Title
Predicting the Externalizing Trajectories of Child Welfare-Involved Preschoolers: A Longitudinal Analysis of Attachment Security, the Caregiving Environment, and Participation in Early Care and Education

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Predicting the Externalizing Trajectories of Child Welfare-Involved Preschoolers: A Longitudinal Analysis of Attachment Security, the Caregiving Environment, and Participation in Early Care and Education

A dissertation submitted in partial satisfaction of the requirement for the degree Doctor of Philosophy in Social Welfare

by

Stephanie Midori Benson

2017
ABSTRACT OF THE DISSERTATION

Predicting the Externalizing Trajectories of Child Welfare-Involved Preschoolers: A Longitudinal Analysis of Attachment Security, the Caregiving Environment, and Participation in Early Care and Education

by

Stephanie Midori Benson
Doctor of Philosophy in Social Welfare
University of California, Los Angeles, 2017
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Background and Aims. Externalizing behaviors, or more informally, aggressive or hyperactive behaviors, in young children are concerning to both parents and child care providers, and at clinical levels pose considerable social and economic costs to society. Externalizing behaviors amongst preschoolers involved with the child welfare system is of particular concern given its theoretical etiology wherein alienation by a primary caregiver, as well as trauma resultant from system involvement, presents increased risk of an externalizing diagnosis in early childhood. Thus, it is unsurprising that children with insecure attachments are at particular risk for externalizing behaviors. Moreover, it is therefore possible that early care and education (ECE) has the potential to differentially benefit child welfare-involved preschoolers by providing both the opportunity to develop a secure attachment and through modeling of prosocial behavior in a supportive environment. This dissertation examined the effects of attachment security, ECE participation, and the caregiving context on the externalizing trajectories of child welfare-involved preschoolers.
Methods. This research utilized secondary data from the National Child and Adolescent Well-Being (NSCAW) II study, following a sample of n=221 preschoolers across three waves of data spanning approximately 36-months. Given the nested, repeated measures nature of the secondary data, this study employed a weighted two-level hierarchical linear model to assess the effects of attachment security, ECE participation, child’s language and the caregiving context (maternal depression, cognitive stimulation, and spanking), controlling for caregiver SES (marital status, caregiver education, and TANF participation), child characteristics (language, gender, race/ethnicity, and age), and child welfare involvement (substantiated, unsubstantiated, or removal from home), as well as the possible moderating effects of attachment and ECE participation.

Results. Findings from hierarchical linear modeling demonstrate no association between attachment security at 18 months of age and externalizing behavior 36 months later. Moreover, this study found a significant negative relationship between ECE participation and externalizing behavior wherein participation in ECE was associated with an increase in externalizing. Maternal depression and spanking were also significantly associated with increased externalizing behavior. Child’s language and cognitive stimulation at home were protective factors and associated with decreased externalizing, though the magnitude of the effect of both were modest compared with maternal depression or corporal punishment. Moreover, there was a significant interaction between maternal depression and ECE participation wherein children with depressed caregivers differentially benefitted from ECE participation when compared with those of non-depressed caregivers.

Conclusions. While this study is limited by its inability to control for the quality of ECE settings, which is of particular concern for this at-risk population, it adds to the emerging
literature on the effects of ECE specific to child welfare-involved preschoolers. Social work policy and practice implications are discussed, such as the need for increased collaboration between ECE providers and the child welfare workers, as well as targeted or triaged support of clinically depressed caregivers.
This dissertation of Stephanie Midori Benson is approved.

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DEDICATION

For Misora, who helped keep things in perspective. And Adam, who was there for me when I didn’t.
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CHAPTER 1: INTRODUCTION

Externalizing behaviors, or more informally, aggressive or hyperactive behaviors, in young children are of particular concern to both parents and caregivers alike, and at clinical levels pose considerable social and economic costs to society at large (Pelham et al., 2007; Rothbaum & Weisz, 1994). A form of emotional dysregulation, externalizing is a construct referring to behavior problems that manifest in a child’s outward behavior or any perceived negative action upon the external environment (Liu, 2004). An externalizing behavior can be defined as any maladjusted behavior which manifests in the form of poor regulation of impulses, aggression, or marked noncompliance and clinically speaking presents as hyperactivity, attention deficient, or conduct disorders (Reef et al., 2011). Understanding the sequela of externalizing behaviors is important from a clinical perspective because these behaviors are often identified as precursors of more severe mental health problems in the school-age years and into adulthood (Cicchetti, Ganiban & Barnett, 1991; Aber et al., 1989; Fantuzzo et al., 1998). Moreover, understanding and identifying predictors of externalizing behaviors is perhaps even more important in the practical sense because caregivers and teachers in child care or preschool settings are more likely to report these behaviors as problematic or disruptive. These types of behaviors therefore carry within them potential disciplinary consequences that can affect both performance and standing in a child care environment or classroom setting (Qi & Kaiser, 2003; Perry et al., 2007; Hoffman-Plotkin & Twentyman, 1984). The practical significance of externalizing behavior for child welfare-involved preschoolers is of paramount importance given that this population is at greater risk of expulsion from preschool and kindergarten settings due to
behavioral problems, thereby setting them on a course for academic failure prior to even entering a formal school setting (Perry et al., 2007).

In recent years, there has been an increasing significance placed on the externalizing behaviors of preschool-aged children involved with the child welfare system for four reasons. First, externalizing behaviors amongst preschoolers is of particular concern given that infants and toddlers are over-represented in the child welfare system. Of the nearly 700,000 substantiated cases of child maltreatment in 2013, 47% of victims were under the age of six years old (USDHHS, 2014). Victimization rates for infants less than one-year-old were 24.2 per 1,000 children while the national average was 9.1 per 1,000, and infants and toddlers constituted 73.9% of child fatalities (USDHHS, 2015). Moreover, in 2013 infants and toddlers represented over one-third (39%) of total foster care placements and nearly half (47.7%) of all entries (AFCARS, 2014).

**Figure 1. Substantiated Cases of Child Maltreatment by Age**

![Exhibit 3-F Victims by Age, 2015](Source: Children’s Bureau, 2016)

Second, externalizing behaviors amongst preschoolers involved with child welfare is of concern given its theoretical etiology wherein potential trauma resulting from involvement with the child welfare system presents increased risk of an externalizing diagnosis in early childhood.
(Burns et al., 2004). Trauma from child abuse and neglect (CAN), additional trauma associated with exposure to the child welfare system, and externalizing correlates such as corporeal punishment or inconsistent parenting practices or insecure attachments, which often characterize families that are system-involved, leave this vulnerable population at risk for developing externalizing behaviors (Cicchetti & Toth, 2005; Campbell, Shaw & Gilliom, 2000). Moreover, an extensive literature has established a relationship between maltreatment in early childhood and a host of adverse developmental problems that further leave children susceptible to externalizing behavior problems including: neurobiological changes in nascent brain structure, such as stunted growth of the corpus collosum and frontal lobes (Glaser, 2000; Leeb, Lewis & Zolotor, 2011); dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis stress response systems (Anda et al., 2006; Teicher et al., 2003; Cicchetti & Rogosch 2001; De Bellis & Thomas, 2003); and increased incidence of mental health disorders including mood disorders, post-traumatic stress, and cognitive distortions (Leeb, Lewis & Zolotor, 2011; Hazen et al., 2009; Higgins & McCabe, 2003; Manly et al., 2001). Moreover, compared to their school-aged or adolescent peers, preschool-aged children are also more likely to experience repeated abuse or neglect leaving them particularly susceptible to externalizing behaviors in later childhood (USDHHS, 2014; English et al., 1999; Fuller & Wells, 2003).

Third, an established literature finds support that elevated externalizing behavior presenting in early childhood is more likely to persist and worsen through middle childhood and young adulthood (Gilbert et al., 2009; Campbell, 1995; Campbell & Ewing, 1990; Fantuzzo et al., 1998). For the vast majority of children early nonclinical externalizing behavior tends to peak at early toddlerhood and gradually decrease throughout early childhood (Perry et al., 2014; Campbell, 1995). Yet, for a subset of children, externalizing behavior persists at clinical levels
from preschool through middle childhood, resulting in decreased adaptive functioning and thereby contributes to maladaptive outcomes, including delinquency or other anti-social behavior (Cambell, 2002; Losel & Bender, 2012).

Lastly, the developmental consequences for children, as well as societal costs at large of externalizing behaviors make this a particularly salient substantive area of research. Children presenting with externalizing behavior at clinical levels are more likely to become involved with the juvenile justice system as a result of antisocial or delinquent actions or infractions (Cauffman, 2004). Moreover, children who exhibit externalizing behaviors in early childhood are at increased risk for school dropout or lower school engagement (Schindler et al., 2015; Bub, McCartney, & Willett, 2007; Bulotsky & Fantuzzo, 2011; Duncan & Magnuson, 2011; Fantuzzo et al., 2007). In classrooms teachers often need to spend a significant portion of their time attending to behavioral concerns exhibited by children with externalizing disorders (Schindler et al., 2015). Pelham, Foster & Robb (2007) estimate that annual societal cost of attention-deficit/hyperactivity disorders alone – when accounting for educational, crime and delinquency, and mental health systems utilization costs – ranges between $36 and $52.4 billion annually, given a projected conservative prevalence rate of approximately 5 percent.

**Externalizing Pathways and Attachment**

Understanding the sequela of externalizing behavior specific to child welfare-involved toddlers and preschoolers is critical in developing effective early childhood interventions and programs to mitigate the later consequences associated with these problematic behaviors. A host of developmental pathways are implicated in the development of externalizing behavior, but central to many of these are lack of self-regulation combined with alienation by a primary caregiver (Egeland et al., 2002; Shaw & Vondra, 1995). Over the last few decades a growing
literature has identified predictors of early externalizing and grouped them into the following three domains: child characteristics (self-regulation, negative emotionality or temperament, biological vulnerabilities), parenting characteristics (discipline, maternal acceptance, absence of warm, responsive caregiving), and family characteristics (parental conflict or maternal depression) (Owens & Shaw, 2003; Greenberg et al., 2001; Keller, Spieker & Gilchrest, 2005; Greenberg, Kusche & Speltz, 1991). It is clear that these child characteristics, genetic predispositions, and transactional social experiences and processes work in concert to set a child on a trajectory of maladaptedness (Campbell et al., 2000).

Attachment, in its most rudimentary sense, is the bond that is forged between an infant and her caregiver in the first year of life, which in turn influences the development of a child’s internal working model of self-worth, thereby setting the stage for optimal emotional development (Bowlby, 2008). Given the theoretical etiology of externalizing behavior and its sequela, it is unsurprising that children with insecure attachments are at particular risk. Early studies in the 1980’s, when attachment theory was gaining recognition across multiple disciplines, identified a correlation between early attachment patterns in infancy and later prosocial behavior and perceived peer competence in the preschool years (Waters, Wippman & Sroufe, 1979; Teti & Ablard, 1985; Lewis et al., 1984; Erickson, Sroufe & Egeland, 1985). More recently, a host of studies, when incorporated into a meta-analysis, has assessed the extent to which insecure attachments predict externalizing behaviors and concluded that children with insecure attachments are at elevated risk for externalizing (d=0.31) and among children identified as having a disorganized attachment, the risk was slightly elevated (Fearon et al., 2010).
Early Care & Education Needs & Utilization Among Child Welfare-Involved Preschoolers

Given empirical evidence that finds associations between externalizing behavior and alienation by a primary caregiver (Egeland et al., 2002), it is possible that early care and education (ECE) has the potential to differentially benefit child welfare-involved preschoolers, while at the same time providing an essential service to working families. In the United States, early care and education (ECE) encompasses a broad range of services and programs, from informal care provided by kin or kith that is largely unregulated, to family child care homes (FCCHs) that provide care to a small number of children under the supervision of a licensed caregiver in their home, to center-based programs that care for a larger number of children in a more formal, educationally-oriented environment (Magnuson & Waldfogel, 2005). In 2011, Census reports indicate that nearly 40% of preschoolers in the United States participate in some form of nonrelative child care, with approximately 23.5% in a formal care setting. Utilization rates specific to child welfare-involved families is more difficult to determine. Some studies suggest that a considerable percentage of preschool-aged children in foster care participate in some form of ECE at rates similar to the general population (Dinehart et al., 2012; Kotch & Thomas, 1986; Lipscomb & Pears, 2011). Other studies suggest an underutilization of ECE amongst this population. For example, Meloy and Phillips (2012) found that only 11% of foster families in Illinois utilized government-subsidized child care, while nationally, approximately 30% of income-eligible families utilize government-subsidized child care. Still, even without concrete numbers it is not unreasonable to assume that the use of ECE among child welfare-involved preschoolers is not insignificant. It is therefore critical to better understand the potential benefits and detriments of participation in ECE programming for this at-risk population. Emerging evidence suggests potential benefits such as increased safety, permanency
and well-being outcomes (Klein, 2016), but it is also increasingly likely that this vulnerable population requires a differing standard of care to meet their needs (Lipscomb et al., 2014).

**Purpose of the Present Study**

The present study seeks to extend existing knowledge by examining longitudinally the effect of attachment patterns and participation in ECE on the externalizing trajectory of child welfare-involved preschoolers. Until recently, much of the literature focusing on externalizing behaviors among child welfare-involved children focused on school-aged and adolescent children (Grogan-Kaylor et al., 2008). Given evidence suggesting that externalizing symptoms which manifest prior to adolescence are more likely to persist over the life course of an individual (Gilbert et al., 2009; Campbell, 1995), research is shifting its focus on earlier identification of behavior, and more importantly, on preschool-age appropriate interventions (Cicchetti, Rogosch & Toth, 2006; Farrington, 2005). The present study seeks to extend this knowledge and is unique in that it provides a longitudinal examination of the effect of attachment patterns, ECE participation, and the caregiving environment on the externalizing behavior of child welfare-involved preschoolers. Specifically, this study seeks to better understand how attachment security at 18 months, combined with participation in ECE programs over 36 months, affect externalizing behavior at kindergarten entry among child welfare-involved children. This longitudinal study utilizes secondary survey data comprised of child-welfare involved families and their caseworkers to address the following research questions:

- What is the externalizing trajectory and inter-individual change among child welfare-involved children over a 36-month period preceding kindergarten entry at age five?
- What predicts these differences in trajectories? Specifically, does attachment security, ECE participation, parenting or family characteristics significantly predict
externalizing behavior among preschool children involved with the child welfare system? Moreover, how does attachment security and participation in ECE interact to affect externalizing behaviors? Is participation in ECE differentially beneficial to insecurely attached children?

**Organization of the Dissertation**

This chapter outlined the significance and purpose of the study and concluded with research questions that this dissertation addresses. Chapter 2 provides the theoretical and conceptual frameworks that guide this research and closes with research questions and their hypotheses based on theory and empirical evidence. Chapter 3 outlines a brief description of externalizing behavior and reviews the extant literature on 1) the prevalence of externalizing behaviors among children, and preschool-aged children specifically, involved with the child welfare system, 3) the dominant correlates (attachment, child characteristics, parenting characteristics, and family characteristics) of externalizing behavior among preschoolers, 4) and reviews existing literature about participation in ECE and externalizing behavior among general populations and specifically children involved with the child welfare system. Chapter 4 describes the methods that were utilized to address the research questions, including a description of the secondary data source, criteria for inclusion within the study sample and its rationale, elaboration of variables, including their constructs and operationalization as well as the assessments from which they were derived. Chapter 5 presents results and discusses major limitations. Chapter 6 reviews major findings and details conclusions and implications for social work practice and policy, as well as directions for future research.
CHAPTER 2: THEORETICAL AND CONCEPTUAL FRAMEWORKS

The purpose of this chapter is to 1) provide a brief description of externalizing behavior, 2) describe the proposed etiology of externalizing behavior among preschool-aged children, 3) discuss attachment theory and social learning theory as proposed mechanisms for influencing the trajectory of externalizing behavior, and 4) advance conceptual and analytic frameworks that guide this dissertation.

What is Externalizing Behavior?

As a result of abuse and neglect, children involved with the child welfare system are at high risk for externalizing behavior problems (Hazen et al., 2009; Kotch et al., 2008; Pilowsky, 1995). A form of emotional dysregulation, externalizing is a construct referring to behavior problems that manifest in a child’s outward behavior or any perceived negative action upon the external environment (Liu, 2004). An externalizing behavior can be defined as any maladjusted behavior which manifests in the form of poor regulation of impulses, aggression, or marked noncompliance and clinically speaking, manifests as hyperactivity, attention deficient, or conduct disorders (Reef et al., 2011).

The Diagnostic and Statistical Manual V (DSM-V) separates externalizing behaviors into two distinct branches of clinical disorders: attention and conduct disorders. First, Attention Deficient and Hyperactivity Disorder (ADHD) is one of the most common disorders of childhood and is defined by six symptoms of hyperactivity and three symptoms of impulsivity (Campbell, Shaw & Gilliom, 2000). Second, conduct problems include any behavior that is considered to violate the rights of others or social norms. The two main disorders identified by
the DSM-V are Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD). ODD reflects negative, disobedient or hostile behavior specifically directed toward authority figures, while CD is more likely to reflect a “repetitive and persistent pattern of behavior in which the basic rights of others and major age-appropriate societal norms or rules are violated” (Loeber et al., 2000). It is important to note that there is a substantial literature documenting a comorbidity between these three disorders (Campbell, Shaw & Gilliom, 2000; Hinshaw, Lahey, & Hart, 1993; Offord et al., 1989).

Unlike internalizing behavior, externalizing behavior is more likely to emerge during the preschool years (Garstein, Putnam & Rothbart, 2012). Yet, identifying and labeling externalizing behavior within the context of the preschool years presents many challenges given that this developmental period is often characterized by poor impulse control, noncompliance and hyperactivity (Campbell, Shaw & Gilliom, 2000). Externalizing behavior is sometimes conceived of as a normative component of development, peaking in toddlerhood and declining as children develop self-regulatory capacities, as well as increases in cognitive and language development (Smith et al., 2004; Campbell, 2002). This presents significant concerns clinically, as to whether labeling and formal diagnoses are valid under the best of circumstances, and actively harmful under the worst of conditions.

Developmental psychopathology uses a life course perspective to better understand both origins and course of behavioral maladaptation (Rutter & Sroufe, 2000; Sroufe & Rutter, 1984). Emphasizing how a disorder presents and manifests across the life course, onset of a disorder is attributable to atypical development within a specific developmental period. For example, in the case of aggression, it is understood to peak at early toddlerhood and gradually decrease across the preschool years. Early toddlerhood is a period characterized by angst combined with a
limited capacity to regulate emotions that moderate outward display of aggression (Smith et al., 2004; Campbell, 2002). While some behavior problems can persist beyond the toddler years, it is assumed that increases in receptive and expressive language, self-regulation skills, and cognitive capabilities will help preschoolers better govern early aggressive and impulsive tendencies, resulting in a decline in externalizing behavior (Smith et al., 2004). Therefore, looking at externalizing behavior within this sensitive, developmental period from toddlerhood through the preschool years facilitates a better understanding of the pathways that result in stability of problematic behavior or a trajectory toward possible psychopathology.

**Etiology of Externalizing Behavior: Factors that Impair Parent/Caregiver-Child Relationship Quality**

A host of developmental pathways are implicated in the development of externalizing behavior, but central to many of these are lack of self-regulation combined with alienation by a primary caregiver (Egeland, Yates, Appleyard, & van Dulmen, 2002; Shaw & Vondra, 1995). An established literature has identified predictors of early externalizing and grouped them into the following three domains: child characteristics (self-regulation, negative emotionality or temperament, biological vulnerabilities), parenting characteristics (discipline, maternal acceptance, absence of warm, responsive caregiving), and family characteristics (parental conflict or maternal depression) (Owens & Shaw, 2003; Greenberg et al., 2001; Keller, Spieker & Gilchrest, 2005; Greenberg, Kusche & Speltz, 1991). It is clear that these child characteristics, genetic predispositions, and transactional social experiences and processes work in concert to set a child on a trajectory of maladaptedness (Campbell et al., 2000). This study is guided by a theoretical framework grounded in the transactional interplay between a child, its caregiver and the caregiving environment in early childhood. Specifically, it utilized attachment
theory and social learning theory to assess how contextual and atypical caregiving risk factors, when added to a child’s attachment insecurity, predict externalizing behavior. This study adds to the literature by also investigating participation in ECE as a potential protective factor, specific to children involved with the child welfare system. This chapter also discusses the empirical and theoretical pathways whereby ECE can affect externalizing behavior, particularly within the context of social learning theory.

**Attachment Theory**

Given the theoretical etiology of externalizing behavior and its sequelae, it is unsurprising that children with insecure attachments are at particular risk. Attachment, in its most rudimentary sense, is the bond that is forged between an infant and her caregiver in the first year of life, which in turn influences the development of a child’s internal working model of self-worth, thereby setting the stage for optimal emotional development (Bowlby, 2008). While the foundation of attachment occurs in the first few months of life, attachment is not a singular event, nor a static state, and should rather be understood as a transactional, malleable process (Cicchetti, 2013).

Influenced by evolutionary theory and ethological studies, the process of attachment as proposed by both John Bowlby and Mary Ainsworth is biologically predisposed (Sroufe et al. 2005). For the first many months after birth, infants require the care and protection of a caregiver to ensure their survival and therefore engage in attachment-serving behavior. For example, the very act of crying is an attempt to have an infants’ needs met and the purpose of such behavior is to draw in a caregiver. Moreover, attachment is contextual in the sense that as an infant progresses developmentally, the attachment-serving behavior also becomes more complex. In the earliest months, much of the attachment serving behavior that helps attract
caregivers is largely a reflex or built-in behavior, such as cooing, early eye contact, or smiling (Davies, 2004). As an infant progresses developmentally she develops more complex attachment serving behavior. For example, with increased motor control, she may raise her arms toward a caregiver to attract attention. Then, as mobility is achieved, an infant may crawl toward a caregiver to elicit a response. In other words, if one behavior is not successful in achieving desired proximity, an infant can respond with greater variation depending on her stage of development.

During these early months, attachment serving behaviors provide caregivers with the opportunity to adopt reciprocal attachment behaviors, such picking up a crying infant or talking and using verbal utterances with the infant to maintain eye contact. These reciprocal attachment behaviors assist in the development of mutual regulation that ultimately help regulate arousal and affect (Davies, 2004). Through repeated interactions, the caregivers’ sensitivity and responsiveness help in the development of more developed and better organized neural control mechanisms, resulting in greater self-regulatory capacity (Sroufe et al. 2005). Fearon & Belsky (2004) referred to this process as the stress regulatory function of attachment and it is implicated as a coping function when experiencing fear or distress.

Around the age of six months, infants begin to develop a sense of trust with a caregiver that is directly contingent upon how adequately her needs have been and are continually met. During this extended time period, from approximately seven to 24 months, a child forms an attachment with her primary caregiver. A secure attachment is considered a hallmark of socialemotional development, allowing the child to develop a sense of security that in turn enables exploration of environment, therein providing greater opportunity for cognitive stimulation and learning. Perry (2001) notes three characteristics of secure attachment: 1)
consistency in the emotional relationship with a primary caregiver, 2) feelings of comfort, safety and pleasure associated with the presence of the caregiver, and 3) distress in response to the loss, even temporarily, of the caregiver. Securely attached children continue to explore when under nominal stress and actively seek comfort from their attachment figure when experiencing distress, which allows them to return to play after receiving consolation (Ainsworth et al., 1978).

In addition to describing secure attachments, Ainsworth et al. (1978) described alternate attachment classifications that can occur in early childhood. A child with an anxious-avoidant attachment demonstrates a lack of exploration prior to separation and often ignores the attachment figure upon reuniting, which results from their failure to develop a trusting relationship with the primary attachment figure (Kennedy & Kennedy, 2004). An anxious-resistant child also demonstrates stunted exploration and prior to separation, when experiencing stress, seeks closeness to the attachment figure. When reunited with the attachment figure, an anxious-resistant child remains usually troubled and simultaneously seeks and resists contact (Ainsworth et al., 1978). Children with this attachment type are often characterized as lacking self-confidence and more socially isolated from peers (Jacobsen & Hofmann, 1997). Colleagues of Ainsworth later described a fourth attachment classification. A disorganized attachment is characterized by a lack of consistent attachment response and includes one or more of the following features: “disordering of expected temporal sequences, simultaneous display of contradictory behavior patterns; incomplete or undirected movements and expressions; direct indices of confusion and apprehension; and behavioral stilling” (Main & Solomon, 1990, p.122)

Secure attachments set the stage for early self-regulatory processes as well as positive concept of self. Additionally, Bowlby noted that the attachment relationship guides a child’s “working model” of future interactions with others (Bowlby, 2008). For example, if caregivers
have been consistently responsive, a child develops an expectation that caregivers will continue to be responsive in the future. At the same, there is a reciprocal effect upon the child by way of her developing a “model of the self” as worthy of care. This internal, representational working model in turn becomes a set of internalized beliefs and expectations about both oneself and others and ultimately, these working models influence the way individuals interact with their environment and relate with others (Bowlby, 1982). Children who develop insecure attachment patterns can be characterized by anxiety or distrust (Erickson, Sroufe & Egeland, 1985) and perceive their environment as “comfortless and unpredictable; and they respond either by shrinking from it or doing battle with it” (Bowlby, 1973, p. 208).

**Social Learning Theory**

Proposed by Bandura as an alternative to, or perhaps a synthesis of cognitive learning and behavioral learning theories, social learning theory posits conditions for learning that encompass observation, retention, reproduction and motivation (Bandura, 1977). According to Bandura (1977), children learn behaviors through directly observing the actions of others within their environment. The actions of parents, teachers, or peers are in turn modeled by children and become learned behaviors. Within the context of corporal punishment, and spanking specifically, children who both experience and witness this behavior are more likely to model this same form of aggression and perceive its use as an appropriate method within which to reduce conflict amongst peers. Succinctly stated by Gershoff (2002), “the argument that children imitate corporal punishment is particularly poignant when children are punished for aggression, because corporal punishment models the very behavior that parents are trying to discourage in their children.” (p. 555).
It is critical to note that social learning theory is but one mechanism within a much more complex developmental framework that helps to explain the relationship between spanking specifically and increased externalizing behavior. For example, Gershoff (2002) explicates hypothesized theoretical and mediational processes, such as social information processing, external or internal attributions, and social control theory that are central to the possible development of externalizing behavior in young children.

Still, social learning theory also provides a valuable theoretical lens with which to understand how participation in ECE can affect externalizing behavior. Quality ECE is intended to provide children with an environment wherein they can safely engage in structured, play-based learning, socialize with their peers, and develop meaningful relationships with teachers or caregivers. Teachers model prosocial behavior and conflict resolution and can intervene to stop aggressive play amongst children. As noted previously, during toddlerhood and early preschool externalizing behavior is sometimes conceived of as a normative and appropriate component of development that gradually declines as children develop self-regulatory capacities, as well as increases in cognitive and language development (Smith et al., 2004; Campbell, 2002). It is therefore not unreasonable to assume that during preschool some aggressive behavior in the classroom or ECE setting will be somewhat normative. It is also not unlikely that this aggressive behavior can also be modeled. In other words, it is important to consider the fact that modeling runs both ways: children can just as easily model aggressive behavior in a classroom as they would prosocial behavior or appropriate conflict resolution modeled by teachers.

The Additive Risk Model

While studies have demonstrated that caregiving insensitivity and controlling behavior are associated with resistant and avoidant attachments respectively (Vondra, Shaw & Kevenides,
and contextual factors such as parenting stress or depression increase a child’s risk for insecure attachments (Lyons-Ruth et al., 2002; van IJzendoorn, 1995). Bowlby emphasized the ongoing importance of the caregiving environment in influencing developmental trajectories (Kobak et al., 2006). In other words, it is exceedingly likely that these risk factors might be somewhat confounding in that they can directly affect the attachment relationship (i.e. depressed mothers are more likely to have insecure attachments with their children), but the attachment relationship itself must also be considered as distinct from each risk factor. Attachment, as elucidated above, is a specific mechanism that contributes to the development of self-regulation and internal working models. Therefore, continued exposure to poor quality caregiving throughout the preschool years leaves children with insecure attachments potentially even more vulnerable to developing externalizing behavior (Shaw & Vondra, 1995). Many of the studies previously cited emphasize the fact that a significant subgroup of children who develop early and persistent behavioral problems come from families that are characterized as multi-problem families with multiple risk factors (Campbell, 1997; Greenberg et al., 1993; Moffitt, 1990; Shaw et al., 2000). In a seminal study by Rutter (1975), multiplicative increased in rates of externalizing behavior were present as a function of the number of risk factors that were presented within the family context. When two or more stressors were present in the family environment, externalizing behavior problems were found to increase significantly, in some cases by 2-4 fold (Rutter et al. 1975).

**Early Care and Education Participation for Child Welfare-Involved Toddlers and Preschoolers: Theoretical and Empirical Explanations for Reducing Externalizing Behavior**
In the United States, ECE encompasses a broad range of services and programs, from informal care provided by kin or kith that is largely unregulated, to family child care homes (FCCHs) that provide care to a small number of children under the supervision of a licensed caregiver in their home, to center-based programs that care for a larger number of children in a more formal, educationally-oriented environment (Magnuson & Waldfogel, 2005). Researchers have recently posited a theoretical explanation for how ECE programs can reduce parent-child conflict, enhance parent/caregiver-child relationship quality and potentially mitigate behavioral problems such as externalizing behavior. Three such hypotheses have been advanced by researchers. First, the family support hypothesis suggests that the degree of parent involvement in a quality ECE program can directly improve parenting practices, which can directly result in improved social competence among children (Reynolds and Robertson, 2003).

Second, the cognitive advantage hypothesis posits improved caregiver-child interactions through cognitive gains, specifically related to language acquisition as well as modeling, received through attending ECE programs, which is expected to “reduce the risk of experiencing child maltreatment by reducing negative parent-child interactions and by increasing parent expectations and satisfaction with children’s education” (Reynolds & Robertson, 2003, p.5).

Third, Meloy & Phillips (2012) suggest that quality ECE programs have the potential to provide caregivers with respite from the rigors of parenting or fostering, as well as provide opportunities for children to form secure attachments with care providers, thereby improving social-emotional functioning and, ultimately, the relationship between the child and caregiver. Research regarding respite care for kinship, foster, and adoptive caregivers suggests that its use can significantly decrease stress, improve a caregiver’s attitude toward the children under their care, and enhance overall family relationships (Owens-Kane, 2006). We may extend this logic
to quality ECE programs in that they can serve a similar function in terms of providing short-term respite to a caregiver, thereby reducing parenting stress.

**Conceptual Framework**

The conceptual framework for this study, illustrated in Figure 2 below. It is an adaptation of the additive risk model proposed by Kobak et al. (2006) and explains how risk factors in the caregiving environment, when combined with a child’s attachment insecurity, predict externalizing behavior. The caregiving environment can be best viewed through a transactional lens and consists of three levels of analysis: attachment security at the individual level, quality of care at the transactional mesosystem level, and “caregiving context” (Kobak et al., 2006). This study adds to the knowledge base by examining ECE participation as a potential protective factor specifically for child welfare involved children wherein we would expect that participation in ECE will be a protective factor for children with insecure attachments who are also experiencing additive risk factors in the caregiving environment. Hypothesized processes based on the theoretical framework are articulated within the illustration and variables in red font are predictors that are available through my proposed secondary dataset and were subsequently utilized in the analytic framework (Figure 3) and analyses.
Figure 2. Conceptual Framework

Only variables in red font are included within the analytic model.
Figure 3. Analytic Model Resulting from the Conceptual Framework

Covariates
- Child’s Age (-)
- Child’s Sex – Male (+)
- Caregiver Education < HSD (+)
- Single Marital Status of Caregiver (+)
- TANF Participation (+)
- Child Welfare Involvement – Substantiated/Removal (+)

Predictors
- Spanking (+)
- Maternal Depression (+)
- Cognitive Stimulation (-)
- Child’s Language (-)

Outcome
- Externalizing Behavior

Moderators
- Attachment Security (-)
- ECE Participation (-)
Research Questions and Hypotheses

This dissertation seeks to address the following research questions. Each research question is accompanied by its alternate hypothesis resultant from theoretical frameworks and empirical evidence.

1. What is the externalizing trajectory and inter-individual change among child welfare-involved children over a 36-month period preceding kindergarten entry at age five?
   
   \( H_1 \): An unconditional, null model will indicate a decreased externalizing score over the 36 month period preceding kindergarten.

2. Is attachment security associated with externalizing behavior?
   
   \( H_1 \): Secure attachment patterns at 18 months will be associated with decreased externalizing behavior.

3. Is ECE participation associated with externalizing behavior?
   
   \( H_1 \): Participation in ECE will be associated with decreased externalizing behavior.

4. Are caregiver characteristics (depression, spanking, cognitive stimulation) associated with externalizing behavior?
   
   \( H_1 \): Child welfare-involved preschoolers with caregivers identifying as clinically depressed will exhibit higher externalizing scores compared to preschoolers of non-depressed caregivers.

   \( H_1 \): Child welfare-involved preschoolers who have experienced spanking by a caregiver will exhibit higher externalizing scores compared to preschoolers who are not spanked.

   \( H_1 \): Child welfare-involved preschoolers with higher cognitive stimulation scores (per HOME-SF) will exhibit decreased externalizing scores compared to preschoolers who do not receive similar cognitive stimulation.
5. Is participation in ECE differentially beneficial to insecurely attached children?

H1: Child welfare-involved preschoolers with insecure attachments security will exhibit greater decreased externalizing when participating in ECE than preschoolers with secure attachments participating in ECE.
CHAPTER 3: LITERATURE REVIEW

The purpose of this literature review is to 1) briefly layout a landscape describing the prevalence of externalizing behaviors among children, and preschool-aged children specifically, involved with the child welfare system, 2) describe the dominant correlates (attachment, child characteristics, parenting characteristics, and family characteristics) of externalizing behavior among preschoolers, 3) review existing literature about participation in ECE and externalizing behavior among general populations and specifically children involved with the child welfare system.

Prevalence of Externalizing Behavior Among Child Welfare-Involved Preschoolers

In a meta-analysis with a combined sample of 2,765 children attending Head Start programs, prevalence rates of externalizing behavior problems among child welfare-involved preschoolers was estimated at between 17% to 30% (Qi & Kaiser, 2003). Children involved with the child welfare system present with a toxic relational environment that leave them particularly susceptible to potential maladaptation across a host of developmental domains (Cicchetti & Toth, 2005). Given the myriad risk factors that families involved with the child welfare system are likely to present – exposure to abuse or neglect, domestic violence, substance use, poverty, and neighborhood violence – it is not surprising that these children are more likely to exhibit externalizing behavior than the general population, or even traditionally at-risk populations (Hazen et al., 2009; Kotch et al., 2008; Center for Community Partnerships, 2006; Pilowsky, 1995).

Yet, given the heterogeneity which defines children that are involved with the child welfare system, aggregated prevalence rates are likely problematic at best. For example,
involvement in the child welfare system can range from an unsubstantiated case to a decade long involvement in foster care across varying settings, from kinship to residential. In addition to the potential trauma brought on as a result of involvement with the child welfare system, maltreatment can range from a single incident to chronic exposure throughout childhood. Furthermore, the type of abuse a child experiences (i.e. neglect, physical or sexual abuse, exposure to domestic violence, or any co-morbidity of the aforementioned types) is of consideration when assessing externalizing trajectories. These factors, combined with age, family composition, socioeconomic status, neighborhood effects, and biological predispositions/effects, renders it problematic to attribute any causal relationship across such a heterogeneous group.

Placing the above caveat aside, in a study of child welfare involved children using the National Survey of Child and Adolescent Well Being (NSCAW) I data, nearly half (47.9%) of all children between the ages of two and 14 had clinically significant emotional or behavioral problems (Burns et al., 2004). These authors used internalizing, externalizing, and total problem behavior scores from the Child Behavior Checklist (CBCL) to assess the mental health needs of child welfare-involved children ranging in age from birth to 17 years. In the NSCAW I sample, 32.3% of 2 to 5 year-olds were within clinical range on the externalizing subscale of the CBCL. A more recent study utilizing NSCAW II data found 8.9% of 19 to 36 month-old toddlers scored above the clinical cut-off on the CBCL for externalizing behaviors specifically (Horwitz et al., 2012). It is perhaps important to note that both NSCAW I and NSCAW II samples include substantiated and unsubstantiated child welfare cases.

Children in foster care are at even greater risk of presenting with externalizing behaviors. In a review of studies from 1974 through 1994, children in foster care were more likely to exhibit
externalizing disorders, even when compared to children with similar backgrounds of deprivation (Pillowsky, 1995). In a study of children in foster care in three counties across California, nearly 48% of children in the San Diego county sample displayed elevated rates of externalizing on the CBCL in terms of their total problem behavior score.

Using latent class growth analysis (LCGA) of NSCAW I data, Woodruff & Lee (2011) identified four distinct trajectories of externalizing behavior as well as predictors of membership within these trajectories across a six-year span (when children were approximately six to 10 years old). Nearly 11% of children exhibited consistently elevated externalizing rates in the clinical range and 8% constituted a worsening group wherein scores increased over the six-year period. Well over half (56.9%) of children started and remained within the normal range of behavior and nearly one-quarter (24.3%) of children improved and shifted from the borderline to normal range. Multinomial logistic regression analyses to identify predictors of membership in these four trajectories revealed that children with persistently high externalizing behavior were more likely to have been investigated for sexual abuse and also displayed elevated co-occurring rates of internalizing behavior.

Several quasi-experimental studies have indicated higher rates of externalizing behavior problems, particularly aggression, among maltreated toddlers and preschoolers. Rieder & Cicchetti (1989) investigated a subsample of 142 preschoolers from a larger longitudinal study to assess cognitive control functioning when presented with aggressive stimuli and found maltreated children directed attention toward the aggressive, distracting stimuli while their non-maltreated counterparts shifted more toward withholding attention. This important finding provides additional evidence to the idea that children who experience maltreatment demonstrate greater difficulty that their non-maltreated peers in managing aggressive impulses (Aber &
Cicchetti, 1984). Hoffman-Plotkin & Twentyman, (1984) used a matched case-control design to assess behavioral differences among physically maltreated, neglected, and non-maltreated preschoolers. ANCOVA analyses of observations by researchers found that physically maltreated children were more aggressive than neglected children or the control group. Cognitive assessments (Stanford-Binet Intelligence Test, Peabody Picture Vocabulary Test, and Merrill Palmer Scale) found no significant difference in performance between either physically abused or neglected children, but both maltreated groups scored significantly lower than the control group. Haskett & Kistner (1991) also utilized a matched case-control design to investigate aggressive behaviors of maltreated preschoolers enrolled in a daycare center.

Maltreated and non-maltreated children were matched on marital status of primary caregiver, living arrangement, consistency of arrangement, number of siblings, mother’s education, and family income. Analyses of teacher/caregiver ratings indicated that maltreated preschoolers scored significantly higher on two externalizing subscales (hostile-aggressive and hyperactive-distractible). In another matched case-control study of 30 preschoolers, Darwish et al., (2001), although in the clinical setting there were not enough instances of aggressive play observed by researchers during “free-play” observations to form group comparisons, aggressive behavior was unique to the maltreated group based on teacher and therapist ratings. It is important to note that these three case-control studies cited above relied on data gathered from observations conducted by researchers directly, thereby introducing potential bias (i.e. subjectivity of researcher or effect on observed subjects) and overall validity of findings. Extending findings from similar studies, in a sample of n=139 families recruited from the Department of Social Services (maltreated families n=88) and neighborhoods where maltreating families reside (non-maltreated families n=51) Maughan & Cicchetti (2002) found that physically maltreated preschoolers were rated as
more aggressive than non-maltreated peers based on maternal reporting using the CBCL aggressivity subscale (mean t-score of 60.55 versus 55.80).

**Correlates of Externalizing**

**Attachment**

The earliest studies investigating the link between early attachment patterns in infancy and later prosocial behavior found correlations between secure attachments and perceived peer competence in the preschool years. Waters et al. (1979) found that 15-month old infants assessed as securely attached using the strange-situation procedure were labeled as more socially competent at age three by independent observers using Q-sort data in a preschool setting. At three and a half years old, securely attached children were more likely to have other children seek out their company, were more sympathetic to their peers’ distress, and less hesitant to engage (Waters et al., 1979). More recently, in a meta-analytic review of 63 studies (n=3,510) with reported correlations between child-parent attachments and peer relations found a small to moderate global effect size (.20) of the predictive strength of mother-child attachments and quality of children’s close friendships (Schneider, Atkinson & Tardif, 2001).

Externalizing behavior is not simply the absence of prosocial behavior and it is therefore critical to review studies that demonstrate a correlation between attachment and externalizing behavior, specifically aggression, hostility, or impulsivity. Some of the earliest studies demonstrated conflicting or inconclusive results. Lewis et al. (1984) followed n=113 children from age one to six years old to assess the effect of early attachment and later externalizing. Attachment was assessed at one year using the strange-situation procedure and maternal reports using the Child Behavior Profile measured externalizing behavior. At age six, analyses demonstrated no significant differences among males in terms of attachment security and
externalizing, but girls with secure (mean score 11.03) and avoidant (mean score 9.42) attachments exhibited higher externalizing scores than those identified as ambivalently attached (mean score 1.40).

One of the first laboratory studies of the relationship between attachment and aggression involved 53 mothers and their children (43 families had two children and 10 had three children) between the ages of two and seven (wherein the youngest child’s average age was 1.57 and the elder sibling was 4.02 years old (Teti & Ablard, 1985). Mothers and their children were assessed in a university playroom twice to first determine attachment security of the youngest child using the Attachment Q-Sort and second to assess sibling interaction. Researchers taped and reviewed sibling interactions to code behavior using a technique “which involved checking off on a coding sheet the presence of behaviors in each interval that related to the quality of the sibling relationship” including but not limited to cry/protest, distract, aggress toward mother/sibling. Teti & Ablard (1985) found that insecure children were significantly more likely to display aggressive behavior toward both their mother and sibling compared with securely attached peers.

As part of the Oregon Toddler Project, Fagot & Kavanagh (1990) followed n=89 children from 18 months to 27 months participating in both home observations and observations within a laboratory preschool setting. Children were observed in the preschool setting 15 times for each term in attendance and were rated by teachers on likability, tractability and peer relations and parents responded to three telephone interviews to rate problem behaviors and also completed the CBCL at 30 months and at 4 years old. The strange-situation procedure was used to assess attachment security. Fagot & Kavanagh (1990) found that parents of insecure and securely attached children reported approximately the same number of behavior problems. Moreover, according to teacher reports, differences in perceptions of problem behavior based on attachment
security were found only among girls, wherein insecurely attached girls were more likely to be reported as “being more difficult” and having “poorer relationships with peers”.

A cross-sectional study of 94 preschoolers in daycare and preschool settings found that insecurely attached children were more likely to be rated as angry-aggressive than their securely attached peers based on teacher reported behavior using the Social Competence and Behavior Evaluation-Short Form (DeMulder, Denham, Schmidt & Mitchell, 2000). In a follow up study by the same authors, children were assessed at kindergarten and findings were consistent. Children with insecure attachments were reported as more aggressive (Schmidt, DeMulder & Denham, 2002). Wood, Emmerson & Cowan (2004) assessed attachment security using the Attachment Q-Set of n=37 three year olds and assessed preschool classroom behavior using teacher and peer reports. Findings indicate that lower attachment security was predictive of higher externalizing and internalizing behavior, as measured by teacher reporting using the Child Adaptive Behavior Inventory at age four.

Results from the previously mentioned studies are limited in the populations that they can generalize to, as samples in these studies consisted of largely middle-class, low-risk families experiencing limited economic burden and without the many stressors associated with lower socioeconomic status. This point is particularly salient, as some researchers have argued that attachment is an “interactive risk factor that is even more significant when other psychological stressors are present in the family ecology” (Fearon et al., 2010; Belsky & Fearon, 2002). Studies reviewed hereafter are limited to investigations of preschoolers who are deemed high-risk or involved with the child welfare system.

The first study to look specifically at low-income, high-risk families was the Minnesota Parent-Child Project (in its 38th year as of 2015). This longitudinal study followed pregnant
mothers entering their third trimester of pregnancy who were eligible for public assistance for prenatal care and delivery. Attachment classifications of a sample of 96 children were assessed at 12 and 18 months using the Strange Situation method. When assessed at preschool, across a range of settings from lab schools to daycares, 14 of 16 stable, anxiously attached children (i.e. assessed as anxiously attached at 12 and 18 months) were labeled as having behavior problems, as reported by their preschool teachers (Erickson, Sroufe & Egeland, 1985). Specifically, those identified as anxiously attached were labeled by teachers as both more hostile and impulsive than securely attached children.

In a cross-sectional study of 62 low-income preschoolers, security of attachment as an infant was the strongest predictor of hostile behavior in preschool based on teacher reporting at age five (Lyons-Ruth, Alpern & Repacholi, 1993). Analyses also indicated that disorganized attachment specifically was predictive of hostile behavior and scores of those with avoidant or secure attachments did not vary significantly (Lyons-Ruth, Alpern & Repacholi, 1993). Families were recruited from among 78 families who participated in a previous study with the same authors and approximately 16% of families had a documented case of child abuse or neglect. An additional 182 children attending the same preschool as the n=62 low-income participants were selected by matching with three same-sex classmates nearest in birthdate and were included to control for potential differences in teacher rating scales.

Shaw & Vondra (1995) recruited n=100 children and families who were receiving Women, Infants and Children (WIC) benefits. Families were recruited into the study when children were approximately 8-11 months old and participants completed Beck Depression Inventories, Fates Infant Characteristics Questionnaires, and demographic information when the children were 12, 18 and 24 months. Attachment security was assessed using the strange-
situation procedure between 12 and 18 months of age. And the CBCL was completed using maternal report at 36 months. Attachment security at 18 months, but not 12 months, was significantly associated with externalizing behavior at 36 months among both girls and boys. In regression analyses using attachment as a dichotomized measure (insecure or secure attachment), the prediction of externalizing behavior problems for boys at age three were accounted for by attachment security and maternal depression indices. As a follow-up to this study Shaw et al., (1996) assessed attachment security and externalizing behavior at 5 years of age. Elevated externalizing behavior at age five was predicted by disorganized attachment classification at 12 months. Moreover, children with disorganized attachments at 12 months with mothers who perceived them as “difficult” demonstrated significantly higher aggressive scores than children with only one risk factor present (either disorganized attachment or perceived “difficult” temperament).

A meta-analysis of 69 studies (n=5,947) assessed the extent to which insecure attachments predict externalizing behaviors concluded that children with insecure attachments are at elevated risk for externalizing (d=0.31) and among children identified as having a disorganized attachment, the risk what slightly elevated (d=0.34) (Fearon et al., 2010). The meta-analysis reported on studies including all children aged 12 or younger (with n=26 using infant or preschool ages samples), but attempted to assess the extent to which attachment-related variation was moderated by age of assessment of externalizing behavior. Regression analyses indicated that the later Strange Situation Assessments were conducted (within the window of 12-18 months), the stronger the effect size. Moreover, assessments after 18-months using the Attachment Q-Sort appeared to yield still stronger effect sizes. Authors also note that it is possible that age three is a particularly important year developmentally that amplifies the link
between attachment and externalizing problems (Fearon et al., 2010). Interestingly, authors note the relative consistent magnitude of association between attachment and externalizing for both middle/high-SES (d=0.25) and low-SES (d=0.31) children.

Perhaps most promising is a recent study which examines the efficacy of an attachment-based intervention for maltreated children and their families. In a randomized control trial of 67 primary caregivers, n=40 received a short-term intervention involving eight home-visits designed to enhance “maternal sensitivity to child emotional and behavioral signals, in order to promote greater child [attachment] security” while n=39 were assigned to a control group, receiving (Moss et al., 2011). Following the intervention, the percentage of children with disorganized attachments was reduced from 54% to 20% compared with an increase in disorganized attachment in the control group from 50% to 56 percent. Findings indicated that both externalizing and internalized behavior within the intervention group, assessed through self-reporting of CBCL scores by a primary caregiver, decreased as a function of child’s age, while those in the control group increased as a function of child’s age. The authors note that this is a particular salient finding given our current understanding of the maladaptive trajectories of externalizing symptomology.

**Parenting Characteristics: Corporal Punishment**

For nearly sixty-years studies have identified an association between corporal punishment – distinct from physical abuse – and aggression in early childhood (Bandura & Walters, 1959; Gershoff et al., 2016). Rothbaum & Weisz (1994) conducted one of the earliest meta-analyses of studies investigating the association between harsh parenting practices and externalizing behavior. The meta-analysis included 47 studies from 1947 to 1992 wherein the age of children included in the samples ranged from infants 10.5 months old through postsecondary-aged youth.
Externalizing was operationalized as aggressive, hostile or non-compliant behavior and coercive control was defined as physical attempts (force, physical manipulation or harsh demands) on the part of the caregiver to influence a child’s behavior (Rothbaum & Weisz, 1994). The authors also identified positive parenting factors, such as approval (praise and encouragement), affection and synchrony (responsiveness and sensitivity).

Gershoff (2002) conducted a meta-analysis of eighty-eight studies from 1938 to 2000 - While robust in the scope of operationalization of corporeal punishment, criticisms remain about the cross-sectional nature of and small sample sizes within the studies that were used in the meta-analysis (Brooks-Gunn). Still, this review article provides robust evidence of an association between corporal punishment in early childhood and its association with aggression and delinquent or antisocial behavior in both childhood and adulthood. The meta-analysis included 27 studies with a total of n=12,326 participants and a strong association (d=0.36) between corporal punishment in childhood and the aggression composite. A slightly stronger effect was found between corporal punishment in childhood and delinquent or antisocial behavior (d=0.42) among a subsample of 13 studies spanning n=7,016 participants. Interestingly, a stronger association was found for boys, compared with girls. The author attributes this to “child effects” wherein boys tend to exhibit aggression more than girls, but are also subsequently more likely to receive corporal punishment from caregivers than their female counterparts (Gershoff, 2002).

Additional literature since Gershoff’s (2002) seminal meta-analysis has consistently provided sound evidence that physical punishment in early childhood is associated with externalizing behavior in later childhood and adolescence (Benjet and Kazdin 2003; Gershoff 2002; Lee et al. 2013; Mackenzie et al. 2012; Taylor et al. 2010 – from MacKenzie). Most recently, MacKenzie et al. (2014) utilized a cross-lagged path model with a sample of n=1,874...
children from the Fragile Families and Child Well-being dataset and found that spanking at one and three-years influenced the presence of later externalizing behavior. Perhaps more importantly, they identified a transactional process whereby externalizing behavior also influenced the frequency of parental spanking.

**Family Characteristics: Maternal Depression**

As a result of the limited or negative affect, emotional unavailability, or inconsistency and irritability that often characterizes depressed caregivers, infants and toddlers growing up in this environment are more likely to have insecure attachments (Davies, 2004). Moreover, infants of depressed caregivers are more likely to develop difficulties in self-regulatory capacities (Davies, 2004). During toddlerhood, children require continued consistent and engaged parenting to develop a sound self-regulatory capacity and maternal depression is a significant risk factor that directly hinders a caregiver’s capacity to provide a structured environment for learning and modeling, thereby affecting both socioemotional and cognitive development (Cicchetti & Schneider-Rosen, 1986). Caregivers who are depressed are often less responsive or attentive than non-depressed caregivers and are also less likely to consistently provide rules or limits, which serve as a foundation for the development of normative expectations. Therefore, many studies have identified a correlation between maternal depression in early childhood and externalizing behaviors.

In fact, some research has found that earlier exposure to maternal depression is more likely to have a stronger, more negative impact, than exposure during later childhood (Connell & Goodman, 2002; Goodman & Gotlib, 1999). Goodman, Rouse & Connell (2011) conducted a meta-analysis that included 193 peer reviewed studies from 1982 to 2009, using both clinical and community samples, which ranged from 16 to 20,520 families or mother-child dyads. Authors
found a modest effect size of maternal depression and externalizing behavior and also found moderation by child’s age. Namely, younger children first exposed to a caregiver’s depression are likely to be more susceptible to externalizing or other psychopathology than children who are exposed later in childhood.

**Participation in Early Care and Education and Externalizing Behavior**

Nearly three decades ago, Jay Belsky sounded alarm bells with a series of studies which found a correlation between nonmaternal care in the first year of life and decreased socioemotional functioning (Belsky, 1988). More specifically, he found an association between elevated levels of aggression and noncompliance from ages three to eight and participation greater than 20 hours in nonmaternal care. Howes’ (1990) seminal longitudinal study following 80 middle-class families participating in programs of low or high quality (45 of whom participated in child care prior to their first birthday and the remainder enrolling in children care between one and four years old) extended Belsky’s work by concluding that quality of child care directly mediates hostile behavior at Kindergarten. Howes’ (1990) looked at the complex interaction among child characteristics, family socialization strategies, and quality of child care.

A host of seemingly conflicting studies followed with some finding evidence of elevated behavior problems with increased use of child care (Brooks-Gunn, 1991; Hofferth, 1999) and others finding no such relationship and in fact, a relationship between longer hours spent in care and increased child compliance at home (Greenstein, 1993; Crockenberg & Litman, 1991). Vandell and Wolfe (2000) reviewed the evidence from 45 studies that examined the association between child care quality and child outcomes. Four studies, correlational and quasi-experimental in design, found clear linear relationships between improved structural quality of care and improved language skills, school-readiness, and decreased externalizing behaviors in
children. For example, an increase in an additional structural standard met at a center (e.g. adult-to-child ratio, size of each group, and formal education or training of caregivers) resulted in an increase in mean scores for school readiness from 38.9 to 51.5 and mean scores for externalizing behaviors decreased from .81 to .04 (measured by Bracken School Readiness Measure and the Adaptive Social Behavior Index, respectively). Eight additional studies found that lower child-to-adult ratios resulted in caregivers that provided more “stimulating, responsive, warm and supportive care” which resulted in higher scores across a range of measures (Infant/Toddler Environmental Rating Scale (ITERS), Early Childhood Environment Rating Scale (ECERS), and process quality scores) and ultimately translated to decreased externalizing behavior among children (Vandell & Wolfe, 2000, p. 14). Four additional studies of one to 3-year old children in center-based care determined that improved ECERS scores among child care centers resulted in increased cognitive capacity (higher scores on CBI intelligence scales, more expressive language skills, and higher school readiness) as well as cooperative behavior with peers and increased persistence in completing tasks.

The lack of controlled experiments utilizing random assignment, given the ethical implications therein, poses a serious threat to the validity and reliability of research pertaining to evidence about child care utilization and therefore, “teasing apart family characteristics that might contribute to the positive developmental outcomes in children from the effects of child care quality remains problematic” (Vandell & Wolfe, 2000). One of the only studies to utilize random assignment found, based on behavior reports from parents, children who entered Head Start at age three scored 0.5 points lower on the Total Behavior Problems scale at the end of the program year (Puma et al., 2005). Moreover, on the hyperactive scale of the total behavior problem construct, this cohort also scored significantly lower (by 0.3 points) when compared
with their non-Head Start attending control group. In terms of aggression specifically, children from English-language families in the 4-year old cohort scored significantly lower, by 0.22 points, on the aggressive subscale. While the findings were statistically significant, the effect sizes were quite small, in some cases accounting for only 13% of a standard deviation (Puma et al., 2005).

Most recently, Schindler et al. (2015) conducted a comprehensive meta-analysis that included high-quality evaluations encompassing only those with similar treatment and comparison groups and attrition rates less than 50% from initiation of treatment to measurement. Using this rigorous inclusion criteria, a total of 273 studies were included in the meta-analysis, from an initial search of more than 10,000 studies and evaluations. Findings from this meta-analysis indicate a clear directional and staggered benefit of quality ECE programming that has clear social and emotional content. For example, participation in ECE programs with no clear focus on social and emotional development demonstrated no significant effects on later externalizing behavior. Yet, programs that intensively targeted children’s social and emotional development were associated with significant reductions in later externalizing behavior.

**Early Care and Education and Externalizing Behavior: Outcomes for Child Welfare-Involved Children and Their Families**

Findings from the child care literature suggest that low-income families are likely to benefit most from high quality, center-based care (Vortuba & Drzal, 2004; Hill, Waldfogel, & Brooks-Gunn, 2002; Vandell & Wolfe, 2000). Moreover, some research has documented the importance of the process and structural quality of ECE for at-risk children, wherein poorer care may have deleterious consequences to a greater extent than for non-at-risk populations (Phillips & Lowenstein, 2011). Research investigating the intersection of child welfare involvement and
ECE participation is an emerging, yet promising, literature. While there are studies that link participation in ECE with modest benefits in cognitive and language development (Merrit & Klein, 2015; Dinehart et al., 2014; Dinehart et al., 2012), decreased recurrence of maltreatment, and stability of placements (Meloy & Phillips, 2012a; Meloy & Phillips, 2012b), few studies have investigated how participation affects externalizing behavior.

Only two studies to date have looked at the link between ECE participation and externalizing behaviors, both using data from the Head Start Impact Study. First, Lipscomb et al. (2013) detected only “marginally significant” indirect effects of Head Start participation at kindergarten on externalizing behavior, mediated through impacts on outcomes in pre-kindergarten participation. Second, Lipscomb et al. (2014) investigated participation in the year prior to kindergarten and rates of externalizing behavior among child welfare involved preschoolers in non-parental care. Using Head Start Impact Study data, which randomly assigned two cohorts of preschoolers to Head Start programs or alternate community comparison programs, Lipscomb et al. (2014) compared externalizing behavior of children considered to be traditionally “at risk” with those in non-parental care (kinship or foster care). Based on caregiver reports, analyses with multilevel modeling indicated children in non-parental care had elevated rates of externalizing (aggression and hyperactivity, and oppositional behavior). Findings also demonstrated that low measures of teacher-child closeness and process quality in the classroom were associated with elevated externalizing scores among children in non-parental care at the end of the pre-kindergarten program year, indicating that children living in non-parental care were found to be more sensitive to ECE program quality. Unexpectedly, the authors also found that children who attended prekindergarten programs that were assessed as having higher process quality exhibited more externalizing behaviors in kindergarten, per teacher report.
CHAPTER 4: METHODS

This chapter will describe the methods that were utilized to address the research questions, including a description of the secondary data source, criteria for inclusion within the study sample and its rationale, elaboration of variables, including their constructs and operationalization, as well as the assessments from which they were derived. Lastly, it will detail analytic procedures.

Secondary Data Source: National Survey of Child and Adolescent Wellbeing (NSCAW) II

To address the above questions, this study employed hierarchical linear modeling to conduct a secondary analysis of longitudinal data utilizing the National Survey of Child and Adolescent Wellbeing (NSCAW) II dataset, which spans three waves, each separated by approximately 18 months. The NSCAW II is a national study of children aging from one month to sixteen years of age referred to child protective services as a result of suspected child abuse or neglect during a 15 month reference period preceding enrollment in the study. The NSCAW II data were collected utilizing a complex, two-stage stratified sampling design wherein the United States was divided into nine sampling strata (consisting of eight states and the remaining 48, including the District of Columbia). A total of 92 primary sampling units within these strata were defined by counties or service planning areas within child welfare agencies. Children were then stratified by domains of interest (age, abuse type, placement type, service utilization). It is important to note that the sampling included children involved in substantiated as well as non-substantiated child abuse or neglect (CAN) allegations, as children were not sampled with equal
probability and oversampling was therefore necessary in order to achieve sufficient cases for analysis across the many domains of interest.

**Data Collection**

The present study is a longitudinal analysis of three NSCAW II waves. Data collection for NSCAW II occurred across three time points over a duration of four years. Wave 1 interviews, or baseline, were conducted over approximately 15 months beginning in March 2008 and ending in September 2009. Wave 2 interviews occurred 18 months after the close of the baseline investigation, beginning in October 2009 and ending in January 2011. Wave 3 interviews occurred approximately 36 months after the close of the baseline investigation, beginning in June 2011 and ending in December 2012 (Table 1). Data collected by the NSCAW II included assessments and questionnaires relating to a range of spheres, from service utilization, caregiver, child and caseworker characteristics, and child development domains. Surveys were conducted through the use of computer-assisted interviewing and many assessments were completed by in-person by trained researchers at the National Data Archive on Child Abuse and Neglect (NDACAN).

**Table 1. NSCAW II Data Collection Timeline**

<table>
<thead>
<tr>
<th></th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Date/End Date</strong></td>
<td>March 2008/ May 2009</td>
<td>October 2009/ January 2011</td>
<td>June 2011/ December 2012</td>
</tr>
<tr>
<td><strong>Modality</strong></td>
<td>• Face-to-face Interviews</td>
<td>• Face-to-face Interviews</td>
<td>• Face-to-face Interviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Computer-Assisted Interviews</td>
<td>• Computer-Assisted Interviews</td>
</tr>
<tr>
<td><strong>Respondent Type</strong></td>
<td><strong>Child</strong></td>
<td><strong>Child</strong></td>
<td><strong>Child</strong></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td><strong>Caregiver</strong></td>
<td><strong>Caregiver</strong></td>
<td><strong>Caregiver</strong></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td><strong>Case Worker</strong></td>
<td><strong>Case Worker</strong></td>
<td><strong>Case Worker</strong></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td><strong>Teacher</strong></td>
<td><strong>Teacher</strong></td>
<td><strong>Teacher</strong></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Study Participants

For purposes of the present study, the subsample was restricted to children that were between the ages of 18 and 33 months at Wave 1 (n=431), from the 5,872 in the complete NSCAW II sample at Wave 1. Our subsample was restricted to this age specification for three reasons. First, two primary assessments of interest targeted children within this age group (Attachment TAS-45 Sort 15 – 35 months; CBCL is valid beginning at 18 months of age). Second, children over the age of one are more likely to participate in ECE programs (Phillips & Adams, 2001) than infants. Moreover, there is a literature suggesting that infants participating in child care within the first year of life are more likely to score lower on cognitive and social emotional measures when compared with those that remain in a home environment or utilize relative care (Brooks-Gunn, Han & Waldfogel, 2002; Baydar & Brooks-Gunn, 1991). Third, attachment classifications earlier than 12 months tend to be less reliable (Fearon et al., 2010). Of the n=431 children aged 18-33 months, n=327 have valid attachment measures. Therefore, the total number of children followed across all three waves for model specification purposes was n=226 after accounting for attrition of those without our dependent variable, or externalizing scores (n=101). Lastly, the n=5 children who self-identified as participating in a Head Start program were also excluded bringing the total study sample to n=221. These five participants were excluded, as Head Start programming is potentially qualitatively different and of potentially higher quality or more stringently regulated than other formal programs. Figure 4 below provides a diagram of how the study sample was derived and what data are missing from the sample.
Figure 4. Missing Data Tree

NSCAW II
Total Sample at Wave 1
n=5,872

Excluded: Case does not satisfy age requirement
n=5,441

Aged 18-33 months at Wave 1
n=431

Missing Attachment Score
n=104

Missing DV
(Externalizing Score)
n=10

Subsample
Wave 1
n=317

Attrition (Externalizing Score)
n=51

Subsample
Wave 2
n=266

Attrition (Externalizing Score)
n=40

Final Subsample
Wave 3
n=226

Final Sample
n=221 (subtracting n=5 Head Start participants)
Analytic Procedures

This longitudinal study utilized secondary data to first employ basic descriptive and graphical statistics to provide a description of within-individual change and define the general growth trajectories for each subgroup (i.e. attachment classification and ECE utilization). Next, hierarchical linear modeling was utilized to conduct the inferential analyses. Given the inherent violation of unit independence in the dataset and its complex, weighted structure, multilevel modeling using STATA 14 is particularly well-suited for this analysis. Hierarchical linear modeling is specifically intended to disaggregate individual level data (level 1 fixed effects) from time level effects (level 2 random effects) and is superior to traditional regression modeling or repeated measures in the case of panel or longitudinal data, as it provides a more accurate and robust representation of standard errors for parameter estimates. Compared with methods traditionally used for repeated-measures analysis, such as RM-ANOVA, hierarchical linear modeling allows for the use of time-varying covariates, which change over time for each participant (Kwok et al., 2008). Hierarchical linear modeling is an extension of OLS regression wherein fixed and random effects can be accounted for at all levels (Hofmann, 1997). Moreover, these models generate an intraclass correlation coefficient (ICC), which provides an estimate of the level of variance in the dependent variable that is attributable to the nesting, often referred to as the cluster effect (Raudenbush & Bryk, 2002). Thus, the present study employed hierarchical linear modeling (HLM), using a discrete measure of externalizing behavior as the dependent variable in a two-level random-coefficients regression model wherein time (Level 1) is nested within children (Level 2).
Measures

All measures for the dependent variable (externalizing score), independent variables (attachment security, ECE participation, maternal depression, spanking, cognitive stimulation, child’s language), and covariates (marital status of primary caregiver, TANF participation, primary caregiver’s education, age and gender of child, substantiated case) used in the analyses are described below and highlighted in Table 2.

Table 2: Measures and Variable Construction and Type

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Scale/Item</th>
<th>Variable Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Externalizing Score</td>
<td>Child Behavior Checklist (CBCL)/1.5-5; Achenbach, 2000; Aggressive Behavior (19 items) and Attention Problems (5 items)</td>
<td>Dependent variable, continuous discrete (range 0 – 48)</td>
</tr>
<tr>
<td>Attachment Security</td>
<td>Toddler Attachment Sort-45; Kirkland &amp; Bimler, 2002; 45 items mapped on attachment classifications (insecure avoidant, secure, insecure ambivalent, and disorganized)</td>
<td>Independent variable, dichotomous (secure or insecure – insecure avoidant, insecure ambivalent, disorganized)</td>
</tr>
<tr>
<td>ECE Participation</td>
<td>Parent response to the following question: Is your child currently in any type of day care program, including a Head Start program, nursery school or early childhood development program?</td>
<td>Independent variable, dichotomous (not participating, participating)</td>
</tr>
<tr>
<td>ECE Participation – Dose</td>
<td>Running sum of ECE Participation variable</td>
<td>Independent variable, categorical (no participation, 1 wave, 2 waves, 3 waves)</td>
</tr>
<tr>
<td>Caregiver Discipline (Spanking)</td>
<td>Home Observation for Measurement of the Environment (HOME-SF); Caldwell and Bradley, 2003; response to one item within the “Emotional Support” scale: In the past week, about how many times, if any, have you had to spank ^CHILD?</td>
<td>Independent variable, dichotomous¹ (not spanked, spanked)</td>
</tr>
</tbody>
</table>

¹ The spanking variable was dichotomized due to the changing nature of the question within the HOME-SF assessments for less than 2 years-old and 3 to 6 year-olds (“In the past week, about how many times, if any, have you had to spank your child?” versus “How many time in the last month have you had to spank your child?”). Given the false equivalence across age and time the variable was dichotomized to not spanked or spanked.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Variable Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Stimulation</td>
<td>Home Observation for Measurement of the Environment (HOME-SF); 22 items encompass the cognitive stimulation subscale</td>
<td>Independent variable, continuous discrete (range 0 to 14)</td>
</tr>
<tr>
<td>Maternal/Caregiver Depression</td>
<td>Composite International Diagnostic Interview Short Form (CIDI-SF); 32 items (16 for anhedonic scale and 16 for dysphoric scale)</td>
<td>Independent variable, dichotomous (not depressed, depressed)</td>
</tr>
<tr>
<td>Child’s Language</td>
<td>Preschool Language Scale-3 (PLS-3); Zimmerman, Steiner &amp; Pond, 1992; 48 items across two subscales (auditory comprehension and expressive language); standard scores</td>
<td>Independent variable, continuous discrete (range 50 – 150)</td>
</tr>
<tr>
<td>Child’s Gender</td>
<td>Caregiver response</td>
<td>Control variable, dichotomous (female, male)</td>
</tr>
<tr>
<td>Child’s Age</td>
<td>Caregiver response</td>
<td>Control variable, continuous (range 18 months to 71 months)</td>
</tr>
<tr>
<td>Child’s Race/Ethnicity</td>
<td>Caregiver response; American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, Hispanic, White</td>
<td>Control variable, categorical (White, Hispanic, African American, other)</td>
</tr>
<tr>
<td>Child Welfare Involvement</td>
<td>Variable derived from NCSAW based on caseworker report</td>
<td>Control variable, categorical (unsubstantiated, substantiated, removed from home)</td>
</tr>
<tr>
<td>Caregiver Marital Status</td>
<td>Caregiver self-report; Are you currently married, separated, divorced widowed, never married?</td>
<td>Control variable, dichotomous (single, married)</td>
</tr>
<tr>
<td>Caregiver Education</td>
<td>Caregiver self-report; What is the highest grade in school you have completed?</td>
<td>Control variable, dichotomous (less than high school, high school degree)</td>
</tr>
<tr>
<td>TANF Participation</td>
<td>Caregiver self-report; In the past 12 months, have you received any TANF, welfare, or benefits?</td>
<td>Control variable, dichotomous (not participating in TANF during last year, participating in TANF during last year)</td>
</tr>
</tbody>
</table>
**Dependent Variable**

The Child Behavior Checklist (CBCL) is a standardized questionnaire using parented-reported behaviors to assess maladaptive emotional or behavioral problems in preschool aged children. The CBCL assesses both internalizing and externalizing behaviors, with subareas including “social withdrawal, somatic complaints, anxiety and depression, destructive behavior, social problems, thought problems, attention problems, aggressive behavior, and delinquent behaviors” (ICPSR). As a developmental assessment tool, the CBCL varies depending on the age of a child. Scoring is based on gender and age of a child and presents a borderline clinical range as well as clinical range. The CBCL/2-3 is an instrument that had been used extensively and is one of the most widely used measures in identifying problem behavior.

The CBCL/1.5-5 is a new instrument that has also been extensively used, notably in the NICHD study. The CBCL/1.5-5 (2000) is a revision of the CBCL/2-3 (1992), which targets children only two or three years old. The CBCL/1.5-5 revision includes the addition of two questions pertaining to the Anxious/depressed cluster (*Shows panic for no good reason*) and (*Rapid shifts between sadness and excitement*). Additionally, wording was slightly revised on six of the checklist items. *Parents or caregiver are asked to score specific behaviors on the following scale: 0 (not true of child), 1 (somewhat or sometimes true), and 2 (very true or often true).* Five items encompass the Attention Problems cluster, while 19 items encompass the Aggressive Behavior cluster. The Attention Problems and Aggressive Behavior clusters are combined to form the Externalizing Problems score. In this study raw scores (ranging from 0-48) are considered discrete in nature and used as our dependent variable. For purposes of interpretation within the findings and discussion sections, raw scores are converted to T-Scores to assess normal, borderline, and clinical ranges.
For purposes of this study, the CBCL for children between 1.5 and 5 years of age was administered at Wave 1 when children ranged in age from 18-35 months, at Wave 2 when children ranged in age from 36-53 months, and at Wave 3 when children ranged in age from 54-71 months. For purposes of this study, externalizing measures are used and grouped by problems relating to attention or aggression. The complete instrument is provided in Appendix A and questions relating to attention include (but not limited to):

- Can’t concentrate
- Can’t sit still
- Quickly shifts from one activity to another
- Wanders away

Questions relating to aggression include (but not limited to):

- Defiant
- Destroys things belonging to his/her family
- Gets in many fights
- Angry moods
- Physically attacks people

**Independent Variables**

**Attachment Security.** The Toddler Attachment Sort-45 (TAS-45) is a 45-item instrument derived from the 90-item Attachment Q-Sort instrument. The TAS-45 is an observational assessment conducted by a trained observer upon completion of a home visit. The observer utilizes a laptop computer wherein she/he completes a series of “sorts” based on attachment behaviors that were observed at the home visit. The program utilized on the computer cycles through a series of 45 cards, each describing a specific attachment (i.e. responds
to positive hints from parent, often plays out of parent’s sight, cries or tries to stop parent from leaving or moving to another place). For the first “sort”, observers are asked to place each card into a binary pile indicating whether or not the child displayed the specific behavior (“apply” or “not apply”). The observer is then asked to conduct a second sort, which involves resorting those behaviors that applied to a child into either “strongly applies” or “mildly applies”. Behaviors that did not apply to a child were also sorted into “mildly not applies” or “strongly not applies” piles. The responses to these 45 items are then be mapped onto a three-dimensional graph that generates values for 9 specific “hotspots”, which include S) warm and cuddly, T) cooperative, U) enjoys company (sociable), V) independence, W) attention seeking, X) upset by separation, Y) avoids others, Z) demanding, angry, and D) moody, unsure, unusual. Using these 9 hotspots, researchers can obtain a child’s attachment classification profile: Insecure Avoidant (A), Secure (B), Insecure Ambivalent (C) and Disorganized (D). It should further be noted that in the NSCAW data, children’s attachment to their primary caregiver was assessed. This means that in the case of a child in an out-of-home care setting, the attachment assessment was completed by the child’s primary caregiver.

For purposes of this study, the attachment variable was recoded and collapsed so that it was operationalized as a binary construct of insecure attachment or secure attachment. In other words, those classified with the TAS-45 as insecure avoidant, insecure ambivalent or disorganized were collapsed to reconstitute “insecure attachment” within the binary construct. This is an artifact of the data itself given the small nature of the subsample. Within the n=221 children followed across the three waves of data, n=60 were classified as insecure avoidant, n=20 were classified as insecure ambivalent, and n=15 as disorganized. The size of the
disorganized and insecure ambivalent types is not robust enough to allow for meaningful analysis in the proposed model.

ECE Participation. At each of the three waves, caregivers were asked to respond yes or no to the following question: Is your child currently in any type of day care program, including a Head Start program, nursery school or early childhood development program? Responses across the three waves were aggregated to generate a binary variable of ECE participation, wherein “yes” is any participation at any of the three waves and “no” is a complete absence of participation across the three waves of data collection. A second ECE variable was constructed to assess the research question relating to the possible dosage effects of ECE. Responses at each wave were summed, thereby creating a categorical variable indicating whether a child participated in a program for: 1) one wave only, 2) two waves, or 3) three waves.

Caregiver/Parenting Discipline. The Home Observation for Measurement of the Environment (HOME) Inventory is a parent/caregiver self-reported measure of the quality of a child’s home environment. HOME is age specific and developmentally appropriate, with instruments specific to children that are less than three years old, from three to six years old, and from six to ten years old. The short-form version of the instrument (HOME-SF) was developed by the National Longitudinal Study of Youth and consists of a series of mostly dichotomized questions related to two subscales: emotional support and cognitive stimulation. For purposes of this study, caregiving/parenting strategies relates to supportiveness, yet discipline is of particular interest as studies have shown that harsh discipline in early childhood strongly correlates with aggressive behavior (Gershoff, 2002; Weiss et al., 1992). The HOME-SF for children less than three-years-old asks caregivers to provide a continuous response when asked how often they spanked a child under their care within the last month (Sometimes kids mind pretty well and
sometimes they don't. In the past week, about how many times, if any, have you had to spank ^CHILD?). Responses ranged from 0 to 30 times in the previous month. The HOME-SF for children 3-6-years old provides caregivers with a prompt (below) asking them to answer the question with scripted responses. Given the discrepancy in the administered assessments a dichotomous yes/no variable was generated indicating whether or not the primary caregiver has spanked the child under their care within the last month.

Question prompt from HOME-SF for 3-6-year-olds:

Sometimes kids mind pretty well and sometimes they don't. In the past week, about how many times, if any, have you had to spank ^CHILD?

Never in the past week,
Less than once a week,
About once a week,
Several times a week, or
Every day?

**Cognitive Stimulation.** As noted above, the Home Observation for Measurement of the Environment (HOME) Inventory is a parent/caregiver self-reported measure of the quality of a child’s home environment and is divided into two main subscales: emotional support and cognitive stimulation. A total of 20-24 questions are asked, depending on the age of child. Infants and toddler (up to age two) and preschoolers (age three to five years old). Questions pertaining to cognitive stimulation. According to NSCAW II research, internal consistency estimates for total HOME scores, both subscales summed, have been robust (greater than .80). Yet, internal consistency scores within this NSCAW study were demonstrably lower, for
example Cronbach’s alphas for measures for infant/toddler measures were found to be less than .45 and .48 for preschoolers (NSCAW II). Some examples are provided below:

About how often do you read stories to ^CHILD?

About how many children's books does ^CHILD have of their own?

Which of the following things have you, or another adult or older child, helped ^CHILD learn at home? (Numbers, the alphabet, colors, shapes)

**Maternal Depression.** The Composite International Diagnostic Interview Short Form (CIDI-SF) is a standardized instrument developed by the National Institute of Mental Health and used to assess the presence of eight disorders (major depression, generalized anxiety, specific phobia, social phobia, agoraphobia, panic attack, alcohol dependence, and drug dependence), but only the interview prompt for major depression was utilized within the NSCAW II dataset (NSCAW). The assessment consists of 32 questions, with 16 pertaining to diagnosing anhedonic depression and 16 related to diagnosing dysphoric depression. Respondents are first asked a stem question related to dysphoric depression: “Think about how you have felt in the past 12 months. During the past 12 months was there a time when you felt sad, blue or depressed for two weeks or more in a row?” If respondents answer “no”, the second stem question pertaining to anhedonic depression is asked: “During the past 12 months was there a time lasting two weeks or more when you lost interest in most things like hobbies, work, or activities that usually give you pleasure?” If respondents answer yes to either or both of these stem questions, the interview continues with additional questions. The maternal depression variable in the model is a binary measure of the presence of either dysphoric or anhedonic depression as a yes/no construct.
Language: Preschool Language Scale-3 (PLS-3). It is uncertain how exactly language delay or disorders contribute to behavioral problems. For example, are language deficits generally predictive of behavioral problems or are both language and behavioral problems distinct expressions of general developmental processes (Barker et al., 2009)? While the precise mechanisms remain unclear, a literature has found a comorbidity between language deficits and externalizing behavior (Heller et al., 1996; Caultield et al., 1989; Beitchman et al., 1986). Specifically, given that language serves a critical role in interpersonal relationships, children with speech or language impairment are more likely to be perceived as less socially competent (McCabe & Meller, 2004). A measure of global language is therefore included in the proposed model.

The PLS-3 is an assessment designed to measure two subscales among preschool aged children from birth six years old: 1) auditory comprehension, considered to be a precursor of receptive communication, and 2) expressive language. The assessment also provides a global total language score, which sums the auditory and expressive scores. The module consists of 48 items, ordered according to age level and scores are derived through age specific standardization categories. For example, in assessing expressive communication, caregivers are asked the following age specific questions:

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 months</td>
<td>Vocalizes a variety of pleasure/displeasure sounds</td>
</tr>
<tr>
<td>6-11 months</td>
<td>Combines sounds to form syllables</td>
</tr>
<tr>
<td>12-17 months</td>
<td>Has vocabulary of at least one word</td>
</tr>
<tr>
<td>18-23 months</td>
<td>Has vocabulary of at least ten words</td>
</tr>
<tr>
<td>24-29 months</td>
<td>Uses a question inflection</td>
</tr>
<tr>
<td>30-35 months</td>
<td>Answers “what, where, and yes/no” to pictures</td>
</tr>
<tr>
<td>36-41 months</td>
<td>Tells how an object is used</td>
</tr>
<tr>
<td>42-47 months</td>
<td>Completes analogies</td>
</tr>
<tr>
<td>48-53 months</td>
<td>Uses prepositions</td>
</tr>
<tr>
<td>54-59 months</td>
<td>Defines words</td>
</tr>
<tr>
<td>60-71 months</td>
<td>Uses adjectives to describe people and objects</td>
</tr>
</tbody>
</table>
Each question is scored as 1=correct response and 0=incorrect response and the range for the total raw language score is 0 to eight, with each subscale ranging from 0 to four.

The National Data Archive on Child Abuse and Neglect (NDACAN) describes the validity and reliability of the PLS-3 instrument (NSCAW, 2012):

“Internal consistency using Cronbach’s alpha has, on average, been acceptable for Auditory Comprehension (mean = .76; range of .47 to .88) and higher for Expressive Communication (mean = .81; range of .68 to .91) and Total Language (mean = .87; range of .74 to .94). Test/retest reliabilities ranged from .89 to .90 for Auditory Comprehension, from .82 to .92 for Expressive Communication, and from .91 to .94 for Total Language. Inter-rater agreement is 89% with correlation between scores = .98 (Zimmerman, Steiner, & Pond, 1992). Using discriminant analysis, PLS-3 identified language-disordered children from 66% to 80% of the time; the majority of incorrect distinctions were for those children previously classified as language-disordered. Concurrent validity was assessed by comparing PLS-3 to PLS-Revised Edition (PLS-R) and the Clinical Evaluation of Language Fundamentals – Revised (CELF-R). Correlation with PLS-R was .66 for Auditory Comprehension and .86 for Expressive Communication. Correlation with the CELF-R was .69 for Auditory Comprehension and .75 for Expressive Communication” (Zimmerman, Steiner, & Pond, 1992).”

Covariates

Socioeconomic & Sociodemographic Indicators. Socioeconomic conditions provide a profound context for the lived experience of children and their families. There is a robust literature demonstrating the effects of poverty in early childhood and correlates of poverty include inadequate nutrition, limited access to health care or protective resources, exposure to
environmental toxins, increased likelihood of discrimination, and neighborhood effects, to name but a few (Brooks-Gunn & Duncan, 1997; Sue et al., 2008). While there are many ways to operationalize socioeconomic status, for purposes of this study three measures are particularly salient. Covariates include one sociodemographic (marital status of primary caregiver or parent) and two socioeconomic (maternal education and Temporary Assistance for Needy Families (TANF) receipt) indicators. Marital status was constructed as a binary variable wherein 1=unmarried and 0=married. Maternal education was transformed to a binary variable wherein 0=less than high school and 1=GED/high school diploma or greater. This transformation was based on caregiver’s response to the question: “What was the last year of education completed?” All responses indicated less than 12 years were coded as 0 (less than high school diploma/GED). All responses indicating 12 or more years were coded as 1 (high school diploma/GED). Lastly, TANF receipt was binary, with 1=received TANF within the last year 0=not received TANF within the last year.

**Child Characteristics.** Child covariates include age and sex. Age of child, in months, is a continuous variable derived from a response by the primary parent or caregiver responding to the NSCAW interview. Sex is a binary variable also derived from parent or caregiver response.

**Substantiated Versus Unsubstantiated Cases.** While an extensive literature has established a relationship between maltreatment in early childhood and a host of adverse developmental problems including, including but not limited to increased incidence of mental health disorders including mood disorders, post-traumatic stress, cognitive distortions, and externalizing behavior (Leeb, Lewis & Zolotor, 2011; Hazen et al., 2009; Higgins & McCabe, 2003; Manly et al., 2001), some scholars have found that outcomes of children with substantiated cases differ little from those with unsubstantiated cases (Barth et al., 2008; Hussey et al., 2005;
Leiter, Myers & Zingraff). For example, using longitudinal data of children with substantiated, unsubstantiated, or no reports in early childhood, Hussey et al. (2005) found no significant differences in behavioral or developmental outcomes between the substantiated and unsubstantiated groups. Interestingly, after introducing controls, externalizing behavior was the only outcome found to be significantly different between unsubstantiated cases and non-report cases (who scored on average 2.1 points lower on CBCL scores than those with unsubstantiated cases), with no statistically significant difference between substantiated and unsubstantiated cases.

This study will employ a variable that seeks to control for the effects of involvement with the child welfare system. The NSCAW II questionnaire for child welfare case managers asks the following question: What was the outcome of the investigation? Was it: 1) Substantiated, 2) Indicated, 3) Neither substantiated nor indicated. Case managers were also asked: Was there a prior incident of substantiated abuse or neglect? Two additional questions were asked caregivers related to whether or not a child was involved in a case that resulted in an out-of-home placement or was presently in an out-of-home placement as a result of system involvement. Using these three questions, a categorical variable was constructed that assessed whether or not a case was either 1) no substantiation or history of substantiation, 2) substantiated or previously substantiated only, and 3) was involved in an out-of-home placement (distinct from those only involved with a substantiated case).

**Data Analysis Procedures**

**Survey Weights**

As previously described, the NSCAW II dataset was collected utilizing a complex, two-stage stratified sampling design wherein the United States was divided into nine sampling strata
with a total of 92 primary sampling units (PSUs) within these strata defined by counties or service planning areas within child welfare agencies. Children were then stratified by domains of interest (age, abuse type, placement type, service utilization). The present study was conducted utilizing weighted data to account for this complex sampling design. Weights were constructed in stages by NSCAW research staff, first accounting for probability of county selection and then accounting for probability of child selection within a county (Biemer et al., 2008). These weights were further adjusted for nonresponse and under-coverage (Biemer et al., 2008). Stata 14 survey estimation procedures and commands were used to apply the survey weights for subpopulations (i.e. children with insecure attachments or those participating in ECE) for descriptive statistics and statistical models, which allowed me to investigate a subgroup while still correctly estimating the variance (Beimer et al., 2008). For example, Stata 14 commands included: svyset [pw=nanalwt], strata(stratum) singleunit(centered); svy, subpop. Additionally, in the models I utilized a Stata command (pwscale: size) to control the scaling of sample weights in two-level models. This command specifies that weights on level one of a two-level model are “scaled so that they sum to the sample size of their corresponding second-level cluster,” leaving level two weights unchanged (StataCorp, 2015).

**Missing Data**

Consistent with other longitudinal data collection, there was some attrition across the three waves of the NSCAW II study. At Wave 1, 5,873 children were interviewed for the study. At Wave 2, one child from Wave 1 was determined to be ineligible and moreover, the sample was reduced by 19.1% as a result of attrition to include 4,750 children. Wave 3 interviews were completed with 4,143 children, constituting 29.4% attrition from Wave 1. For purposes of our final subgroup sample (n=221), Table 3 provide demographic and pertinent variables of interest
for those missing from the subpopulation. Nearly one-quarter (24.13%) of total children who were age-eligible children from the complete NSCAW II survey data did not have a measure for attachment and were therefore excluded from the analysis. There were no statistically significant differences between those without attachment scores (n=104) and the initial age-eligible inclusion subsample (n=431) in terms of the externalizing scores. There were however significant differences in the following areas: there were higher rates of maternal depression in those without attachment scores and these caregivers were also more likely to be single and spank their child within the previous month. These significant differences indicate that those excluded from the sample might be substantively different, most notably, higher-risk. Moreover, there were an additional number of children (n=101) who did not have an externalizing score and were also omitted from the final subsample. The attachment classifications for this omitted group and the final subsample were significantly different. While 40.49% of the children included in the final model were insecurely attached, only 16.49% of those with missing externalizing scores were insecurely attached, which clearly alludes to a qualitative difference between those excluded and those included. Still, multiple imputation was not utilized for purposes of our dependent variable or attachment measures. While approximately 13% of children in the analytic sample had missing values on variables within the model, imputation for these variables was not used given that imputation is likely to “offer little advantage” unless there is more than 20% missing within a model (Ho, 2013). Furthermore, procedures such as list-wise deletion or setting missing values to the mean were also not utilized as they are likely to produce biased estimates (Croy & Novins, 2005).
Table 3. Comparison of Participants with Missing Attachment Scores

<table>
<thead>
<tr>
<th></th>
<th>Not Missing Attachment Score at Wave 1</th>
<th>Missing Attachment Score at Wave 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% or M(SE)</td>
<td>% or M(SE)</td>
</tr>
<tr>
<td><strong>n=327</strong></td>
<td></td>
<td><strong>n=104</strong></td>
</tr>
<tr>
<td><strong>Externalizing Score</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.88 (0.74)</td>
<td>13.17 (1.12)</td>
</tr>
<tr>
<td><strong>ECE Participation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any participation noted by CG* (%)</td>
<td>23.84</td>
<td>39.08</td>
</tr>
<tr>
<td><strong>Male (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>61.68</td>
<td>58.76</td>
</tr>
<tr>
<td><strong>Age (months)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25.84 (0.50)</td>
<td>26.77 (0.52)</td>
</tr>
<tr>
<td><strong>Maternal Depression</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Level* (%)</td>
<td>17.95</td>
<td>26.7</td>
</tr>
<tr>
<td><strong>Maternal Risk</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less Than HS Education (%)</td>
<td>25.65</td>
<td>30.51</td>
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<tr>
<td>Single* (%)</td>
<td>64.46</td>
<td>84.56</td>
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<tr>
<td>Received TANF in Past Year (%)</td>
<td>16.98</td>
<td>19.16</td>
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<tr>
<td><strong>Discipline</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not spanked in last month (%)</td>
<td>72.55</td>
<td>61.36</td>
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<tr>
<td>Spanked 1+ times in last month</td>
<td>27.45</td>
<td>38.64</td>
</tr>
<tr>
<td><strong>Cognitive Stimulation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.15 (0.19)</td>
<td>6.82 (0.16)</td>
</tr>
<tr>
<td><strong>Language PLS-3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>78.17 (2.30)</td>
<td>77.27 (2.92)</td>
</tr>
</tbody>
</table>

*p<.05. Asterisks represent significant differences between those with attachment scores (col. 1) and those without attachment scores (col. 2).

Statistical Model and Model Diagnostics

Descriptive statistics detailing the demographics and variables of interest for the study sample for each of the three waves are detailed below and in provided Table 4. Bivariate Pearson correlation matrices are also provided in Appendix B. Next, hierarchical linear modeling was utilized to conduct the inferential analyses. Again, given the inherent violation of unit independence in the dataset and its complex, weighted structure, multilevel modeling is an ideal analytic procedure. To assess the first research question, I constructed Model 1, a linear
mixed regression model of attachment security, ECE participation, caregiver and child demographics, and caregiving characteristics on externalizing scores. First, I conducted diagnostics appropriate for hierarchical linear modeling to assess the appropriateness of the data for this model type. Namely, I generated a histogram of residuals at both Level 1 and Level 2 of the Model. Figure 5 demonstrates Level 1 residuals which appear normally distributed Figure 6 illustrates the histogram of Level 2 residuals, which also appear normally distributed, but with a slight right skew. Given this slight skew, I conducted a log transformation of the dependent variable. Improvement was negligible, certainly not enough improvement to warrant the complexity of output and interpretation associated with logarithmic scaling. Furthermore, use of the test of normality based on kurtosis also provides further evidence of a normal distribution (p=0.003).

**Figure 5. Histogram of Level 1 Residuals**
Second, I assessed heteroscedasticity using the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity which tests against the null hypothesis, namely that error variances are all equal. This test and state command (estat hettest) assumes a normal distribution, which the first diagnostic procedure indicated. A high p-value and low chi-square result indicates that the error variance is not heteroscedastic, which our results safely indicate (ch2(1)=1.64, p=0.201).

Model 2 added interactions of ECE participation and maternal depression as well as attachment security and caregiver education. Model 3 was also a mixed regression model that included a transformed variable to assess dosage of ECE participation, attachment security, caregiver and child demographics, and caregiving characteristics on externalizing scores. The final model (Model 4) assessed the question of additive and cumulative risk factors, ECE participation and attachment security. The equation for the multilevel models can be noted as:

\[ Y_{ijt} = \beta_0 + \beta_1 X_{ijt} + B_2 X_{ijt} \ldots + E_{ijt} \]

\[ \text{Externalizing}_{it} = \beta_{0l} + e_{ti} \]
In the above equation, t represents the repeated measures, or three waves of data collection, and i represents the total number of cases (n=221). The estimated average externalizing score, averaged across the three waves, for the i-th individual is represented by $\beta_{0i}$. The last portion of the equation denotes the within-individual random error, or more specifically, the difference between the observed externalizing score at time t and the average score of the i-th case.
CHAPTER 5: RESULTS

Descriptive Analyses

At Wave 1, the mean age of children in the subsample was 25.5 months, with a range of 18 to 33 months. Nearly 61% of the children were assessed as securely attached, while aggregate insecure attachments constituted 39.09% (11.73% considered insecure-avoidant, 18.50% insecure-ambivalent, and 8.86% disorganized). More than three-quarters of children (80.92%) were not currently utilizing ECE. Of those utilizing formal child care, less than 3% were enrolled in a Head Start program. The majority of children were male with females constituting only 38.32% of the subsample. The mean externalizing score per the CBCL 1.5/5 was 13.58 with 13.83% children considered within the clinical range (a raw score of 25 or higher) and an additional 10.83% assessed as borderline clinical (a raw score of 21 to 24). Securely attached children had lower externalizing scores than insecurely attached children (12.82 and 14.99 respectively) and this finding was statistically significant using an adjusted Wald test of means (F(1,69)=4.92, p<0.05). No other differences between securely and insecurely attached children were statistically significant.

Nearly one-third of the subsample were reported to child welfare services for neglect (32.73%), 13.19% for physical abuse, 16.52% for substance use related issues, and 11.12% for exposure to domestic violence. The remaining 26.43% of the sample were reported for one of the following reasons: voluntary relinquishment, to obtain services for family or children, or educational or moral maltreatment. Over one-third (35.19%) of the subsample involved cases that were unsubstantiated upon entry into the NSCAW study. It is perhaps worth noting that

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2 Given the small subsample of Head Start participants (n=5), an independent grouping and subsequent analysis is not possible. This limitation and direction for future research is noted in the discussion section. Still, in an attempt to address the issue of quality of ECE, Appendix F details an additional mixed model of Head Start participants.
among these cases, nearly 89% (n=80) had not been involved with a substantiated report that resulted in removal from their home prior to entering the NSCAW study, while n=9 had previously been removed and one case involved removal at more than one time. Just over 7% of the subsample were in out-of-home care at wave one.

In terms of caregiver demographics, a biological parent was the primary caregiver in 89.83% of the subsample, while 7.48% of children were under the care of a relative, 2.56% living with a non-relative, and less than 1% under the care of an adoptive parent. Just over one-fifth (22.59%) of respondents did not have a high school degree or GED, nearly one-fifth (18.19%) were also from households that have received TANF benefits within the past year. In terms of marital status, well over half of respondents (60.10%) identified as single.

At wave 3, the mean age of children was 62.2 months with a range of 48 and 71 months. Nearly three-quarters of children (71.30%) were not currently utilizing ECE, compared with 80.92% at wave 1. The mean externalizing score per the CBCL 1.5/5 was 11.97 with 10.23% children considered within the clinical range (a raw score of 25 or over) and an additional 9.09% assessed as borderline clinical (a raw score of 21 to 24). Mean vocabulary scores, as measured by the PLS-3 had increased from 78.63 at wave 1 to 90.78 at wave three. Moreover, mean cognitive stimulation scores increased from 7.15 at wave 1 to 11.66 at wave three.
Table 4. Weighted Descriptive Statistics for Waves 1-3

<table>
<thead>
<tr>
<th></th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=221 (Weighted n=117,583)</td>
<td>% or M(SE)</td>
<td>% or M(SE)</td>
<td>% or M(SE)</td>
</tr>
<tr>
<td><strong>Externalizing Score</strong></td>
<td>13.58 (0.68)</td>
<td>12.92 (0.78)</td>
<td>11.97 (0.75)</td>
</tr>
<tr>
<td><strong>Attachment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insecure (Ambivalent)</td>
<td>18.50</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Secure</td>
<td>60.91</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Insecure (Avoidant)</td>
<td>11.73</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Disorganized</td>
<td>8.86</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>ECE Participation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in formal ECE</td>
<td>19.08</td>
<td>32.66</td>
<td>28.70</td>
</tr>
<tr>
<td>No Participation in formal ECE</td>
<td>80.92</td>
<td>67.34</td>
<td>71.30</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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</tr>
<tr>
<td>Female</td>
<td>33.35</td>
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<td>-</td>
</tr>
<tr>
<td>Male</td>
<td>66.65</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Age (months)</strong></td>
<td>25.54 (0.74)</td>
<td>40.64 (0.64)</td>
<td>62.16 (0.75)</td>
</tr>
<tr>
<td><strong>Maternal Depression</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Level (%)</td>
<td>21.58</td>
<td>30.80</td>
<td>18.81</td>
</tr>
<tr>
<td><strong>Maternal Risk</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School Education (%)</td>
<td>22.59</td>
<td>20.85</td>
<td>19.49</td>
</tr>
<tr>
<td>Single (%)</td>
<td>60.10</td>
<td>66.18</td>
<td>71.48</td>
</tr>
<tr>
<td>Received TANF in Past Year (%)</td>
<td>18.19</td>
<td>20.29</td>
<td>10.13</td>
</tr>
<tr>
<td><strong>Discipline</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not spanked in last month (%)</td>
<td>65.52</td>
<td>69.25</td>
<td>75.43</td>
</tr>
<tr>
<td>Spanked 1+ times in last month (%)</td>
<td>34.48</td>
<td>30.75</td>
<td>24.57</td>
</tr>
<tr>
<td><strong>Child Race/Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian (%)</td>
<td>1.37</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Asian Pacific Islander (%)</td>
<td>5.31</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>African American (%)</td>
<td>44.57</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hispanic (%)</td>
<td>32.53</td>
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<tr>
<td>White (%)</td>
<td>16.22</td>
<td>-</td>
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</tr>
<tr>
<td><strong>Maltreatment Type</strong></td>
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<td></td>
</tr>
<tr>
<td>Physical Abuse (%)</td>
<td>13.19</td>
<td>18.96</td>
<td>19.41</td>
</tr>
<tr>
<td>Neglect (%)</td>
<td>32.73</td>
<td>34.04</td>
<td>32.48</td>
</tr>
<tr>
<td>Substance Use Related (%)</td>
<td>16.52</td>
<td>9.79</td>
<td>14.23</td>
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<tr>
<td>Domestic Violence Exposure (%)</td>
<td>11.12</td>
<td>11.67</td>
<td>12.36</td>
</tr>
<tr>
<td>Other (%)</td>
<td>26.43</td>
<td>25.54</td>
<td>21.51</td>
</tr>
<tr>
<td><strong>Child Welfare Involvement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsubstantiated (%)</td>
<td>65.02</td>
<td>64.48</td>
<td>61.95</td>
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<tr>
<td>Substantiated (%)</td>
<td>16.8</td>
<td>17.09</td>
<td>20.00</td>
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<tr>
<td>Removed From Home (%)</td>
<td>18.18</td>
<td>18.43</td>
<td>18.05</td>
</tr>
<tr>
<td><strong>Cognitive Stimulation (HOME subscale)</strong></td>
<td>7.15 (0.19)</td>
<td>8.23 (0.63)</td>
<td>11.66 (0.18)</td>
</tr>
<tr>
<td><strong>Language PLS-3</strong></td>
<td>78.63 (2.77)</td>
<td>79.02 (2.77)</td>
<td>90.78 (2.37)</td>
</tr>
</tbody>
</table>
**Research Question 1:**
What is the externalizing trajectory and inter-individual change among child welfare-involved children over a 36-month period preceding kindergarten entry at age five?

H₁: An unconditional, null model will indicate a decreased externalizing score over the 36-month period preceding kindergarten.

The following growth curve graph (Figure 7) presents the mean externalizing scores for n=221 children in our sample at each of the three waves, thereby reflecting change across time. The graphical output and trend line can be characterized as a more-or-less linear, negative trend towards decreased externalizing behavior over time, which is consistent with our alternate hypothesis. This graph is illustrative of the unconditional model, constructed to examine individual externalizing trajectories without predictors as a linear function of time, wherein the slope was calculated at -0.466 and its intercept (or the average externalizing score at wave 3) was 11.97 per CBCL externalizing scores. Also included within this graph are the mean externalizing scores by subgroups of interest at each wave, namely those with secure attachment (green dash), insecure attachment (red triangle), those not participating in ECE (orange square) and those participating in ECE (red diamond). In addition to providing support for the alternate hypothesis, this is useful in providing empirical evidence for the proper specification of the individual growth equation (mixed model) (Raudenbush & Bryk, 2002) by providing evidence that a linear model is appropriate (versus quadratic or curvilinear modeling).
Research Question 2:
Is attachment security associated with externalizing behavior?

H1: Secure attachment patterns at 18-months will be associated with decreased externalizing behavior.

Results of the multilevel model of attachment, ECE participation, and caregiving context on externalizing behavior are provided in Table 5. To appropriately compare levels of factor variables, post-estimation contrasts, or tests of estimates, were performed using the “contrast” command and are provided in Table 6. The intraclass correlation coefficient (ICC) for this model indicated that approximately 47% of the variance in externalizing scores was a result of individual child differences. This HLM model (Model 1) presented in Table 5 below also pertains to research questions 2-5. When controlling for marital status, TANF participation,
caregiver education, child’s age, gender, and severity of child welfare system involvement, attachment security at Wave 1 was not associated with a significant decrease or increase in externalizing behavior across time (B = 0.69, p>0.10).

Table 5. Model 1: Externalizing, Attachment, ECE Participation and the Caregiving Environment

<table>
<thead>
<tr>
<th></th>
<th>Unconditional Model</th>
<th>Full Model</th>
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<tbody>
<tr>
<td></td>
<td>B (Beta)</td>
<td>Standard Error</td>
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<tr>
<td><strong>Attachment</strong></td>
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<tr>
<td>Insecure Attachment</td>
<td>1.64*</td>
<td>1.34</td>
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<tr>
<td><strong>ECE Participation</strong></td>
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<tr>
<td>Participation in formal ECE</td>
<td>1.27*</td>
<td>1.18</td>
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<tr>
<td><strong>Child Characteristics</strong></td>
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<td></td>
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<td>Age (months)</td>
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<tr>
<td>African American</td>
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<tr>
<td>Hispanic</td>
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<td>-</td>
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<tr>
<td>Other</td>
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<tr>
<td>Vocabulary (PLS-3)</td>
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<tr>
<td><strong>Caregiver Characteristics</strong></td>
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<tr>
<td>&lt; High School Education</td>
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<td>-</td>
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<tr>
<td>Single Marital Status</td>
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<td>-</td>
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<tr>
<td>Received TANF in Past Year</td>
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<td>-</td>
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<tr>
<td>Clinical Depression</td>
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<td>-</td>
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<td><strong>Caregiving Environment</strong></td>
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<td></td>
</tr>
<tr>
<td>Spanked 1+ times in last month (%)</td>
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<td>-</td>
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<tr>
<td>Cognitive Stimulation (HOME subscale)</td>
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<td>-</td>
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<tr>
<td><strong>Child Welfare Involvement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substantiated (%)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Removed From Home (%)</td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>Level 1 (Child) Variance</strong></td>
<td>31.19</td>
<td>5.61</td>
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<tr>
<td><strong>Residual Variance</strong></td>
<td>36.63</td>
<td>5.45</td>
</tr>
</tbody>
</table>

Note. 0=secure attachment, 1=insecure attachment; 0=no ECE participation, 1=participation in ECE; 0=female, 1=male; comparison group=white; comparison group=unsubstantiated

** p < 0.01, * p < 0.05, † p < 0.1
Table 6. Post-estimation Tests (Full Model)

<table>
<thead>
<tr>
<th>Comparisons</th>
<th>$\chi^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Securely Attached vs. Insecurely Attached</td>
<td>0.40</td>
<td>0.528</td>
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<td>No ECE vs. ECE</td>
<td>7.95</td>
<td>0.005</td>
</tr>
<tr>
<td>Not Spanked vs. Spanked</td>
<td>3.99</td>
<td>0.045</td>
</tr>
<tr>
<td>Not Depressed Caregivers vs. Depressed Caregivers</td>
<td>4.24</td>
<td>0.040</td>
</tr>
<tr>
<td>No HSD vs. HSD</td>
<td>8.36</td>
<td>0.004</td>
</tr>
<tr>
<td>Not Received TANF vs. Received TANF</td>
<td>2.79</td>
<td>0.095</td>
</tr>
<tr>
<td>Female vs. Male</td>
<td>3.25</td>
<td>0.072</td>
</tr>
</tbody>
</table>

Research Question 3:
Is ECE participation associated with externalizing behavior?

$H_0$: Participation in ECE will be associated with decreased externalizing behavior.

Again, when controlling for marital status, TANF participation, caregiver education, child’s age, gender, and severity of child welfare system involvement, ECE utilization was significantly associated with an increase in externalizing behavior across time ($B = 2.22$, $p<0.01$). This finding runs counter our hypotheses and will be discussed at length in the findings chapter below (Chapter 5).

Research Question 4:
Are caregiver characteristics (depression, spanking, cognitive stimulation) associated with externalizing behavior?

$H_0$: Child welfare-involved preschoolers with caregivers identifying as clinically depressed will exhibit higher externalizing scores compared to preschoolers of non-depressed caregivers.

$H_1$: Child welfare-involved preschoolers who have experienced spanking by a caregiver will exhibit higher externalizing scores compared to preschoolers who are not spanked.
H1: Child welfare-involved preschoolers with higher cognitive stimulation scores (per HOME-SF) will exhibit decreased externalizing scores compared to preschoolers who do not receive similar cognitive stimulation.

Also when controlling for marital status, TANF participation, caregiver education, child’s age, gender, and severity of child welfare system involvement, moreover, cognitive stimulation did not have a significant effect on externalizing behavior (B = -0.16, p > 0.10). Consistent with the existing literature, spanking was significantly associated with increased externalizing behavior over time (B = 2.00, p < 0.05) as was maternal depression (B = 2.39, p < 0.05). In terms of the Model’s covariates, also significant was a child’s language, as measured by the PLS-3, wherein an increase in language score was associated with a modest, yet statistically significant decrease in externalizing behavior over time (B = -0.05, p < 0.05). Less than high school degree was also associated with an increase in externalizing behavior (B = 3.49, p < 0.01).

**Research Question 5:**
Is participation in ECE differentially beneficial to insecurely attached children?

H1: Child welfare-involved preschoolers with insecure attachments security will exhibit greater decreased externalizing when participating in ECE than preschoolers with secure attachments participating in ECE.

Results from our second model (Model 2) are presented in Table 7. Model 2 includes interaction terms along with results of the multilevel model of attachment, ECE participation, and caregiving context on externalizing behavior. Findings indicate that children with insecure attachments did not differentially benefit from participation in ECE as predicted by our theoretical framework. Interestingly, children of depressed caregivers differentially benefit from participation in ECE (B = -3.64, p < 0.01) and the graphed interaction terms are provided in
Figure 10. Moreover, there was a significant interaction among children with insecure attachments at Wave 1 and their caregivers who had less than a high school education (B = 6.21, p<0.01). In other words, children with insecure attachments whose caregivers did not have a high school degree demonstrated a 6.21 point increase in terms of externalizing. Graphical representation of the interaction is provided in Figure 11.
Table 7. Model 2: Interactions

<table>
<thead>
<tr>
<th>Variable</th>
<th>B (Beta)</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secure Attachment</td>
<td>-0.60</td>
<td>1.18</td>
</tr>
<tr>
<td>ECE Participation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in formal ECE</td>
<td>3.34***</td>
<td>0.86</td>
</tr>
<tr>
<td>Child Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (months)</td>
<td>-0.04</td>
<td>0.11</td>
</tr>
<tr>
<td>Male</td>
<td>1.63</td>
<td>1.13</td>
</tr>
<tr>
<td>African American</td>
<td>3.42</td>
<td>1.64</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.86</td>
<td>1.46</td>
</tr>
<tr>
<td>Other</td>
<td>-0.72</td>
<td>2.43</td>
</tr>
<tr>
<td>Vocabulary (PLS-3)</td>
<td>-0.06**</td>
<td>0.19</td>
</tr>
<tr>
<td>Caregiver Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School Education</td>
<td>-0.22</td>
<td>1.54</td>
</tr>
<tr>
<td>Single Marital Status</td>
<td>-0.95</td>
<td>1.01</td>
</tr>
<tr>
<td>Received TANF in Past Year</td>
<td>2.00*</td>
<td>0.86</td>
</tr>
<tr>
<td>Clinical Depression</td>
<td>3.66***</td>
<td>1.33</td>
</tr>
<tr>
<td>Caregiving Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanked 1+ times in last month (%)</td>
<td>2.17*</td>
<td>0.97</td>
</tr>
<tr>
<td>Cognitive Stimulation (HOME subscale)</td>
<td>-0.18*</td>
<td>0.10</td>
</tr>
<tr>
<td>Child Welfare Involvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substantiated (%)</td>
<td>0.49</td>
<td>1.25</td>
</tr>
<tr>
<td>Removed From Home (%)</td>
<td>-1.86</td>
<td>1.47</td>
</tr>
<tr>
<td>Interaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECE*Maternal Depression</td>
<td>-3.63**</td>
<td>1.64</td>
</tr>
<tr>
<td>Degree*Attachment</td>
<td>6.19**</td>
<td>2.05</td>
</tr>
<tr>
<td>Level 1 Variance</td>
<td>21.40</td>
<td>4.84</td>
</tr>
<tr>
<td>Residual Variance</td>
<td>25.36</td>
<td>4.48</td>
</tr>
</tbody>
</table>

Note. 0=secure attachment, 1=insecure attachment; 0=no ECE participation, 1=participation in ECE; 0=female, 1=male; comparison group=white; comparison group=unsubstantiated

***p<0.001, ** p < 0.01, * p < 0.05, † p<0.1
Figure 8. ECE Participation and Maternal Depression Interaction

Figure 9. Attachment Security and Caregiver Education
CHAPTER 6: DISCUSSION AND CONCLUSIONS

This study utilized a nationally representative sample of child welfare-involved preschoolers to assess longitudinally the effects of attachment security, ECE participation and the caregiving environment on externalizing behavior. This study was guided by attachment theory, social learning theory, and an additive risk model framework. This research first assessed what predictors are significantly associated with changes in externalizing behaviors. Second, it assessed the possible moderating, or interaction effects, of ECE participation and attachment.

Major Findings

Consistent with the existing literature and predictions based on the proposed theoretical framework, spanking was significantly associated with increased externalizing behavior over time (Gershoff, 2002; Bender et al., 2007; Taylor et al., 2010), as was maternal depression (Connell & Goodman, 2002; Goodman & Gotlib, 1999; Goodman, Rouse & Connell, 2011). The magnitude of both predictors is considerable, with maternal depression accounting for a nearly 2.5 point increase in total externalizing score and spanking accounting for an increase of 2 points. The CBCL externalizing scale ranges from 0 to 44, which at first glance calls into question the practical significance of this finding. Yet, when noting that the average score at Wave 1 was approximately 14 points, the CBCL score for a child that is spanked and with a depressed caregiver would be nearly 19 points, which is only two points shy of the borderline clinical cutoff. Also significant was a child’s language, as measured by the PLS-3, wherein an increase in language score was associated with a small, yet statistically significant decrease in externalizing behavior over time.

Inconsistent with previous literature and theoretical framework was the finding that attachment did not have a significant effect on externalizing behavior (Fearon et al., 2010; Moss
et al., 2011). Though, this inconsistency could be explained by two factors. First, having only one measure of attachment at 18-months for this population of children is particularly problematic as many children had experienced out-of-home placements or were in living situations with potentially different caregivers at the time in which the attachment assessment was provided. Second, previous research has indicated that it’s the consistency of attachment patterns that is more important in assessing effects of attachment (Fearon et al., 2010; Landry et al., 2001).

Also inconsistent with the theoretical framework, yet consistent with early ECE research (Belsky, 1988), was the unexpectedly inverse association of ECE participation and externalizing (Schindler et al. 2015; Dinehart et al., 2014). In this study, children who participated in any amount of ECE demonstrated increased externalizing scores compared with children who did not utilize ECE. This finding, along with maternal depression and spanking mentioned above, was substantial in effect wherein ECE participation was associated with a 2.2 increase in externalizing score. Yet, this finding can be explained through both theory and empirical literature. Given social learning theory’s proposed mechanism of modeling as the major pathway for learning, it is not unreasonable to assume that if a child is in an ECE environment where either other children are more aggressive, or worse yet, the ECE provider is inconsistent or unable to adequately care for high needs children, it is not unlikely that this child will also end up modeling aggressive behavior. This is perhaps a particularly salient point as low-income, at-risk children tend to cluster geographically and therefore have access to similar neighborhood ECE resources, which has been shown by researchers to be of lower quality than children in more affluent neighborhoods (Fuller et al., 2004; Whitebook et al., 2007). Though, it is perhaps also important to point out that in this study there was a significant association between
increased language capacity and decreased externalizing behavior, albeit small. Therefore, given
the documented effects of ECE on language (Klein & Merritt, 2016; Vandell & Wolfe, 2000), it
is important to mention ECE as a possible pathway to increased language competence.

Children with insecure attachments did not differentially benefit from participation in
ECE as predicted by our theoretical framework. Though, children of depressed caregivers did
differentially benefit from participation in early care and education. A significant interaction
effect was found among children with depressed caregivers wherein participation in ECE was
associated with a nearly 4-point decrease in externalizing behavior across time. This finding
suggests a potential buffering effect of ECE participation specific to preschoolers with depressed
caregivers. Moreover, there was also a significant interaction effect among children with
insecure attachments at Wave 1 and their caregivers who had less than a high school education.
Perhaps more interesting was the magnitude of this effect. Children with insecure attachments
and caregivers who did not have a high school degree demonstrated a nearly 7-point increase on
their CBCL externalizing score compared with the increase of having an insecure attachment
(0.41) or a caregiver without a high school degree (2.39). An addition of this magnitude would
likely put a child’s externalizing score well into the borderline clinical or clinical range.

Interestingly, while ECE participation was significantly associated with increased
externalizing behavior, there was no significant finding when ECE was measured in terms of its
dose. In other words, there was no dose effect present in our model: more participation in ECE
was not associated with a change in externalizing behavior compared with those who
participated in less ECE programming or no ECE programming at all. As noted by Klein (2016)
preliminary studies suggest that either the amount or consistency of ECE has the potential to
moderate the effects of ECE, principally on safety outcomes of child welfare-involved
preschoolers (Li, Godinet & Arnsberger, 2011). Perhaps this finding also helps to explain the potential moderating effect of dose on externalizing behavior in the present study. It is possible that the continuity provided by more long-term ECE programming is particularly beneficial for at-risk children, which might help explain the seemingly contradictory results found in Model 1 wherein ECE participation was associated with increased externalizing behavior. Regardless, it is evident that both continuity of care and quality of care are both significant in assessing the true effects of ECE for this vulnerable population.

While only a control in our models it is important to comment upon the child welfare involvement variable, which was operationalized as a categorical variable to describe those with unsubstantiated cases, those was substantiated cases, and those who have been removed from home. It is interesting to note that this particular finding was not significant - there was no statistically significant difference between children with substantiated or unsubstantiated cases in terms of its effect on externalizing behavior. There was also no statistically significant difference between those and out of home placement and substantiated cases. This is potentially interpreted in one of two ways. First, this finding might indicate that because there's no difference between substantiated and unsubstantiated cases that involvement in the child welfare system itself is potentially traumatic, resulting in increased externalizing behavior. Or this finding is perhaps attributable to the fact that families involved in the child welfare system are sometimes considered “multi-problem” families and it is perhaps the family dynamics, environmental conditions, and structural factors within society (i.e. institutionalized racism, poverty) that are negatively impacting child behavior. Furthermore, in our model an out-of-home placement was associated with a decrease in externalizing behavior by approximately two points, but this finding was not statistically significant. One possible interpretation of this
finding is that the child welfare system is potentially providing adequate supports for children who are removed from their home and removal from a particularly traumatic home environment warrants such action and can be potentially beneficial for the child.

**Strengths and Limitations and Directions for Future Research**

This study is one of only a few studies to look specifically at the externalizing trajectories of child welfare-involved preschoolers utilizing ECE and is the only study to do so using NSCAW II data. It is the only study to date that also examines ECE participation in the context of a child’s attachment security and caregiver context among child welfare-involved preschoolers utilizing NSCAW II data. The substantive content was a strength of the study, as was the use of NSCAW II data, which utilizes national survey weights, thereby reducing bias within estimates and providing a more robust reflection of the child welfare population across the United States (Biemer et al, 2008). Another strength was the use of analytic procedures, namely hierarchical linear modeling, given the complexity of the weighted data.

Still, given that it utilizes secondary, longitudinal survey data, this study is not without its limitations. Perhaps the most significant limitation to this study is that we were not able to use all the variables that were proposed in the conceptual framework. Most notably, the models did not control for child’s temperament, biological vulnerabilities, or negative emotionality, all variables associated with externalizing (Owens & Shaw, 2003; Greenberg et al., 2001; Keller, Spieker & Gilchrest, 2005; Greenberg, Kusche & Speltz, 1991). Secondly, there are no constructs for the proposed theorized processes. We posit that attachment is critical in achieving self-regulatory capacity as well as the development of internal working models that are critical in supporting and guiding prosocial relationships, thereby mitigating externalizing behavior. If variables for these constructs were available, a mediational path analysis would be an ideal approach to gain a better
understanding of the relationship between attachment and externalizing behavior and perhaps also how these processes may or may not be supplemented or supported by ECE participation. Moreover, existing studies suggest transactional processes such as social information processing mediating externalizing behavior among children who are spanked by caregivers (Dodge, Bates & Pettit, 1992; Citation). Mediational pathways are not evident in a multilevel modeling design and therefore, future research should employ use of structural equation modeling methods to more accurately investigate transactional processes.

The lack of an indicator of quality of the ECE setting is also a significant limitation. The question of ECE participation when posed to caregivers was non-specific and includes all forms of formal child care options: family child care homes, center-based care, preschools and Head Start programs. There is a follow up question specifically pertaining to Head Start participation, but there are only data on n=5 Head Start participants across all three waves of data, thereby rendering a subgroup analysis of these participants impossible. Given the heterogeneity of quality that exists within ECE programs (Phillips et al., 1994; Loeb et al., 2004; Fuller et al., 2006; Layzer et al., 2007; Whitebook, Kipinis & Bellm, 2007), this is rather problematic given that a small literature suggests that low-income families are more likely to utilize lower-quality child care and moreover, that quality of ECE might be particularly important to a high-risk population involved with the child welfare system (Dinehart et al., 2014; Phillips & Lowenstein, 2011; Vortuba & Drzal, 2004; Hill, Waldfogel, & Brooks-Gunn, 2002).

An additional limitation lies in the use of a single measure of attachment at one point in time. Many studies utilize multiple measures of attachment throughout the infant/toddler period, and in some cases, continuity of attachment has been a more robust predictor of externalizing behavior than a single, isolated measure (Fearon et al., 2010). While use of a single measure is
not unprecedented in the literature, the value of a more stable measure of attachment is a particularly salient point. Moreover, one of the hypothesized mechanisms whereby ECE has the capacity to decrease externalizing behavior is in its potential for child to develop a secure attachment with an ECE provider (Ahnert, Pinquart, & Lamb, 2006). Future studies should address this limitation by also including measures of ECE provider attachment relationships.

Also important to note is the nature of the instruments used in operationalizing the dependent variable. The Child Behavior Checklist (CBCL 1.5/5) uses caregiver self-reporting, which potentially introduces some degree of bias, in particularly the social desirability bias that is inherent in questions around one’s child rearing practices when under already investigation by child welfare agencies. Though, this may be somewhat mitigated through the use of computer aided interviewing techniques utilized within components of the NSCAW II study (Turner et al., 1998). Yet, perhaps most problematic is the potential method variance in the reporting of the dependent variable (Podsakoff et al., 2003). For example, the CBCL is intended to be used by two independent observers (a parent and ECE provider, or a caregiver and a caseworker). Relying on a singular report from a parent or caregiver is potentially misleading. Additionally, it is important to note that depressed caregivers are also more likely to over-report potentially problematic behavior in the children for which they care, thereby creating systematic error variance (Kroes, Veerman & De Bruyn, 2003).

While harsh discipline is an established correlate of externalizing behavior (Owens & Shaw, 2003; Greenberg et al., 2001; Keller, Spieker & Gilchrest, 2005; Greenberg, Kusche & Speltz, 1991), it is important to note that such practices take the form of many behaviors beyond spanking. In fact, corporal punishment is not simply synonymous with spanking, but rather is defined by legally by the use of “reasonable force” by means of slapping or other verbal or
physical punishments. It is possible that the operationalization of harsh parenting, in this research spanking, is an inappropriate or incomplete measure. For example, while the literature is inconsistent concerning the frequency with which different ethnicities utilize corporal punishment, some studies do indicate that race or ethnicity may in fact moderate the association between corporal punishment and externalizing behavior (Gershoff, 2002).

This research is limited by its exclusion of the potential of neighborhood effects. This research focuses on transactional, inter-personal processes without accounting for the physical environment in which children, particularly child welfare-involved children, spend much of their time. Neighborhoods that are characterized by concentrated disadvantage or residential instability or even child care burden, are correlated with early child abuse or neglect (CAN). For example, Fresithler et al. (2005) found evidence that neighborhoods with high ratios of adult men to women report higher incidences of maltreatment. Future research should take into account neighborhood effects, which is simply by adding a third level to our hierarchical linear model. This was not possible in the current study as the sample size was too small to effectively support the addition of this level.

Lastly, in addition to the usual caveat concerning observational research and correlation versus causation, it is perhaps also worth noting that this particular sample might not be completely generalizable to the child welfare population more broadly given. Given the nature of the missing data, and descriptive statistics which indicate that there might be significant differences in the qualitative make-up of our sample when compared with the larger NSCAW sample, we must take caution when generalizing our results beyond this study. Perhaps most significant is the fact that the subsample includes a particularly large percentage of
unsubstantiated child welfare cases which would lead one to believe that these certainly will not be generalizable to those with substantiated cases.

**Practice and Policy Implications**

Results from this study can help inform practice in both social work and early education settings. Perhaps most importantly this research directly points to the need for increased collaboration between child welfare case workers and early care and education practitioners to more effectively meet the needs of the children both groups serve. For example, child welfare workers need to be versed on the type of ECE available to children on their caseloads and should be clearly trained to identify quality programming. It is clear that child welfare-involved preschoolers have needs above and beyond the general population of ECE participants, even more so than traditionally at-risk populations that programs like Head Start serve. Child welfare-involved preschoolers present with behavioral problems consistent with the trauma they’ve experienced both in the system and within their families. ECE providers need to be able to both identify potential behavioral problems that are resultant from trauma and provide trauma-informed support in the classroom environment. Moreover, there is a need for increased collaboration between case workers and ECE providers to more effectively communicate about the progress and needs of children they both serve in an effort to ensure that children are not mislabeled and over-diagnosed when normative behavior is at play, but also providing services like IEPs only when there is truly a clinical need.

This research points to the fact that the quality of relationships and interactions are of paramount importance to child welfare-involved children and their caregivers, both at home and within ECE settings. Caregivers who are depressed often cannot engage with their children in a
supportive, consistent, and structured way (Davies, 2004; Goodman & Gotlib, 1999). Spanking has continually proven to be an ineffective means of behavioral modification, often producing the opposite effects of increased behavior problems, which is corroborated by this research (Gershoff, 2002). It is therefore critical that caregivers within the child welfare system are provided effective training to help them improve parenting skills. Moreover, these findings point to the need for case workers to more effectively triage the needs of the children they serve, which also speaks to the importance of caregiver assessments and screening. Such screening would allow workers to prioritize cases wherein young children are cared for by depressed caregivers, perhaps prioritizing the already limited ECE programming for children who are in greatest need and stand to benefit the most.

Currently, all children within foster care are categorically eligible for Head Start programming. Additionally, many Head Start programs use an eligibility point system whereby any participation in the child welfare system – whether a non-parental out-of-home placement or simply a substantiated case – is prioritized for purposes of attendance. Additional state-sponsored toddler and preschool programs should similarly prioritize attendance for this at-risk population of children. Moreover, state Pre-K and other ECE programming should eliminate eligibility rules based on geographic restrictions, which can be particularly problematic for children who are placed with relative caregivers or foster parents in differing areas, thereby disrupting continuity of care (Meloy et al., 2015). Given the potential for quality ECE to at the very least provide child welfare-involved preschoolers with both the foundation and tools for cognitive and language development and thereby reduce externalizing behavior, as illustrated by this research, it is critical that policies support increased access to programming.
Beyond Head Start programming, local, state, and federal funding should continue to prioritize both the availability of programming and invest in quality rating systems infrastructure that can more effectively monitor the quality of ECE settings. For example, it is possible that preschoolers involved with the child welfare system would benefit from ECE that is more therapeutic in its approach. For example, care that utilizes a relationship-based rather than play-based approach, or care that emphasizes transition planning or individualized treatment plans. In other words, it is possible that quality of ECE is even more critical for child welfare involved populations than traditionally at-risk or under-served children. It is therefore critical that quality rating systems are developed and implemented to assist both caregivers and caseworkers in identification of ECE programming that is most appropriate for the needs of children involved with the child welfare system.
APPENDICES

Appendix A. The Child Behavior Checklist (CBCL) 1.5/5
Please print your answers. Be sure to answer all items.

<table>
<thead>
<tr>
<th>0 = Not True (as far as you know)</th>
<th>1 = Somewhat or Sometimes True</th>
<th>2 = Very True or Often True</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 55. Plays with own sex parts too much</td>
<td>0 1 2 59. Rapid shifts between sadness and excitement</td>
<td>0 1 2 80. Strange behavior (describe):</td>
</tr>
<tr>
<td>0 1 2 58. Poorly coordinated or clumsy</td>
<td>0 1 2 81. Stubborn, sullen, or irritable</td>
<td>0 1 2 82. Sudden changes in mood or feelings</td>
</tr>
<tr>
<td>0 1 2 57. Problems with eyes (without medical cause) (describe):</td>
<td>0 1 2 83. Sulus a lot</td>
<td>0 1 2 84. Talks or cries out in sleep</td>
</tr>
<tr>
<td>0 1 2 85. Punishment doesn't change his/her behavior</td>
<td>0 1 2 85. Temper tantrums or hot temper</td>
<td>0 1 2 86. Too concerned with neatness or cleanliness</td>
</tr>
<tr>
<td>0 1 2 85. Rashness of other skin problems (without medical cause)</td>
<td>0 1 2 87. Too fearful or anxious</td>
<td>0 1 2 88. Uncooperative</td>
</tr>
<tr>
<td>0 1 2 61. Refuses to eat</td>
<td>0 1 2 89. Underactive, slow moving, or lacks energy</td>
<td>0 1 2 90. Unhappy, sad, or depressed</td>
</tr>
<tr>
<td>0 1 2 62. Refuses to play active games</td>
<td>0 1 2 91. Unusually loud</td>
<td>0 1 2 92. Upset by new people or situations (describe):</td>
</tr>
<tr>
<td>0 1 2 63. Repeatedly rocks head or body</td>
<td>0 1 2 93. Vomiting, throwing up (without medical cause)</td>
<td>0 1 2 94. Wakes up often at night</td>
</tr>
<tr>
<td>0 1 2 64. Resists going to bed at night</td>
<td>0 1 2 95. Wanders away</td>
<td>0 1 2 96. Wants a lot of attention</td>
</tr>
<tr>
<td>0 1 2 65. Resists toilet training (describe):</td>
<td>0 1 2 97. Whining</td>
<td>0 1 2 98. Withdrawn, doesn't get involved with others</td>
</tr>
<tr>
<td>0 1 2 66. Stares a lot</td>
<td>0 1 2 99. Worries</td>
<td>0 1 2 100. Please write in any problems the child has that were not listed above.</td>
</tr>
<tr>
<td>0 1 2 67. Seems unresponsive to affection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 68. Self-conscious or easily embarrassed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 69. Shy or won't share</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 70. Shows little affection toward people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 71. Shows little interest in things around him/her</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 72. Shows too little fear of getting hurt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 73. Too shy or timid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 74. Sleeps less than most children during day and/or night (describe):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 75. Sleeps or plays with bowel movements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 76. Speech problem (describe):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 77. Stares into space or seems preoccupied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 78. Stomachaches or cramps (without medical cause)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Does the child have any illness or disability (either physical or mental)? □ No □ Yes—Please describe:

What concerns you most about the child?

Please describe the best things about the child:

PAGE 2
|          | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 2         | 0.184| 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 3         | 0.104|      | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 4         | 0.104|      |      | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 5         | 0.101|      |      |      | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 6         | 0.050|      |      |      |      | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 7         | 0.051|      |      |      |      |      | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 8         | 0.199|      |      |      |      |      |      | 1    |      |      |      |      |      |      |      |      |      |      |      |      |
| 9         | 0.202|      |      |      |      |      |      |      | 1    |      |      |      |      |      |      |      |      |      |      |      |
| 10        | 0.164|      |      |      |      |      |      |      |      | 1    |      |      |      |      |      |      |      |      |      |      |
| 11        | 0.045|      |      |      |      |      |      |      |      |      | 1    |      |      |      |      |      |      |      |      |      |
| 12        | 0.081|      |      |      |      |      |      |      |      |      |      | 1    |      |      |      |      |      |      |      |      |
| 13        | 0.051|      |      |      |      |      |      |      |      |      |      |      | 1    |      |      |      |      |      |      |      |
| 14        | 0.179|      |      |      |      |      |      |      |      |      |      |      |      | 1    |      |      |      |      |      |      |
| 15        | 0.640|      |      |      |      |      |      |      |      |      |      |      |      |      | 1    |      |      |      |      |      |
| 16        | 0.292|      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1    |      |      |      |      |
| 17        | 0.013|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1    |      |      |      |
| 18        | 0.431|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1    |      |      |
| 19        | 0.051|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1    |
| 20        | -0.147|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 21        | 0.044|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

**p < 0.01, *p < 0.05**
Appendix C. Head Start Analysis

The following table is derived from an auxiliary multilevel model that was intended to investigate the possible effects of quality of ECE, indicators which were not available in the secondary NSCAW II data. This model utilized a categorical construct of ECE to encompass those not participating in any ECE (n=199), those participating in formal ECE (n=121) and those participating specifically in Head Start (n=29). This model is considered auxiliary as it does not include a measure for attachment, one of the primary variables of interest in this research. Still, findings from this model provide support for the critical importance of the quality of ECE in assessing its benefits or possible detriments, perhaps particularly for child welfare-involved populations. In this model, there is no statistically significant association between ECE participation when utilizing Head Start programming and externalizing behavior (B = -0.81, p>0.10), while participation in other types of ECE is significantly associated increased externalizing behavior (B = 1.91, p>0.05).
HLM: Participation in Head Start

<table>
<thead>
<tr>
<th></th>
<th>B (Beta)</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECE Participation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in Head Start</td>
<td>-0.81</td>
<td>2.43</td>
</tr>
<tr>
<td>Participation in other formal ECE</td>
<td>1.91**</td>
<td>0.74</td>
</tr>
<tr>
<td><strong>Child Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (months)</td>
<td>-0.06</td>
<td>0.10</td>
</tr>
<tr>
<td>Male</td>
<td>1.16</td>
<td>1.13</td>
</tr>
<tr>
<td>African American</td>
<td>2.05</td>
<td>1.49</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.56</td>
<td>1.48</td>
</tr>
<tr>
<td>Other</td>
<td>-1.02</td>
<td>2.42</td>
</tr>
<tr>
<td>Vocabulary (PLS-3)</td>
<td>-0.04*</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Caregiver Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School Education</td>
<td>2.92*</td>
<td>1.15</td>
</tr>
<tr>
<td>Single Marital Status</td>
<td>-0.85</td>
<td>1.05</td>
</tr>
<tr>
<td>Received TANF in Past Year</td>
<td>0.77</td>
<td>0.97</td>
</tr>
<tr>
<td>Clinical Depression</td>
<td>2.98**</td>
<td>1.11</td>
</tr>
<tr>
<td><strong>Caregiving Environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanked 1+ times in last month (%)</td>
<td>2.12*</td>
<td>0.88</td>
</tr>
<tr>
<td>Cognitive Stimulation (HOME subscale)</td>
<td>-0.16</td>
<td>0.11</td>
</tr>
<tr>
<td><strong>Child Welfare Involvement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substantiated (%)</td>
<td>1.14</td>
<td>1.37</td>
</tr>
<tr>
<td>Removed From Home (%)</td>
<td>-1.01</td>
<td>1.38</td>
</tr>
<tr>
<td><strong>Level 1 Variance</strong></td>
<td>26.02</td>
<td>4.88</td>
</tr>
<tr>
<td><strong>Residual Variance</strong></td>
<td>27.23</td>
<td>3.94</td>
</tr>
</tbody>
</table>

Note. 0=secure attachment, 1=insecure attachment; comparison group=no ECE participation; 0=female, 1= male; comparison group=white; comparison group=unsubstantiated

** p < 0.01, * p < 0.05, † p < 0.1
REFERENCES


