Limited language proficiency [a]	56 (10.7%)	132 (25.3%)		[b]
SNAP recipient [a]	206 (39.5%)	195 (37.4%)		-.043
Personal crime [a]		7 (1.3%)	71.06 (22.86)	-.009
Property crime [a]		7 (1.3%)	123.58 (57.50)	.057
Poverty		88 (17.0%)		[c]
Below 100% federal guidelines	304 (58.2%)			
Public assistance	125 (23.9%)			
Homeless	65 (12.5%)			

*$p < .05$, **$p < .01$
[a] omitted from the regression model
[b] $X^2(3) = 11.729$, $p = .008$
[c] $X^2(5) = 39.374$, $p < .01$

Table 11
Intercorrelations between Home-Visitor Child Level Risk Factors

	1	2	3
1. Child behavior problems	--		
2. Chronic physical health or emotional condition	.191**	--	
3. HV disability concerns	.166**	.172**	--
4. Toddler	.280**	.236**	.231**

*$p < .05$, **$p < .01$

Table 12
Intercorrelations between Home-Visitor Caregiver Level Risk Factors

	1	2	3	4	5	6
1. Less than high school degree	--					
2. Teen parent	.123**	--				
3. Unemployed	.214**	-.068	--			
4. Mental health concerns	-.050	.063	-.005	--		
5. Substance abuse concerns	-.051	-.020	.018	.175**	--	
6. First time caregiver	-.074	.211**	-.027	-.007	.075	--
7. Single parent	-.017	.090*	-148**	.186**	.166**	.203**

*$p < .05$, **$p < .01$

Table 13

Intercorrelations between Home-Visitor Interactional Level Risk Factors

	1	2	3	4	5	6	7	8	9	10
1. IPV concerns	--									
2. Divorce/separation	.171**	--								
3. Bereavement	.028	.054	--							
4. Chronic physical health or emotional condition of other family member	.203**	.248**	.120**	--						
5. Housing concerns	.270**	.133*	.004	.116*	--					
6. Prior maltreatment or CPS involvement	.145**	.154**	.042	.141**	.057	--				
7. Household size	-.107*	-.209**	-.038	-.014	-.194**	-.001	--			
8. Parent/child interaction concerns	-.058	-.055	.062	-.021	.031	.114*	-.040	--		
9. Poor household routines	.010	.013	.186	.122	.105	.091	-.047	.410**	--	
10. Close birth spacing	.033	.009	-.051	.048	.019	.069	.111*	.105*	.142	--
11. Missed EHS home visits	.101	.084	.098	-.083	.198**	.184**	-.067	-.027	.029	.016

*$p < .05$, **$p < .01$

Table 14
Intercorrelations between Home-Visitor Social/Environmental Level Risk Factors

	1	2	3	4	5	6
1. Property crime	--					
2. Personal crime	.645**	--				
3. Limited household resources	.115**	.096*	--			
4. Recent immigration	.032	.100*	.098*	--		
5. Lack of medical coverage for child	-.043	-.039	.010	.030	--	
6. Limited social support	.052	-.011	.108	-.261	-.136	--
7. SNAP	.064	.111*	.144*	.039	.043	.194

*$p < .05$, **$p < .01$

Due to the frequency of missing data, estimation problems evidenced by high SE values (e.g., lack of medical coverage, household size), or questions regarding the validity of the data collected (e.g., crime rates), seventeen variables were excluded from the final model, leaving twenty variables remaining for inclusion. Table 14 provides estimated regression coefficients, standard errors, p-values, and odds ratios for the predictors in the logistic regression. As shown, being a single parent ($\widehat{OR}$ = 2.646, p = .007), IPV risk ($\widehat{OR}$ = 3.052, p = .003), and prior maltreatment or CPS involvement ($\widehat{OR}$ = 2.378, p = .042) each contributed significantly to the model, while holding all other variables constant. Specifically, single parent families were 2.646 times as likely to have court-substantiated instances of child maltreatment, families with intimate partner violence were 3.052 times as likely to have a court-substantiated instance of child maltreatment, and families with prior maltreatment or CPS involvement were 2.378 times as likely to have a court-substantiated instance of maltreatment.

Table 15
Summary of Logistic Regression Analysis for Home-Visitor Risk Factors Predicting Court-Substantiated Maltreatment

Predictors	$\hat{B}$	$\widehat{SE}(\hat{B})$	$e^{\hat{B}}$
Child Level			
Behavior problems	.407	.375	1.503
Chronic physical health or emotional condition	-.049	.389	.952
Developmental disability	-.083	.374	.921
Toddler	.281	.381	1.324
Caregiver Level			
Less than high school degree	.145	.360	1.156
Teen parent	-.357	.871	.700
Unemployed	-.275	.355	.759
Mental health concerns	.213	.368	1.237
Substance abuse concerns	-.285	.622	.752
First time caregiver	-.813	.423	.444
Single parent	.973**	.362	2.646
Interactional Level			
Intimate partner violence concerns	1.116**	.369	3.052
Bereavement	.138	.444	1.148
Chronic physical health or emotional condition of other family member	.506	.379	1.658
Housing concerns	.597	.460	1.817
Prior maltreatment or CPS involvement	.866*	.426	2.378
Close birth spacing	.313	.410	1.368
Social/Environmental Level			
Limited household resources	.373	.412	1.452
Recent immigration	.308	.520	1.360
Poverty			
Public Assistance	.636	.380	1.889
Homeless	.206	.533	1.229
Constant	-3.867		
χ^2		65.037	
df		21	
% maltreated		14.0%	

Note: e^B = exponentiated B.
$^{*}p < .05$, $^{**}p < .01$

Primary Aim 3

Develop a model of the combination of risk factors that best predict family maltreatment status. It was expected that a combination of evidence-based risk factors

and those risk factors identified by Early Head Start home visitors would most effectively predict maltreatment status. Table 16 provides estimated regression coefficients, standard errors, p-values, and odds ratios for the predictors in the logistic regression. As shown, being a single parent ($\widehat{OR}$ = 2.548, p = .009), IPV risk ($\widehat{OR}$ = 3.546, p = .001), and prior maltreatment or CPS involvement ($\widehat{OR}$ = 2.431, p = .035) each contributed significantly to the model, while holding all other variables constant. Specifically, single parent families were 2.703 times as likely to have court-substantiated instances of child maltreatment, families with intimate partner violence were 3.59 times as likely to have court-substantiated instances of child maltreatment, and families with prior maltreatment or CPS involvement were 2.42 times as likely to have court-substantiated instances of maltreatment. Families with a first time caregiver approached significance ($\widehat{OR}$ = .447, p = .057).

Exploratory analyses were conducted with only the four significant or marginally significant predictors and a larger sample size of 508 subjects. Results were consistent, such that being a single parent ($\widehat{OR}$ = 2.524, p = .001), IPV risk ($\widehat{OR}$ = 3.444, p < .001), and prior maltreatment or CPS involvement ($\widehat{OR}$ = 3.845, p < .001) each contributed significantly to the model, while holding all other variables constant. Families with a first time caregiver was not significant ($\widehat{OR}$ = .631, p = .147). Because there were no significant differences between these results using only four predictors and the results with the full model, no further analyses were conducted.

Table 16
Summary of Logistic Regression Analysis for the Overall Model of Risk Factors Predicting Court-Substantiated Maltreatment

Predictors	$\hat{B}$	$\widehat{SE}(\hat{B})$	$e^{\hat{B}}$
Child Level			
Behavior problems	.418	.373	1.519
Chronic physical health or emotional condition	-.182	.406	.834
HV developmental disability	-.118	.374	.888
Toddler	.359	.387	1.432
Pregnancy risk	.429	.381	1.536
Caregiver Level			
Less than high school degree	.201	.362	1.223
Teen parent	-.603	.880	.547
Unemployed	-.274	.353	.760
Mental health concerns	.170	.372	1.185
Substance abuse concerns	-.390	.621	.677
First time caregiver	-.805	.423	.447
Single parent	.935**	.356	2.548
Interactional Level			
Intimate partner violence concerns	1.269**	.372	3.556
Chronic physical health or emotional condition of other family member	.525	.377	1.691
Housing concerns	.551	.397	1.735
Prior maltreatment or CPS involvement	.888*	.422	2.431
Close birth spacing	.247	.412	1.280
Social/Environmental Level			
Limited household resources	.347	.408	1.414
Recent immigration	.376	.518	1.457
TANF	.296	.407	1.345
Constant	-3.960		
χ^2		63.96	
df		20	
% maltreated		14.0%	

Note: e^B = exponentiated B.
*$p < .05$, **$p < .01$

Receiver operating characteristic (ROC) curve analysis was then used to evaluate and compare the predictive accuracy of the final logistic regression models identified for Primary Aims 1, 2b, and 3. ROC curves provide a visual examination of the tradeoff

between increasing the model's sensitivity (i.e., increasing the estimated probability that a case is classified as maltreated given that the case is, in fact, maltreated) and decreasing the false positive rate (i.e., decreasing the estimated probability that a case is classified as maltreated given that the case is not maltreated). The ROC curve comparing the models identified in Primary Aim 1 (evidence-based), 2b (home-visitor), and 3 (combined) is given by Figure 1. The three curves correspond to the three competing models, and the 45° line represents chance accuracy. The greater the area under the curve (AUC), the greater the model's overall classification accuracy. A Mann-Whitney *U* test was used to determine whether each model's AUC is significantly greater than .50 (chance accuracy), and corresponding confidence intervals were used to determine whether the three curves are significantly different from one another. All three models have an AUC that is significantly greater than chance ($p < .001$), with the evidence-based model AUC=.770 (95% confidence interval: .702 - .837), the home-visitor based model AUC=.800 (95% confidence interval: .733 - .867), and the combined model AUC=.791 (95% confidence interval: .719 - .863). The confidence intervals overlap, suggesting that the difference in AUC is not statistically significant, and thus any of the three models are sufficient.

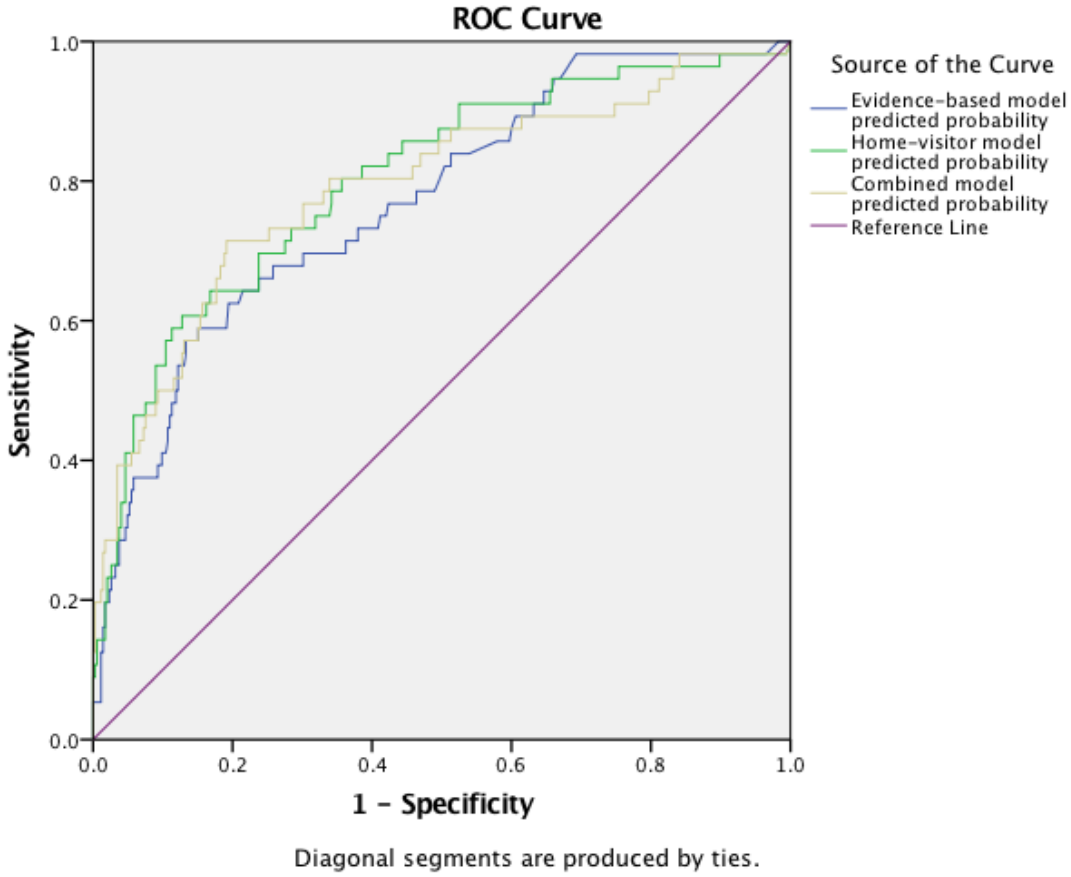

Figure 1
ROC Curve for Court-Substantiated Maltreatment

The combined model was selected, reflecting the inclusion of both evidence-based and home-visitor risk factors. A cut-off value was selected that produced sensitivity greater than .80, in order to capture the most cases while minimizing the false positive rate. Decreasing the classification cut-point not only increases a model's sensitivity, but also increases its false positive rate. In the context of maltreatment, a false negative (i.e., classifying a case as not maltreated when the case is, in fact, maltreated) is more damaging than a false positive, so a slightly higher false positive rate will be tolerated in order to achieve greater specificity. Thus, any case with a predicted probability of having a court-substantiated report of maltreatment that is greater than or

equal to .0986793 is classified as maltreated.

This cut-point produced an overall classification accuracy of 68%. Forty-five of 56 maltreated cases were correctly classified as maltreated, giving a sensitivity of 80%, and a corresponding false negative rate of 20%. Two hundred twenty eight of 345 cases were correctly classified as not maltreated, giving a specificity of 66%, and a corresponding false positive rate of 34%. Thus, 80% of maltreated families were correctly classified, while 34% of non-maltreated cases were incorrectly classified as maltreated.

Primary Aim 4

Identify the relationship between the risk model that best predicts maltreatment and service referral and utilization for Early Head Start families. It was expected that families identified by the model that best predicts risk (identified in Primary Aim 3) would be more likely to have been referred to services within the program (e.g., housing services) and/or outside of the program (e.g., community mental health services). It was expected that the families identified as high-risk would be less likely to utilize program services than families identified as lower-risk.

To determine whether both predicted and actual maltreatment status relates to service referral and utilization for EHS families, a series of negative binomial regression models were estimated, with the maltreatment variables as the predicted maltreatment status or the actual maltreatment status based on the final model for Primary Aim 3. A negative binomial model is appropriate for Primary Aim 4 because it allows for overdispersion, which is often present when modeling counts (e.g., number of EHS home

visits completed, number of EHS services used). Relative rates were used to interpret the effect size of β_2. In this context, the relative rate is the expected rate of increase in service referrals or services utilized for the cases predicted as maltreated compared to the cases predicted as not maltreated.

Regarding number of EHS home visits completed, results were marginally significant (p = .078) and indicate that holding constant the other variables in the model, the estimated incident rate is .927 times as large for cases predicted as maltreated compared to cases predicted as not maltreated. For each one-unit increase in time enrolled, the estimated number of home visits increases by 2.136 (p < .001). Holding time enrolled at its grand mean of 1.4020, the predicted number of home visits for cases predicted as not-maltreated is 42.31 ($\widehat{SE}$ = 1.144), whereas the predicted number of home visits for cases predicted as maltreated is 39.23 ($\widehat{SE}$ = 1.297). For actual incidence of maltreatment, results indicate that holding constant the other variables in the model, the estimated incident rate is .840 times as large for maltreated cases compared to non-maltreated cases (p = .005). For each one-unit increase in time enrolled, the estimated number of home visits increases by 2.126 (p < .001). Holding time enrolled at its same grand mean, the predicted number of home visits for non-maltreated cases is 42.01 ($\widehat{SE}$= .939), whereas the predicted number of home visits for maltreated cases is 35.27 ($\widehat{SE}$= 2.025).

Regarding number of EHS services used since enrollment, results were not significant for cases predicted as maltreated compared to cases predicted as not maltreated (p = .206). For each one-unit increase in time enrolled, the estimated number

of EHS services used increases by 1.215 ($p < .001$). Holding time enrolled at its grand mean, the predicted number of EHS services for cases predicted as not-maltreated is 4.10 ($\widehat{SE}$= .133), whereas the predicted number of EHS services for cases predicted as maltreated is 3.84 ($\widehat{SE}$= .156). For actual incidence of maltreatment, the results were not significant for maltreated cases compared to non-maltreated cases ($p = .916$). For each one unit increase in time enrolled, the estimated number of EHS services used increases by 1.223 ($p < .001$). Holding time enrolled at its grand mean, the predicted number of EHS services for non-maltreated cases is 3.99 ($\widehat{SE}$= .109), whereas the predicted number of EHS services for maltreated cases is 4.03 ($\widehat{SE}$= .280).

A series of logistic regressions were estimated for the dichotomous service receipt variables. Table 17 provides estimated regression coefficients, standard errors, p-values, and odds ratios for the predictors in the logistic regression. For some variables, the overall test of the model did not fit significantly better than the empty model. This was true for referral for program mental health services to both predicted maltreatment [$\chi^2(2) = 4.842$, $p = .089$] and actual maltreatment [$\chi^2(2) = 3.277$, $p = .194$], joint home visits to actual maltreatment [$\chi^2(2) = 3.135$, $p = .209$], housing assistance to predicted maltreatment [$\chi^2(2) = 4.997$, $p = .082$], substance abuse services to both predicted maltreatment [$\chi^2(2) = 4.837$, $p = .089$] and actual maltreatment [$\chi^2(2) = 4.104$, $p = .129$], and assistance obtaining child support to predicted maltreatment [$\chi^2(2) = 2.003$, $p = .367$]. Due to estimation problems as evidenced by a high SE, receipt of marriage education to actual maltreatment is not included in these results.

Table 17
Summary of Logistic Regression Analysis for Service Receipt

Predictors	$\hat{B}$	$\widehat{SE}(\hat{B})$	$e^{\hat{B}}$	Constant	χ (df)
Mental Health Assessment					
Predicted maltreatment	1.006**	.254	2.734	-1.958	18.854(2)**
Time enrolled	.319**	.133	1.375		
Actual maltreatment	.331	.351	1.393	-1.436	3.654(2)**
Time enrolled	.230	.127	1.258		
Joint Home Visit					
Predicted maltreatment	.663*	.250	1.940	-1.990	10.137(2)**
Time enrolled	.294*	.133	1.341		
Emergency Crisis Assistance					
Predicted maltreatment	-.096	.226	.909	-.072	16.829(2)**
Time enrolled	.501**	.132	1.651		
Actual maltreatment	-.437	.311	.646	-.021	18.606(2)**
Time enrolled	.481**	.132	1.618		
Housing Assistance					
Actual maltreatment	.257	.233	1.293	-1.095	12.747(2)**
Time enrolled	.429**	.123	1.535		
Mental Health Services					
Predicted maltreatment	.257	.233	1.293	-1.095	12.747(2)**
Time enrolled	.429**	.123	1.535		
Actual maltreatment	.198	.329	1.219	-1.004	11.893(2)**
Time enrolled	.417**	.123	1.517		
English as a Second Language					
Predicted maltreatment	-1.302**	.289	.272	-1.632	52.679(2)**
Time enrolled	.793**	.140	2.210		
Actual maltreatment	-1.250*	.500	.286	-1.951	52.679(2)**
Time enrolled	.805**	.137	2.237		
Adult Education					
Predicted maltreatment	-.503*	.230	.605	-.923	34.750(2)**
Time enrolled	.617**	.127	1.852		
Actual maltreatment	-.059	.324	.943	-1.155	29.948(2)**
Time enrolled	.646**	.127	1.909		
Employment Training					
Predicted maltreatment	-.129	.298	.879	-2.217	11.963(2)**
Time enrolled	.480**	.145	1.616		
Actual maltreatment	-.573	.501	.564	-2.176	13.240(2)**
Time enrolled	.464**	.145	1.590		
Child Abuse Prevention Services					
Predicted maltreatment	1.352**	.476	3.865	-3.601	8.940(2)*
Time enrolled	.128	.248	1.136		
Actual maltreatment	1.353**	.482	3.870	-3.164	6.977(2)*
Time enrolled	.121	.241	1.129		
Domestic Violence Assistance					
Predicted maltreatment	1.621**	.498	5.060	-3.898	12.404(2)**
Time enrolled	.213	.247	1.237		

Actual maltreatment	1.828**	.474	6.221	-3.502	13.599(2)**
Time enrolled	.243	.243	1.276		
Child Support Assistance					
Actual maltreatment	1.327**	.509	3.768	-3.442	6.299(2)*
Time enrolled	.254	.244	1.289		
Parenting Education					
Predicted maltreatment	-.989*	.488	.372	1.709	26.956(2)**
Time enrolled	1.794**	.505	6.015		
Actual maltreatment	-.356	.553	.701	1.240	22.981(2)**
Time enrolled	1.795**	.501	6.021		
Marriage Education					
Predicted maltreatment	-1.397	.772	.247	-4.212	21.276(2)**
Time enrolled	.881**	.246	2.413		
Women, Infants, and Children (WIC)					
Predicted maltreatment	-.170	.278	.844	.732	21.527(2)**
Time enrolled	.797**	.197	2.218		
Actual maltreatment	-.254	.362	.776	.710	21.635(2)**
Time enrolled	.787**	.198	2.198		

Note: e^B = exponentiated B.
*$p < .05$, **$p < .01$

Chapter 4: Discussion

Occurrence of Maltreatment

Examinations of juvenile court records for enrolled families indicate that 14.9% experienced court-substantiated maltreatment. Occurrence of maltreatment was measured as presence of a maltreatment record for the target child *OR* presence of a maltreatment record for another sibling in the family subsequent to the target child's birth. Inclusion of siblings' maltreatment in analyses reflects the notion that substantiated maltreatment affects all members of the family unit, even if the enrolled child was not explicitly listed in the report.

An earlier study using a portion of this sample found that 7.8% of enrolled children had experienced substantiated maltreatment between 2008 and 2012 (Hubel et al., 2012). The current study expanded upon this original sample of 312 participants and included three additional years of Early Head Start participants. The observed maltreatment rate of 149 per 1,000 children is consistent with the maltreatment rate documented in the only other longitudinal study using an Early Head Start population. Green and colleagues (2014) examined maltreatment rates over a 13-year period and found that, across program options, 15.8% of the sample had experienced child maltreatment, with 5% having experienced maltreatment in the birth through three range alone.

It is difficult to compare rates of maltreatment from this study to the large-scale, national studies of incidence rates. Recent estimates based on CPS data collected through the National Child Abuse and Neglect Data System (NCANDS) have demonstrated that

9.4 per 1,000 children in the United States will experience substantiated maltreatment (U.S. DHHS, 2016b). Incidence rates increase in the young population served by Early Head Start. This same study found maltreatment rates for children younger than one year of age as 24.4 per 1,000, and ranging from 11.0-12.3 per 1,000 for children ages one to three. Yet, these national incidence rates are merely a one-year snapshot of maltreatment occurrence and do not reflect the likely increase of maltreatment rates when examining the same child over a longer period of time. Thus, comparing findings from longitudinal studies of maltreatment to national incidence may be misleading.

However, maltreatment rates found in this study are also higher than those found in other longitudinal studies using random sampling. For example, in a 17-year study of residents in upstate New York, Brown and colleagues (1998) found 46 substantiated cases of maltreatment out of 644 participants – a rate of 71 per 1,000 children. Similarly, Sidebotham and colleagues (2006) conducted a large-scale cohort study in the United Kingdom, and found that 2.1% of children were involved in maltreatment investigations prior to age six, with only .8% of cases resulting in substantiation. These findings suggest that children enrolled in Early Head Start are at higher risk for maltreatment than a more general population of children.

Although higher rates of maltreatment observed within Early Head Start may reflect increased risk, it is also possible that these findings are a result of other factors, such as surveillance effects. Research on surveillance bias posits that children and families enrolled in interventions may be more likely to be reported for maltreatment because of their increased contact with service providers and services systems (Chaffin &

Bard, 2006; Widom, Czaja, & DuMont, 2015). This pattern was found in the Green et al. (2014) study, such that children in Early Head Start had more substantiated reports of neglect than did children in the control group. The authors suggest that this finding was a result of higher surveillance by program staff rather than a true increase in incidence of neglect.

Despite the potential influence of surveillance effects, it remains likely that observed maltreatment rates are an underestimate. It is widely understood that official estimates of maltreatment do not capture all maltreatment occurrence (Daro & Harding, 1999; Friedenberg, Hansen, & Flood, 2013; Olds, Eckenrode, & Kitzman, 2005; Theodore et al., 2005). This is due in part to the recognition that the majority of cases of maltreatment are not reported, in addition to the low likelihood that reported cases will be substantiated. For example, in the longitudinal study conducted by Brown and colleagues (1998), official maltreatment records did not match maltreatment occurrence as measured by youth self-report. The process by which reports are substantiated is also complex and influenced by multiple, interrelated factors, which can differ state by state (Child Welfare Information Gateway, 2013). When a report is received by CPS, it is first screened to determine whether allegations meet the legal definition of abuse and neglect. In Nebraska, it is the responsibility of a law enforcement agency to investigate reports that have been screened in. Investigators then conduct assessments that can include interviews and observations from children, caregivers, and any other relevant sources. Based on results of this investigation, cases can be deemed substantiated, unfounded, or inconclusive. This requires the integration of many different factors, including individual

subjectivity, which limits the ability of even trained professionals to accurately identify maltreatment (Pecora et al., 2013). Gambrill and Shlonsky (2000) note that this decision-making process is rife with uncertainty and has historically low reliability, though they acknowledge increased reliability with more actuarial based assessment models. Thus, the occurrence of maltreatment as identified by juvenile court records in this study is likely a conservative estimate. This highlights the critical need to incorporate maltreatment prevention – and risk identification – into Early Head Start and other early childhood intervention programs.

Home Visitor Risk Identification

In order to effectively identify risk for maltreatment, home visitors must first understand what constitutes maltreatment. To measure knowledge of maltreatment, home visitors were asked to identify types of maltreatment. Results indicated variability between home visitors in what constitutes maltreatment. It was expected that home visitors would identify physical abuse, sexual abuse, emotional abuse, neglect, and exposure to domestic violence. Of the 14 participants, no one identified all five types of maltreatment. Further, no single type of maltreatment was identified by all 14 home visitors. The majority of home visitors focused primarily on physical abuse and neglect. It was particularly notable that only half of all home visitors identified sexual abuse as a type of maltreatment. Although the lack of identification of sexual abuse is troubling, it is also consistent with findings that suggest that home visitors rely on observable behaviors such as physical injuries or housing conditions to identify abuse and neglect. Physical abuse and neglect may be more readily visible than sexual abuse, which could

account for this lack of focus by home visitors. It is also possible that home visitors do not anticipate that sexual abuse could occur in such a young population. Research has also demonstrated that younger children are more likely to delay disclosure, which may reflect home visitors' belief that young children are not able to disclose abuse experiences (Friedenberg et al., 2013).

This variability in definition of maltreatment suggests that home visitors may not be considering all indicators of child maltreatment. This is concerning, in that it may lead to situations in which home visitors ignore or minimize risk indicators beyond visible injuries or housing conditions, resulting in a misunderstanding of 'reasonable suspicion' of maltreatment and a subsequent failure to fulfill their role as a mandated reporter (Davidov & Jack, 2014). Home visitors generally reported feeling confident in recognizing maltreatment when it was occurring, particularly in situations with physical evidence. Early Head Start staff frequently referenced their roles as mandated reporters and many described previous experience calling the CPS hotline. In the subsample of families included in the analyses, Early Head Start staff had made a report to the CPS hotline regarding 4.0% of children. Of the court substantiated cases of maltreatment for the enrolled child (11.5%), approximately 6.5% occurred during program enrollment.

All home visitors participate in training during the pre-service week about child abuse and neglect. These findings potentially indicate that the current training model of an annual training may not be sufficient in preparing home visitors for working with high-risk families. Similarly, many home visitors struggled to distinguish between maltreatment occurrence and risk for maltreatment. That is, the concept that there are

'risk factors' that indicate that families may be more likely to experience maltreatment at some point in the future was difficult for many home visitors to understand. In fact, this challenge was originally noted during the qualitative pilot interviews, in which pilot participants suggested that the interviewer refer to 'red flags' or 'warning signs,' rather than 'risk factors.' This language has been used in previous studies examining home visitation (Vasquez & Pitts, 2006).

Related to risk identification, home visitors identified 86 risk factors across the four levels of the developmental-ecological model. Any risk factor identified by a home visitor was included in the list; consensus was not required for inclusion in this study. As expected, there was substantial variability between home visitors in understanding what risk factors may increase likelihood of future maltreatment. Of the 86 risk factors, the majority were either unmeasurable or were not regularly measured by program staff and included in program records (e.g., poor hygiene; caregiver history of abuse; country of origin). For example, home visitors identified factors at all levels that would be difficult to objectively measure, such as *child appears nervous/shuts down, child is quiet*, *caregiver does not seek help*, *caregiver is guarded*, *caregiver is overprotective,* and *lack of love/respect in family.* Other factors that were not included in program records include *child physical injuries, miscarriage, job loss, caregiver history of abuse, unrelated adult involvement,* and *country of origin.* These variables were omitted from subsequent analyses. Of the remaining 37 risk factors that were measurable using available data sources, there was overlap with the evidence-based risk model. As expected, home visitors also identified additional risk factors that were not included in the evidence-based

model. Thus, the home visitor model was comprised of more risk factors than the evidence-based risk model. Concerns related to pregnancy was a risk factor that was not identified by home visitors but was included in the evidence-based risk model. In the Fragile Families and Child Well-Being study, Guterman (2015) found that both maternal and paternal reports of unintended pregnancy has been associated with increased risk for neglect, psychological aggression, and physical aggression. The only other evidence-based risk factor not identified by home visitors was receipt of TANF. It is possible that home visitors did not identify TANF as distinct from limited household resources or poverty.

Home visitors were more likely to identify risk factors at the caregiver level and were less likely to identify risk factors at the child level. However, this is consistent with the results indicating that risk factors at those levels of the developmental-ecological model are more strongly associated with maltreatment. As has been observed in previous studies, there were significant associations at the bivariate level between child physical health problems and maltreatment (Palusci, 2011; Risch, Owora, Nandyal, Chaffin, & Bonner, 2014). Significant relationships were also observed between maltreatment and both caregiver mental health problems and caregiver substance abuse concerns. This finding is consistent with a substantial body of research that supports this relationship (Hecht & Hansen, 2001; National Academy of Sciences, 2013; Stith et al., 2009). Of note, home visitors also identified high frequency of missed home visits, which was significantly associated with maltreatment at the bivariate level. This may reflect recognition of issues of engagement, including that high-risk families often face

numerous logistical barriers to participation (Webster-Stratton, 2014). These findings are promising and suggest that home visitors do, in fact, recognize the risk factors that are most directly associated with maltreatment.

Measurements of poverty are particularly relevant indicators, as there is near universal agreement that poverty is associated with maltreatment (e.g., Belsky, 1993; Sedlak et al., 2010). Further, Early Head Start is intended specifically for low-income families; income is a factor that contributes to the enrollment within ERSEA. Although it could be considered a positive finding that the majority of home visitors identified poverty as a risk factor for maltreatment, poverty as measured by income does not serve to identify a subset of high-risk families, since nearly all enrolled families live below the federal poverty line. Thus, it may be more beneficial to measure other indicators of community poverty, such as residential instability, childcare burden, and immigrant concentration, which have been associated with higher rates of maltreatment (Coulton et al., 2007; Maguire-Jack, 2014). However, there are not clear mechanisms through which to monitor these factors. Anecdotally, many of the families enrolled in Early Head Start experience residential instability and may move on multiple occasions throughout their enrollment. Yet, there is currently no mechanism to indicate in ChildPlus if and how frequently families move within a program year.

Risk Models

This study also sought to develop a model of individual risk factors that would most effectively predict risk for maltreatment. Within the evidence-based risk model, intimate partner violence concerns and prior maltreatment or CPS involvement were

individually predictive of court-substantiated maltreatment. This same pattern was observed in the home visitor risk model, although single parent families were also significantly more likely to have a court-substantiated instance of maltreatment. These three risk factors remained significantly predictive of maltreatment. In addition, being a first time caregiver approached significance, such that families with a first time caregiver were less likely to experience maltreatment. Prior research has also shown that the strongest effect sizes for child physical abuse and neglect are for risk factors within the caregiver and interactional levels (Stith et al., 2009).

The intention of this study was to identify specific risk factors that are predictive of maltreatment in order to provide direction for targeted intervention (Ridings, Beasley, & Silovsky, 2017). However, there is a substantial body of literature that suggests that it may be more effective to consider the cumulative effects of risk. In the earlier study using a subset of this sample, Hubel (2014) developed Overall Adversity Scores to sum the number of risk factors experienced by enrolled families. Children were more likely to experience maltreatment when Overall Adversity Scores were higher. This is consistent with the notion that it is the accumulation of risk that is most predictive of maltreatment (Begle, Dumas, & Hanson, 2010).

Results indicated that there were not significant differences in predictive accuracy of the evidence-based risk model, the home visitor risk model, or the model that combined the factors between the two models that were significantly associated with maltreatment. As such, the combined model was selected to further explore the issue of classification accuracy. Because there were no significant differences between models, it

was determined that a combination of both the evidence-based and home visitor model was most consistent with the aims of the study. Typically, it is important to identify a classification cut-point that produces an adequate sensitivity while minimizing the likelihood of false positive. However, in the context of identification of risk for maltreatment, higher false positive rates are preferred, relative to greater numbers of false negatives. It would be better to overclassify families as 'maltreated' and provide additional, targeted intervention, than to classify a case as 'not maltreated' and potentially miss significant risk for maltreatment. Using the identified classification cut-point, 80% of maltreated families were correctly classified and 34% of cases were 'false positives.' It will be important for Early Head Start programs to consider the feasibility of overclassification. While the approach to prefer a great number of false positive classifications may increase the program's ability to intervene, it may also place a greater demand on program resources by identifying more families as high-risk and necessitating additional intervention.

Program Service Usage

It was expected that families classified as maltreated would utilize program resources less frequently than those classified as non-maltreated. Families classified as maltreated were significantly more likely to have a mental health assessment, a joint home visit with a mental health consultant, Child Abuse Prevention services, and Domestic Violence Assistance. Families classified as maltreated were significantly less likely to have received English as a Second Language, Adult Education, and Parenting Education.

To gain a more comprehensive understanding of how families engage in Early Head Start, results also examined service usage for families with court-substantiated maltreatment. Families with a court-substantiated instance of maltreatment received fewer home visits compared to families without a maltreatment incident. Actual maltreatment was significantly associated with receipt of Child Abuse Prevention Services, Domestic Violence Assistance, and Child Support Assistance with results observed in the same direction as predicted maltreatment. There were no significant results for number of Early Head Start program services received. These findings are consistent with results related to risk factors, in that families are being referred to services directly associated with the risk factors that are predictive of maltreatment. However, the direction of this service receipt is unknown; home visitors may be referring families to appropriate services or families may have been receiving these services prior to experience of court-substantiated maltreatment.

Qualitative interviews also provide insight into how home visitors engage with families within the program. The majority of home visitors reported that they communicate their concerns about risk to the families they work with. However, they frequently do not feel equipped to initiate these conversations. Home visitors identified a particular difficulty discussing concerns early in the relationship with families, before they have built trust. The fear that addressing risk factors and sensitive issues would cause a strain the relationship was a barrier for many home visitors and may interfere with their ability to effectively intervene. A qualitative study of French home visiting programs found similar patterns, noting that poor relationship quality between the family

and home visitor led to mistrust and difficulty engaging in the intervention (Saias et al., 2016).

Concerns about confidentiality also appear to be a substantial barrier that reduces EHS home visitors' ability to effectively utilize program resources. Consultation with peers can be a very helpful opportunity to share expertise and advice, particularly given the wide range of experience among home visitors. Clarifying the extent of confidentiality and the role of consultation may enable home visitors to better learn from each other in these particularly challenging cases.

Strengths and Limitations

Results from this study contribute to the literature on the role of paraprofessional home visitors in the identification of risk for maltreatment among young children and families. This study is novel in that it uses a mixed methods approach to examine the role of Early Head Start home visitors in identification of risk for maltreatment and in subsequent service provision. The use of a sequential design allowed for the qualitative results to drive quantitative analyses, and the depth of the interviews provided valuable context with which to interpret the results. Few studies have conducted qualitative interviews with home visitors related to risk for maltreatment, and to date, this is the first study to utilize interview data to predict maltreatment occurrence. Other methodological strengths include the use of court-substantiated treatment as an outcome variable. Nebraska is unique in that juvenile court records are available to the public. As a result, this study was able to utilize court-substantiated maltreatment as an outcome variable, which is rare among studies examining child abuse and neglect.

Further, this study occurred in the context of a well-established relationship with a local Early Head Start program, which allows for immediate translation of research findings to practice and local policy. This study was developed in collaboration with a local Early Head Start program and reflects the needs identified by that program. This ongoing relationship allowed for data-sharing and complete access to program records including CPS reports made by program staff. Access to these comprehensive records provided for the inclusion of numerous variables in analyses. Although the majority of risk factors were not included in the multivariate models, this study was able to examine the relationship between a substantial number of risk factors and court-substantiated maltreatment at the bivariate level. The well-established relationship with Early Head Start also enables the immediate translation of results into policy. Results were integrated into ongoing clinical practice through the collaborative partnership with the UNL Psychological Consultation Center, and were shared with Early Head Start administration. Finally, this study was funded by a Head Start Graduate Student Research Grant and the Project Director also received funding from a Doris Duke Fellowship for the Promotion of Child Well-Being (Doris Duke Fellowship for the Promotion of Child Well-Being, 2012). These funding sources provided training on maximizing the policy relevance of this research and opportunities to disseminate results to relevant audiences throughout the study period.

However, there were also several limitations that reduce the generalizability of results and suggest that some results should be interpreted with caution. Qualitative interviews were conducted with a small sample of Early Head Start home visitors and

supervisors in a Midwestern Early Head Start program. Because Early Head Start programs can vary across sites and training related to maltreatment is not clearly defined, results may not be generalizable to other programs. Further, the qualitative sample was comprised of primarily European-American participants. Spanish-speaking and Arabic-speaking home visitors were less likely express interest in participation. Given the small sample size, it was not possible to explore whether Spanish- or Arabic- speaking participants provided qualitatively different results. Similarly, both home visitors and supervisors were included in the interviews. Individuals who serve as supervisors likely have different levels of training and experience and fulfill a different role within the program. Although all supervisors who participated in this study had previously been home visitors, the inclusion of their perspective could impact the generalizability of results. In addition, social desirability is always a concern. To address this, all interviews were conducted by a graduate student who had not previously worked with Early Head Start, and all participants were assured that their comments would remain confidential and would not impact their employment.

Regarding the sample extracted from archival data, a priori power analyses identified a sample size of 600 was needed for analyses to be adequately powered. While the full sample of 723 children was sufficiently powered, the removal of sibling pairs and presence of missing data reduced the sample to 522 and further reduced the sample size in multivariate analyses to 401 due to listwise deletion. As such, it is feasible that results were impacted by a lack of sufficient power, and that other results may have approached significance with a slightly larger sample size. Similarly, although previous research has

shown that different types and combinations of risk factors are associated with different maltreatment types (Brown et al., 1998), the frequency of maltreatment occurrence in this sample was not large enough to run analyses by maltreatment type. The frequency of missing data indicates that the program should make consistent efforts to monitor the routine collection of information in order to ensure that accurate records are gathered.

On a broader scale, it is simply hard to measure reductions in maltreatment even in the most controlled evaluations. First, baseline rates of maltreatment tend to be very low, leading to difficulty detecting reductions in maltreatment without using prohibitively large samples (Daro & Harding, 1999). Research using a low frequency outcome such as maltreatment leads to empty cells, which can increase the instability of models. It may be beneficial to explore other analytic strategies that better account for low frequency outcomes or rare events, such as exact logistic regression, Firth's logistic regression, or other forms of correction (King & Zeng, 2001; Williams, 2016). It is also important to note that few variables contributed significantly to the models. It is possible that this is due to collinearity between variables, such that they may each predict maltreatment independently, but do not uniquely predict the outcome when included in the model. In addition, Primary Aim 4 necessitated the running of multiple related analyses, for both true and predicted maltreatment, leading to issues with multiplicity of related dependent variables. This increases the likelihood of committing a Type I error.

Finally, as described previously, measurement issues also interfere with likelihood of finding significant effects. Use of CPS reports or cases of court-substantiated maltreatment as primary outcome variables tend to underestimate actual

incidence of maltreatment, particularly for infants and very young children (Daro & Harding, 1999; Olds, Eckenrode, & Kitzman, 2005). As such, the majority of studies examining maltreatment outcomes use indicators or proxies such as hospitalization for injury or ingestion; few studies use official records of maltreatment or child welfare services (Hahn, Mercy, Bilukha, & Briss, 2005; Reynolds, Mathieson, & Topitzes, 2009). Daro (2005) highlights the challenges of trying to demonstrate effectiveness of home visitation programs without accurate estimates of abusive and neglectful behaviors, including reliable baseline measures of proxies (e.g., parenting quality). This suggests the need to incorporate multiple different forms of measurement, including court records, hospital records, self-report, and observational data. Although this study utilized both court-substantiated maltreatment and CPS reports made by program staff, future research should incorporate additional proxy measures to supplement existing indicators, including potential administrative data sharing to include unsubstantiated reports from juvenile court (Kohl et al., 2009).

Policy Recommendations

Currently, Early Head Start does not identify prevention of maltreatment as a primary program aim (U.S. DHHS, 2016a). However, it is clear that reducing risk for maltreatment falls within the goal of improving healthy family functioning. As such, these findings may provide guidance for more directly engaging in maltreatment prevention within this program. Results from this study provide useful guidance for the local Early Head Start program in this study, the national Early Head Start program, and other early interventions serving high-risk families.

In order to most effectively reduce risk and prevent maltreatment, Early Had Start would need to identify a sub-population of higher-risk families within the larger population. To meet this need, improved risk identification at both the program- and service-provider levels is critical. This may involve standardized risk screening and assessment tools that could potentially be incorporated into the mandatory screening procedures already required by the Performance Standards (U.S. DHHS, 2016a). Currently, risk factors are measured at enrollment and other specified timepoints throughout enrollment. Unfortunately, Early Head Start changes what information is provided at enrollment and reported in the Program Information Report year to year. This contributes to difficulty measuring risk between and within participants across time, as variables may not always be retained. There are some systematic measures for assessing risk, though most have limited accuracy and may not be useful across contexts (Peters & Barlow, 2005). Although standardized assessment and use of predetermined systems would ease this process in Early Head Start, targeted risk identification places increased demands on home visitors to be more aware of risk for maltreatment within the families they work with.

However, this study demonstrates that while home visitors have a variable understanding of risk factors for maltreatment, they are able to recognize factors across the four levels of the developmental-ecological model. It will also be important to continue to evaluate the use of cumulative risk versus targeting specific risk factors (McKelvey, Whiteside-Mansell, Conners-Burrows, Swindle, & Fitzgerald, 2016). While some literature suggests that greater number of risk factors increases risk for

maltreatment (Begle et al., 2010; McKelvey et al., 2016), other research suggests that distinct mechanisms are at play for different types of maltreatment (O'Hara et al., 2015). Risk should also be frequently and systematically monitored over the course of enrollment. Home visitors should directly assess for risk and monitor changes in the electronic record keeping system in a fashion that would allow for adequate monitoring of change in risk status over time.

There are many existing opportunities for training within the Early Head Start program model, including the annual pre-service training and ongoing trainings throughout the year. Currently, the majority of training is designed to meet the Performance Standards and is thus performed for compliance rather than comprehension. Home visitors identified a need for more intensive, ongoing trainings. On a larger scale, it may be valuable to modify the Performance Standards to encourage training for comprehension rather than compliance. Individual programs can take steps to meet this need in the absence of formal policy changes. Training plans should more explicitly target the areas of need identified by home visitors and design a sequence of trainings on the same topic that increase in intensity and specificity. Trainings should involve role plays focused on initiating conversation and referring families to relevant resources, and ongoing supervisory support to this end. Specific to initiating conversations about risk, home visitors feared that discussing concerns would lead to strain in their relationship with participants. While prior research does indicate that poor relationship quality between program staff and families leads to lower program engagement, home visitors can learn strategies to effectively engage in these conversations. Training and role plays

focused on initiating sensitive conversations in ways that can enhance engagement and participation may be particularly relevant for home visitors. There is also a specific need to clarify the distinction between the occurrence of maltreatment and risk for maltreatment. Home visitors report feeling prepared to identify maltreatment as it is occurring, but tended to struggle with the concept of factors increasing the likelihood for maltreatment in the future. As this is a critical component of maltreatment prevention, Early Head Start should provide education on the association between risk factors and maltreatment so home visitors know which risk factors or combination of risk factors may warrant immediate intervention. Concerns about confidentiality appear to be a substantial barrier that reduces Early Head Start home visitors' ability to effectively utilize program resources. Consultation with peers can be a critical opportunity to share expertise and advice, particularly given the wide range of experience among home visitors. Clarifying the extent of confidentiality and the role of consultation may enable home visitors to better learn from each other in these particularly challenging cases.

Once families at higher risk for maltreatment are identified by service providers, Early Head Start will need to provide targeted intervention. Currently, Early Head Start provides the same dosage to all enrolled families, with uniform requirements laid out in the Performance Standards (U.S. DHHS, 2016a). However, stronger effects and increased cost-savings are seen in higher-risk families in other evidence-based home visitation models (DuMont et al., 2010; Olds, Hill, O'Brien, Racine, & Moritz, 2003), suggesting that maltreatment prevention may be better targeted towards high-risk families (Olds, 2006). It is possible that the families with lower attendance are the higher risk

families, in need of more targeted services. Early Head Start might need to consider the feasibility of variable service provision based on level of need, following improved risk identification. This could be accomplished through the inclusion of brief, standardized, adjunctive interventions that could be grafted on to existing services when a need is identified, either by the home visitors or available mental health consultants. Some existing programs that could be modified for use in EHS are SafeCare (e.g., Lutzker & Edwards, 2009) or In-Home Cognitive-Behavioral Therapy for Depression (Ammerman et al., 2013). These programs have been evaluated within the home visitation context and have demonstrated positive effects. Any modifications to Early Head Start programming should be done with implementation and evaluation in mind.

Although the above considerations could make Early Head Start a feasible model through which more integrated child abuse prevention and intervention could occur, there remain a number of challenges for preventing maltreatment within early childhood home visitation programs. Working with at-risk populations is a challenge across most prevention programs. The risk factors that make families eligible for participation in these programs, such as low income, lower educational attainment, and poor maternal and child health also lead to low engagement in services (Holland, Xia, Kitzman, Dozier, & Olds, 2014; O'Brien et al., 2012; Raikes et al., 2006). Additional risk factors faced by at-risk and maltreating families, such as parental depression, substance abuse, and domestic violence, may be particularly difficult for paraprofessional home visitors to identify and address (Duggan et al., 2004; Tandon, Parillo, Jenkins, & Duggan, 2005). This may be due to the more restricted educational background and training of home

visitors employed by Early Head Start (Duggan et al., 2004). There are currently no minimum educational requirements for home visitors (Sama-Miller et al., 2016), though programs are encouraging staff members to pursue a Child Development Associate credential, which may increase their ability to work effectively with families. Low wages common to paraprofessionals may also contribute to home visitor turnover, which in turn reduces the program's ability to effectively work with at-risk families (Gomby, 2007; Kisker et al., 1999)

Conclusion

Overall, this study provides valuable information regarding the occurrence of maltreatment within Early Head Start, and the role of home visitors in identifying and working with families at high risk. It is clear that the population of children and families served by Early Head Start is at increased risk for maltreatment. Home visitation has been identified as an effective method for preventing child abuse and neglect, but there has been little research on the role of home visitors in this process. This study demonstrates that home visitors may be equipped to identify families at risk for maltreatment with appropriate program supports, including enhanced training on risk identification and communicating with families about risk, data collection and monitoring, and accessibility of targeted intervention designed to ameliorate risk factors. Early Head Start and other home visitation programs have a unique opportunity to reduce risk and increase healthy family functioning.

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APPENDIX A

Qualitative Interview

The following script should be read to the home visitor or supervisor before beginning the interview:

Thank you for meeting with me. I appreciate your time and allowing me to ask you questions about your experiences working with the Early Head Start program. I am trying to learn more about how you think about child maltreatment in your work with families. I want to know what you think about the factors that place children and families at risk for child maltreatment. I would also like to hear about what you do when you work with families who you believe are at risk for child maltreatment.

This interview will consist of open-ended questions. At the end, you will be asked to read 2-3 vignettes and discuss them. The interview should take approximately one hour. I ask that you be as specific as possible without providing any identifying information about individuals or families. For example, please do not refer to any family by name. Also, please answer only the questions you are comfortable with.

As a reminder, all of your responses are confidential.

Demographic Questionnaire

First, I will ask you some basic questions about yourself.

Age: ____

Gender: ___ Male ___ Female

Which best describes your race/ethnicity?: __White __Hispanic __Black or African-American __Multiracial/Biracial __Asian __American Indian/Alaska Native

What is your educational background?: __Less than high school degree __High school diploma/GED ___Some college/Associates degree __Bachelor's degree __Advanced degree

How long have you worked as a home visitor?: ___ years ____ months

Interview

Central Question: What do you consider child maltreatment?

Possible probes/follow up questions:

a. How do you identify child maltreatment in the families you work with?
b. How do you communicate about child maltreatment with the families you work with? With other Early Head Start staff members?

Central Question: What characteristics of a child or family makes them more likely to experience child maltreatment?

Possible probes/follow up questions:

a. What are other "risk factors" for maltreatment?
b. Call to mind a family that you have worked with that you have been concerned about. Without giving any identifying information, what made you feel concerned?
c. What makes a family you are concerned about different from a family you are not concerned about?

Central Question: How do you work with a family who you think is likely to experience child maltreatment?

Possible probes/follow up questions:

a. Do you communicate concerns about maltreatment to the families you work with? If so, how? If not, why not?

b. Based on the risk factors you identified earlier (for example, _____), what services could help these families?

c. What could Early Head Start do that would make it easier for you to work with these families?

Vignettes

You will now be asked to read three brief vignettes and answer questions about them. These vignettes are fictional but based on things likely to happen for families enrolled in Early Head Start.

You are working with the Hernandez family. Juanita is a 21-year-old single parent with two children. Her youngest daughter, Maria, is enrolled in Early Head Start, and her oldest daughter is in kindergarten. Juanita recently completed her Associates Degree, but has not been able to find a job. She has recently struggled to pay her bills, so she and her daughters have been staying with a friend. At the last visit, Juanita told you that she is three months pregnant. She says that she has already had an appointment with a doctor, but reports feeling worried about this pregnancy, since Maria was born very early and had trouble gaining weight.

a. Identify all aspects of this vignette that would be a concern to you.

b. What would you do to address these concerns if you were working with this family?

You are working with the Miller family. Ann, the primary caregiver, is 36 years old. She lives in a house with her husband, Mark, and their three children. Their youngest child, Andrew, is two years old. When he was 18 months old, he was diagnosed with a feeding disorder and has a g-tube. Both Ann and Mark work during the day, so Andrew and his siblings go to a neighborhood daycare. Ann recently mentioned that there has been a lot of fighting in their house, since Mark started drinking again and having problems at his job. When you asked her if she had ever been worried about her safety, she became quiet and changed the subject. She has seemed a little down lately, and you remember that she said she had depression when she was younger. Ann reports that she can only talk to her sister about what is going on in her life. However, she usually seems to be managing the stress well, and hardly ever brings anything up during visits.

c. Identify all aspects of this vignette that would be a concern to you.

d. What would you do to address these concerns if you were working with this family?

You are working with the Kassab family. Mohammed, the primary caregiver, is 40 years old. He lives with his wife, Fatima, and their five children. Mohammed works part-time, and comes home for visits. He has said that he would like a promotion, but is not eligible for one because he did not graduate from high school. He identified getting his GED as a goal in the most recent family partnership agreement. Mohammed is very engaged in the visit, and translates most of the material for Fatima, who does not speak English. At the most recent visit, Mohammed appeared very frustrated with two of his children – Ahmad, who is six, and Hassan, who is three. He says that both boys have been acting out almost constantly. You have witnessed them hitting each other, throwing toys, and running out of the house at prior visits. When this happens, Mohammed becomes very angry and yells at them using a very harsh tone. You have noticed that these behaviors seem to occur more frequently when the boys are left alone because Mohammed is engaged with Alia, who is two and enrolled in Early Head Start. Mohammed does not seem to understand that, and expects them to keep themselves occupied with appropriate activities.

a. Identify all aspects of this vignette that would be a concern to you.

b. What would you do to address these concerns if you were working with this family?